

# ADDITIVE ADVERBS AND COORDINATORS IN CHINESE: A CASE STUDY OF *YE* 'ALSO', *ERQIE* 'AND' AND *HE* 'AND'

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## 1. Introduction

This paper deals with two topics: (I) an adverb *ye*; (II) two coordinators *erqie* 'and' and *he* 'and'. We shall first argue that syntactically, *ye* behaves as an adverb in the coordinated construction; semantically, *ye* presupposes that at least one contextually salient expression P, distinct from the sentence with *ye*, is true. Assuming this analysis, we are able to represent and define the interpretation of *ye* formally, and to provide explanations for the characteristics of *ye*: (A) when a modal occurs in the coordinated structure, it has to occur in both conjuncts as in (1); (B) *ye* rather than *erqie* precedes the *wh...dou* construction as in (2); (C) *ye* instead of *erqie* appears in sentences with two contradictory conjuncts as in (3); and (D) *ye* can occur in *shi* 'be' clauses, but *erqie* can not unless followed by certain adverbs, as shown in (4)-(5), respectively.

- (1) Dang yisheng de yao xiaoxin, yi-tie yiao neng jiu  
As doctor DE need careful, one-CL medicine can save  
ren de ming, ye \*(neng) hai ren de ming.  
people De ming also can harm people DE life  
'As a doctor, you should be careful, the medicine can save one's life,  
and it can also take away one's life.'
- (2) Wo jiao-guo hao xuesheng, ye/\*erqie jiao-guo huai  
I teach-ASP good students also/\*and teach-ASP bad  
xuesheng, shenmeyiang de xuesheng wo dou keyi  
students what kind DE students I all can  
yingfu.  
handle  
I have taught good students, and also taught bad students, I can handle  
all kinds of students.'
- (3) Zhangsan bu gao ye/\*erqie bu ai.  
Zhangsan not tall also/\*and not short

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\* For their insightful discussions, I am indebted to Chen-Sheng Luther Liu, Jo-Wang Lin, Wei-Tien Dylan Tsai, and Chung-Yu Barry Yang.

‘Zhangsan is neither tall nor short.’

- (4) Zhe shi yizhang chuang ye/\*erqie shi yizhang shafa.  
 This is one-CL bed also/\*and is one-CL sofa  
 ‘This is a bed, and also a sofa.’<sup>1, 2, 3</sup>
- (5) Zhe shi yizhang chuang erqie \*(hai)shi yizhang shafa.  
 This is one-CL bed and even is one-CL sofa  
 ‘This is a bed, and even a sofa.’

Second, we shall argue that the interpretation of ‘furthermore’ denoted by the coordinator *erqie* in effect derives from the semantic nature of *erqie*. *Erqie* presupposes informativeness verified by the environments where *erqie* occurs: (A) in *p erqie q* construction, *q* entails *p*, as shown in (6); (B) the propositional strength of the conjunct following *erqie* must be stronger than the one preceding *erqie* as in (7); and (C) the conjunct following *erqie* contains adverbs, such as *ye* ‘also’, *hai* ‘even’, as shown in (8)-(9).

- (6) Muqian feiji yijing bei women kongzhi erqie feixing  
 Right now airplane already BEI us control and flight  
 jihua yijing yisuo kengdong.  
 plan already with change  
 ‘Right now the flight is already controlled by us, and the plan of the flight has already changed.’
- (7) Baishang you san-shi-ge ren kao-shang guoli-daxue  
 class have thirty-Cl people pass national-university  
 erqie di-er-leizu de bangshou zai wo-men bang.  
 and second-group DE the first in our class  
 ‘Thirty students in our class can enter the national universities, and furthermore the first of the second group is in our class.’
- (8) Wo jiao-guo hao xuesheng, erqie ye jiao-guo huai  
 I teach-ASP good-students and also teach-ASP bad  
 xuesheng, (shenmeyiang de xuesheng wo dou keyi  
 students (what kind DE students I all can  
 yingfu).  
 handle  
 ‘I have taught good students, and also taught bad students; (I can handle all kinds of students).’

<sup>1</sup> The gloss is as follows: *erqie*: ‘and’; *ye*: ‘also’; *he*: ‘and’; and *hai*: ‘even’ or ‘still’. Abbreviations used in this thesis are as follows: ASP: aspect markers; CL: classifiers; DE: verbal suffix or marker for modifying phrases like genitive phrases, relative clauses, and noun complement clauses; BEI: passive marker; BA: the disposal marker, and SFP: sentence-final particles.

<sup>2</sup> According to Zhu (1982), Tseng (1977), and Aoun and Li (2003), different categories of conjuncts are conjoined by difference coordinators in Chinese.

<sup>3</sup> *Erqie* can proceed the *wh...dou* construction, occur in *shi* ‘be’ clauses, conjoin two contradictory conjuncts, providing that it is followed by proper adverbs, such as *ye* ‘also’, *hai* ‘even’.

- (9) Wo ren-shi zhe-san-ge jiaoshou, erqie qizhong you liang-ge  
 I know this-three-CL professors and among with two-CL  
 \*(hai) shi wo-de zhidaolaoshi, (wo gen tamen zai shou  
 even is my adviser (I with them again familiar  
 bu-guo).  
 not-over  
 ‘I know these three professors, and two of them are even my advisers.  
 I can not be more familiar with them.’

Finally, we shall suggest the idea that *he* conjoins nominal expressions be challenged by linguistic data observed by Lu (1980) and Zhu (1982), as shown in (10)-(11), respectively.

- (10) Taishan de jingse\*(shifen) zhuangli he xiongwei.  
 Taishan DE scenery very grandeur and majestic  
 ‘The scenery of Taishan is very grandeur and majestic.’
- (11) Wo\*(hai)yao shuoming he buchong ji-ju.  
 I still want explain and supplement several sentences  
 ‘I still want to explain and supplement several sentences.’

This paper proceeds as follows: previous studies of characteristics of *ye* and *erqie* will be reviewed in section 2, and then the proposal of the syntax and semantics of *ye* and *erqie* will be suggested in section 3 and 4, respectively. In section 5, the properties of the conjuncts conjoined by *he* will be reexamined, and finally the conclusion will be reached in section 6.

## 2. Literature Review: Syntax and Semantics of *Ye* and *Erqie*

In this section, the syntax and semantics of *erqie* and *ye* are reviewed, and then some problems that can not be solved by previous studies are brought out (cf. Zhu (1982), Ma (1982), Shen (1983)).

### 2.1 Literature Review: Syntax and Semantics of *Ye*

According to Chao (1968), Zhu (1982), and Li and Thompson (1981), *ye* is an adverb of scope that refers to the scope of the expressions before *ye*, as shown in (12). Paris (1979) further pinpoints out that *ye* can have its scope either to the right or to the left substantiated by the ambiguous interpretations of (12).

- (12) Zhangsan ye chi-le mian.  
 Zhangsan also eat-ASP noodles  
 ‘Someone ate noodles, and Zhangsan also ate noodles.’  
 ‘Zhangsan ate something, and he also ate noodles.’

Yet, Li (1947), and Tseng (1977) argue that *ye* is a coordinator

conjoining non-nominal expressions: VPs, APs, Advs or clauses, as shown in (13)-(16).

- (13) Zhangsan [<sub>VP</sub> qu-guo Meiguo], ye [<sub>VP</sub> qu-guo yingguo].  
 Zhangsan go-ASP America also go-ASP England  
 ‘Zhangsan has been to America, and has also been to England.’
- (14) Ta [<sub>AdjP</sub> hen congming] ye [<sub>AdjP</sub> hen piaoliang].  
 She very smart also very beautiful  
 ‘She is very smart and also very beautiful.’
- (15) Ta jihua-de [<sub>AdvP</sub> hen zhouxiang] ye [<sub>AdvP</sub> hen yianmi].  
 He plan DE very comprehensively also very strictly  
 ‘He plans very comprehensively and strictly.’
- (16) [<sub>CP</sub> Zhangsan qu-guoMeiguo], [<sub>CP</sub> Lisi ye qu-guo Meiguo].  
 Zhangsan go-ASP America Lisi also go-ASP America  
 ‘Zhangsan has been to America, and Lisi has also been to.’

From the above sentences, one may regard *ye* as an adverbial conjunction that functions to conjoin and to modify phrases or clauses.<sup>4</sup> Yet, this will lead to an expansion of the lexicon. *Ye* will have two syntactic categories: on the one hand, it will be classified as an adverb when it appears in a single sentence, like (12); on the other hand, it will be an adverbial conjunction when it conjoins phrases or clauses, like (13)-(16). In the following, we shall therefore suggest that a uniform analysis for the status of *ye* be preferred in section 3.

Semantically, Lu (1980) argues that multiple uses of *ye* can be generalized as the one that functions to emphasize the identical element between two expressions, as shown by two actions made by the same person *Zhangsan* in (17). Ma (1982) further modifies Lu’s (1980) idea, and proposes that *ye* signify the similarity between two expressions rather than mark the existence of two things that are equivalent, as shown in (18). In (18), there is no identical element between two conjuncts. Still, we can draw certain similarity between them: the intensity of ‘the wind’ and ‘the rain’ are both reduced.

- (17) Zhangsan da bangqiu, ye ti zuqiu.  
 Zhangsan hit baseball also kick soccer  
 ‘Zhangsan plays baseball, and also plays soccer.’
- (18) Feng ting-le, yu ye xiao-le.  
 Wind stop-SPF rain also little-SPF  
 ‘The wind stops, and the rain becomes lighter.’

Besides, Shen (1983) pinpoints out that the similarity between two expressions will not be of importance unless certain existence of difference between them, as shown by (19)-(21).

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<sup>4</sup> Chao (1968) claims that except for a few prepositional conjunctions, most conjunctions are adverbial conjunctions that serve both to join and to modify words, phrases or clauses.

- (19) Zhangsan shi Meiguoren, Lisi ye shi Meiguoren.  
Zhangsan is American Lisi also is American  
'Zhangsan is an American, and Lisi is also an American.'
- (20) \*Lisi shi Meiguoren, Lisi ye shi Meiguoren.  
Lisi is American Lisi also is American  
'Lisi is an American, and Lisi is also an American.'
- (21) \*Zhangsan shi Meiguoren, Lisi ye shi Yingguoren.  
Zhangsan is American Lisi also is English  
'Zhangsan is an American, and Lisi is also an English.'

Furthermore, Zhu (1982) proposes that *ye* denote the interpretation of 'listing'. For example, the 'listing' reading in (19) is to state that the following two persons are Americans: *Zhangsan* and *Lisi*.

In sum, *ye* functions to underscore the similarity between two expressions; the similarity will not be imperative unless there is certain difference between them (cf. Lu (1980), Ma (1982), Shen (1983), Zhu (1968)).

## 2.2. Literature Review: Syntax and Semantics of *Erqie*

According to Zhu (1968), Lu (1980), Ma (1982), Aoun and Li (2003), *erqie* is a coordinator, connecting two non-nominal categories: verb phrases, adjective phrases, and clauses.<sup>5</sup> Interestingly, when *erqie* conjoins clauses, the clause following it usually carries some adverbs, such as *hai* 'even', *geng* 'more', and *you* 'again' as illustrated by (22)-(24). Thus, Lu (1980) argues that the semantics of *erqie* is *dijin* 'furthermore'.

- (22) Zhe-li bu shao ren shi wo de lao tongxue, erqie you  
This-place not few people is my DE old classmates and have  
de \*(hai)shi hao pengyou.  
DE even is good friends  
'Many people here are my old classmates, and some are even my good friends.'
- (23) Cong lulu keyi qu, cong shuilu ye keyi qu, erqie  
From land-rout can go from waterway also can go and  
\*(geng) jin yixie.  
more near some  
'You can either go by land rout or by waterway, and the distance is

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<sup>5</sup> According to Aoun and Li (2003), presuming that *erqie* connects two verb phrases, these verb phrases can not express dual properties or activities of one individual, as shown in (i).

- (i) Zhangsan nianshu \*erqie/jian gongzuo, hen mang.  
Zhangsan study and/and work very busy  
'Zhangsan studies and works; (he is) very busy.'

much shorter by waterway. ’

- (24) Jingyan shi baogui De erqie jingyan De huode  
Experience is treasure De and experience de acquisition  
\*(you) wangwang shi xuyao fuchu daijia de.  
again always is need pay price De  
‘Experience is valuable, and the acquisition of that always requires  
efforts.’

There is no denying that Zhu (1968), Lu (1980), Ma (1982), and Shen (1983) give a precise description for the syntax and semantics of *ye*, but they simply give us a description instead of an analysis with explanatory adequacy for the semantic nature of *ye*. Lu (1980) either touches the question of why *erqie* is usually followed by adverbs. Besides, we shall point out that previous analysis of *ye* and *erqie* is challenged by characteristics of *ye* and *erqie* mentioned in section 1 (cf. (1)-(5)). In the following, we shall first discuss the properties of *ye* in section 3, and then that of *erqie* in section 4.

### 3. Syntax and Semantics of *Ye*

In section 3.1, we shall first propose a uniform analysis for *ye*, which is treated as an additive particle, and then briefly introduce Rooth’s (1992) alternative semantics to facilitate further discussions. The semantics of *ye* will be spelled out in section 3.2.<sup>6</sup> In section 3.3 we shall argue that the English counterpart of *ye* is *too/also*.

#### 3.1 *Ye* as an Additive Particle

Syntactically, *ye* is an adverb instead of an adverbial conjunction by the following evidence (cf. Lu (1968), Liu (2001), Hole (2004)). First, Chinese coordinated structure can be expressed by a coordinator, such as *bingqie* ‘and’ in (25), *er* ‘and’ in (26) or a zero coordinator in (27)-(28). In fact, according to Chao (1968), the zero morpheme is the most frequent marker of coordinated structures: coordinated expressions can occur in succession without conjunctions; sometimes even without pause, as shown by (27)-(28).<sup>7</sup>

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<sup>6</sup> Since *ye* plays a crucial role with respect to the pitch accent of the sentence, we shall suggest that *ye* be a focusing adverb in the following section (cf. König (1991)). Besides, the meaning of ‘additive’ in ‘additive particle’ actually derives from the presupposition of *ye*: asides from the sentence with *ye* is true, there is at least one additional expression P will be true (cf. Krifka (1999)).

<sup>7</sup> This does not entail that each coordinator can be substituted by a zero morpheme. For example, some sentences will alter their meanings, supposing that the original coordinator is deleted, as shown by the contrast between (i) and (ii).

- (i) Ni yao ziji qu huo gen bieren qu?  
You want self go or with other people go  
‘Do you want to go by yourself or with others?’

- (25) Dushuhui yiding yiao zhuzhi qi-lai bingqie zhichi  
 Study group must want organize arise-come and insist  
 xiaqu.  
 down-come  
 ‘The study group must be organized and kept going on.’
- (26) Bali shi Faguo de shoudu, er Luoma shi Yidali de shoudu.  
 Paris is France DE capital and Rome is Italy DE capital  
 ‘Paris is the capital of France, and Rome is the capital of Italy.’
- (27) Zhangsan chi-le liang-wan fan, Lisi chi-le wu-wan mian.  
 Zhangsan eat-ASP two-CLrice Lisi eat-ASP five-CL noodles  
 ‘Zhangsan ate two bowls of rice, and Lisi ate five bowls of noodles.’
- (28) Ta youshihou ku, youshihou xiao.  
 He sometimes cry sometimes laugh  
 ‘He sometimes cries and sometimes laughs.’

Given this, sentences with *ye* can be conjoined by a zero coordinator, and *ye* does not have to serve as a coordinator.

Second, *ye*, unlike a coordinator *bingqie* ‘and’, can occur in a single sentence, as illustrated by (29)-(32). Thus, *ye* can not be treated as a coordinator, since it has nothing to conjoin.<sup>8</sup>

- (29) Lisi ye qu-guo Meiguo.  
 Lisi also go-ASP America  
 ‘Lisi has also been to America.’
- (30) \*Bingqie Lisi qu-guo Meiguo.<sup>9, 10</sup>  
 And Lisi go-ASP America  
 ‘And Lisi has also been to America.’
- (31) Zhe ye jiu shi laoshi chang shuo de: you zhi zhe shi  
 This also then is teacher often say DE: you will person thing  
 jing cheng.  
 eventually success  
 ‘This is what the teacher said: where there is a will there is a way.’
- (32) \* Bingqie zhe jiu shi laoshi chang shuo de: you zhi  
 And this then is teacher often say DE: you will  
 zhe shi jing cheng.  
 person thing eventually success  
 ‘And this is what the teacher said: where there is a will there is a way.’

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(ii) \*Ni yiao ziji qu gen bie ren qu?

<sup>8</sup> One may argue that when *ye* occurs in a single sentence, it is a macrosyntactic use of a conjunction, depending on something outside the sentence in which it occurs. This usage of *ye* is beyond the scope of this paper, and we shall not discuss it in the remaining paper.

<sup>9</sup> According to Zhu (1968) and Lu (1980), *bingqie* ‘and’ is a coordinator.

<sup>10</sup> In case that more information is provided in the discourse, this sentence can be grammatical in the conversation.

Third, a coordinator generally cannot co-occur with another coordinator or subordinator, as shown in (33)-(34), respectively.<sup>11</sup> That is, a coordinator *bingqie* ‘and’ can be preceded neither by another coordinator *qie* ‘and’ as in (33), nor another subordinator *suoyi* ‘so’ as in (34). Yet, the fact that *ye* can follow a coordinator *qie* ‘and’ or a subordinator *suoyi* ‘so’ substantiates that *ye* is not a coordinator, as shown in (35)-(36).

- (33) \*Ta changchang bu tinghua, qie bingqie youshi hui  
 He usually not obedient and and sometimes will  
 shua-piqi.  
 lose temper  
 ‘He is not usually obedient, and sometimes he also loses his temper.’
- (34) \*Yinwei ta you yi-shuang da yianjing, suoyi bingqie  
 Since she has one-CL big eyes so and  
 geng xiyin ren.  
 more charming people  
 ‘Since she has big eyes, she is more charming.’
- (35) Ta changchang bu tinghua, bingqie youshi ye hui  
 He usually not obedient and sometimes also will  
 shua-piqi.  
 lose temper  
 ‘He is not usually obedient, and sometimes he also loses his temper.’
- (36) Yinwei ta you yi-shuang da yianjing, suoyi ye geng  
 Since she has one-CL big eyes so also more  
 xiyin ren.  
 charming people  
 ‘Since she has big eyes, she is more charming.’

Thus far, it is plausible for us to rule out the possibility that *ye* functions as a conjunction, or as an adverbial conjunction.

In sum, we have pointed out that *ye* should be treated as an adverb by the following reasons: (A) Chinese allows a zero coordinator, and thus *ye* does not need to function as an adverbial conjunction; (B) *ye* can occur in a single sentence; and (C) *ye* can co-occur with a coordinator or a subordinator. In the following, we shall first briefly introduce as preliminary Rooth’s (1992) alternative semantics, and then a proposal that *ye* presupposes an alternative set will be suggested.

## 3.2 Proposal

### 3.2.1 Preliminary of *Ye*: Rooth’s Alternative Semantics

The idea of Rooth’s (1992) alternative semantics is to account for the interpretation of focus by proposing the idea that in addition to the ordinary

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<sup>11</sup> According to Zhu (1968) and Lu (1980), *qie* ‘and’ is a coordinator.



semantic value of an expression  $\alpha$ , represented as  $[[\alpha]]^o$ , each expression has a focus semantic value  $[[\alpha]]^f$ , which is in contrast to the ordinary semantic value  $[[\alpha]]^o$ . The focus semantic value for a phrase  $\alpha$ , namely  $[[\alpha]]^f$ , is a set of propositions that derives from the ordinary semantic value. Seen in this way, the focus semantic value of  $[[\alpha]]^f$  results from substitution in the position corresponding to the focus phrase  $\alpha$  of the ordinary semantic value. For example, the focus semantic value of (37) is the set of propositions of the form ‘ $x$  likes Sue’, as shown by (38b).

(37) [Mary]<sub>F</sub> likes Sue.

- (38) a.  $[[\text{[Mary]}_F \text{ likes Sue }]]^o = \text{Mary likes Sue}$ <sup>12</sup>  
 b.  $[[\text{[Mary]}_F \text{ likes Sue }]]^f = x \text{ likes Sue}$ , where  $x$  is in contrast to ‘Mary’

Simply put, the focus semantic value of (38b) is the set of propositions contrary to the ordinary semantic value. So, the denotation of the variable  $x$  introducing by focus is a set of alternatives of ‘Mary’.

In addition to the intonational reflex of focus, Rooth (1992) pinpoints out that certain lexical constructions also have focus-related effects that introduce variables. For example, *only* in auxiliary position is assigned a lexical semantic value quantifying properties. The semantic nature of *only* in (40a) is the quantification in (40b) representing that if  $P$  is a property in a certain set of properties  $C$ , and Mary has that property, and then  $P$  is identical to the property expressed by VP.

(39) Mary only introduces [Bill]<sub>F</sub> to Sue.

- (40) a. Mary only VP  
 b.  $\forall P [P \in C \wedge P(m) \rightarrow P = \text{VP}]$   
 c. Focus-determined constraint:  $C \in [[\text{VP}]]^f$ , where  $C$  serves as a domain of quantification<sup>13</sup>

(41)  $[[\text{VP}]]^f = \text{introducing } x \text{ to Sue}$

### 3.2.2 Semantics of *Ye*

Assuming Rooth’s (1992) alternative semantics, we first assign *ye* a lexical semantic value with quantificational force. The focus semantic value is derived from making a substitution in the position corresponding to the focus semantic value of the ordinary semantic value. In other words, the focus semantic value and the ordinary semantic value are equivalent except for the substitution part, turning out to be a variable introduced by the focus, and thus the semantics of *ye* is spelled out as (42).

<sup>12</sup> The ordinary semantic value is equivalent to the original sentence.

<sup>13</sup> The function of focus semantic value is to constrain rather than to fix  $C$  illustrated by the focus-determined constraint. Thus, the focus semantic value for (40) is the proper superset of  $[[\text{VP}]]^f$  including propositions based on choices of  $x$  which are not people (cf. Rooth (1992)).

(42)  $[[ye]] = \text{a set of expressions } P \in \{[[\alpha]]^f - [[\alpha]]^o\}$

Simply put, the semantics of *ye* denotes a set of expressions *P* belonging to a set of expressions of the focus semantic value other than the ordinary semantic value. Namely, *ye* presupposes that at least one contextually salient expression *P*, distinct from the sentence with *ye*, is true.

Given this, we would be able to represent the ambiguous interpretations of (43) in a formal way. On condition that the focus is on VP, *ye* presupposes an alternative set of ‘Lisi qu-guo Meiguo’, as shown by ‘Lisi *P*’, and at least one member from that set is true, as shown in (45a). Namely, *P* can be *Lisi qu-guo Yingguo* ‘Lisi has been to England’, *Lisi qu-guo Riben* ‘Lisi has been to Japanese’, *Lisi qu-guo Deguo* ‘Lisi has been to German’, and etc.

- (43) Lisi ye qu-guo Meiguo.  
 Lisi also go-ASP America  
 ‘Lisi has been to someplace ( $\neq$  America), and Lisi has also been to America.’ or  
 ‘Someone ( $\neq$  Lisi) has been to America, and Lisi has also been to.’
- (44) Lisi ye  $[_{VP}$ qu-guo Meiguo]<sub>f</sub>.  
 Lisi also go-ASP America  
 ‘Lisi has been to someplace ( $\neq$  America), and Lisi has also been to America.’
- (45) a.  $[[ye]] = \text{a set of propositions of } P \in \{[[qu-guo Meiguo]]^f - [[qu-guo Meiguo]]^o\}$   
 b. Focus-determined constraint:  $C \in [[qu-guo Meiguo]]^f$ , where *C* serves as a domain of quantification

On condition that the focus is on NP, the semantic nature of *ye* in (46) is to presuppose that at least one proposition with the form ‘*P* qu-guo Meiguo’, where *P* is not ‘Lisi’ is true, as represented by (47). By analogy with (44), *P* can be *Zhangsan* ‘Zhangsan’, *Wangwu* ‘Wangwu’, *Zhaoliu* ‘Zhaoliu’.

- (46) Lisi<sub>f</sub> ye qu-guo Meiguo.  
 Lisi ye qu-guo Meiguo  
 ‘Someone ( $\neq$  Lisi) has been to America, and Lisi has also been to.’
- (47) a.  $[[ye]] = \text{a set of propositions of } P \in \{[[Lisi]]^f \text{ qu-guo Meiguo} - [[Lisi]]^o \text{ qu-guo Meiguo}\}$   
 b. Focus-determined constraint:  $C \in [[Lisi]]^f$ , where *C* serves as a domain of quantification

Second, the proposal also helps us to account for the characteristics of *ye* reviewed in section 2: *ye* signifies the similarity between two expressions; the similarity will not be significant unless there is certain difference between two expressions. This phenomenon is exemplified by the ungrammaticality of (48) with more than one variable introduced by focus, and (49) without any variable (cf. Lu (1980), Ma (1982), and Shen (1983)).

- (48) \*Zhangsan qu-guo Yingguo, Lisi<sub>f</sub> ye qu-guo Meiguo<sub>f</sub>.  
 Zhangsan go-ASP England Lisi also go-ASP America  
 ‘Zhangsan has been to England, and Lisi has also been to America.’
- (49) \*Lisi qu-guo Meiguo, Lisi ye qu-guo Meiguo.  
 Lisi go-ASP America Lisi also go-ASP America  
 ‘Lisi has been to America, and Lisi has also been to America.’

Simply put, the second clause of (48) with two foci, which introduces two variables:  $C_1$  and  $C_2$ ; however, there is only one *ye* that introduces domain of quantification. Thus, either  $C_1$  or  $C_2$  will be vacuously quantified and it results in the ungrammaticality of (48). In (49), no contrast between the two clauses yields the outcome that no variable for *ye* to quantify over, thus either (49) is ungrammatical.

Furthermore, the idea that *ye* denotes ‘listing’ can be realized as the choice of alternatives that are members in the set of proposition P, the focus semantic value other than the ordinary semantic value.

Third, in the light of the facts above, the semantics of *ye* in (42) also explains the following questions: (A) in *...(erqie)...ye* construction, *erqie* is optional while *ye* is obligatory; (B) *ye* not *erqie* precedes the *wh...dou* construction; (C) *ye* can occur in sentences with two contradictory predicates, while *erqie* cannot do so; (D) *ye* instead of *erqie* appears in sentences containing *shi* ‘be’; and (E) when a modal occurs in the coordinated structure, it has to occur in both conjuncts, as shown in (50)-(58), respectively (cf. Simons (2005)).

- (A) In *...(erqie)...ye* construction, *erqie* is optional while *ye* is obligatory, as shown by the contrast between (50) and (51).
- (50) Zhangsan qu-guo Meiguo, (erqie) Lisi ye qu-guo Meiguo.  
 Zhangsan go-ASP America and Lisi also go-ASP America  
 ‘Zhangsan has been to America, and Lisi also has been to.’
- (51) \*Zhangsan qu-guo Meiguo, erqie Lisi qu-guo Meiguo.  
 Zhangsan go-ASP America and Lisi go-ASP America  
 ‘Zhangsan has been to America, and Lisi also has been to.’

In (50), *erqie* is optional because it can be replaced by a zero coordinator. In contrast, *ye* is obligatory because the speaker’s presupposition that there is at least one more person that has been to America must be saturated by the presupposition of *ye*.

For ease of exposition, we shall first explain why *ye* is used in the following sentences; whereas why *erqie* is not used will not be illustrated until the semantic nature of *erqie* is proposed in section 4.<sup>14</sup>

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<sup>14</sup> *Erqie* can proceed the *wh...dou* construction, occur in *shi* ‘be’ clauses, conjoin two contradictory conjuncts, providing that it is followed by proper adverbs, such as *ye* ‘also’, *hai* ‘even’.

(B) *Ye* not *erqie* precedes the *wh...dou* construction, as shown in (52).

- (52) Wo jiao-guo hao xuesheng, ye/\*erqie jiao-guo huai  
 I teach-ASP good students also/\*and teach-ASP bad  
 xuesheng, shenmeyiang de xuesheng wo dou keyi  
 students what kind DE students I all can  
 yingfu.  
 handle  
 ‘I have taught good students, and also taught bad students; I can handle  
 all kinds of students.’
- (53) [[*ye* ( $\alpha$ )]] presupposes that there is at least one contextually salient  
 expression  $P \in \{ \text{teach } [[\text{bad}]]^f \text{ students} - \text{teach } [[\text{bad}]]^o \text{ students} \}$   
 such that *P* is true.

According to Lin (1997), Cheng (1991), and Cheng and Huang (1996), *wh* phrases obtain the universal interpretation when they occur with *dou*. With the presupposition of *ye* in (53), it is desirable for *ye* to precede the *wh...dou* construction because the combination of the ordinary semantic value of ‘teaching bad students’ and the focus semantic value of that is the denotation of universal interpretation.

(C) *Ye* can occur in sentences with two contradictory predicates, while *erqie* cannot do so, as shown in (54).

- (54) Laoshi zanmei women, ye/\*erqie piping women.  
 Teacher praise us also/\*and criticize us  
 ‘The teacher not only praises us, he also criticizes us.’
- (55) [[*ye* ( $\alpha$ )]] presupposes that there is at least one contextually salient  
 expression  $P \in \{ [[\text{criticize us}]^f - [[\text{criticize us}]^o] \}$  such that *P* is  
 true.

A similar way of presupposition also obtains from *ye* in (54), as demonstrated by (55). *Ye* presupposes an alternative set of ‘criticize us’. Namely, there is at least one contextually salient property  $P \in \{ [[\text{criticize us}]^f - [[\text{criticize us}]^o] \}$  such that *P* is true.

(D) *Ye* instead of *erqie* appears in sentences containing *shi* ‘be’ in (56).

- (56) Zhangsan shi Mali xinzhong de hao baba, ye/\*erqie shi linju  
 Zhangsan is Mary at heart De nice father also/\*and is neighbor  
 xinzhong De haohao xiansheng.  
 at heart DE nice sir  
 ‘Zhangsan is a good father at Mary’s heart, and also a nice person at his  
 neighbor’s heart.’
- (57) [[*ye* ( $\alpha$ )]] presupposes that there is at least one contextually salient  
 expression  $P \in \{ [[\text{nice person at his neighbor’s heart}]^f - [[\text{nice person at his neighbor’s heart}]^o] \}$  such that *P* is true.

The denotations of *ye* in (56) is represented in (57). The second *shi* ‘be’ clause reveals the identification relationship of ‘Zhangsan’ and ‘nice sir at the neighbor’s heart’ (cf. Huang (1979)). The use of *ye* presupposes that besides the identification of ‘Zhangsan’ and the ordinary semantic value of ‘nice person at neighbor’s heart’ is true, at least one contextually prominent identification between  $P \in [[\text{nice person at his neighbor’s heart}]^f - [[\text{nice person at his neighbor’s heart}]]^0$  and ‘Zhangsan’ is true.

(E) When a modal occurs in the coordinated structure, it has to occur in both conjuncts, as exhibited in (58) (cf. (Simons (2005)).<sup>15</sup>

(58) Ni keyi shui chuang, ye \*(keyi) shui shafa.  
 You can sleep on-bed also can sleep sofa  
 ‘You can either sleep on the bed, or sleep on the sofa.’

(59)  $[[ye (\alpha)]]$  presupposes that there is at least one contextually salient expression  $P \in [[\text{the choice of sleeping on the sofa}]^f - [[\text{the choice of sleeping on the sofa}]]^0$  such that P is true

The semantics of *ye* in (58) is represented in (59). *Ye* is an additive particle that presupposes that besides the ordinary semantic value of the choice of sleeping on the sofa’ is true, at least one contextually salient proposition  $P \in [[\text{the choice of sleeping on the sofa}]^f - [[\text{the choice of sleeping on the sofa}]]^0$  such that P is true. If the modal of the second clause is deleted, the ordinary semantic value of the focus part turns out to be the proposition of ‘sleeping on the sofa’, rather than ‘the choice of sleeping on the sofa’. That is to say, *ye* turns out to presuppose that besides the ordinary semantic value of

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<sup>15</sup> This is only applicable when the relation of the two conjuncts is exclusive (cf. Quirk et al. (1985)). For example, in (i) one is implausible to sleep on the sofa and on the bed, simultaneously. However, if the relation of the two conjuncts is inclusiveness, either the modal of the first conjunct or that of the second conjunct can be omitted, but the interpretation has been altered, as shown in (i)-(iii).

- (i) Ni keyi he ca, ye keyi he kafe.  
 You can drink-tea also can drink coffee  
 ‘You can drink tea or you can drink coffee.’
- (ii) Ni keyi he ca, ye he kafe.  
 You can drink tea also drink coffee  
 ‘You can both drink tea and coffee (at the same time).’
- (iii) Ni he ca, ye keyi he kafe.  
 You drink-tea also can drink coffee  
 ‘When you drink tea, you can also drink coffee.’

Simply put, in (i) the speaker provides two choice: ‘drinking tea’ and ‘drinking coffee’ to the listener. The interpretation of (ii) is similar to that of (i) because the modal carries the widest scope. However, in (iii) the second conjunct is just like an adjunct; it is likely to be a subordinate clause rather than the coordinated construction.

‘sleeping on the sofa’ is true, there is at least one contextually salient proposition  $P \in [[\text{sleeping on the sofa}]^f - [[\text{sleeping on the sofa}]^o \text{ such that } P \text{ is true. The first conjunct with the proposition of ‘the choice of sleeping on the bed’ can not fulfill the presupposition of } ye \text{ in (58). Thus, the modal of the second conjunct is obligatory.}$

To sum up, the proposal that *ye* presupposes that at least one contextually salient expression *P*, distinct from the sentence with *ye*, is true can provide explanations for the following questions: (A) *ye* rather than *erqie* is used in the following sentence patterns: (i) preceding the *wh...dou* construction, (ii) sentences with contradictory predicates, and (iii) *shi* ‘be’ clauses; (B) in *...(erqie)...ye...construction*, *erqie* is optional while *ye* is obligatory; (C) when a modal occurs in the coordinated structure, it has to occur in both conjuncts. After the demonstration of the semantic nature of *ye*, we shall next compare *ye* with *too/also* in English.

### 3.3 *Ye is Equivalent to Too/Also*

We shall claim that the English counterpart of *ye* is *too/also* (cf. Kaplan (1984), König (1991), Rullmann (2003), Hole (2004)). Significantly important here is that Rullmann (2003) gives the semantics of *too*, and also applies it to *also*, and *as well*.<sup>16</sup> Given this, we shall treat the semantic properties of *also* and *too* as equivalence. Green (1973) is the first one who notes that *too* is obligatory after sentential conjunctions with exactly one meaning difference, as shown by the contrast between (a) and (b) in (60)-(61).

- (60) a. Jo had fish and Mo did, too.  
 b. \*Jo had fish and Mo did.
- (61) a. \*Jo had fish and Mo had soup, too.  
 b. Jo had fish and Mo had soup.

Namely, in (60b) *too* is obligatory because there is only one difference, while in (60a) *too* is unnecessary because there are two differences. This phenomenon corresponds to that of *ye* in section 3.2.2 (cf. (48)-(49)).

Besides, Kaplan (1984) provides the semantic nature and discourse function of *too*, as represented in (62) and (63), respectively.

- (62) *Too* conventionally implicates: What speakers say about the contrasting (or focused) constituent in the second clause, speakers also say about the contrasting (or focused) constituent in the first clause.<sup>17</sup>
- (63) Hypothesized discourse function of *too*: To emphasize the similarity between contrasting constituents.

<sup>16</sup> We shall not discuss the characteristics of *as well* in this paper.

<sup>17</sup> The word ‘contrasting’ means the single difference between the two conjuncts.

Simply put, the function of *too* is to emphasize the similarity between two items with only one difference. This exactly corresponds to the semantics of *ye* shown in the previous sections (cf. Lu (1980), Ma (1982), Shen (1983)).

Furthermore, Rullmann (2003) adopts Rooth's (1992) alternative semantics to spell out the semantics of *too* as follows: *too* adds the presupposition that at least one of the propositions in the focus value of its host sentence is true.<sup>18</sup> From the above linguistic data, we can wrap up the conclusion that the semantics of *ye* and *also/too* has no distinctions.

#### 4. Syntax and Semantics of *Erqie*

We shall argue that syntactically, *erqie* is a coordinator conjoining clauses and phrases (except NPs); semantically, *erqie* presupposes informativeness, and requires its conjuncts to be the same polar in section 4.1. Next, we shall suggest that there be no Chinese counterpart of *and* in English; namely, *erqie* is not equivalent to *and* in English in section 4.2.

##### 4.1 Syntax and Semantics of *Erqie*

According to Zhu (1968) and Lu (1980), we shall suggest that syntactically *erqie* be a coordinator conjoining clauses and phrases (except NPs), as represented by (64)-(68).

- (64) Zhangsan [<sub>VP</sub> chi-le fan] erqie [<sub>VP</sub> he-le tang].  
 Zhangsan eat-ASP rice and drink-ASP soup  
 'Zhangsan has had some rice and soup.'
- (65) Ta [<sub>AdjP</sub> hen congming] erqie [<sub>AdjP</sub> hen piaoliang].  
 She very smart and very beautiful  
 'She is very smart and very beautiful.'
- (66) Ta jihua-de [<sub>AdvP</sub> hen zhouxiang] erqie [<sub>AdvP</sub> hen yianmi].  
 He plan DE very comprehensively and very strictly  
 'He plans very comprehensively and strictly.'
- (67) \* [<sub>NP</sub> Zhe-zhi gou] erqie [<sub>NP</sub> na-zhi mao] dou hen keai.  
 This-CL dog and that-CL cat both very cute  
 'This dog and that cat are both very cute.'
- (68) [<sub>CP</sub> Zuotian you dizhen] erqie [<sub>CP</sub> zhenyang jiu zai Taipei].  
 Yesterday has earthquake and epicenter right at Taipei  
 'There was an earthquake yesterday, and the epicenter is in Taipei.'

Semantically, Lu (1980) provides a precise description that *erqie* means 'furthermore', and notices that sentences containing *erqie* usually carry adverbs, such as *hai* 'even' and *ye* 'also', as represented in (69)-(70), respectively.

<sup>18</sup> Rullmann (2003) calls the sentence in which *too* occurs the *host* sentence.

- (69) Zhe-li bushao ren shi wo de lao tongxue, erqie you  
 This-place not-few people is my DE old classmates and there  
 de \*(hai) shi hao pengyou  
 DE even is good friends  
 ‘Many people here are my old classmates, and some of them are even my good friends.’
- (70) Wo jiao-guo hao xuesheng, erqie \*(ye) jiao-guo  
 I teach-ASP good students and also teach-ASP  
 huai xuesheng, (shenmeyiang de xuesheng wo dou keyi  
 bad students what kind DE students I DOU can  
 yingfu).  
 handle  
 ‘I have taught good students, and also taught bad students; (I can handle all kinds of students).’

However, Lu (1980) simply gives us a description instead of an analysis with explanatory adequacy for the semantics of *erqie*. Besides, Lu (1980) does not touch the question of what environments *erqie* can occur in.

In the following, we shall first point out that *erqie* can occur in the following three sentence patterns: (A) in *p erqie q* construction, *q* entails *p*, as shown in (71); (B) the propositional strength of the conjunct following *erqie* must be stronger than that of the conjunct preceding *erqie* in (72); and (C) the conjunct following *erqie* contains adverbs, such as *ye* ‘also’, *hai* ‘even’, as shown in (73)-(74).

- (71) Muqian feiji yijing bei women kongzhi erqie feixing  
 Right now airplane already BEI we control and flight  
 jihua yijing yiusuo kengdong.  
 plan already with change  
 ‘Right now the flight is already controlled by us, and the plan of the flight has already changed.’
- (72) Baishang you san-shi-ge ren kao-shang guoli-daxue  
 class have thirty-Cl people pass national-university  
 erqie di-er-leizu de bangshou zai wo-men bang.  
 and second-group DE the first in our class  
 ‘Thirty students in our class can enter the national universities, and furthermore the first of the second group is in our class.’
- (73) Wo jiao-guo hao xuesheng, erqie ye jiao-guo huai  
 I teach-ASP good-students and also teach-ASP bad  
 xuesheng, (shenmeyiang de xuesheng wo dou keyi  
 students (what kind DE students I all can  
 yingfu).  
 handle  
 ‘I have taught good students, and also taught bad students; (I can handle all kinds of students).’



- (74) Wo ren-shi zhe-san-ge jiaoshou, erqie qizhong you liang-ge  
 I know this-three-CL professors and among with two-CL  
 \*(hai) shi wo-de zhidaolaoshi, (wo gen tamen zai shou  
 even is my adviser (I with them again familiar  
 bu-guo).  
 not-over  
 ‘I know these three professors, and two of them are even my advisers.  
 I can not be more familiar with them.’

Second, we shall briefly introduce as preliminary the notion of informativeness before suggesting that the interpretation of ‘furthermore’ comes from the presupposition of *erqie*.

#### 4.2 Analysis: *Erqie* Presupposes Informativeness

According to BarHillel and Carna (1952) and Popper (1959) the notion of informativeness is represented in (75).

- (75) Informativeness: *p* is *more informative than q* if the set of states of affairs that *q* rules out is a proper subset of the set that *p* rules out (cf. BarHillel and Carna (1952), Popper (1959), Atlas and Levinson (1981), and Levinson, S.C. (2000))

Simply put, given a domain of discourse, the semantic information content of a message can be measured in proportion to the number of states of affairs that the message effectively rules out. Assuming such a definition of informativeness, we shall propose that *p* be more informative than *q* if the size of the possible worlds in which *p* is true is smaller than the size of the possible worlds in which *q* is true. On the other hand, we can further infer that *p* is more informative than *q* if *p* can dominate all of the set of the possible worlds in which the sentence is true. So, we would expect that in ‘*p erqie q*’ construction, the speaker can make his or her speech as informative as possible with the following two strategies: one is to narrow down the set of the possible worlds in which the sentence is true; the other is to control all of the set of the possible worlds in which the sentence is true.<sup>19</sup> Assuming this way of analysis, we can explain why *erqie* can occur in the following three sentence patterns.

First, in ‘*p erqie q*’ construction, *q* entails *p*, as shown in (76)-(77). In (75), the second conjunct ‘the location of the epicenter’ entails the first conjunct ‘the occurrence of the earthquake’. Likewise, in (77) the second conjunct

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<sup>19</sup> The analysis of informativeness is in accordance with Grice’s Cooperative Principles, especially the Maxims of Quantity (cf. Grice (1975)):

Q1: Make your contribution as informative as is required (for the purpose of the exchange).

Q2: Do not make your contribution more informative than is required.

‘ensure that he can not run away’ entails the first conjunct ‘imprison him’.

- (76) Zuotian you dizhen erqie zhenyang jiu zai Taipei.  
Yesterday has earthquake and epicenter right at Taipei  
‘There was an earthquake yesterday, and the epicenter is in Taipei.’
- (77) Ba ta guan qilai, erqie yao queding ta mei fazi  
BA he imprison arise-come and must sure he no way  
taozou.  
run-away  
‘Imprison him and make sure that he can not run away.’

Second, if the conjuncts do not possess the relation of entailment, the propositional strength of the conjunct following *erqie* must be stronger than that preceding *erqie*.<sup>20</sup> Namely, the function of *erqie* is to restrict the set of the possible worlds in which the sentence is true, as shown in (78).

- (78) Ge zu dou dedao hen hao de chengji erqie  
Each group all get very good DE score and  
(qizhong) yi di-san zu de chengji zui wei tuchu.  
(among those) the-third group De score most prominent  
‘Every group all gets good grades, and (among those) the grades of the third group are the most prominent.’

Simply put, in (78) the assertion that *(among those) the grades of the third group is the most prominent* carries more informational load than the assertion that *every group all gets good grades*. In other words, the set of the possible worlds in which *(among those) the grades of the third group are the most prominent* is true is smaller comparing to the set of the possible worlds in which *every group all gets good grades* is true. Similarly, when *erqie* conjoins two coordinated predicates, the set of the possible worlds in which the sentence is true will be limited because the truth condition of the sentence is the intersection of two coordinated predicates, as shown in (79).

- (79) Zhe-ke pingguo hen da erqie hen tian  
This-CL apple very big and very sweet  
‘This apple is very big and very sweet.’

Given a domain consisting of ten apples, and considering just the properties of apples characterized by two predicates, say *very big* and *very sweet*, the assertion *this apple is very big* may rule out just three apples, but the assertion *this apple is very big and very sweet* may rule out nine apples. In terms of the case above, it is desirable to say that the set of possible worlds in which *the apple is very big and very sweet* is true is smaller than the set of possible worlds in which *the apple is very big* is true. However, one may point

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<sup>20</sup> The domain of the propositional strength is not strictly defined by the relationship of entailment, rather by the relative size of the set of possible worlds in which the sentence is true.

out that ungrammaticalities of (80) and (81), rather similar to (79), are contrary to our expectation.

- (80) \*Zhe-ke pingguo hen da erqie hen suan.  
 This-CL apple very big and very sour  
 ‘This apple is very big and very sour.’
- (81) \*Zhangsan bu gao erqie bu ai.  
 Zhangsan not tall and not short  
 ‘Zhangsan is neither tall nor short.’

In fact, this question can be reinterpreted as what kind of conjunct is capable of being coordinated by *erqie*. Before providing our answer, we shall first introduce the idea of polar opposition of adjectives.

According to Cresswell (1976), Hellan (1981), and especially Pinkal (1989), gradable adjectives are characterized as expressions that map objects to abstract representations of measurement, namely, scales.<sup>21</sup> Precisely, scales are sets of points (degrees) that are totally ordered along a dimension determined by the adjective (e.g., *weight*, *length*, *temporal precedence*, etc.). In the light of antonymous pairs of adjectives such as ‘big’ and ‘small’, they map identical arguments onto the same scale (and are therefore associated with the same dimension introduced by *size*), but they introduce the opposite ordering relations (Rullmann (1995)). Thus, such antonymous pairs ‘big’ and ‘small’ are dubbed adjectives of different polar. Likewise, a verb pair ‘criticize’ and ‘praise’ are viewed as in different polars.

Turning back to the question of whether there is any restriction for the conjuncts conjoined by *erqie*. We propose that *erqie* require the conjuncts it conjoined to be of the same polar, as exemplified by the following empirical facts (82)-(84).

- (82) \*Zhe-ke pingguo hen da erqie hen suan.  
 This-CL apple very big and very sour  
 ‘This apple is very big and very sour.’
- (83) \*Zhangsan bu gao erqie bu ai.  
 Zhangsan not tall and not short  
 ‘Zhangsan is neither tall nor short.’
- (84) \*Laoshi zanmei women, erqie piping women.  
 Teacher praise us and criticize us  
 ‘The teacher not only praises us, he also criticizes us’

Simply put, in (82) the first conjunct *very big* is on the opposite scale of ‘size’, still the second one *very sour* is on the negative scale of ‘sweetness’. In other words, the two conjuncts are on the opposite polar of scales introduced by

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<sup>21</sup> According to Zhu (1956), adjectives can be divided into two types (cf. Zhu (1961, 1982, 1993)). One is the absolute adjective, such as *zhen* ‘true’ which is incompatible with any degree modifier, for example *hen* ‘very’; the other is the gradable adjectives, such as *piaoliang* ‘beautiful’ which can optionally take a degree modifier.

respective adjectives; this yields to maximizing the possible worlds in which sentence (82) is true. So, sentence (82) is ungrammatical.<sup>22</sup> Similarly, in (83) the two conjuncts conjoined by *erqie*, namely, *not tall* and *not short* are expressions which map the identical argument *Zhangsan* to the opposite sides of the scale ordered along the dimension of *height*. This will increment the size of possible worlds in which (83) is true, thus neither (83) is grammatical. By analogy, we can say that the ill-formedness of (84) is due to the different polar of the conjuncts: ‘criticize’ and ‘praise’.

Third, in ‘*p erqie q*’ construction, *q* usually contains adverbs, such as *ye* ‘also’, and *hai* ‘even’. The presupposition carried by these adverbs increments the information load of the sentence by controlling all of the sets of the possible worlds in which the sentence is true, as shown by (85) and (86).

- (85) Wo jiao-guo hao xuesheng, erqie ye jiao-guo huai  
 I teach-ASP good students and also teach-ASP bad  
 xuesheng, (shenmeyiang de xuesheng wo dou keyi  
 students what kind DE students I DOU can  
 yingfu).  
 handle  
 ‘I have taught good students, and also taught bad students; (I can  
 handle all kinds of students).’
- (86) Wo ren-shi zhe-san-ge jiaoshou, erqie qizhong you liang-ge  
 I know this-three-CL professors and among with two-CL  
 \*(hai) shi wo-de zhidaolaoshi, (wo gen tamen zai shou  
 even is my adviser (I with them again familiar  
 bu-guo).  
 not-over  
 ‘I know these three professors, and two of them are even my  
 advisers. I can not be more familiar with them.’

Simply put, in (85) we have shown that *ye* presupposes an alternative set of *taught good students*, therefore the two conjuncts *I have taught good students*, and *also taught bad students* denoting the universal interpretation can be followed by *I can handle all kinds of students*. The speaker tries to make his or her conversation as informative as possible by handling all of the set of the possible worlds in which the sentence *I have taught students* is true. Likewise, in (86) *hai* ‘even’ presupposes that providing the least possible condition that *two of them are my advisers* is true, the assertion that *I know these three professors well* will inevitably be true.<sup>23</sup> Again, the speaker utilizes the

<sup>22</sup> Thanks to Chen-Sheng Liu and Wei-Tien Dylan Tsai for reminding us that world knowledge plays an important role in deciding whether the conjuncts are in the same polar, as illustrated in (i):

(i) Qinghai Xizang gaoyuan hen gao erqie hen leng.  
 Qinghai Xizang Plateau very high and very cold  
 ‘Qinghai Xizang Plateau is very high are cold.’

<sup>23</sup> See Liu (1996) and Yeh (1998) for the presupposition of *hai* ‘even’.

presupposition of *hai* ‘even’ to control all of the sets of possible worlds in which *I know these three professor well* is true, and satisfies the requirement of *erqie*.

To sum up, we suggest that *erqie* presuppose informativeness by either narrowing down the set of possible worlds in which the sentence is true or by controlling all of the set of possible worlds in which the sentence is true. Besides, the conjuncts conjoined by *erqie* should be of the same polar.

After the demonstration of the semantics of *erqie*, let us back to the question why *ye* rather than *erqie* occurs in the following sentence patters: (A) sentences containing two contradictory predicates; (B) preceding the *wh...dou* construction; and (C) *shi* ‘be’ clauses, as shown by (87)-(89), respectively.

- (87) \*Laoshi zanmei women, erqie piping women.  
Teacher praise us and criticize us  
‘The teacher not only praises us, he also criticizes us.’
- (88) \*Wo jiao-guo hao xuesheng, erqie jiao-guo huai xuesheng, shenmeyiang de xuesheng wo dou keyi  
I teach-ASP good students and teach-ASP bad students what kind DE students I DOU can handle  
‘I have taught good students, and also taught bad students; I can handle all kinds of students.’
- (89) \*Zhe shi yizhang chuang erqie shi yizhang shafa.  
This is one-CL bed and is one-CL sofa  
‘This is a bed, and also a sofa.’

In fact, the above sentences can be rescued with the addition of proper adverbs, such as *ye* ‘also’, as shown in (90)-(92).

- (90) Laoshi zanmei women, erqie ye piping women.  
Teacher praise us and also criticize us  
‘The teacher not only praises us, he also criticizes us.’
- (91) Wo jiao-guo hao xuesheng, erqie ye jiao-guo huai xuesheng, shenmeyiang de xuesheng wo dou keyi  
I teach-ASP good students and also teach-ASP bad students what kind DE students I all can handle  
‘I have taught good students and also have taught bad students. I can handle all kinds of students.’
- (92) Zhe shi yizhang chuang erqie ye shi yizhang shafa.  
This is one-CL bed and also is one-CL sofa  
‘This is a bed, and also a sofa.’

Simply put, in type B sentence (91), we have discussed the phenomenon that owing to the presupposition of *erqie*, the adverb *ye* following *erqie* is

obligatory (cf. (85)). In type A, *erqie* can not conjoin contradictory conjuncts, unless *ye* is inserted. *Ye* presupposes an alternative set of ‘criticize us’ including the possibility of ‘praise us’, so sentence (90) is grammatical. In type C, the insertion of *ye* enables the listener to know that in addition to the identification of ‘this’ and ‘sofa’ is true, another identification, such as ‘this’ and ‘bed’ is also true. If *ye* is deleted in (92), listeners will not be able to know what the pronoun ‘this’ exactly means: ‘bed’ or ‘sofa’?

### 4.3 The Distinctions between *Erqie* vs. *And*

In this section, we shall discuss the syntactic and semantic distinctions between *erqie* in Chinese and *and* in English. Syntactically, *erqie* is a coordinator conjoining clauses and phrases (except NPs), while *and* is a coordinator conjoining any categories as long as they are syntactically or semantically conjoinable (cf. Zhu (19968), Lu (1980), Aoun and Li (2003), Quirk (1985)). We shall then briefly introduce the previous analysis of *and*; then the proposal that *erqie* is not equivalent to *and* will be provided.

Since Grice (1975) it is generally proposed that *and* can be regarded as equivalent to logical conjunction, and its variation in meaning is a matter of pragmatic inference (see, for example, Schmerling (1975), Posner (1978), and Gazdar (1978)). That is to say, *and* is basically ‘symmetric’, and any ‘asymmetric’ interpretation is attributed to context. For example, in (93) there is no need to set up a special ‘and then’ *and* for English (cf. Grice (1975)).<sup>24, 25</sup>

(93) John stood up and objected to the proposal.

Whether the symmetric *and* and asymmetric *and* should be analyzed as a uniform phenomenon or not is not the central issue of this paper. We shall focus on discussing the multiple interpretations of *and* to support that the English counterpart of *erqie* is not *and*. In case that *and* is a symmetric conjunction, the order of the two clauses can be reversed, as shown in (94a-b).

(94) a. Paris is the capital of France, and Rome is the capital of Italy.  
b. Rome is the capital of Italy, and Paris is the capital of France.

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<sup>24</sup> Supposing *and* is interpreted as a symmetric conjunction, the order of the conjuncts can be reversed, as in (i) and (ii).

- (i) Paris is the capital of France, and Rome is the capital of Italy.
- (ii) Rome is the capital of Italy, and Paris is the capital of France.

Both (i) and (ii) exhibit a linguistic property in (iii).

- (iii)  $p.q \equiv q.p$

<sup>25</sup> Grice (1975) suggests that the hearer may infer such a temporal sequence on the basis of a principle of conversation, that is, we talk about events in the order in which they occurred.

In contrast, the order of the clauses conjoined by an asymmetric *and* can not be reversed, as in (95)-(97). Significantly important here is that the asymmetric use of *and* denotes the interpretation of cause-effect, temporal succession, nontemporal succession, as shown in (95)-(97), respectively.

- (95) John called a secret meeting and offended Mary.  
 (96) John went to the store and bought some whiskey.  
 (97) Aunt Hattie wants you to be nice and kisses your granny.  
 (= It would be nice of you to kiss your granny.)

We shall point out that the usages of *erqie* do not match to those of *and* because of the ungrammaticality of its counterpart in English, as shown in (94)'-(97)' (cf. Schmerling (1975))

- (94)' a. \*Bali shi Faguo de shoudu, erqie Luoma shi Yidali de shoudu.  
 Paris is France DE capital and Rome is Italy De capital  
 b. \*Luoma shi Yidali de shoudu erqie Bali shi Faguo de shoudu.  
 Rome is Italy De capital and Paris is France De capital  
 (94)'' a. Bali shi Faguo de shoudu er Luoma shi Yidali de shoudu.  
 Paris is France DE capital and Rome is Italy De capital  
 b. Luoma shi Yidali de shoudu er Bali shi Faguo de  
 Rome is Italy De capital and Paris is France De  
 shoudu.  
 capital  
 (95)' \*Yuehan zhaokai mimi huiyi erqie maofan-le Mali.  
 John call secret meeting and offend-ASP Mary  
 (95)'' Yuehan zhaokai mimi huiyi jieguo maofan-le Mali.  
 John call secret meeting the result offend ASP Mary  
 (96)' \*Wo qu-le shangdian erqie mai-le weishigi.  
 I go-ASP store and buy-ASP whisky  
 (96)'' Wo qu-le shangdia Ø mai-le weishigi.  
 (97)' \*Zhang ayi xiwang ni haoxin erqie qinwen ni de nainai.  
 Zhang aunt think you nice and kiss you DE grandma  
 (97)'' Zhang ayi renwei ruguo ni neng qinwen ni de  
 Zhang aunt think if you can kiss your DE  
 nainai, ni shi hen tiexinde.  
 grandma you is very sweet DE

Simply put, in (94) the symmetric *and* is understood as *er* 'and' in Chinese as shown in (94)'. Regarding to multiple meanings of the asymmetric *and* in (95)-(97), they are translated to different words, as shown in (95)''-(97)'', respectively: (A) the cause-effect *and* in (95) can be seen as *jieguo* 'the result' in Chinese, as shown in (95)''; (B) the temporal succession *and* in (96) can be replaced by a zero coordinator as shown in (96)''; and finally (C) the nontemporal succession *and* in (97) seems to be a subordinator rather than a coordinator, as shown in (97)'.

From the above linguistic data, it reveals that *and* can coordinate

conjuncts with the relations of cause-effect, temporal succession, or non-temporal succession, whereas *erqie* cannot do so. Therefore, *erqie* can not be translated as *and* in English.

## 5. What Kind of Conjuncts *He* ‘and’ Conjoins

Chinese coordinators can be classified into different types according to the categories which they conjoin (cf. Tseng (1977), Zhu (1982), Liu (2000)). We shall first present the previous analysis of *he* in section 5.1, and then point out some counterexamples observed by Lu (1980) and Zhu (1982). In section 5.2, we shall briefly introduce the basic notion of the first-order predicate and the higher-order predicate, and then the proposal that *he* conjoins arguments is provided.

### 5.1 Literature Review

In English, the coordinator *and* basically can be used to conjoin phrases of any category, whereas in Chinese there is a rich set of coordinators used to connect different types of like categories. For example, *he* can only connect nominal expressions, such as pronouns, expressions containing number + classifier, as shown in (98)-(101) (cf. Chao (1968), Tseng (1977), and Aoun and Li (2003)).

- (98) Ta he wo dou xihuan gou.  
He and I both like dogs  
‘He and I both like dogs.’
- (99) Zhangsan mai-le yi-zhi bi he liang-ben shu.  
Zhangsan buy-ASP one-CL pen and two-CL book  
‘Zhangsan bought one pen and two books.’
- (100) \*Ta [<sub>VP</sub>chi-le fan] he [<sub>VP</sub>he-le tang].  
He eat-ASP rice and drink-ASP soup  
‘He has had some rice and some soup.’
- (101) \*Ta [<sub>AdjP</sub>hen congming ] he [<sub>AdjP</sub>hen piaoliang].  
Ta very smart and very beautiful  
‘She is very smart and very beautiful.’

At a superficial level, the idea that *he* conjoins nominal phrases seems to be reasonable, since this can fill in the gap of *erqie*, which fails to conjoin noun phrases, as shown by the ungrammaticality of (102). However, this claim is challenged by examples like (103)-(104).

- (102) \*Zhangsan mai-le yi-zhi bi erqie liang-ben shu.  
Zhangsan buy-ASP one-CL pen and two-CL book  
‘Zhangsan bought one pen and two books.’
- (103) Taishan de jingse\*(shifen) zhuangli he xiongwei.  
Taishan DE scenery very grandeur and majestic  
‘The scenery of Taishan is very grandeur and majestic.’



- (104) Wo \*(hai)yao shuoming he buchong ji-ju.  
 I still want explain and supplement several sentences  
 ‘I still want to explain and supplement several sentences.’

In the following, we shall first briefly introduce the notion of the first-order predicate and the higher-order predicate; then our proposal that *he* conjoins arguments will be illustrated.

## 5.2 Proposal

### 5.2.1 Preliminary Analysis: Predicate Logic

Following a common practice in the tradition of Montague, the basic atomic type are *e* (for entity) and *t* (for truth value) (cf. Montague (1974)). That is to say, an expression of syntactic categories, like proper names and individuals, can be said to be of the type *e*. A sentence, denoting a truth value, is of the type *t* (cf. Montague (1974), Heim and Kratzer (1998)). In the first-order logic, it only allows us to quantify over variables whose type is *e*; for example, we can say that there is something that has the property of being large, as represented by (105) (cf. Barwise and Etchemendy (2000)).

- (105)  $\exists x \cdot \text{large}(x)$

Simply put, ‘something’ denotes an individual of the type *e*, and ‘large’ is a first-order predicate that is a predicate applicable to individuals.

First-order predicate is yet not sufficient to describe our languages. There are many nouns and verbs that are not properties of individuals, but properties of properties of individual. Thus, the higher-order predicate, which is possible for a quantifier to bind not only individuals but also predicate variables, is introduced. The following example from Partee et al. (1990) makes the idea of higher-order predicates very clear: if the vase is blue, and blue is a color; we cannot say that the vase is a color, but rather the vase is *of* a color. The predicate ‘is a color’ cannot properly be applied to an ordinary individual, ‘the vase’, but can be applied to the property of the individual ‘blue’.

Besides, higher-order logic is useful for describing the semantics of various categories in natural language, such as an adverb, which takes the first-order predicate as its argument (cf. Reichenbach (1947), Allwood et al (1997)).

### 5.2.1 *He* Conjoins Arguments

Assuming the above predicate logic, we shall suggest that *he* conjoin arguments rather than nominals. It is crucial that adverbs preceding two conjuncts conjoined by *he* are obligatory, as illustrated in (106)-(108). Thus, we claim that the conjuncts conjoined by *he* are the arguments of adverbs, the higher-order predicates, which quantify over properties of individuals.

- (106) Taishan de jingse \*(shi-fen) zhuangli he xiongwei.<sup>26</sup>  
 Taishan DE scenery very grandeur and majestic  
 ‘The scenery of Taishan is very grandeur and majestic.’
- (107) Ta-de hua shi \*(nayang) mingque he youli.  
 His words is so accurate and powerful  
 ‘His words are so accurate and powerful.’
- (108) Wo \*(hai) yao shuoming he buchong ji-ju.  
 I again want explain and supplement several sentences  
 ‘I want to explain and supplement several sentences again.’

As for (106) the adjectives ‘grandeur’ and ‘majestic’ are type <e, t>; we can therefore infer that the conjunctive expression ‘grandeur and majestic’ is also type <e,t>. The adverbs *shifen* ‘very’ is a higher-order predicate, which quantifies over the conjunctive expression ‘grandeur and majestic’. Also, sentence (107) will turn out to be ungrammatical, if the adverb *nayang* ‘so’ is deleted. Given this, *he* conjoins two predicates, namely, *mingque* ‘accurate’ and *jouli* ‘powerful’ rather than arguments. Likewise, in (108) the adverb *hai* ‘again’ is obligatory because it is the higher-order predicate that takes two arguments conjoined by *erqie*: *shuoming* ‘explain’ and *buchong* ‘supplement’. However, one may question the proposal by providing the following sentences:

- (109) \*Wo zhidao Zhangsan xihuan pinggou he Lisi xihuan  
 I know Zhangsan like apple and Lisi like  
 xianjiao.  
 banana  
 ‘I know that Zhangsan likes apples, and Lisi likes bananas.’
- (110) Ta zuotian he jintian \*(dou) lai zhao wo.  
 Ta yesterday and today all come look-after me  
 ‘He comes to see me today and yesterday.’
- (111) Zhe-ding maozi he na-jian yifu, ni \*(zhi) neng xuan  
 This-CL hat and that-CL clothes you only can choose  
 qizhong yi-yang.  
 one one-item  
 ‘This hat and that clothes, you can only choose one of them.’

Simply put, in (109) two clauses conjoined by *he* are arguments of the

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<sup>26</sup> One may ask why there exists a difference in the degree of grammaticality between different adverbs, as shown by in (i)-(ii).

- (i) Taishan de jingse shifen zhuangli he xiongwei.  
 Taishan De scenery very grandeur and majestic
- (ii) ?Taishan de jingse hen zhuangli he xiongwei.  
 Taishan De scenery very grandeur and majestic

Simply put, a disyllabic adverb *shifen* ‘very’ is more suitable to be a higher-order predicate than a monosyllabic adverb *hen* ‘very’. This may be related to prosodic structures requiring further study (cf. Shih (1986)).

verb *zhidao* ‘know’, yet the sentence is ungrammatical. This can be explained by one of the properties of *he*, which can only conjoin phrases but not clauses. Besides, contrary to our predication, two conjuncts conjoined by *he* are not arguments, but sentences (110) and (111) are still grammatical. In (110) the conjuncts conjoined by *he*, *zuotian* ‘yesterday’ and *jintian* ‘today’, are adjuncts, while in (111) *zhe-ding maozi* ‘this hat’ and *na-jian yifu* ‘that clothes’ are topics. Though two conjuncts conjoined by *he* are not arguments, it is noticeable that adverbs, such as *dou* ‘all’ and *zhi* ‘only’ are obligatory. We argue that problems concerning (110) and (111) should not be exclusively attributed to the semantic nature of *he*, and require further study of characteristics of these adverbs.<sup>27</sup>

## 6. Conclusion

This paper deals with two topics: (I) an adverb *ye*; (II) two coordinators *erqie* ‘and’ and *he* ‘and’, which conjoin different types of conjuncts. We first argue that syntactically, *ye* behaves as an adverb in the coordinated construction; semantically, *ye* presupposes that at least one contextually salient expression P, distinct from the sentence with *ye*, is true (cf. Rooth (1992), Rullmann (2003), Tsai (2004)). This analysis helps us to represent the semantic nature of *ye* formally; provides well explanations for the characteristics of *ye* (cf. Lu (1980), Ma (1982), Shen (1983)). Second, we shall argue that the interpretation of ‘furthermore’ conveyed by *erqie* derives from the presupposition of *erqie* (cf. Lu (1980)). That is, *erqie* presupposes informativeness and requires its conjuncts to be the same polar (cf. BarHillel and Carna (1952), Popper (1959)). Crosslinguistically, the English counterpart of *ye* is *too/also*, presupposing an alternative set. Yet, the usages of *erqie* are not equivalent to those of *and*. Finally, we propose that *he* conjoin arguments of either first-order predicate or higher-order predicate, instead of conjoining nominal expressions (cf. Reichenbach (1947), Chao (1968), Tseng (1997)).

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<sup>27</sup> Thanks for Jo-Wang Lin for pointing out this.

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