

# Relativized Parallelism in Mandarin Chinese Natural Coordination\*

Niina Ning Zhang  
(National Chung Cheng University)

Zhang, Niina Ning. (2008). Relativized Parallelism in Mandarin Chinese Natural Coordination. *Language Research* 44.1, 121-163.

Conjuncts of natural coordination are semantically related, in contrast to those of accidental coordination. It is generally assumed that no single conjunct may be moved and no element may be extracted from a single conjunct. Focusing on Chinese *he/gen* constructions, this paper first argues that not only post-verbal, but also preverbal *he* and *gen* in comitative constructions are coordinators, and thus form constructions of natural coordination, and then presents the following correlation: on the one hand, single conjuncts may move in natural coordination and elements may also be extracted from single conjuncts of natural coordination; and on the other hand, single conjuncts may not move in accidental coordination, nor may elements be extracted from single conjuncts of accidental coordination. This correlation reveals a relativized parallelism in coordinate constructions: syntactic operations applied to single conjuncts are possible only when the conjuncts of a coordinate complex are semantically related to each other. The paper then tries to account for this relativized parallelism from an economy perspective of language processing.

**Keywords:** coordination, parallelism, Mandarin Chinese, comitative, coordinate structure constraint

## 1. Introduction

Since Ross (1967), it has been assumed that coordinate constructions are subject to a coordinate structure constraint (CSC), which has two parts: no single conjunct may be moved, and no element may be extracted from single conjuncts. The two parts are illustrated in (1a) and (1b), respectively. Following Grosu (1973), I call the first part the Conjunct Constraint (CC), and the second part the Element Constraint (EC).

---

\* I am grateful to the two reviewers of *Language Research* and James Yoon for their comments and suggestions. I also thank the audience of the 16<sup>th</sup> North American Conference on Chinese Linguistics (Iowa, May 21-23, 2004), where an earlier version of part of this paper was presented, and my student Chiung-Yi Joy Yu, for their feedback. All remaining errors are mine.

- (1) a. \*John<sub>i</sub> was hit [t<sub>i</sub> and Mary]. (CC violation)  
 b. \*What kind of herbs did you [[eat t] and [drink beer]]? (EC violation)

Since both parts of the CSC ban syntactic operations that are applied to single conjuncts, they both can be viewed as a parallelism requirement on coordination (Lang 1984: 40).

Goldsmith (1985) and Lakoff (1986) have shown that the EC can be violated if the verbal or clausal conjuncts of a coordinate construction are semantically related. Their conclusion reveals the relativity of the parallelism requirement on coordinate constructions. In this paper, I will not only provide Chinese examples to support this correlation between semantic relatedness and possible violations of the EC, but also investigate how the availability of single conjunct movement correlates with the semantic relatedness of conjuncts, and thus how the CC is also relativized semantically.

As emphasized by Postal (1998: 95), the CSC was intended as a linguistic universal. However, from a minimalist perspective it is implausible that the theory of syntax has, in addition to operations such as Merge and Rmerge, which apply in the computational system in its constructive sense, construction-specific stipulations such as the CSC, which give special instructions where the normal operations cannot apply. Nevertheless, it seems that the CSC has remained relatively immune to reduction to other more general principles. Some researchers (e.g., Sag 1982, Pesetsky 1982, Pollard & Sag 1994, Zoerner 1995) have indeed tried to 'derive' the CSC from other parts of the syntax, whereas others (e.g., Goldsmith 1985, Lakoff 1986, Kehler 2002, Yoon 1997) have suggested that the CSC is semantic or pragmatic. If both parts of the CSC can be relativized semantically, as shown by this paper, the CSC cannot be a constraint on syntactic operations.

The paper is organized as follows. In section 2, I introduce the notion of natural coordination. In section 3, I demonstrate how the EC is relativized in verbal natural coordination. In section 4, I argue that the *he/gen*-comitative constructions are coordinate constructions, and thus *he* and *gen* there are coordinators rather than prepositions. In section 5, I present systematic data to show the correlation between the possible conjunct-conjunction separation and collectivity. The conclusion of this section and that of section 3 indicate that both parts of the CSC may be relativized in natural coordination. In section 6, I argue that the relativized CSC is semantic-pragmatic in nature and eventually comes from a filter in language processing. Section 7 is a short summary.

## 2. Natural Coordination

### 2.1. Natural Coordination

Natural coordination is a semantic relation in which the entities expressed by the conjuncts of a coordinate complex are closely related to each other (Haspelmath 2004, 2006, Wälchli 2005, Dalrymple & Nikolaeva 2006; see also Mithun (1988: 332-33)). A close relation is indicated if any element in the context is semantically associated with the combined meaning of the conjuncts, rather than to the meaning of each isolated conjunct. In contrast, accidental coordination involves coordination of elements which do not have a close semantic relationship with each other. For instance, if a coordinate complex is associated with a relational adjective such as *compatible* or *similar*, the conjuncts are semantically related and the coordination is natural, whereas if a coordinate complex is associated with a non-relational adjective such as *smooth*, the conjuncts are not semantically related to each other and the coordination is accidental (see Dalrymple & Nikolaeva 2006: 825, 834).

Collective coordination is natural coordination. Coordinate complexes that are arguments of collective predicates or collective verbs, such as *John and Mary* in (2), are collective. In such coordinate complexes, neither conjunct may function as an independent argument of the predicate or verb (*\*John collided in the street*).<sup>1</sup>

(2) [John and Mary] collided in the street.

The dichotomy between natural and accidental coordination covers various dichotomies proposed in the literature: sentence conjunction vs. phrasal conjunction (Lakoff & Peters 1966, reprinted 1969), non-joint vs. joint coordination (McCawley 1968), non-Boolean conjunction vs. Boolean conjunction in semantics (Massey 1976, Link 1983, Hoeksema 1983, Krifka 1990, among others), *jia-er-bu-he* (adding-without-joining) and *jia-er-qie-he* (adding-and-joining) (Lü 1979: sec 75), and [+/- Separate] coordination (Payne 1985: 17). All of these dichotomies depend on whether the conjuncts are semantically related to each other or are essentially unrelated.

According to Haspelmath (2004, 2006), Wälchli (2005), and Dalrymple & Nikolaeva (2006), the classification of natural and accidental coordination is decided by both linguistic and nonlinguistic contexts. Lexical semantics, pragmatics, morphology, and syntactic forms all can play roles in distinguish-

<sup>1</sup> See Teng (1970: 355) for a list of collective predicates in Chinese (He calls them 'multiple-reference verbs.')

ing the two types of coordination.<sup>2</sup>

The semantic distinction between the natural grouping in natural (or collective) coordination and the accidental grouping in accidental (or distributive) coordination can also be seen in plural nominals. Conjuncts of natural coordination are related to each other and thus the whole coordinate complex shows semantic integrity; by contrast, conjuncts of accidental coordination are not related to each other and thus the whole coordinate complex does not show semantic integrity. The accidental coordination reading of (3a) is that John can draw the cart and Peter can also draw the cart, while its natural coordination reading is that they can draw the cart together. It has long been recognized that this contrast also exists in plural nominals. (3b) is ambiguous in the same way as (3a). In its natural grouping reading, it means that the men can draw the cart together, whereas in its accidental grouping reading, it means that each of the men can draw the cart individually.

- (3) a. John and Peter can draw the cart. (Dik 1968: 87)  
 b. The men can draw the cart.

We can see the contrast between the two types of readings for plural nominals not only in predication, but also in modification. In the natural grouping reading of (4), the multiple individuals denoted by *stories* contradict each other, whereas in the accidental grouping reading, each of them is internally inconsistent.

- (4) Jack told inconsistent stories. (Schwarzschild 2002: 16)

We highlight this parallelism between coordinate complexes and non-coordinate elements in order to emphasize the fact that the contrast between natural and accidental coordination does not depend on the construction being a coordinate construction.

## 2.2. The Coordination *ji* as an Exclusive Accidental Coordinator

The conjunction *ji* in Chinese is an exclusive distributive or accidental con-

---

<sup>2</sup> In some languages, natural coordination has a bounded number of conjuncts, most often two (see Dairymple & Nikolaeva (2006: 841)). However, this constraint found in the languages does not seem to come from the concept of natural coordination itself. It is possible for more than two conjuncts to be semantically related to each other and to occur in the argument position of a collective predicate in Chinese:

- (i) Baoyu, Daiyu, he Baochai he-xie-le yi shou shi.  
 Baoyu Daiyu and Baochai co-write-PRF a CL poem  
 'Baoyu, Daiyu, and Baochai co-wrote a poem.'

junction. This can be seen in the following aspects.

First, all three conjunctions, *he*, *gen*, and *ji*, can occur in accidental coordination. Coordinate complexes conjoined by these conjunctions can be the subjects of distributive predicates. Coordinate complexes conjoined by the three conjunctions are compatible with the distributive adverbs *dou* ‘all’ and *fenbie* ‘respectively’, as shown in (5).<sup>3</sup>

- (5) a. Shizhang {he/gen/ji}    xiao-zhang    dou    zai    zher.  
 mayor    and/and/and school-principal    all    exist here  
 ‘Both the mayor and the school-principal are here.’
- b. Shizhang {he/gen/ji}    tade    mishu    fenbie    bing-dao-le.  
 mayor    and/and/and his    secretary    respectively    ill-fall-PRF  
 ‘The mayor and his secretary got ill respectively.’

Similarly, coordinate complexes conjoined by the three conjunctions can be the objects of distributive verbs. In (6), the coordinate object conjoined by any of the three conjunctions is compatible with the distributive adverbs *fenbie* ‘respectively’:

- (6) Akiu fenbie    yaoqing-le    tade    tongshi    {he/gen/ji}    lao-tongxue.  
 Akiu    respectively    invite-PRF    his    colleague    and/and/and    old-classmate  
 ‘Akiu invited his colleagues and former classmates respectively.’

Second, coordinate complexes conjoined by the conjunction *ji* may not be the subject of collective predicates. In (7a), for instance, *shi pengyou* ‘be friends’ is a collective predicate, so is *shi yi dui fu-qi* ‘be a pair of husband and wife.’ The coordinate subject of the predicates may not be conjoined by *ji*. Other examples in (7) show the same point.

- (7) a. \*Baoyu ji    Daiyu shi {pengyou/yi    dui fu-qi}.  
 Baoyu and Daiyu be    friend    /one pair husband-wife  
 Intended: ‘Baoyu and Daiyu are {friends/a couple}.’
- b. \*Baoyu ji    Daiyu zai    huayuan    jianmian-le.  
 Baoyu and Daiyu at    garden    meet-PRF  
 Intended: ‘Baoyu and Daiyu met in the garden.’
- c. \*Qiche ji    huoche    xiangzhuang-le.  
 bus    and train    collide-PRF  
 Intended: ‘The bus and the train collided.’

<sup>3</sup> The abbreviations used in the Chinese examples are: EXP: experience aspect, PRF: perfect aspect, PROG: progressive aspect, INCH: inchoative aspect, CL: classifier, PRT: sentence-final particle, Q: question, MOD: modification.

Moreover, collective verbs are not compatible with coordinate objects conjoined by *ji*. In (8a), the verb *jiqie* ‘graft’ is a collective verb, and the coordinate object cannot be conjoined by *ji*. (8b) shows the same point.

- (8) a. Wo qu-nian jiajie-le tao-shu {he/gen/\*ji} xing-shu.  
 I last-year graft-PRF peach-tree and/and/and apricot-tree  
 ‘I grafted peach-trees into apricot-trees last year.’  
 b. Akiu hunxiao-le lundian {he/gen/\*ji} lunju.  
 Akiu confuse-PRF claim and/and/and argument  
 ‘Akiu confused the claims and the arguments.’

Third, unlike those conjoined by *he* and *gen*, coordinate complexes conjoined by *ji* are never ambiguous between distributivity and collectivity. (9a) can be ambiguous, although the default reading is the collective one, i.e., Baoyu has been engaged to Daiyu. If the context allows, (9a) can also have a distributive reading, i.e., Baoyu is engaged to another person other than Daiyu, and Daiyu is engaged to another person other than Baoyu. The distributive reading occurs if the speaker gives a list: John is married, Mary is a widow, Bill is divorced. In such a context, (9a) can be distributive. (9b), however, is distributive, since the presence of the distributive adverb *fenbie* ‘respectively’ or *dou* ‘all’ rules out the collective reading. In contrast to (9a), (9c) is not ambiguous. It has only a distributive meaning.

- (9) a. Baoyu {he/gen} Daiyu dingqin-le. (default: collective)  
 Baoyu and/and Daiyu engage-PRF  
 ‘Baoyu and Daiyu are engaged.’  
 b. Baoyu {he/gen} Daiyu {fenbie/dou} dingqin-le. (distributive)  
 Baoyu and/and Daiyu respectively/all engage-PRF  
 ‘Baoyu and Daiyu are both engaged (respectively).’  
 c. Baoyu ji Daiyu dingqin-le. (distributive)  
 Baoyu and Daiyu engage-PRF  
 ‘Baoyu and Daiyu are both engaged.’

Similarly, (10a) can be ambiguous, although the default reading is the collective one. (10b), however, is not ambiguous. It has only a distributive meaning.

- (10) a. Wo zhi bijiao-le jufaxue {he/gen} goucixue.  
 I only compare-PRF syntax and/and morphology  
 Collective reading: ‘I compared syntax with morphology only.’ (As a reply to the question whether you have compared any courses in our department).  
 Distributive reading: ‘I compared only syntax and morphology

with those in another department.’ (As a reply to the question whether you have compared any courses of our department with those of another department)

- b. Wo zhi bijiao-le jufaxue ji goucixue.  
Distributive reading only.

Summarizing, I have shown the fact that *he* and *gen* can occur with either collective or distributive contexts, and the conjunction *ji* occurs in distributive ones only.<sup>4</sup>

### 3. The EC and Relativized Parallelism Requirement

#### 3.1. Asymmetrical Coordination

Natural coordination can be either nominal or verbal (Dalrymple & Nikolaeva 2006: 830). In this subsection I specify asymmetrical coordination as verbal natural coordination. In data like (11), the coordination is not asymmetrical, since the conjuncts do not have to be semantically related to each other. In (11a), for instance, *to play the piano* has no semantic relation with *to learn exotic languages*. Goldsmith (1985: 134) calls such use of *and* ‘truth-conditional *and*’ (the data are cited from Goldsmith 1985: 134 and Cormack & Smith 2001: 3).

- (11) a. Our first contestant likes to play the piano and (to) learn exotic languages.  
b. He did some weeding and wrote a few pages of the paper.

Since Goldsmith (1985) and Lakoff (1986), other semantic types of coordination have been explored extensively in languages such as English (Culicover & Jackendoff 1997) and German (Höhle 1990, among others). Goldsmith calls the conjunction ‘temporal *and*’ in data like (12a), ‘causal *and*’ in data like (12b), ‘despite’ or ‘nonetheless’ *and* in data like (12c). One might like to add the term ‘conditional *and*’ to cover data like (12d).

- (12) a. Mary bought the newspaper after work and she read it on the train.  
b. The child heard the news and broke down in tears.  
c. How many courses can we expect our graduate students to teach and (still) finish a dissertation on time?

<sup>4</sup> The contrast between natural and accidental coordination can be seen in various languages. For instance, it is possible that the contrasts between the two kinds of coordination in both verbal (Yoon 1997) and nominal coordinate constructions (Yoon & Lee 2005) are in fact the contrasts between natural and accidental coordination (James Yoon, p.c.).

- d. You drink another can of beer and I'm leaving. (= If you drink one more can of beer, I'm leaving.)(Culicover & Jackendoff 1997)

The terms for the various uses of *and* are not syntactically significant. Data like (12) have been covered by the general term Asymmetrical Coordination or Fake Coordination in the literature. Like the coordination constructions in (11), asymmetrical coordination constructions express plural eventualities. What is special in asymmetrical coordination is that the conjuncts are semantically related. In data like (11) we do not see any semantic relation between conjuncts. Asymmetrical coordination, however, always encodes a certain semantic relation between conjuncts. Analyzing data like (12), Culicover & Jackendoff (1997: 213 fn. 13) explicitly claim that 'we understand the two events as being connected as parts of a larger event; they did not occur independently, on different "occasions", so to speak.' We can see that with respect to the expressed eventualities, asymmetrical coordination combines the conjuncts into an integrated whole, and thus the coordination is natural coordination. In contrast, the coordination represented by (11) is accidental.

In asymmetrical or natural coordination, conjuncts are semantically related to each other in a certain dimension. Goldsmith's terms simply name the various dimensions of semantic relatedness. As pointed out by Dik (1968: 271), 'the semantic aspect of *and* does not in itself specify the kind of combination any further, but can give rise to a multitude of different relations in the final interpretation.' Generally, it is the linguistic contexts (including word order) and non-linguistic contexts that tell us the exact semantic relation between conjuncts of asymmetrical coordination. For instance, *and* in the following pairs does not tell us the different semantic relations between the conjuncts.

- (13) a. The thief snatched the money and the clerk pressed the alarm.  
 b. The clerk pressed the alarm and the thief snatched the money.
- (14) a. She died, and they buried her.  
 b. They buried her, and she died.

However, accidental and natural or asymmetrical coordination can be signaled by certain expressions. For instance, *and similarly* and *and ...too* encode accidental coordination, and *and therefore*, *and as a result*, and *and then* encode natural or asymmetrical coordination.

Although conjuncts of natural or asymmetrical coordination might function like modifiers semantically, no conjunct of such coordination has an adjunction relation to another element syntactically. This has been argued for in Culicover & Jackendoff (1997) and Kehler (2002: 61). I thus assume that asymmetrical coordination is true coordination (contra Schachter 1977: 100 and Postal

1998).

### 3.2. EC Violation in Asymmetrical Coordination

Extraction from either conjunct is generally possible in asymmetrical coordination, indicating that there is no EC effect in natural coordination. Quite a lot of EC violation examples have been reported in Grosu (1973), Goldsmith (1985), and Lakoff (1986) (also see Levine (2001: 156-161)). Cross-linguistic data of EC violation in asymmetrical coordination are also seen in Johannessen (1998). In (15), I list some fully acceptable asymmetrical coordination data that violate the EC (See Ross (1967: sec. 5.2.2)), Schachter (1977: 299), Heycock & Kroch (1994: 272), Wilder (1999: 9), Culicover and Jackendoff (1997: 201), Cormack & Smith (2001: (29), (32)):

- (15) a. This is the thief that [you just point out the loot] and [then we arrest \_ on the spot]. (relativization)
- b. How much wine can you drink \_ and still stay sober? (wh-Ques)
- c. What did she turn around and say \_ to you?
- d. Swiftly John will run \_ and end up falling down. (Adv-fronting)  
      (Benjamin Shaer, p.c., see Shaer (2003: 243))
- e. Off the boy went \_, and told his friends the news.
- f. [This advice] the committee decided to follow \_ and proceeded to set up a new subcommittee. (nominal-topic)
- g. Kiss her, I didn't \_, and will probably regret it. (VP-topic)

In (15a), the relativization occurs in the second conjunct. In (15b) and (15c), the wh-phrase moves from the first and second conjunct respectively. In (15d) and (15e), the manner and the direction adverbs are fronted from the first conjunct, respectively. In (15f) and (15g), the nominal topic and VP topic are fronted, respectively. (16) shows that extraction from either conjunct of the same construction is possible (Lakoff 1986):

- (16) a. What kind of cancer can you eat herbs and not get \_?
- b. What kind of herbs can you eat \_ and not get cancer?

The examples in (15) and (16) show that the EC can be violated in asymmetrical coordination. The following examples in (17) tell us that when the EC is violated, the coordination must be asymmetrical. The EC is violated in (17b), but not in (17a). Carlson (1987: 539, also see Kehler 2002) observes that in (17b) there must be a consequential relation between the two eventualities; (17a), however, allows a (less salient) reading in which the two eventualities are not related.

- (17) a. John went to the store and bought some ice cream.  
 b. What did John go to the store and buy?

The correlation between EC violation and asymmetrical coordination is also seen in Chinese. Three conjunctions can be used in asymmetrical coordination in Chinese: the consequential conjunction *yushi* ‘and thus’ (Zhang 2006. See Payne (1985:24) for similar asymmetrical coordination conjunctions in other languages), the consecutive conjunction *ranhou* ‘and then’, and the conjunction *erqie* ‘and,’ which occurs in either accidental coordination or the consecutive type of natural coordination.

Relativization from either conjunct of the *yushi* construction is possible. In (18a), for instance, the relativized nominal *xiaoshuo* ‘novel’ is associated with the object gap of the first conjunct, whereas in (18b), the relativized nominal *wenzhang* ‘article’ is associated with the object gap of the second conjunct.

- (18) a. Zhe jiu shi Akiu kan-le yushi shuibuzhaojiao de na  
 this just be Akiu read-PRF and cannot.sleep MOD that  
 ben xiaoshuo.  
 CL novel  
 ‘This is the novel that Akiu read and thus was not able to sleep.’
- b. Zhe jiu shi Akiu mang-le yi zheng tian yushi xie-chulai  
 this just be Akiu busy-PRF one whole day and write-out  
 de wenzhang.  
 MOD article  
 ‘This is the article that Akiu was busy for the whole day and wrote.’

The conjunction *ranhou* behaves the same. Relativization from either conjunct of the *ranhou* construction is possible. In (19a), for instance, the relativized nominal *xiaoshuo* ‘novel’ is associated with the object gap of the first conjunct, whereas in (19b), the relativized nominal *wenzhang* ‘article’ is associated with the object gap of the second conjunct.

- (19) a. Zhe jiu shi Akiu yaoqing-le ranhou mang-le haoji tian  
 this just be Akiu invite-PRF and busy-PRF several day  
 de na bang keren.  
 MOD that group guest  
 ‘This is the group of guests that Akiu invited and then was busy for several days.’

- b. Zhe jiu shi Akiu qu-le Bali ranhou mai-le de xiangshui.  
 this just be Akiu go-PRF Paris and buy-PRF MOD perfume  
 ‘This is the perfume that Akiu went to Paris and bought.’

We have thus seen that in both *yushi* and *ranhou* asymmetrical coordination constructions, the EC can be violated.

If *erqie* is used in a consecutive sense, extraction from the first conjunct is also possible, as seen in (20). Normally, reading something occurs before writing notes about the thing. The two events have a consecutive relation. In (20a), the topic *na fen baozhi* ‘that newspaper’ is associated with the object gap of the first conjunct. In (20b), the relativized nominal *baozhi* ‘newspaper’ is associated with the object gap of the first conjunct.

- (20) a. Na fen baozhi, Baoyu kan-le, erqie hai xie-le biji.  
 that CL newspaper, Baoyu read-PRF and also write-PRF notes  
 ‘That newspaper, Baoyu read it and wrote notes.’  
 b. na fen [Baoyu kan-le erqie hai xie-le biji] de baozhi  
 that CL Baoyu read-PRF and also write-PRF note MOD newspaper  
 ‘the newspaper that Baoyu read and also wrote notes on it.’

Like in English, if there is no semantic relation between two conjuncts, i.e., the speaker only reports two unrelated eventualities, extraction from a single conjunct is impossible. In (21b), the event of reading newspaper is not related to the event of taking a bath, thus the coordinate complex conjoined by *erqie* does not tolerate the object gap in the first conjunct, which is associated with the relativized nominal *baozhi* ‘newspaper.’

- (21) a. Akiu kan-le na fen baozhi, erqie xi-le zao.  
 Akiu read-PRF that CL newspaper and wash-PRF bath  
 ‘Akiu read that newspaper and took a bath.’  
 b. \*na fen [Akiu kan-le erqie xi-le zao] de baozhi  
 that CL Akiu read-PRF and wash-PRF bath MOD newspaper

Since there is no semantic connection between the conjuncts in (21), the coordination is accidental. The presence of the EC effects in (21b) and the absence of the effects in (18) through (20) exhibit the contrast between accidental and natural coordination.<sup>5</sup>

<sup>5</sup> Note the constituency marked by the brackets in (20b) and (21b). Neither the string *xie-le biji de baozhi* ‘write-PRF note MOD newspaper’ in (20b), nor the string *xi-le zao de baozhi* ‘wash-PRF bath MOD newspaper’ in (21b), is a constituent. One should not use the unacceptability of the two strings to challenge the analysis here. The strings are not acceptable because they are not syntactic constituents. I thank an anonymous reviewer for urging me to clarify this.

The fact that natural coordination tolerates EC violation whereas accidental one does not is also observed in Quantifier Raising, a covert movement operation (May 1985). Data like the following are discussed in Ruys (1992) and De Vos (2005: 42):

- (22) a. A policeman serenaded every widow.  
       ‘Some policeman serenaded all the widows.’ [narrow scope]  
       ‘For each of the widows, there was some policeman or other who serenaded her.’ [wide scope]
- b. A policeman went to town and (he) serenaded every widow as well.  
       ‘Some policeman went to town and also serenaded all the widows.’ [narrow scope]  
       ‘\*Some policeman or other went to town and for each of the widows, there was some policeman or other who serenaded her.’ [wide scope]

The quantifier *every* in (22a) can have either a narrow scope, as in the first reading, or a wide scope, as in the second reading. In the latter case, presumably, the quantifier undergoes a covert movement and lands at a position higher than a *policeman*. (22b) is a coordinate construction, and the expression *as well* indicates its accidental coordination reading. In this example, the wide scope reading of *every* disappears, suggesting that its covert movement from the second conjunct is impossible. Importantly, de Vos notes that in the contiguous reading of (23), a natural coordination reading, both a narrow scope and wide scope reading of *every* are available. In other words, the assumed covert movement launching from the second conjunct is possible.

- (23) A policeman sat and serenaded every widow.  
       ‘Some policeman went to town and also serenaded all the widows.’ [narrow scope]  
       ‘For each of the widows, there was some policeman or other who serenaded her.’ [wide scope]

One might think that in data like (15), the EC is not violated, instead, the gap in the single conjuncts may be accounted for by null resumptive pronouns or operator movement. The quantifier raising contrast in (22b) and (23), however, does not support this hypothesis. This is because there is no possibility of either resumptive pronoun or operator movement in (22b) and (23), but the contrast still exists.

Summarizing, in both English and Chinese, and in both overt movement and covert movement, when the EC is violated, the coordinate complexes show semantic relatedness. The situation is like what Goldsmith (1985: 134)

claims: ‘The Coordinate Structure Constraint fails here not because of some formal failing of English or the grammar, but, it seems, because of the meaning of the construction.’ Specifically, as we have shown, it is because of the semantic relatedness of the conjuncts of natural coordination.

#### 4. The Constituency of Comitative *he/gen* Constructions

In the last section, we saw that the EC can be violated in asymmetrical coordination, which is natural, rather than accidental coordination. In this and next section, I demonstrate that the CC can also be violated in natural coordination. My argument comes from comitative constructions in Chinese.

Early discussion of the close relationship between comitative and coordinate constructions can be seen in Jespersen (1924: 90). Cross-linguistically, the linking words occurring in comitative constructions share forms with the words that have other functions (Mithun 1988: 339, 349, among others). For instance, the English *with* may introduce a nominal that encodes an additional entity to participate jointly in some eventuality, i.e., a comitative nominal, as in (24a), or a nominal of instrument, as in (24b), or a nominal of manner, as in (24c) (see Stolz (2001) and Zhang (2007) for recent discussions). In Chinese, the diachronical evolution order of conjunctions is verb > preposition > conjunction (Liu & Peyraube 1994). In modern Chinese, in addition to their verbal uses, the words *he* and *gen* may introduce a comitative nominal, as in (25), a source, as in (26a), or a goal, as in (26b).

- (24) a. John came with Mary.  
 b. John opened the door with a key.  
 c. John ate the dinner with great pleasure.
- (25) a. Baoyu gen Daiyu he-mai-le yi liang che.  
 Baoyu GEN Daiyu co-buy-PRF one CL car  
 ‘Baoyu and Daiyu bought a car together.’  
 b. Baoyu bijiao-le zhe ben shu gen na ben shu.  
 Baoyu compare-PRF this CL book GEN that CL book  
 ‘Baoyu compared this book and that book.’
- (26) a. Baoyu gen Daiyu xue-le bushao dongxi.  
 Baoyu GEN Daiyu learn-PRF many thing  
 ‘Baoyu learned a lot from Daiyu.’  
 b. Baoyu gen xuesheng jiang-qi-le guoqu de jingli.  
 Baoyu GEN student tell-INCH-PRF past MOD experience  
 ‘Baoyu started to tell his past experiences to the students.’

The goal of this section is to clarify the syntactic status of *he* and *gen* in comitative constructions, as in (25). I call the *he/gen* in such constructions *com-he/gen*, and the one that clearly functions as a preposition, as in (26), *prep-he/gen*. Moreover, I label the DP immediately following *he/gen* DP2 and the other DP, which occurs to the left of *he/gen* and encodes a co-participant of the event, DP1. Note that in comitative constructions, the word *he* and *gen* have the same distributions. Thus in all of the comitative data of this paper, either of the two words can be replaced with the other.

If *com-he* and *com-gen* are prepositions, they form a PP with DP2. This PP can be either an adjunct of the predicate of the construction, or part of a complex nominal that also contains DP1. However, if they are conjunctions, they form a complex nominal with the associated two DPs. Thus, in order to find out whether a *com-he/gen* is a preposition or coordinator, we need to find out the constituency of comitative constructions in Chinese.

The issue whether *he* and *gen* in comitative constructions are conjunctions or prepositions has long been discussed in the literature (See Zhang (1996) for references). Although Lü (1942: sec 4.6) claims that *he* and *gen* are conjunctions in comitative constructions, he does not present any argument to support this claim. Zhang (1996) made the most recent endeavor to tackle the issue. Unfortunately, as correctly pointed out by Zhou (2002: ch.2 p. 23), there are certain serious problems in Zhang's analysis. Zhou himself, however, does not provide any new analysis. The issue thus still remains unsolved.

In this section, I present six arguments for the constituency of the string 'DP1 *com-he/gen* DP2'. This constituent status supports in turn the coordinator status of *he* and *gen* in preverbal comitative constructions. Among my arguments, only the fourth (the reversibility of the two DPs) has previously been mentioned in the literature (Zhu 1982: 176).

As for post-verbal *gen* comitative constructions, in which *gen* occurs to the right of a collective transitive verb such as *hebing* 'combine', *jiajie* 'graft', *hunxiao* 'mix', and *bijiao* 'compare', the conjunction status of the *com-gen* is not controversial. This is because in Chinese, no PP adjunct may occur to the right of a verb. Since a postverbal *com-he/gen* occurs to the right of a collective verb, it cannot be a preposition. Collective verbs require a plural internal argument. In each of the examples in (27), neither of the two nominals to the right of the verb is plural. A plausible analysis of the examples is that the two nominals and *gen* form a coordinate complex. Since a coordinate nominal is a plural nominal, it satisfies the selection of the collective verb.

- (27) a. Gongsì hebing-le disan bumen gen diliu bumen.  
 company combine-PRF third branch GEN sixth branch  
 'The company combines the third branch and the sixth branch.'

- b. Lao Wang qu-nian jiajie-le yi ke xing-shu gen yi  
 Lao Wang last-year graft-PRF one CL apricot-tree GEN one  
 ke tao-shu.  
 CL peach-tree  
 ‘Lao Wang grafted an apricot tree and a peach tree last year.’

The conclusion of this section will unify the syntactic status of *com-he/gen* in preverbal and post-verbal positions: they are coordinators rather than prepositions, consistently.

#### 4.1. The String ‘DP1 *com-he/gen* DP2’ as a Topic

My first argument for the constituency of the cluster ‘DP1 *com-he/gen* DP2’ is that the string may occur in a topic position. The string *Baoyu gen Daiyu* in (28a) is topicalized in (28b):

- (28) a. Wo tingshuo Baoyu gen Daiyu yiqi he-xie-le  
 I hear Baoyu GEN Daiyu together co-write-PRF  
 yi bu xiaoshuo.  
 one CL novel  
 ‘I heard that Baoyu and Daiyu co-wrote a novel.’
- b. Baoyu gen Daiyu, wo tingshuo yiqi he-xie-le  
 Baoyu GEN Daiyu I hear together co-write-PRF  
 yi bu xiaoshuo.  
 one CL novel  
 ‘Baoyu and Daiyu, I heard that (they) co-wrote a novel.’

Since only syntactic constituents may occur in topic positions, I conclude that the cluster ‘DP1 *com-he/gen* DP2’ must be a syntactic constituent.

#### 4.2. The String ‘DP1 *com-he/gen* DP2’ May Have an Appositive

My second argument for the constituency of the cluster ‘DP1 *com-he/gen* DP2’ is that the string may have an appositive, such as *liang ge ren* ‘two CL person’ in (29). Since only syntactic constituents may have appositives, I conclude that the cluster ‘DP1 *com-he/gen* DP2’ is a syntactic constituent.

- (29) Baoyu gen Daiyu (liang ge ren) yiqi qu-le Taipei.  
 Baoyu GEN Daiyu two CL person together go-PRF Taipei  
 ‘Baoyu and Daiyu, the two persons, went to Taipei together.’

#### 4.3. The String ‘DP1 com-*he/gen* DP2’ as a Conjunct

The cluster ‘DP1 com-*gen* DP2’ may be conjoined with another cluster ‘DP1 com-*gen* DP2’, as in (30). Since only syntactic constituents can be conjoined, data like (30) suggest that the cluster is a syntactic constituent.

- (30) Baoyu gen Daiyu ji Yuanyang gen Xiren dou he-xie-le  
 Baoyu GEN Daiyu and Yuanyang GEN Xiren all co-write-PRF  
 yi shou shi.  
 one CL poem  
 ‘Baoyu and Daiyu co-wrote a poem, so did Yangyang and Xiren.’

#### 4.4. The Reversibility of DP1 and DP2

The third argument for the constituency of the cluster ‘DP1 com-*he/gen* DP2’ is that the two DPs can exchange their positions, without affecting the basic meaning of the construction, whereas the two DPs in prep-*he/gen* constructions cannot do so (see Zhu (1982: 176)). In (31) through (33), DP1 and DP2 can switch their positions without affecting the basic reading.

- (31) a. Baoyu he Daiyu dingqin-le.  
 Baoyu HE Daiyu engage-PRF  
 ‘Baoyu and Daiyu are engaged.’  
 b. Daiyu he Baoyu dingqin-le.
- (32) a. Qing he yang he-cheng shui.  
 hydrogen HE oxygen combine-become water  
 ‘Hydrogen and oxygen make water.’  
 b. Yang he qing he-cheng shui.
- (33) a. Baoyu he Daiyu he-zhu-le yi zuo fangzi.  
 Baoyu HE Daiyu co-rent-PRF one CL house  
 ‘Baoyu and Daiyu rented a house together.’  
 b. Daiyu he Baoyu he-zhu-le yi zuo fangzi.

The reversibility in the above data is parallel to the reversibility of the following examples of distributive coordination.

- (34) a. Baoyu he Daiyu ge zhu-le yi zuo fangzi.  
 Baoyu HE Daiyu each rent-PRF one CL house  
 'Baoyu and Daiyu each rented a house.'  
 b. Daiyu he Baoyu ge zhu-le yi zuo fangzi.

In (35), however, the preposition *gen* introduces a source, and if the source nominal *Daiyu* is exchanged with the agent nominal *Baoyu*, the basic meaning is changed. The encoded transaction direction in (35a) is different from that of (35b).

- (35) a. Weile hua-diao yixie xianjin, Baoyu gen Daiyu mai-le  
 to spend-off some cash Baoyu GEN Daiyu buy-PRF  
 yi jia gangqin.  
 one CL piano  
 'In order to spend some cash, Baoyu bought a piano from Daiyu.'  
 b. Weile hua-diao yixie xianjin, Daiyu gen Baoyu mai-le  
 to spend-off some cash Daiyu GEN Baoyu buy-PRF  
 yi jia gangqin.  
 one CL piano  
 'In order to spend some cash, Daiyu bought a piano from Baoyu.'

Constituent reversibility is seen between conjuncts of a symmetrical coordination, but not between elements that have different theta roles. If the comitative constructions in (31) through (33) are coordinate constructions, rather than constructions with PP adjunctions, the constituent reversibility is accounted for.

Note that the reversibility of com-*he/gen* constructions is merely flexibility in merger. This flexibility implies that it makes no difference which nominal is merged with the com-*he/gen* first, but it does not mean that we have a syntactic operation that can exchange the positions of two elements.

#### 4.5. The Obligatory Occurrence of DP2

Removal of a PP adverbial does not affect the acceptability of a sentence, as shown in (36a) and (36b).

- (36) a. Baoyu gen Daiyu mai-le yi liang che.  
 Baoyu GEN Daiyu buy-PRF one CL car  
 'Baoyu bought a car from Daiyu.'

- b. Baoyu mai-le yi liang che.  
 Baoyu buy-PRF one CL car  
 'Baoyu bought a car.'

Like the collective transitive verbs in (27), collective and relational predicates select plural arguments. In a preverbal comitative construction, if DP1 is singular, the presence of DP2 is obligatory. In examples like (37a), if we remove DP2 together with *gen*, the sentence becomes unacceptable, as seen in (37b). The predicate *yi yang gao* 'equally tall' in (38a) is a relational predicate. If we remove DP2 together with *gen*, the sentence also becomes unacceptable, as seen in (38b). The obligatory occurrence of DP2 together with *gen* indicates that they are not a PP adjunct.<sup>6</sup>

- (37) a. Baoyu gen Daiyu he-mai-le yi liang che. (= (25a))  
 Baoyu GEN Daiyu co-buy-PRF one CL car  
 'Baoyu and Daiyu bought a car together.'  
 b. \*Baoyu he-mai-le yi liang che.  
 Baoyu co-buy-PRF one CL car
- (38) a. Baoyu gen Daiyu yi yang gao.  
 Baoyu GEN Daiyu same tall  
 'Baoyu has the same height as Daiyu.'  
 b. \*Baoyu yi yang gao.  
 Baoyu same tall

#### 4.6. The String 'com-*he/gen* DP2' May Precede a Circumstantial

In Chinese no VP-level adverbial may precede a circumstantial (i.e., expressions denoting the location and time of the event), as seen in (39) and (40). However, the string 'com-*he/gen* DP2' may precede a circumstantial, as seen in (41). The contrast indicates that the string is syntactically different from any PP modifier of a predicate (The string 'com-*he/gen* DP2' may also follow a circumstantial; see 5.2.).

<sup>6</sup> It is true that the English *with*-phrase is also obligatory with collective predicates taking a singular nominal as subject:

(i) John is friends \*(with Bill).

Zhang (2007: 146) uses facts like these to argue that comitative *with* is actually not a preposition, and thus the behavior of English *with* does not support the PP adjunct analysis of the Chinese com-*he/gen* constructions.

- (39) a. Baoyu zuotian xiang laoshi wen-le yi ge wenti.  
Baoyu yesterday toward teacher ask-PRF one cl question  
'Baoyu asked the teacher a question yesterday.'  
b. \*Baoyu xiang laoshi zuotian wen-le yi ge wenti.
- (40) a. Baoyu zai Shanghai xiang laoshi wen-le yi ge wenti.  
Baoyu at Shanghai toward teacher ask-PRF one cl question  
'Baoyu asked the teacher a question in Shanghai.'  
b. \*Baoyu xiang laoshi zai Shanghai wen-le yi ge wenti.
- (41) a. Daiyu gen Baoyu zuotian yiqi qu-le Taipei.  
Daiyu GEN Baoyu yesterday together go-PRF Taipei.  
'Daiyu and Baoyu went to Taipei together yesterday.'  
b. Daiyu gen Baoyu zai Shanghai he-mai-le yi zhuang fangzi.  
Daiyu GEN Baoyu at Shanghai co-buy-PRF one CL house.  
'Daiyu and Baoyu bought a house together in Shanghai.'

#### 4.7. Section Summary

Among the above six arguments, the first three directly support my claim that 'DP1 com-*he/gen* DP2' is a syntactic constituent (an additional argument will be given in 5.6), and the latter three directly falsify the assumption that the string com-*he/gen* DP2 is a PP modifier of the predicate of the construction.

If the string 'DP1 com-*he/gen* DP2' is a syntactic constituent, the cluster 'com-*he/gen* DP2' alone cannot be an adjunct of the predicate in this construction. One might, however, still wonder whether the complex-internal cluster *he/gen*-DP2 is a PP complement of DP1, like *dui Daiyu* in (42a), or a PP adjunct of DP1, like *yan malu* 'along the street' in (42b).

- (42) a. *dui Daiyu* \*(de) *guanxin*  
to Daiyu DE care  
'the care of Daiyu'  
b. *yan malu* \*(de) *shangdian*  
along street DE shop  
'the shops along the street'

However, even if we ignore semantics (in (37a), for instance, *gen Daiyu* is neither an argument nor a modifier of *Baoyu*), we still have two formal considerations to argue against this preposition analysis. First, in Chinese, the complement and any adjunct of a nominal must occur to the left of the nominal. In [DP1 com-*he/gen* DP2], the cluster *he/gen*-DP2 is to the right of DP1. Second, if a PP modifies a nominal or functions as the complement of a nominal, the

functional word *de* must be present (Lü et al. 1999: 19). In the constituent [DP1 com-*he/gen* DP2], however, *de* is absent. We thus conclude that the constituent [DP1 com-*he/gen* DP2] is a coordinate complex, and *he/gen* is a coordinator.

Recall that it is not controversial that post-verbal comitative *he* and *gen* are coordinators (see (27)). Our analysis has now clarified the consistent status of comitative *he* and *gen*: in both preverbal and post-verbal positions, they are coordinators rather than prepositions.

It is true that DP1 may be separated from com-*he/gen*-DP2. In the examples in (43), for example, DP1 is separated from com-*he/gen*-DP2 by the modal *hui* 'will'. In the next section I will argue that the separation is derived from the raising of DP1. One might assume that when the separation occurs, the com-*he/gen*-DP2 is a PP adjunct of the predicate. However, the arguments presented in this section falsify this assumption. Data like (43) show that even when com-*he/gen*-DP2 is separated from DP1, it still fails to show properties of PP adjuncts of predicates.

- (43) a. Qing      hui   gen yang      he-cheng      shui.  
 hydrogen will GEN oxygen combine-become water  
 'Hydrogen and oxygen will make water.'
- b. Yang hui gen qing he-cheng shui.
- c. Baoyu hui \*(gen Daiyu) he-mai yi      liang che.  
 Baoyu will GEN Daiyu co-buy one CL      car  
 'Baoyu and Daiyu will buy a car together.'
- d. Daiyu hui gen Baoyu zai Shanghai he-mai yi      zhuang fangzi.  
 Daiyu will GEN Baoyu at Shanghai co-buy one CL      house.  
 'Daiyu and Baoyu will buy a house together in Shanghai.'

The two DPs have the reversed order in (43a) and (43b), but they have the same reading. This is impossible if the com-*he/gen*-DP2 is a PP adjunct of the predicate (see 4.4.). In (43c), unlike a PP adjunct of a predicate, the string com-*he/gen*-DP2 is obligatory (see 4.5). In (43d), unlike a PP adjunct of a predicate, the string com-*he/gen*-DP2 may precede the circumstantial *zai Shanghai* 'at Shanghai' (see 4.6.).

The conclusion that com-*he/gen* is a conjunction permits me to gloss *he* and *gen* in comitative constructions as 'and' in the rest of this paper.

If comitative constructions are coordinate constructions in Chinese, the word *he* or *gen* and the associated two nominals form a complex nominal in their base-positions. In this respect, comitative constructions behave the same as other coordinate constructions. On the other hand, since the conjuncts of comitative coordination are related in a single eventuality, the coordination is natural coordination, in contrast to distributive coordination, which is acciden-

tal coordination.

This conclusion predicts that in a comitative construction, if any one of the two associated nominals, which are conjuncts, is not adjacent to *he/gen*, the surface position must be a derived position. The separation of the conjunct from the rest of the base-generated coordinate complex is unexpected, if the CC is an absolute syntactic constraint.

In the next section, I will present such a well-formed separation. Based on this possible separation and its licensing condition, I will claim in the later sections that the CC can be relativized in natural coordination.

## 5. The CC and Relativized Parallelism Requirement

In section 3, I presented the correlation between EC violation and natural coordination. In this section, I will show the systematic possible separation of the first conjunct from the rest of a coordinate complex in natural coordination, in contrast to accidental coordination. In other words, CC violation also correlates with natural coordination.

Since comitative complexes are coordinate complexes, their base positions should be the same as those of any other coordinate complexes, depending on the selecting elements. If a comitative coordinate complex is a subject of a transitive predicate, it is base-generated at Spec vP. In this section, I will show that, the first conjunct can be raised from the base-position of subjects, and thus no CC effect is seen. The raising is observed in six aspects. In contrast to comitative or natural coordinate constructions, none of these aspects is possible in distributive or accidental coordinate constructions. We can thus see systematic contrasts between the two types of coordinate constructions, with respect to the CC effects. The contrasts in these six aspects are discussed in 5.1. through 5.6.

### 5.1. The Occurrence of Raising Verbs between First Conjuncts and Conjunctions

The first indication that first conjuncts may move is seen in the occurrence of raising verbs between first conjuncts and conjunctions.

#### 5.1.1. The Separation of First Conjuncts from Conjunctions by Raising Verbs in Comitative Constructions

CC violation is seen in data like (44). In (44), the first conjunct and the conjunction are separated by the epistemic *hui* 'might' and *yinggai* 'should,' which are raising verbs (Huang 1988b, Lin & Tang 1996).

- (44) a. *Huoche hui gen qiche xiangzhuang ma?*  
 train might and bus collide Q  
 'Might the train collide with the bus?'
- b. *Wo caixiang, Baoyu yinggai gen Daiyu xia-zhe qi ne.*  
 I guess Baoyu should and Daiyu play-PRG chess PRT  
 'I guess, Baoyu should be playing chess with Daiyu (now).'

It is generally assumed that the subject of a raising verb has been raised from a position that is c-commanded by the raising verb and has landed at the surface position. If so, in the two examples in (44), the nominal to the left of the epistemic verb has been raised and occurs at the surface position of subjects. In (44a), *huoche* 'train' is raised; and in (44b), *Baoyu* is raised. In each case, the raising launches from a coordinate complex, violating the CC.

The readings of (44) can also be expressed as (45). In each sentence of (45), the whole comitative coordinate complex occurs to the left of the modal. In this case, no conjunct moves alone, and thus the CC issue is irrelevant.

- (45) a. *Huoche gen qiche hui xiangzhuang ma?*  
 train and bus might collide Q  
 'Might the train collide with the bus?'
- b. *Wo caixiang, Baoyu gen Daiyu yinggai xia-zhe qi ne.*  
 I guess Baoyu and Daiyu should play-PRG chess PRT  
 'I guess, Baoyu should be playing chess with Daiyu in the yard now.'

There is a consistent reading difference between data like (44a) and their counterpart data like (45a), from the perspective of information structure: the two DPs in (44a) are not symmetrical, whereas the two DPs in (45a) are. Specifically, in the absence of any contrastive stress, the DP preceding the raising verb is foregrounded, i.e., emphasized, whereas the one following the raising verb is backgrounded, i.e., not emphasized. In (44a), *huoche* 'train' is foregrounded and *qiche* 'bus' is backgrounded; however, in (45a), there is no such a difference between *huoche* and *qiche*. The reading difference can be captured by Seiler's (1974) generalization that comitative constructions leave the extent of participation of the backgrounded partner in the action underspecified. In other words, the backgrounded partner participates in the action to varying degrees: from mere 'accompanying' to full-fledged 'partnership.' The foregrounded participant of a comitative construction has the property of 'Principality' (Teng 1970: 332), in contrast to the other participant. This reading contrast consistently occurs in other comitative data in which the first conjunct is separated from the rest of the coordinate complex.

### 5.1.2. No Separation of First Conjuncts from Conjunctions by Raising Verbs in Distributive Coordinate Constructions

Unlike in comitative constructions, first conjuncts cannot be separated from the conjunctions by raising verbs in distributive coordinate constructions. In (46), *fenbie* indicates that the coordination is a distributive coordinate construction, and in (47), the distributive conjunction *ji* occurs. The epistemic *hui* ‘will’ cannot occur between the first conjunct *Lao Li* and the conjunction in (46), and the epistemic *yinggai* ‘should’ cannot occur between the first conjunct *Li Xiansheng* and the conjunction *ji* in (47). Since no conjunct may be separated from the conjunction in distributive coordinate constructions, the CC effects are observed.

- (46) a. \*Lao Li hui gen Lao Wang fenbie qu-le Shanghai ma?  
 Lao Li will and Lao Wang respectively go-PRF Shanghai Q  
 b. Lao Li gen Lao Wang hui fenbie qu-le Shanghai ma?  
 Lao Li and Lao Wang will respectively go-PRF Shanghai Q  
 ‘Might Lao Li and Lao Wang have gone to Shanghai respectively?’
- (47) a. \*Li Xiansheng yinggai ji qi furen dou zai kan-xi ne.  
 Li Mr. should and his wife all PRG watch-play PRT  
 b. Li Xiansheng ji qi furen yinggai dou zai kan-xi ne.  
 Li Mr. and his wife should all PRG watch-play PRT  
 ‘Mr. Li and his wife should both be watching a play now.’

## 5.2. The Occurrence of Adverbials between First Conjuncts and Conjunctions

The second indication that first conjuncts may move is seen in the occurrence of adverbials between first conjuncts and conjunctions.

### 5.2.1. The Separation of First Conjuncts from Conjunctions by Adverbials in Comitative Constructions

CC violation is also noted in the fact that first conjuncts can be separated from conjunctions by adverbials such as *yijing* ‘already’ or temporal or locative adverbials in comitative constructions. In (48b) and (49b) the first conjunct and the conjunction are separated by the circumstantial *yiqian* ‘before, in the past’ or *zai Riben* ‘in Japan.’ The two b-sentences below are near synonymous to the corresponding a-sentences.

- (48) a. [Baoyu he Daiyu] yiqian jie-guo hun.  
 Baoyu and Daiyu past connect-EXP marriage  
 ‘Baoyu and Daiyu married before.’

- b. Baoyu<sub>i</sub> yiqian [t<sub>i</sub> he Daiyu] jie-guo hun.  
 Baoyu past and Daiyu connect-EXP marriage

- (49) a. [Akiu gen Baoyu] zai Riben jian-le mian.  
 Akiu and Baoyu at Japan meet-PRF face  
 'Akiu and Baoyu met in Japan.'  
 b. Akiu<sub>i</sub> zai Riben [t<sub>i</sub> gen Baoyu] jian-le mian.  
 Akiu at Japan and Baoyu meet-PRF face

In (48b) and (49b), no resumptive pronoun is allowed, as shown below:

- (50) a. \*Baoyu<sub>i</sub> yiqian [ta<sub>i</sub> he Daiyu] jie-guo hun.  
 Baoyu past he and Daiyu connect-EXP marriage  
 b. \*Akiu<sub>i</sub> zai Riben [ta<sub>i</sub> gen Baoyu] jian-le mian.  
 Akiu at Japan he and Baoyu meet-PRF face

Resumptive pronouns are seen in the gapless topic sentences such as (51). The occurrence of the pronoun shows that the topic is base-generated in the surface position, rather than being moved there.

- (51) Akiu<sub>i</sub>, zai Riben, ta<sub>i</sub> meitian da chang-tu dianhua.  
 Akiu at Japan he everyday make long-distance phone call  
 'Speaking of Akiu, he made long-distance phone calls in Japan every-day.'

The ban of resumptive pronouns in data like (48b) and (49b) indicates that the sentence-initial nominals are not gapless topics, and are thus not base-generated in their surface positions. Instead, they are moved out of a post-circumstantial position.

Since all conjuncts and the conjunction of a coordinate DP complex must be merged into a constituent which excludes any circumstantial, the occurrence of the circumstantial between the first conjunct and the conjunction in the b-sentences in (48) and (49) suggests that the conjunct has been moved. If so, the CC is violated.

### 5.2.2. No Separation of First Conjuncts from Conjunctions by Adverbials in Distributive Coordinate Constructions

Unlike in comitative constructions, first conjuncts cannot be separated from the conjunctions by adverbials in distributive coordinate constructions. In (52) the distributive conjunction *ji* occurs; and in (53), the adverb *fenbie* indicates that the coordination is distributive. In all of these data, the first conjunct and

the conjunction must be adjacent. Again, since no conjunct may be separated from the conjunction in the distributive coordinate constructions, the CC effects are observed.

(52) a. \*[Shizhang] zai Riben [ji qi furen] canguan-le yi  
 Mayor at Japan and his wife visit-PRF one  
 ge youeryuan.  
 CL kindergarten

b. [Shizhang ji qi furen] zai riben canguan-le  
 Mayor and his wife at Japan visit-PRF  
 yi ge youeryuan.  
 one CL kindergarten

‘The mayor and his wife visited a kindergarten in Japan.’

(53) a. \*Baoyu zuotian [he Daiyu] fenbie qu-le Taiguo.  
 Baoyu yesterday and Daiyu respectively go-PRF Thailand  
 b. [Baoyu he Daiyu] zuotian fenbie qu-le Taiguo.  
 Baoyu and Daiyu yesterday respectively go-PRF Thailand  
 ‘Baoyu and Daiyu went to Thailand respectively yesterday.’

### 5.3. The Occurrence of Negation Words between First Conjuncts and Conjunctions

The third indication that first conjuncts may move is seen in the occurrence of negation words between first conjuncts and conjunctions.

#### 5.3.1. The Possible Negation Word between First Conjuncts and Conjunctions in Comitative Constructions

Like the conjunction *and* in English, conjunctions in Chinese may not be negated by any negation word. Therefore, the conjunctions *he* and *gen* are not negated by the negation word *bu* or *mei*. However, it is possible for a negation word to occur between the first conjunct and the conjunction in comitative constructions. In (54a), which is a comitative construction, the first conjunct *qing* ‘hydrogen’ and the conjunction *gen* are separated by the negation word *bu*. Similarly, in (54b), the first conjunct *Baoyu* and the conjunction *gen* is separated by the negation word *mei*.

(54) a. Qing bu gen dan he-cheng shui.  
 hydrogen not and nitrogen combine-become water  
 ‘Hydrogen and nitrogen do not make water.’

- b. Baoyu mei gen Daiyu he-mai yi liang che.  
 Baoyu not and Daiyu co-buy one CL car  
 ‘Baoyu and Daiyu did not buy a car together.’

Since all conjuncts and the conjunction of a coordinate DP complex must be merged into a constituent that excludes any negation word, the occurrence of the negation word between the first conjunct and the conjunction in (54) suggests that the conjunct has moved. If so, the CC is violated.

### 5.3.2. No Negation Word between First Conjuncts and Conjunctions in Distributive Coordinate Construction

It is impossible for a negation word to occur between the first conjunct and the conjunction in a distributive coordinate construction. In (55), the occurrence of *fenbie* indicates that the coordination is a distributive one, and in (56), the conjunction *ji* is an exclusive distributive conjunction. In (55a), the negation word *bu* may not occur between the first conjunct *nanhai* ‘boy’ and the conjunction *gen*. Similarly, in (56a), the negation word *mei* may not occur between the first conjunct *shizhang* ‘mayor’ and the conjunction *ji*. In these distributive coordinate construction data, since no conjunct may be separated from the conjunction, the CC effects are observed.

- (55) a. \*Baoyu mei gen Daiyu fenbie mai yi liang che.  
 Baoyu not and Daiyu respectively buy one CL car  
 b. Baoyu gen Daiyu mei fenbie mai yi liang che.  
 Baoyu and Daiyu not respectively buy one CL car  
 ‘Baoyu and Daiyu did not each buy a car.’
- (56) a. \*Shizhang mei ji qi furen cangan zhe suo xuexiao.  
 mayor not and his wife visit this CL school  
 b. Shizhang ji qi furen mei cangan zhe suo xuexiao.  
 Mayor and his wife not visit this CL school  
 ‘The mayor and his wife did not visit this school respectively.’

## 5.4. The Possibility for First Conjuncts to be Relativized

The fourth indication that first conjuncts may move is seen in the possibility for first conjuncts to be relativized.

### 5.4.1. The Possible Relativization of First Conjuncts in Comitative Constructions

First conjuncts of coordinate complexes can be relativized. The predicate *he-zu fangzi* ‘co-rent house’ in (57a) and *xiangzhuang* ‘collide’ in (57b) are both col-

lective. They each have a coordinate complex subject, but the first conjunct of the complex is relativized.

- (57) a. [[ \_ Gen Daiyu he-zu fangzi] de xuesheng] hen qiong.  
           and Daiyu co-rent house MOD student very poor  
           ‘The student who co-rents a house with Daiyu is very poor.’  
 b. Wo kanjian-le [[ \_ gen huoche xiangzhuang] de qiche].  
       I see-PRF and train collide MOD car  
       ‘I saw the car that collided with the train.’

Relativization is derived by either null operator movement (Chomsky 1977) or the movement of the antecedent directly (Vergnaud 1974, Kayne 1994). In either theory, some element is moved from the first conjunct position in data like (57).

#### 5.4.2. No Relativization of First Conjuncts in Distributive Constructions

Unlike in comitative constructions, first conjuncts cannot be relativized in distributive constructions. In (58a) and (58b), the adverb *gezi* ‘separately’ and *fenbie* ‘separately’ indicate that the constructions are distributive. Since relativization is derived by movement and conjuncts cannot be relativized in such constructions, the CC effects are observed.

- (58) a. \*[[ \_ Gen Daiyu gezi zu fangzi] de xuesheng] hen qiong.  
           and Daiyu separately rent house MOD student very poor  
           Intended: ‘The student who rents a house separately from Daiyu is very poor.’  
 b. \*Wo kanjian-le [[ \_ gen huoche fenbie chu shigu] de qiche].  
       I see-PRF and train separately occur accident MOD car  
       Intended: ‘I saw the car that had an accident separately from the train.’

In Chinese, one can use the copular *shi* ‘be’ to focalize a relativized head. In (59a), *qiche* ‘car’ is relativized, and in (59b), this relativized head is focalized by *shi*.

- (59) a. chu shigu de qiche  
           occur accident MOD car  
           ‘the car that had an accident’  
 b. Chu shigu de shi qiche.  
       occur accident MOD be car  
       ‘What had an accident is a car.’

The following data show that we may focalize the first conjunct of the comitative construction in (60a), but not the first conjunct of the distributive construction in (60b) (I am grateful to an anonymous review for bringing my attention to data like (60a)):

- (60) a. Gen huoche xiangzhuang de shi qiche.  
 and train collide MOD be car  
 'What collided with the train is a car.'
- b. \*Gen huoche fenbie chu shigu de shi qiche.  
 and train separately occur accident MOD be car

If the focalization construction is syntactically related to relativization, the contrast in (60) shows the same point as that between (57) and (58).

### 5.5. A-not-A Forms of Conjunctions

The fifth indication that first conjuncts may move is seen in the A-not-A forms of conjunctions.

#### 5.5.1. The Possible A-not-A Conjunctions in Comitative Constructions

In Chinese, A-not-A questions are yes-no questions. They are formed by the reduplication of the initial syllable of a predicate (a verb or preposition) or reduplication of a larger prosodic unit of the predicate phrase, and an appropriate negation word (*bu* 'not' or *mei* 'not') between the reduplicant and the root. For instance, in (61a), it is the first syllable of the verb *xihuan* 'like' that is reduplicated, whereas in (61b), it is the whole verb *xihuan* that is reduplicated. The two sentences in (61) are synonymous.<sup>7</sup>

- (61) a. Lao Li xi-bu-xihuan ni?  
 Lao Li like-not-like you
- b. Lao Li xihuan-bu-xihuan ni?  
 Lao Li like-not-like you  
 'Does Lao Li like you?'

The position of an A-not-A element can mark the left boundary between a vP and the functional projections above vP, assuming that subjects move out of vP to SpecIP in Chinese (Huang 1993). It is always the left-peripheral element of vP that is in the A-not-A form. Usually the element is the verb or the first

<sup>7</sup> An A-not-A word marks the left-edge of a predicate. It thus does not always mark the head of the predicate. This needs to be clarified. Lin (1992) claims that A-not-A is a property of (syntactic) predicates, whereas Tsai (1994:161) uses some data similar to my (62) to argue against Lin's claim. Both of them are partially right.

syllable of the verb. But it can also be a preposition. For instance, if a vP starts with a directional PP, it is the preposition of this PP that is in the A-not-A form. This is seen in (62). However, it can never be an adverb. In (62), for instance, the adverb *hai* ‘still’ is not in an A-not-A form. I leave this special property of adverbs for future study.

- (62) Zhe liang che hai wang-bu-wang nan kai?  
 this CL car still toward-not-toward south drive  
 ‘Is this car still going to move to the south?’

Since the A-not-A formation can be applied to the first syllable of the predicate, it is a syntax-phonology interface operation. Following the basic thesis of Huang (1988a), I assume that the [Q] feature of the A-not-A form must be licensed by a corresponding feature of a c-commanding functional head, presumably Infl (it can also be C. The choice is not important here).

What is important here is that since an A-not-A form can mark the left boundary of a vP, elements to the left of the A-not-A form must be either base-generated out of vP or have moved out of vP. The following data show that there are two possible A-not-A constructions for a comitative subject. The first possibility is that the conjunction *gen/he* is in the A-not-A form, as shown in (63a). In (63a), the nominal to the left of the A-not-A word, *Baoyu*, is the surface subject. If a subject comitative complex is base-generated at SpecvP, (63a) shows that the first conjunct moves. The movement launches from the base-position of the subject, i.e., inside the Spec,vP, and lands at SpecIP. In this case, the CC is violated. The second possibility is that the verb is in the A-not-A form, as seen in (63b). If the whole comitative complex DP occurs to the left of the A-not-A word, as in (63b), the whole complex DP is raised from SpecvP to SpecIP. In this case, no conjunct moves alone, and thus the CC issue is irrelevant.

- (63) a. Baoyu gen-mei-gen Daiyu jiehun?  
 Baoyu and-not-and Daiyu marry  
 ‘Did Baoyu and Daiyu marry?’  
 b. Baoyu gen Daiyu jie-mei-jiehun?  
 Baoyu and Daiyu marry-not-marry  
 ‘Did Baoyu and Daiyu marry?’

### 5.5.2. No A-not-A Conjunction in Distributive Coordinate Constructions

I have introduced the assumption that the nominal to the left of an A-not-A word is out of vP, and thus if a conjunction is in the A-not-A form, the first conjunct, which precedes the conjunction, must be out of the vP. In this subsection I present the fact that the conjunctions of distributive coordinate con-

structions cannot be in the A-not-A form. In (64), the presence of the distributive adverb *fenbie* ‘respectively’ indicates that the coordination is a distributive coordinate construction. In (65), the distributive conjunction *ji* occurs. The intended meaning of each of the a-sentences is expressed by the corresponding b-sentence. In (64b) and (65b), it is the verb, rather than the conjunction, that is in the A-not-A form (Recall that adverbs cannot be in an A-not-A form. Thus *fenbie* ‘respectively’ cannot be in an A-not-A form).

- (64) a. \*Baoyu gen-mei-gen Daiyu fenbie jiehun?  
 Baoyu and-not-and Daiyu respectively marry  
 b. Baoyu gen Daiyu fenbie jie-mei-jiehun?  
 Baoyu and Daiyu respectively marry-not-marry  
 ‘Did Baoyu and Daiyu get married, respectively?’
- (65) a. \*Shizhang ji-mei-ji qi furen canguan-guo zhe suo xuexiao?  
 Mayor and-not-and his wife visit-EXP this CL school  
 b. Shizhang ji qi furen canguan-mei-canguan-guo zhe  
 mayor and his wife visit-not-visit-EXP this  
 suo xuexiao?  
 CL school  
 ‘Did the mayor and his wife visit this school?’

In (64b) and (65b), the whole coordinate complex precedes the A-not-A word. This means that the whole complex is out of vP. No single conjunct is raised out of the complex. (64a) and (65a) show the fact that the conjunctions of distributive coordinate construction cannot be in the A-not-A form. This fact indicates that no conjunct may be raised out of vP alone in the distributive coordinate constructions. This is in contrast to the fact that in comitative coordinate constructions, the conjunctions can be in the A-not-A form, and thus first conjuncts can be raised. The contrast implies that CC effects are seen in distributive coordinate constructions, but not in comitative coordinate constructions.

One might wonder why the disjunction *huozhe* ‘or’ may not have an A-not-A form. The reason is that disjunctive coordination is never collective (Winter 2001: 33, 66, see also Schwarzschild (1999: 16)). Therefore, like the distributive conjunction *ji*, the disjunction may not have an A-not-A form.

## 5.6. First Conjunct-oriented Resultatives

The sixth indication that first conjuncts may move is seen in the existence of first conjunct-oriented resultatives.

## 5.6.1. The First Conjunct-oriented Resultatives in Comitative Constructions

If a comitative coordinate complex occurs with a resultative, the sentence is always ambiguous. The secondary predicate can be either the whole coordinate complex-oriented, or the first conjunct-oriented:<sup>8</sup>

- (66) a. Baoyu gen Daiyu zhuang de toupoxueliu.  
Baoyu and Daiyu collide MOD bleed  
'Baoyu and Daiyu collided so that Baoyu bled.'  
'Baoyu and Daiyu collided so that they both bled.'
- b. Baoyu gen Daiyu liao de wang-le chi fan.  
Baoyu and Daiyu chat MOD forget-PRF eat meal  
'Baoyu and Daiyu chatted so that Baoyu forgot to eat a meal.'  
'Baoyu and Daiyu chatted so that they both forgot to eat a meal.'

The existence of the single conjunct-oriented resultatives would be unexpected, if the relevant conjunct remained inside the hosting DP. According to Williams (1980), subjects must C-Command their predicates, including secondary predicates. Thus in order to achieve the first reading of the above data, the first conjuncts have to move out of the coordinate complexes in order to C-Command the resultatives. The empirical issue remains regardless of whether one adopts a PRO approach to secondary predication (Hornstein & Lightfoot 1987, Bowers 1993, 2001). Specifically, if the subject of a secondary predicate is a local PRO, which C-Commands the secondary predicate, the controller of the PRO still needs to be a constituent out of any coordinate complex. In this PRO-approach, the first conjuncts in the above data are controllers of the PRO subjects of the secondary predicates. As controllers of the PROs, the first conjuncts must be syntactically out of the coordinate complexes.

Note that the ambiguity remains even if DP1 is separated from the string *gen*-DP2:

- (67) a. Baoyu zuotian gen Daiyu zhuang de toupoxueliu.  
Baoyu yesterday and Daiyu collide MOD bleed  
'Baoyu and Daiyu collided so that Baoyu bled yesterday.'  
'Baoyu and Daiyu collided so that they both bled yesterday.'
- b. Baoyu zuotian gen Daiyu liao de wang-le chi fan.  
Baoyu yesterday and Daiyu chat MOD forget-PRF eat meal

<sup>8</sup> It is generally recognized that resultatives in Chinese can be subject-oriented, without any reflexive-support (Li 1990, among others).

‘Baoyu and Daiyu chatted so that Baoyu forgot to eat a meal yesterday.’

‘Baoyu and Daiyu chatted so that they both forgot to eat a meal yesterday.’

The existence of whole-coordinate-complex-oriented resultatives, seen in the second reading of the above data, on the other hand, indicates that the resultative may also take the whole coordinate complex in its base-position as its subject. Since resultatives are generally analyzed as the complement of V, it is C-Commanded by the base-position of the coordinate subject, which is at Spec of vP. Therefore, the predication relation is licensed.

The fact that resultatives can take the combination of the two DPs as their subjects, even when DP1 is away from the com-*gen* DP2, also supports our claim that the two DPs form a constituent in their base-positions. The above comitative data are in contrast to the following data. In the intended preposition reading of *gen*, the *gen*-DP cluster is a PP, and the resultatives are exclusively secondary predicates of the DPs to the left of *gen*, i.e., the subjects.

- (68) a. Zhe ben shu, Baoyu gen Daiyu jie de dou  
This CL book Baoyu from Daiyu borrow MOD already

fan-le.  
tired.of-PRF

‘This book, Baoyu<sub>i</sub> borrowed from Daiyu so that he<sub>i</sub> already got tired.of it.’

Irrelevant reading: ‘This book, Baoyu and Daiyu borrowed from others so that they both got tired of it.’ (distributive coordinate construction, *gen* is a conjunction)

- b. Baoyu gen Daiyu xue de wang-le chi fan.  
Baoyu from Daiyu learn MOD forget-PRF eat meal  
‘Baoyu<sub>i</sub> learned from Daiyu so that he<sub>i</sub> forgot to eat a meal.’

The lack of ambiguity in the reading of (68b) is expected from the fact that the cluster *Baoyu gen Daiyu* is not a constituent, and thus it cannot have a secondary predicate. Instead, only the DP to the left of *gen*, which is the subject of the primary predication, can have a secondary predicate.

#### 5.6.2. No First Conjunct-oriented Resultatives in Distributive Coordinate Constructions

In contrast to the data in (66), the first conjuncts of distributive coordinate constructions can never have any secondary predicate. The following sen-

tences are not ambiguous. Only the whole coordinate complexes can be the subjects or the controllers of the subjects of the resultatives. We thus see one more contrast in single conjunct raising between comitative coordinate construction and distributive coordinate construction.

- (69) a. Baoyu he Daiyu qi de zhi fadou.  
 Byou and Daiyu angry MOD continuously shiver  
 'Baoyu and Daiyu were so angry that they shivered continuously.'  
 b. Shizhang ji qi furen zhuang de toupoxueliu.  
 Mayor and his wife collide MOD bleed  
 'The mayor and his wife collided (with something/body) so that they bled.'

### 5.7. Section Summary

The above six contrasts between the comitative and distributive coordinate constructions with respect to the mobility of first conjuncts show that CC effects are sensitive to the semantic type of the coordination: the first conjunct can move in comitative or natural coordination but not in distributive or accidental coordination. We thus see the semantic side of the CC.<sup>9</sup>

One might wonder why final conjuncts never move, if conjuncts can move in principle. For instance, why is (70a) unacceptable?

- (70) a. \*Baoyu<sub>i</sub> zuotian Daiyu gen t<sub>i</sub> he-mai-le yi liang che.  
 Baoyu yesterday Daiyu and co-buy-PRF one CL car  
 b. Baoyu<sub>i</sub> zuotian Daiyu gen ta<sub>i</sub> he-mai-le yi liang che.  
 Baoyu yesterday Daiyu and he co-buy-PRF one CL car  
 'Speaking of Baoyu, Daiyu and he bought a car together yesterday.'

I claim that final conjuncts cannot move because the conjunctions *he* and *gen*

<sup>9</sup> The possibility of the first conjunct raising in comitative constructions also accounts for the contrast between the VP-fronting constructions in (i) and (ii):

- (i) [gen Daiyu he-zu yi zuo fangzi], Baoyu juehui bu hui \_\_\_\_.  
 and Daiyu co-rent one CL house Baoyu definitely not will  
 'Co-rent a house with Daiyu, Baoyu will definitely not.'  
 (ii) \*[gen Daiyu fenbie zu butong de fangzi], Baoyu juehui bu hui \_\_\_\_.  
 and Daiyu separately rent different MOD house Baoyu definitely not will

In (i), it is possible that *Baoyu*, as the first conjunct of the subject of the verb *he-zu* 'co-rent', moves before the whole remnant vP moves. In (ii), however, since it is a distributive construction, *Baoyu* may not move, therefore, fronting the vP with part of the subject is impossible.

are cannot be stranded, and thus they must be followed by some phonological elements, such as the pronoun *ta* 'he' in (70b). Moreover, no conjunct may be moved from a postverbal position. It is possible that there is certain intervention effect for such non-local movement. I leave the locality issue for future research. Furthermore, conjuncts cannot move in English, regardless of whether they are semantically related to each other. See Zhang (2004) for a morphosyntactic account for the constraint in English.

If both the CC and the EC can be violated systematically in natural coordination, the CSC cannot be a general constraint on movement, although I do not claim that CSC violation is always possible in any natural coordinate constructions.

## 6. Relativized Parallelism Requirement in Processing

Both parts of the CSC forbid operations that apply to single conjuncts. The CSC is thus a parallelism requirement on coordinate complexes. I have shown that both parts of the CSC can be relativized if conjuncts are semantically related to each other. In this section, I argue that this relativized parallelism requirement is semantic-pragmatic in nature and eventually comes from a filter in language processing.

### 6.1. The More Tightly Semantically Connected, the Easier to Process

It is generally recognized that elements that are more readily integrated into the sentence are processed faster than elements that are not so readily integrated into the sentence. For instance, the arguments of a verb are easier to process than adjuncts of the verb. Thus Speer and Clifton (1998) found that readers read the same prepositional phrases faster when they were arguments of a verb than when they were adjuncts. A similar conclusion follows from the finding that prepositional phrases that can function either as arguments or as adjuncts tend to be understood as arguments (Schütze and Gibson 1999). Furthermore, an experiment reported by Lin (2007) found that the possessors of inalienable nouns (including kinship terms and body parts) were read significantly faster than their alienable counterparts.

Conjuncts of natural coordination are more readily integrated into the sentence than conjuncts of accidental coordination, so we expect that natural coordination constructions should be processed more easily than accidental coordination constructions. This is indeed the case. If a coordinate complex is ambiguous between natural and accidental coordination readings, the default is the former reading. We have seen the examples in (71) in (9) and (17). For (71a), the collective reading is the default one, whereas the distributive reading

is marked. For (71b), the natural coordination reading is the default one, whereas the accidental coordination reading is marked.

- (71) a. Baoyu {he/gen} Daiyu dingqin-le.  
       Baoyu and/and Daiyu engage-PRF  
       ‘Baoyu and Daiyu are engaged.’  
 b. John went to the store and bought some ice cream.

As pointed out by Carston (1993: 29), the natural coordination reading ‘is overwhelmingly more likely to be recovered by the hearer, and to have been intended by the speaker,’ than the accidental coordination reading. This fact has been discussed from a pragmatic perspective since Grice (1967), and accounted for by the pragmatic notion of relevance by Carston, which he claims minimizes processing effort (p. 29). Relevance is subsumed under the relatedness condition of the RPR.

## 6.2. The More Parallel in Merged Structure, the Easier to Process

Frazier et al. (2000) Find that the coordination of syntactically like categories, as in (72a), is processed faster than coordination of unlike categories, as in (72b).

- (72) a. John walked slowly and carefully, avoiding the broken glass.  
 b. John walked slowly and with great care, avoiding the broken glass.

Likewise, Frazier & Clifton (2001) and Carlson (2002) find that a conjunct is read faster if it is structurally parallel to the preceding conjunct than if it is not. (73a) was read more quickly than (73b), and the sentences in (74) were read more quickly than those in (75).

- (73) a. Hilda noticed a strange man and a tall woman when she entered the house.  
 b. Hilda noticed a man and a tall woman when she entered the house.
- (74) a. Jim believed all Tom’s stories and Sue believed Jim’s stories.  
 b. Jim believed all Tom’s stories were literally true and Sue believed Jim’s stories were fictitious.
- (75) a. Jim believed all Tom’s stories and Sue believed Jim’s stories were fictitious.  
 b. Jim believed all Tom’s stories were literally true and Sue believed Jim’s stories.

In (73a), both conjuncts have a [D A N] construction, whereas in (73b), the first conjunct has a [D N] construction and the second conjunct has a [D A N] construction. We can see that in (73a), the two conjuncts are identical in their structure, and thus the sentence is read faster. In (73b), the two conjuncts are not identical in their structure, and thus the sentence is read slower. Similarly, in (74a) the object of each conjunct is a DP. The two conjuncts thus have similar structures. In (74b), the object of each conjunct is a clause. The two conjuncts thus also have similar structures. In contrast, in (75a) and (75b), one of the two conjuncts has a nominal complement and the other conjunct has a clause complement. Since these data are minimal pairs, the contrast in their reading speed is directly related to the contrast in the degree of parallelism in the conjuncts.

Parallelism makes processing easier and more efficient. However, the forms that show more parallelism and those that show less parallelism are both syntactically well-formed.

A similar experiment is reported in Luka & Barsalou (2005). It is observed that grammaticality ratings are increased for sentences that shared representational structures with those read earlier. Again, the more parallel, the easier to process.

### 6.3. The More Parallel in Dependency Chains, the Easier to Process

A final example showing the role of the Relativized Parallelism Requirement in processing is the following. If each clausal conjunct contains a dependency chain, coordinate complexes with non-parallel gaps are not acceptable.

- (76) a. I know a man who [Bill likes \_] and [Mary hates \_].  
 b. \*I know a man who [Bill saw \_] and [\_ likes Mary].

(Williams 1978: 34)

In (76a), the gaps in both conjuncts are object gaps, and thus they are parallel. In the unacceptable (76b), however, the gap in the first conjunct is an object gap, whereas the gap in the second conjunct is a subject gap. The gaps in the conjuncts are not parallel and since they also show no semantic relation, the sentence is unacceptable.

However, the following examples, which also have non-parallel gaps, are fine, because they are saved by having semantically related conjuncts:

- (77) a. This is the dress which Mary bought \_ and \_ cost \$6,000.

(Goodall 1987: 72)<sup>10</sup>

<sup>10</sup> Zoerner (1995: 82) points out that (i) is natural only with heavy phonological stress on the con-

- b. That's the candidate who the unions endorsed \_ and \_ was the overwhelming favorite of the Democrats. (Goodall 1987: 75)

Anderson (1983) reports from her experimental study that non-adjacent gaps are more acceptable than adjacent ones. In (76b), (77a), and (77b), for instance, the gaps are adjacent; in (76a), however, the gaps are not adjacent. Generally speaking, the degree of route parallelism is lower when the two gaps are adjacent than when the two gaps are not adjacent. The fact that the two conjuncts in (77a) in (77b) are semantically related may reduce the processing difficulty caused by the non-parallel dependency chains.

#### 6.4. The Nature of Relativized Parallelism Requirement

We have seen that the parallelism requirement of the CSC is not always met in comitative and asymmetrical coordination. It is possible that the semantic integrity of collectivity makes the processing of asymmetrical and comitative coordination complexes easier, and thus no parallelism requirement is forced. The parallelism requirement is instead relativized. If the parallelism requirement of the CSC can be relativized in natural coordination, the CSC does not look like either a trigger of syntactic operations (cf. Hornstein & Nunes 2002: 41) or a constraint on syntactic operations.

A more plausible possibility is that the two conjuncts and the whole coordinate complex are built without any parallelism requirement guidance, but the acceptability of the complex is evaluated by the relativized parallelism requirement, which is semantic-pragmatic in nature and eventually comes from a filter in language processing. While triggers of syntactic operations apply before syntactic operations and constraints on syntactic operations apply during syntactic derivations, filters in language processing apply after syntactic derivations.

#### 6.5. The General Economy Motivation of Relativized Parallelism Requirement

So far, I have shown that if the subcomponents of a syntactic complex deviate from parallelism, without any semantic relation to integrate them, our brains will have difficulty in processing them, and thus the complex is rejected as unacceptable. This effect can be accounted for by the general economy principle of processing. I claim that the relativized parallelism requirement is the result of the general economy principle of processing.

---

junction.

(i) Mary wore a dress that Ungaro designed and cost a fortune.

Unlike recognizing this general principle, treating the CSC as a syntactic constraint, which is stipulated for coordinate constructions only, is ad hoc. The possible CSC violation is compatible with the structure of coordinate complexes. As claimed in Munn (1987), Kayne (1994), Zoerner (1995), Johannesen (1998), and defended in Zhang (2006) (contra Munn (1992), Borsley (2005)), conjuncts are specifiers and complements of conjunctions. Syntactic operations can apply to specifiers and complements. As correctly pointed out by Anandan (1993: 33), 'As there are no rules for particular constructions such as interrogative, relative, passive and so on, there are no rules for coordinate constructions also.'

Considering certain asymmetrical or natural coordination data (e.g., *I went to the store and bought some whiskey*), Bever et al. (1975, cited by Sag et al. (1985: 152)) claim that there are two possibilities. One is that such data are grammatical, but require unconventional syntactic operations. The other is that such data are not grammatical, but acceptable for processing reasons. They opt for the second position. For the first option, the judgment of unconventional syntactic operations is based on the CSC. If the CSC is not a syntactic constraint, this option is not available. As for the second option, it looks conceptually problematic. All acceptable forms should be grammatical, and our syntactic theories should be able to cover all of them. Thus there is no acceptable but ungrammatical sentence. Of course, as we know, not all syntactically well-formed sentences are acceptable in discourse. My conclusion is that natural coordination data such as *Which dress has she gone and ruined now* (CSC violation) are both grammatical and acceptable, whereas sentences such as *\*Which books did Robin talk to Chris and read* (also CSC violation) are derivable in syntax but unacceptable for processing reasons. In natural coordination (asymmetrical and comitative coordination) constructions, since conjuncts are semantically related to each other, the constructions are easy to process. Thus no parallelism requirement is enforced. However, in accidental coordination constructions, since conjuncts are not semantically related to each other, if they are not parallel, the constructions are hard to process and may get rejected in language process.

## 7. Conclusions

In this paper, presenting Chinese facts, I have reported that the parallelism requirement of the Coordinate Structure Constraint is relativized in natural coordination, in which conjuncts are semantically related to each other.

I first showed that like in English, elements may be extracted from single conjuncts of natural coordination in Chinese, violating the EC. Then I demonstrated that not only post-verbal, but also preverbal *he/gen*-comitative con-

structions are coordinate constructions, and thus *he* and *gen* there are coordinators rather than prepositions, consistently. I then presented systematic data to show the correlation between collectivity and the possible conjunct-conjunction separation. I thus concluded that the CC can also be violated in natural coordination. Finally, I claimed that the relativized parallelism requirement of the Coordinate Structure Constraint is semantic-pragmatic in nature and eventually comes from a filter in language processing.

## References

- Anandan, K. N. (1993). *Constraints on Extraction from Coordinate Structures in English and Malayalam*, Ph.D. dissertation, Central Institute of English and Foreign Languages, Hyderabad, India.
- Bever, Thoms G., J. M. Carroll, and R. Hurtig. (1975). Analogy, or ungrammatical sequences that are utterable and comprehensible are the origins of new grammar in language acquisition and linguistic evolution. In Thoms G. Bever, Jerrold J. Katz, and D. Terence Langendoen, eds., *An Integrated Theory of Linguistic Ability*. Thomas Crowell.
- Borsley, Robert D. (2005). Against ConjP. *Lingua* 115.4, 461-482.
- Bowers, John. (1993). The syntax of predication. *Linguistic Inquiry* 24, 591-656.
- Bowers, John. (2001). Predication. M. Baltin & C. Collins eds., *The Handbook of Contemporary Syntactic Theory*. Blackwell.
- Carlson, Greg. (1987). Same and different: some consequences for syntax and semantics. *Linguistic and Philosophy* 10, 531-565.
- Carlson, Katy. (2002). *Parallelism and Prosody in the Processing of Ellipsis Sentences*. Routledge.
- Carston, Robyn. (1993). Conjunction, explanation and relevance, *Lingua* 90, 27-48.
- Chomsky, N. (1977). On wh-movement. In *Formal Syntax*, Peter Culicover, Thomas Wasow and Adrian Akmajian, eds., 71-132. Academic Press.
- Cormack, Annabel and Neil Smith. (2001). What is coordination? Ms. University College London.
- Culicover, Peter W. and Ray. Jackendoff. (1997). Semantic subordination despite syntactic coordination. *Linguistic Inquiry* 28, 195-217.
- Dalrymple, Mary and Irina Nikolaeva. (2006). Syntax of natural and accidental coordination: Evidence from agreement. *Language* 82, 824-849.
- De Vos, Mark Andrew. (2005). *The Syntax of Verbal Pseudo-coordination in English and Afrikaans*. Ph.D. dissertation. Leiden University.
- Dik, Simon. C. (1968). *Coordination: Its Implications for the Theory of General Linguistics*. North-Holland publishing company.
- Frazier, Lyn, Alan Munn and Charles Clifton. (2000). Processing Coordinate Structures, *Journal of Psycholinguistic Research* 29, 343-370.

- Frazier, Lyn and Charles Clifton. (2001). Parsing coordinates and ellipsis: copy  $\alpha$ . *Syntax* 4, 1-22.
- Goldsmith, John. (1985). A Principled Exception to the Coordinate Structure Constraint. *CLS*, 133-143.
- Goodall, Grant. (1987). *Parallel Structures in Syntax: Coordination, Causatives and Restructuring*, Cambridge University Press.
- Grice, Paul. (1967). Logic and conversation: the William James Lectures, in: H.P. Grice (1989), *Studies in the Way of Words*, Harvard University Press, 22-40.
- Grosu, Alexander. (1973). On the nonunitary nature of the coordinate structure constraint. *Linguistic Inquiry* IV, 88-92.
- Haspelmath, Martin. (2004). Coordinating constructions: An overview. In M. Haspelmath, ed., *Coordinating Constructions*, 3-39. John Benjamins.
- Haspelmath, Martin. (2006). Coordination. In T. Shopen, ed., *Language Typology and Linguistic Description*, 2<sup>nd</sup> edition., Cambridge University Press, to appear.
- Heycock, Caroline and Anthony Kroch. (1994). Verb movement and coordination in a dynamic theory of licensing. *The Linguistic Review* 11, 257-283.
- Hoeksema, J. (1983). Plurality and conjunction, in A. ter Meulen, ed., *Studies in Modeltheoretic Semantics*. Foris.
- Höhle, Tilman. (1990). Assumptions about asymmetric coordination in German. In Joan Mascaró and Marina Nespór, eds., *Grammar in Progress: a Festschrift for Henk van Riemsdijk*, 221-235. Foris.
- Hornstein, Norbert and David Lightfoot. (1987). Predication and PRO. *Language* 63, 23-52.
- Hornstein, Norbert and Jairo Nunes. (2002). On Asymmetries Between Parasitic Gap and Across-the-Board Constructions. *Syntax* 5, 26-54.
- Huang, Cheng-teh James. (1988a). Hanyu zhengfanwenju de mozuyifa [Chinese A-not-A questions: a modular approach], *Zhongguo Yuwen* 205, 247-264.
- Huang, Cheng-teh James. (1988b). Shuo shi he you 'On *Be* and *Have* in Chinese,' *The Bulletin of the Institute of History and Philology* 59, 43-64.
- Huang, Cheng-teh James. (1993). Reconstruction and the structure of VP: some theoretical consequences. *Linguistic Inquiry* 24, 103-138.
- Jespersen, Otto. (1924). *Philosophy of Grammar*. Norton (1965).
- Johannessen, Janne Bondi. (1998). *Coordination*. Oxford University Press.
- Kayne, Richard. (1994). *The Antisymmetry of Syntax*. The MIT Press.
- Kehler, Andrew. (2002). *Coherence, Reference, and the Theory of Grammar*. CSLI Publications.
- Krifka, Manfred. (1990). Boolean and Non-Boolean 'and', in *Papers from the Second Symposium on Logic and Language*, 161-188. Akademiai Kiado.
- Lakoff, George. (1986). Frame semantic control of the coordinate structure constraint. Anne M. Farley et al., eds., *Chicago Linguistic Society 22, Part2: Papers from the Parasession on Pragmatics and Grammatical Theory*, 152-167. CLS.
- Lakoff, George and Stanley Peters. (1966). Phrasal Conjunction and Symmetric Predi-

- cates. *Mathematical Linguistics and Automatic Translation*, Harvard Computation Laboratory, Report No. NSF-17, VI, 1-49 (reprinted in 1969).
- Lang, Ewald. (1984). *The Semantics of Coordination*. John Benjamins.
- Levine, Robert D. (2001). The extraction riddle: just what are we missing? *Journal of Linguistics* 37, 145-174.
- Li, Ya-fei. (1990). On V-V compounds in Chinese. *Natural Language and Linguistics Theory* 8, 177-207.
- Lin, Chien-Jer Charles. (2007). Processing (In)alienable Possessions at the Syntax-Semantics Interface. Paper presented at the conference On Linguistic Interfaces, University of Ulster, Northern Ireland, June 1-3, 2007.
- Lin, Jo-Wang. (1992). The Syntax of *Zenmeyang* 'how' and *Weishenme* 'why' in Mandarin Chinese, *Journal of East Asian Linguistics* 1, 293-331.
- Lin, Jo-Wang and Chih-Chen Jane Tang. (1996). Modals as verbs in Chinese: A GB perspective. *The Bulletin of the Institute of History and Philology* 66, part I, Academic Sinica.
- Link, Godehard. (1983). The logical Analysis of Plurals and Mass Terms: a Lattice-Theoretical Approach, in R. Bäuerler, Chr. Schwarze, A. von Stechow, eds., *Meaning, Use and Interpretation of Language*, 303-323. De Gruyter.
- Liu, Jian and A. Peyraube. (1994). History of some coordinative conjunctions in Chinese. *Journal of Chinese Linguistics* 22.2, 179-201.
- Lü, Shuxiang. (1942). *Zhongguo Wenfa Yaolue* [An Outline of Chinese Grammar]. Shangwu Press.
- Lü, Shuxiang. (1979). *Hanyu yufa fenxi wenti* [Issues in analysis of Chinese grammar], Shangwu Press.
- Lü, Shuxiang et al. (1999). *Xiandai Hanyu Babai Ci* [800 Words in Chinese]. Shangwu Press (1<sup>st</sup> edition, 1980).
- Luka, B. and L. Barsalou. (2005). Structural facilitation: mere exposure effects for grammatical acceptability as evidence for syntactic priming in comprehension. *Journal of Memory and Language* 52, 436-459.
- Massey, Gerald J. (1976). Tom, Dick, and Harry, and all the king's men, *American Philosophical Quarterly* 13, 89-107.
- May, Robert. (1985). *Logical Form: Its structure and derivation*. MIT Press.
- McCawley, James. (1968). The role of semantics in grammar, in Emmon Bach and Robert Harms, eds., *Universals in Linguistic Theory*, 124-169. Holt, Rinehart and Winston.
- Mithun, Marianne. (1988). The grammaticalization of coordination. In *Clause Combining in Grammar and Discourse*. Haiman, J. & Thompson, S. A. eds., 331-359. J. Benjamins.
- Munn, Alan. (1987). Coordinate structure and X-bar theory, *McGill Working Papers in Linguistics* 4, McGill University.
- Munn, Alan. (1992). A null operator analysis of ATB gaps. *The Linguistic Review* 9, 1-26.
- Payne, John. (1985). Complex Phrases and Complex Sentences. In Timothy Shopen,

- ed., *Language Typology and Syntactic Description*, 3-41. Cambridge University.
- Pesetsky, David. (1982). *Paths and Categories*, Ph.D. dissertation, MIT.
- Pollard, Carl and Ivan Sag. (1994). *Head-Driven Phrase Structure Grammar*. University of Chicago Press.
- Postal, Paul Martin. (1998). *Three Investigations of Extraction*. MIT Press.
- Ross, John Robert. (1967). *Constraints on Variables in Syntax*. Ph.D. dissertation, MIT, Cambridge, Mass.
- Ruys, Eddy. (1992). *The Scope of Indefinites*. OTS dissertation series.
- Sag, Ivan. (1982). Coordination, extraction, and generalized phrase structure grammar, *Linguistic Inquiry* 13, 329-336.
- Sag, Ivan, Gerald Gazdar, Thomas Wasow, and Steven Weisler. (1985). Coordination and how to distinguish categories. *Natural Language and Linguistic Theory* 3, 117-171.
- Schachter, Paul. (1977). Constraints on coordination. *Language* 53, 86-103.
- Schütze, C. and E. Gibson. (1999). Argumenthood and English prepositional phrase attachment. *Journal of Memory and Language* 40, 409-431.
- Schwarzschild, Roger. (1999). Review of: Winter (1998) *Flexible Boolean Semantics: Coordination, Plurality and Scope in Natural Language*.
- Schwarzschild, Roger. (2002). *The grammar of measurement*, Ms., Rutgers University.
- Seiler, Hansjakob. (1974). The principle of concomitance: instrumental, comitative, and collective. *Foundations of Language* 12.2, Nov, 215-247.
- Shaer, Benjamin. (2003). 'Manner adverbs' and the association theory: Some problems and solutions. In Ewald Lang, Claudia Maienborn and Cathrin Fabricius-Hansen, eds., *Modifying Adjuncts*, 211-259. Mouton de Gruyter.
- Speer, S. R. and C. J. Clifton. (1998). Plausibility and argument structure in sentence comprehension. *Memory and Cognition* 26, 965-978.
- Stolz, Thomas. (2001). To be with X is to have X: comitatives, instrumentals, locatives, and predicative possession. *Linguistics* 39, 2(372), 321-350.
- Teng, Shou-hsin. (1970). Comitative versus phrasal conjunction. *Papers in Linguistics* 2.2, 314-358.
- Tsai, Wei-Tien Dylan. (1994). On nominal islands and LF extraction in Chinese. *Natural Language and Linguistic Theory* 12, 121-175.
- Vergnaud, R. (1974). *French Relative Clauses*. Doctoral Dissertation, MIT.
- Wälchi, Bernhard. (2005). *Co-compounds and natural coordination*. Oxford University Press.
- Wilder, Chris. (1999). *The syntax of coordination*. Handout of Linguistic Summer School, Potsdam University.
- Williams, Edwin S. (1978). Across-The-Board rule application, *Linguistic Inquiry* 9, 31-43.
- Williams, Edwin S. (1980). Predication. *Linguistic Inquiry* 11, 203-238.
- Winter, Yoad. (2001). *Flexibility Principles in Boolean Semantics: The interpretation of coordination, plurality, and scope in natural language*. MIT Press.

- Yoon, James Hye-Suk. (1997). Coordination (A)symmetries. In *Harvard Studies in Korean Linguistics VII*, Susumu Kuno, et. al. eds., 3-32. Hanshin Publishing Company.
- Yoon, James Hye-Suk & Wooseung Lee. (2005). Conjunction reduction and its consequences for noun phrase morphosyntax in Korean. *Proceedings of the West Coast Conference on Formal Linguistics-24*, 379-387, John Alderete et. al. eds., Cascadilla Proceedings Project.
- Zhang, Niina Ning. (2004). Category Feature Movement From Specs to Heads. Paper presented at The Second International TEAL Workshop, National Tsing Hua University, Hsinchu, June 12-13, 2004.
- Zhang, Niina Ning. (2006). On the configuration issue of coordination. *Language and Linguistics* 7.1, 175-223.
- Zhang, Niina Ning. (2007). The Syntax of English Comitative Constructions. *Folia Linguistica* 41.1-2, 135-169.
- Zhang, Yisheng. (1996). Jiaohulei duanyu yu lian-jie jianlei ci de fenhua [Phrases with 'mutual' meaning and the division between conjunctions and prepositions] *Zhongguo Yuwen* 1996-5, 330-338.
- Zhou, Gang. (2002). *Lianci yu xiangguan wenti* [coordinators and the relevant issues] Anhui Jiaoyu Press.
- Zhu, Dexi. (1982). *Yufa Jiangyi* [Lectures on grammar], Shangwu Press.
- Zoerner, Cyril Edward, III. (1995). *Coordination: The Syntax of andP*. Doctoral Dissertation, University of California, Irvine.

Niina Ning Zhang  
Institute of Linguistics  
National Chung Cheng University  
168 University Road, Min-Hsiung  
Chia-Yi, 62102  
Taiwan  
Email address: Lngnz@ccu.edu.tw

Received: January 4, 2008

Revised version received: May 27, 2008

Accepted: June 5, 2008