

On the Configuration Issue of Coordination^{*}

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This paper analyzes the structure of coordinate complexes. New cross-linguistic arguments are presented in this paper to support four claims. First, coordinate complexes have a binary-branching structure, and thus one conjunct is structurally closer to the coordinator than the other conjunct. This constituency is not captured by traditional flat multiple branching representations. Second, the head of the structure is realized by a coordinator, and the conjunct that is structurally closer to the coordinator is the complement of the head, and the other conjunct is always Spec of the head. This is different from either any right-adjunction analysis or heterogeneous structure analysis of coordination. Third, the semantic relation between conjuncts does not need to be symmetrical. Fourth, conjuncts, which are non-projecting elements in coordinate complexes, can be of any constituency level (word-fragment, word, phrase).

Key words: coordinate complex, coordinator, complementation structure, asymmetrical coordination

1. Introduction

A coordinate complex is a syntactic constituent consisting of two or more units (called conjuncts), and its category is identical to that of at least one of the conjuncts. Generally speaking, there is a particle or affix that serves to link the conjuncts. Such a particle or affix is called a coordinator. How two (or more) conjuncts and a coordinator are organized in a coordinate complex has been an open question: Do they form a flat multiple branching structure or any type of basic binary-branching structure? Finding answers to this question is the goal of this paper.

In this paper, I examine the structure of coordinate complexes that are composed of two conjuncts. This is the basic type of coordinate complex. I shall not discuss

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coordinate complexes that are composed of more conjuncts. Nor do I study the category issue of coordinate complexes.¹

The claims made by this paper have all been seen in the literature, but have not been accepted by many. This is why it is still necessary to argue for them as follows:

(1) Coordinate complexes have a binary-branching structure, and thus one conjunct is structurally closer to the coordinator than the other conjunct. This constituency is not captured by traditional flat multiple branching representations.

(2) The head of the structure is realized by a coordinator, and the conjunct that is structurally closer to the coordinator is the complement of the head, and the other conjunct is Spec of the head.

(3) The semantic relation between conjuncts does not need to be symmetrical.

(4) Conjuncts, which are non-projecting elements in coordinate complexes, can be of any constituency level (word-fragment, word, phrase).

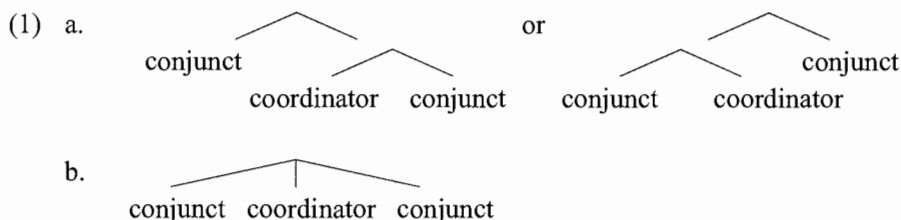
The layout of this paper is as follows. In §2, I shall argue for the binary-branching structure of coordinate complexes. In §3, I argue for the complementation configuration of coordinate complexes. Then in §4, I address the issue of the mapping between two contrasts with respect to coordination: the semantic contrast between modification and non-modification, and the syntactic contrast between adjunction and non-adjunction. Finally, in §5, I discuss the issue of so-called bar-level sharing, in order to defend the conclusion reached in §3. Section 6 is a brief summary.

2. The constituency of coordinate complexes: internal vs. external conjuncts

The goal of this section is to advocate a binary-branching structure of coordinate complexes, making a syntactic distinction between internal and external conjuncts.

The claim that coordinate complexes are binary has been proposed in De Groot (1949:66, 112-3), Nida (1949:42 fn.25), Thiersch (1985), and Munn (1987). It is in contrast to the assumption that such complexes have a flat structure in which conjuncts are on the same level, while the coordinator holds them together without being more closely connected with any one of them. The two assumptions are represented in (1a) and (1b), respectively.

¹ For an extensive discussion of the configuration issue of coordinate complexes containing three conjuncts and the category issue of coordinate complexes in general (whether the category &P is well-argued, for instance), see Zhang (2004).



The structure in (1b) has been assumed in many works, including Blümel (1914: 193, 205), Bloomfield (1933:185), Bach (1964:67-8), Chomsky (1965:12-3, 196 fn.7), Dik (1968), Dougherty (1969), Gazdar et al. (1985:170), Goodall (1987), and Muadz (1991). It is still quite popular in the current literature of coordination (Winter 2001:63, Johnson 2002, Phillips 2003, Takano 2004, Peterson 2004). The cross-linguistic facts to be presented in this section do not support this assumption. Theoretically, the binary structure in (1a) is also superior to the multiple-branching structure in (1b) under economy considerations (Collins 1997:77).

I shall first present evidence for the binary-branching structure (§2.1), and then answer Dik's (1968) challenges against the binary-branching analysis (§2.2).

2.1 Coordinate complexes have a binary-branching structure

As stated in Schachter (1985:46), "the conjunctions are more closely associated structurally with one of the conjuncts than with the other." Various arguments for the binary-branching structure of coordinate complexes have been seen in the literature. Among them, I choose three representative ones: the asymmetry between conjuncts in binding, the restricted distributions of less deletable coordinators, and the restricted scope of coordinator floating. These arguments show the structural closeness of coordinators to one of conjuncts, and thus indicate that coordinators form a constituent with one of the conjuncts. The suggested structure is (1a), rather than the flat structure (1b).²

² Among other arguments for the binary-structure of coordinate complexes is Ross's (1967:90-91) observation that a coordinator forms a phonological unit with the preceding conjunct in Japanese whereas with the following conjunct in English. See also Schachter (1985:47) and McCawley (1988:523).

(i) The son graduated // and the daughter got married.

(ii) musuko-ga sotugyoo sita-si // musume-ga yome-ni itta]
son-NOM graduation did-and daughter-NOM bride-DAT went
'The son graduated and the daughter got married.'

Argument I: The asymmetry between conjuncts in binding

A well-cited argument is Blümel's (1914:164) observation of a binding asymmetry in coordination. The first conjunct as a whole can be the antecedent of a pronoun in the second conjunct, but the second conjunct as a whole has no way to be the antecedent of a pronoun in the first conjunct. The English data of the following appear in Dik (1968: 36, 57) and Moltmann (1992:28, 45, 50). For instance, in the coordinate complex *Every man and his dog* in (2a), the first conjunct *Every man* can be the antecedent of the pronoun *his* in the second conjunct; however, in the coordinate complex *his dog and everyman* in (2b), the second conjunct *everyman* cannot be the antecedent of the pronoun *his* in the first conjunct.

- (2) a. Every man and his dog left.
b. *His_i dog and every man_i left.
- (3) a. every man and two of his children
b. *two of his_i children and every man_i
- (4) a. everyman and a picture of himself
b. *a picture of himself_i and every man_i
- (5) a. Mei ge haizi he ta de fuqin dou dai zai jia-li. (Chinese)
every CL child and 3SG MOD father all stay at home-in
'Every child and {his/her} father stay at home.'
b. *Ta_i de fuqin he mei ge haizi_i dou dai zai jia-li.
3SG MOD father and every CL child all stay at home-in

Likewise, in each of the following examples, the second conjunct contains a pronoun that is co-referential with the first conjunct.

- (6) a. [That Himmler appointed Heydrich] and [the implications thereof]
frightened many observers. (Bayer 1996:580)
b. Pat is [a Republican] and [proud of it]. (Sag et al. 1985)

In (6a), the word *there* is combined with the preposition *of*. In this usage, *there* means 'that'. It is co-referential with the first conjunct *that Himmler appointed Heydrich*. In (6b) the pronoun *it* pronominalizes the whole first conjunct *a Republican*, which is a predicate nominal here (see Dechaine & Wiltschko 2002:410 for a discussion of NP pronouns, in addition to the more familiar DP pronouns).

Were we to reverse the order of the two conjuncts in the above data, the resultant forms would not allow the binding relation. The two conjuncts are thus asymmetrical in

binding. This asymmetry suggests that the first conjunct is structurally higher than the second. Accordingly, the structure of coordinate complexes cannot be a flat multiple-branching one.³

Argument II: The restricted distributions of less deletable coordinators

Zoerner (1995:23) uses the restricted distributions of less deletable coordinators to argue against the flat structure of coordinate complexes in which all conjuncts and coordinators are sisters. He concludes that coordinate complexes have a binary-branching structure. In this subsection, I introduce cross-linguistic data to support his claim.

In languages such as Kannada (Sridhar 1990:106) and Malayalam (Anandan 1993: 143, Jayaseelan 2001:64), every conjunct must have a coordinator suffix. Similarly, Chinese repetitive coordinator *yehao* 'and' must follow each conjunct (Lü et al. 1980[1999]: 598). In many other languages, and in many other cases in Chinese, however, only one coordinator is required in a coordinate complex. In the latter situation, the positions of coordinators are not free or random, either. The restricted distributions of coordinators in this situation can tell us the structure of coordinate complexes.

Dik (1968:41, 58) claims that "if only one coordinator is present, its place is determined, generally, by the last member of the series," and "an almost universal rule puts the coordinator before or after the last member of the series." I use French and Chinese data to show the correctness of his generalization with respect to the coordinators under discussion. In French, only non-final coordinators are deletable. If any non-final coordinator remains and the final one is deleted, the coordinate complex is not acceptable. In (7a), in the presence of *et* that immediately precedes the second conjunct, the *et* that immediately precedes the first conjunct is optional. In (7b), however, the single occurrence of *et* to the left of the first conjunct makes the sentence unacceptable. The same contrast is seen in (8).

- (7) a. Joan connait (et) Paul et Michel. (French)
 Joan knows and Paul and Michel
 'Joan knows Paul and Michel.'

³ Another type of binding asymmetry between two conjuncts might be found between an element in one conjunct and an element in another conjunct. For instance, the nominal *one bottle of wine* in one conjunct and *it* in the other conjunct in the following data.

- (i) John bought just [one bottle of wine]_i and served it_i with the dessert.
 (ii) *John bought (just) it_i and served [one bottle of wine]_j with the dessert.

For relevant discussions, see Mittwoch (1979), Munn (1993), Collins (1988), Wilder (1994, 1999: §4.4 and §3.4), Heim & Kratzer (1998:280-297), Progovax (1998), Camacho (2003:16).

- b. *Joan connait et Paul Michel.
Joan knows and Paul Michel
- (8) a. Je veux coucher (ou) avec Marie ou avec Jeanette.
I want sleep or with Mary or with Jeanette
'I want to sleep with either Mary or with Jeanette.'
- b. *Je veux coucher ou avec Marie avec Jeanette.
I want sleep or with Mary with Jeanette

The same deletability pattern is seen in Chinese. In this language, some coordinators can occur in pairs. For such coordinators, it is always the initial one that is deletable. In (9), for instance, the occurrence of *you* 'and' to the left of the first conjunct is parasitic on the occurrence of *you* to the left of the second conjunct (see Lü 1942, §2.23 for the claim that *you...you* is a pair of conjunctions rather than adverbs). The same is true of the disjunction *huozhe* 'or', as shown in (10).

- (9) a. Na ge nühair (you) meili you dafang. (Chinese)
that CL girl and pretty and poised
'That girl is both pretty and poised.'
- b. *Na ge nühair you meili dafang.
that CL girl and pretty poised
- (10) a. Baoyu (huozhe) yijing jie-le hun, huozhe yijing
Baoyu or already connect-PRF marriage or already
ding-le hun.
order-PRF marriage
'Baoyu is either married or engaged.'
- b. *Baoyu huozhe yijing jie-le hun, yijing ding-le hun.
Baoyu or already connect-PRF marriage already order-PRF marriage

The deletability contrast indicates that in French and Chinese, the undeletable coordinators consistently precede the second conjunct, and the deletable ones precede the initial conjunct.^{4 5}

⁴ The opposite situation occurs to the Japanese coordinator *-to*. It is deletable only when it follows the final conjunct. In the coordinate subject in (ia), for instance, only the second coordinator *-to* is optional.

(i) a. Taro-to Akiko-(to)-wa nara-e ikimashita. (Hinds 1986:94)
Taro-and Akiko-and-TOP Nara-to went
'Taro and Akiko went to Nara.'

The relative deletability contrast presented here shows the fixed positions of the real coordinators with respect to conjuncts. The fixed positions again suggest that the position of a coordinator is not equidistant to the two conjuncts. Alternatively speaking, the two conjuncts of a coordinate complex are not syntactically equal: One of them is closer to the coordinator and is thus grouped with it. The constituency of French *et* and *ou* coordinate complexes and Chinese *you* and *huozhe* coordinate complexes is thus [conjunct [& conjunct]] (I use the ampersand “&” to represent a coordinator). It is possible that the constituency of Japanese *to* coordinate complexes is [[conjunct &] conjunct] (see my footnote on page 176). Both structures are binary branching, rather than flat or multiple-branching.

The fixed positions of coordinators indicate that the relative positions of coordinators with respect to conjuncts are structurally decided, rather than phonologically decided (contra Goodall 1987).

Argument III: The restricted scope of coordinator floating

In this subsection, I report that in Mandarin Chinese and Hungarian certain coordinators can occur either between two conjuncts or inside the second conjunct, but they never occur to the left of or inside the first conjunct. This constraint shows that the coordinators interact with the second conjunct only, and they never interact with the first conjunct. This fact shows that coordinators are syntactically closer to the second conjunct than to the first conjunct. The asymmetry rejects any flat or multiple-branching structure of coordinate complexes.⁶

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- b. Eigo-to Nihongo-(to) dotchi-ga il? (Hinds 1986:97)
 English-and Japanese-and which-NOM good
 ‘Which is better (for you), English or Japanese?’

One might associate the contrast between the above French-Chinese pattern and the Japanese pattern to the contrast between the verb-initial and verb-final order of the two types of languages, respectively. However, firstly, German embedded clauses are also verb-final, but the undeletable coordinator *und* is grouped with the last conjunct rather than with the first. Secondly, unlike *-to*, the Japanese coordinator *sosite* ‘and’ is grouped with the last conjunct rather than with the first. I claim that the structure of coordinate complexes is not related to the verb positions of the relevant languages. Instead, it is related to the lexical-syntactic properties of the concrete coordinators.

⁵ The syntactic status of the deletable coordinators that are parasitic on the presence of other coordinators is studied in Zhang (2004). New arguments are provided there to support Hendriks’ (2002) claim that such elements are focus particles parasitic on coordinators.

⁶ Ross (1967) uses German data like the following to show that the coordinator *aber* ‘but’ can float, and it does so into the second conjunct, but never into the first:

In Chinese, the disjunction *ke(shi)* ‘but’ and the conjunction *yushi* ‘and thus’ conjoin clauses. They either precede the second conjunct or immediately follow the subject (or topic) of the second conjunct (Lü et al. 1980[1999], Shi 1986, Hou 1998:368). This is shown in the following examples. In (11), the subject of the second conjunct is the first person singular pronoun *wo* ‘I’. In (11a), *ke(shi)* precedes the second conjunct, i.e., to the left of *wo*. In (11b), it follows *wo*. (11c) and (11d) show that *ke(shi)* cannot occur in the first conjunct, regardless of its position relative to the subject there.

- (11) a. Baoyu yao tiaowu, **ke(shi)** wo yao hui-jia.
 Baoyu want dance but I want return-home
 ‘Baoyu wants to dance, but I want to go home.’
 b. Baoyu yao tiaowu, wo **ke(shi)** yao hui-jia.
 Baoyu want dance I but want return-home
 ‘Baoyu wants to dance, but I want to go home.’

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- (i) a. Sie will tanzen, aber ich will nach Hause gehen.
 she wants dance but I want toward home go
 ‘She wants to dance, but I want to go home.’
 b. Sie will tanzen, ich will aber nach Hause gehen.
 c. *Sie will aber tanzen, ich will nach Hause gehen.

However, *aber* can co-occur with the coordinator *und* ‘and,’ as shown in (ii):

- (ii) Sie will tanzen, (und) ich will aber nach Hause gehen.

This co-occurrence possibility shows that the distribution of *aber* is very much like an adverb. It is thus not clear whether it is a real coordinator or a conjunctive adverb. Similarly, the English word *however* sometimes functions like a coordinator, but it can co-occur with the coordinator *and* (Caroline Heycock, p.c.). Crucially, *however* cannot occur to the left of a conjunct if the whole coordinate clausal complex is in an island, as shown in (iii), where the subject is a definite complex DP.

- (iii) *[The news that John was criticized by his boss, however he was mistaken] was surprising to me.

The conjunct-initial *however* behaves like the adverbs *indeed* and *frankly* (Green 1976), typically having to do with speaker attitude. The island effects of speaker-oriented adverbs are also observed in Chinese (Sung 2000). Coordinators do not show such island effects. For instance, *but* and *and* can occur in any islands.

All of these make me more careful in using Ross’s data. However, his claim can be supported by Chinese and Hungarian data, as shown in the text.

I am grateful to Werner Frey, Benjamin Shaer, Caroline Heycock, and Hans-Martin Gärtner for answering my inquiries and letting me know these German and English facts.

Note that Latin coordinator clitic *-que* also occurs inside a conjunct. Unlike the Chinese and Hungarian examples introduced here, the clitic can be the result of Prosodic Inversion. See Zhang (2004: §3.4.1) for a discussion of the issue.

- c. *Baoyu **ke(shi)** yao tiaowu, wo yao hui-jia.
 Baoyu but want dance I want return-home
- d. ***ke(shi)** Baoyu yao tiaowu, wo yao hui-jia.
 but Baoyu want dance I want return-home

Not all coordinators in Chinese can float. The coordinator *ke(shi)* has a synonym, *danshi* ‘but’, which is not a floating coordinator. In other words, *danshi* occurs only to the immediate left of the second conjunct. It cannot occur inside the second conjunct (Song 1990:7). Thus if we replace *ke(shi)* with *danshi* in (11), only (11a) will be acceptable.

One might claim that *ke(shi)* is an adverb rather than a coordinator. I now present the following two facts to show that *ke(shi)* is not an adverb.

First of all, according to Sledd (1959:203), “coordinators and ‘conjunctive adverbs’ may occur together.” In contrast, no single conjunct may be in construal with two coordinators, although it is possible that each conjunct is in construal with a coordinator or coordinator-like element (see the data in Argument II above). The example in (12a) shows that *ke(shi)* and the adverb *que* ‘however’ (Song 1990) can co-occur. The example in (12b) shows that neither *danshi* nor any other coordinator can precede the conjunct in which *ke(shi)* occurs:

- (12) a. Akiu mingtian qu Shanghai, **keshi** Daiyu **que** xia-xingqi cai qu.
 Akiu tomorrow go Shanghai but Daiyu however next-week only go
 ‘Akiu will go to Shanghai tomorrow, but Daiyu will go there next week.’
- b. *Baoyu yao tiaowu, {**danshi/erqie**} wo **keshi** yao hui-jia.
 Baoyu want dance but/and I but want return-home

The co-occurrence possibility in (12a) and the restriction in (12b) indicate that *ke(shi)* cannot be an adverb.

Second, *keshi* can occur to the left of subjects, as shown in the contrast in (13), whereas *que*, like other adverbs, cannot occur to the left of any subject (Song 1990:7):

- (13) Akiu mingtian qu Shanghai, {**keshi**/***que**} wo xia-xingqi cai qu.
 Akiu tomorrow go Shanghai but/however I next-week only go
 ‘Akiu will go to Shanghai tomorrow, but I shall go there next week.’

The contrast in (13) shows that the distributions of coordinators and adverbs are different.

These two facts indicate that while *que* is an adverb, *ke(shi)* is a floating

coordinator.

It needs to be mentioned that the clause-internal *ke(shi)* can also occur with a pro subject, as shown in (14).

- (14) a. Gangcai wo you ge wenti yao wen ni,
just.now I have CL question want ask you
keshi zhehuir xiang-buqilai le.
but now recall-not PRT
'I had a question to ask you just now, but I cannot recall it now.'
- b. Gangcai wo you ge wenti yao wen ni,
just.now I have CL question want ask you
zhehuir **keshi** xiang-buqilai le.
now but recall-not PRT
'I had a question to ask you just now, but I cannot recall it now.' (= a)

If the coordinator *ke(shi)* floats in the second conjunct only, we can conclude that the coordinator has a closer relation to the second conjunct than to the first.

The same restriction on floating scope is seen in another coordinator *yushi* 'and thus.' This coordinator is used if the eventuality expressed by the second conjunct is a consequence of the eventuality expressed by the first conjunct. It can be regarded as the Chinese counterpart of *and* in the following English sentences (or the Malagasy conjunction *dia* 'and then'. See Rajemisa-Raolison 1966:147):

- (15) a. The child heard the news and broke down in tears.
b. John drank the poison and died.

In (15a), for instance, the event denoted by the second conjunct *broke down in tears* is a consequence of the event denoted by the first conjunct *heard the news*.

The distributions of *yushi* are similar to that of *keshi*. It either precedes the second conjunct, as in the (16a) and (17a) below, or follows the subject of the second conjunct, as in the (16b) and (17b) below. Moreover, no other coordinator can precede the conjunct in which *yushi* occurs. Importantly, *yushi* never precedes any element of the first conjunct, as shown by (16c) and (17c) below.

- (16) a. Baoyu yi guli, **yushi** Daiyu huifu-le xinxin.
Baoyu once encourage and Daiyu recover-PRF confidence
'Baoyu encouraged her, and thus Daiyu recovered her confidence.'

- b. Baoyu yi guli, Daiyu **yushi** huifu-le xinxin.
Baoyu once encourage Daiyu and recover-PRF confidence
'Baoyu encouraged her, and thus Daiyu recovered her confidence.'
- c. (***yushi**) Baoyu (***yushi**) yi guli, Daiyu huifu-le xinxin.
and Baoyu and one encourage Daiyu recover-PRF confidence
- (17) a. Xia yu le, **yushi** Xiao Wang jue ding liu zai wuzi-li.
fall rain PRT and Xiao Wang decide stay at room-in
'It rained, and thus Xiao Wang decided to stay in the room.'
- b. Xia yu le, Xiao Wang **yushi** jue ding liu zai wuzi-li.
fall rain PRT Xiao Wang and decide stay at room-in
'It rained, and thus Xiao Wang decided to stay in the room.'
- c. (***Yushi**) xia yu le, Xiao Wang jue ding liu zai wuzi-li.
and fall rain PRT Xiao Wang decide stay at room-in

My analysis of the floating of the two coordinators introduced above will be presented in §3.2.

Parallel Hungarian data can be found in Bánréti (1994:356ff). In this language, coordinators are divided into three groups, according to their distributions. Coordinators such as *és* 'and' must occur between two conjuncts; coordinators such as *azonban* 'however', called right-shifted coordinators, occur either between two clausal conjuncts or within the second clausal conjunct (following the topic of the clause); and finally, coordinators such as *meg* 'and' must occur within the second conjunct, specifically, following the topic of the second conjunct. In (18a), for instance, the conjunction *meg* follows the subject of the second conjunct, *Péter*. In (18b), *meg* precedes the whole conjunct and the sentence is unacceptable (Bánréti 1994:357).

- (18) a. János a televíziót nézte, Péter meg a rádiót hallgatta.
John the TV-ACC watched Peter and the radio-ACC listened
'John watched the TV, and Peter listened to the radio.'
- b. *János a televíziót nézte, meg Péter a rádiót hallgatta.

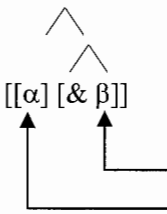
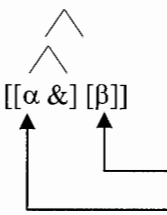
In this language, although there are coordinators such as *meg* that must occur within the second conjunct, there is no coordinator that may occur within the first conjunct. The asymmetry between the two conjuncts is obvious. (Conjunctions that must follow the topic of the second conjunct are also observed in Nupe. See Kandybowics 2005: §2).

The restricted floating scope of the coordinators suggests that in a coordinate complex, the two conjuncts do not have an equidistant relation with the coordinator. One of them is closer to the coordinator and is thus able to interact with it. The scope of

the interaction divides a coordinate complex into two parts: <i> the first conjunct; <ii> the combination of the coordinator and the second conjunct. The constituency of a coordinate complex in Mandarin Chinese is thus [[conjunct [& conjunct]]. This is the same pattern reached from the last argument.

Note that at this moment, I pay more attention to the constituency of sub-components of coordinate complexes than the surface positions of coordinators relative to the conjunct that it forms a constituent with. Specifically, I care about which conjunct and the coordinator belong to the same constituent. It is another issue where the coordinator surfaces with respect to this particular conjunct: It can be to the left (prepositive), or right (postpositive) of the conjunct, or align with a certain prosodic unit within the conjunct (e.g., Latin *-que*. See my footnote 6). Even in the same language, one coordinator can be prepositive and another one can be postpositive (Dik 1968:47, Haspelmath 2004:6).

The above three arguments show that coordinate complexes do not have a flat or multiple-branching structure. Instead, they show a binary-branching structure, where the coordinator and one conjunct form a constituent, excluding the other conjunct. I shall call a conjunct that forms a constituent with coordinators an *Internal Conjunct*, whereas one that does not an *External Conjunct*. I label (19a) as the right-branching type and (19b) as left-branching type. I shall concentrate my study on the pattern of (19a) only in this paper.

- (19) a.  (the right-branching type)
(e.g., English *and*-complexes)
- b.  (the left-branching type)
(e.g., the Japanese *to*-complexes)

2.2 Dik's (1968) challenges

Dik (1968:53-55) argues against the binary-branching structure of coordinate complexes, advocating a flat multiple branching structure where all conjuncts and coordinators are structurally on the same level. I have not seen anyone answer his challenges. I now do so in this subsection.

Dik claims that the binary view “gives the impression that the coordinator is in some way more closely involved with the second member than with the first, which in my opinion is incorrect.” What Dik refuses to accept is exactly the binary structure in (19a). My arguments in §2.1 clearly indicate that it is indeed the case that coordinators are more closely involved with one of the conjuncts, and thus Dik's opinion is not compatible with the reality.

I address his four challenges as follows.

<i> Assuming that there must be a parallelism between conjuncts, Dik claims that the parallelism “is spoiled” by the binary-branching analysis (p.53). However, we have seen in the arguments in §2.1 that conjuncts are intrinsically asymmetrical. Therefore, I do not accept Dik's assumption that there must be a parallelism between conjuncts. In addition to the binding asymmetry presented above, data like the following (20a), which also occur on his page 28, do not show a categorial parallelism, and data like (20b) (Lakoff 1986) do not show any movement chain parallelism.

- (20) a. John walked slowly and with great care. (Adv & PP)
 b. What kind of cancer can you eat herbs and not get?

In general, not all coordinate complexes show syntactic parallelism. Indeed, no binary-branching representation requires conjuncts to be parallel to each other. This “spoiling” in fact captures the reality.

Zhang (2004) shows that parallelism is a filter of syntactic complex representations in processing rather than a constraint on syntactic operations, and thus it has no effect on the structure-building of syntactic complexes. In other words, under certain conditions, parallelism may reject certain representations; however, no structure-building needs to follow a parallelism constraint. Data like (20) are well-formed exactly because they are derived without the enforcement of parallelism.

<ii> Dik claims that only the flat multiple branching structure is “able to connect the difference between coordination and subordination with different hierarchical descriptions” (p.54). The difference, according to my analysis, is between the complementation structure in the former and the adjunction structure in the latter. In §3, I shall

argue for the Spec-Complement relation between conjuncts and show how conjuncts are syntactically different from adjuncts.

<iii> Some early advocates of the binary-branching structure of coordination such as Van de Lubbe (1958:80) and Paardekooper (1966:194) make the claim that the closer connection between coordinators and second conjuncts is evident from the contrast that coordinators and first conjuncts can be separated by other constituents, whereas for coordinators and second conjuncts this is not possible. Dik presents the following data to show that their claim is wrong:

- (21) a. John will come today but, as he said to me yesterday, he will not be able to stay for the weekend.
b. I want you to know that he will come today and also that he will not be able to stay for the weekend.

Dik is right in pointing out the insertion possibility. However, the possibility only shows sub-constituency of the constituent formed by a coordinator and the second conjunct. It does not show that they cannot form a constituent that excludes the first conjunct. The insertion possibility does not rule out alternatives to his flat structure.

<iv> Dik's strongest argument, according to my judgment, is the following (p.54):

"If it were really true that the coordinator and the following member constitute a unit with greater freedom of combination, we would expect, e.g., that this unit could be shifted to the front of the whole construction, as is indeed possible with subordinating coordinators and certain adverbial modifiers, as we have seen above (§4.1.4.2.2). With coordinators, however, this is always excluded; a fact which is at least partly accounted for if the coordinator and the following member are not treated as a single constituent."

Dik's challenge is based on a contrast observed by Sledd (1959:101) and others. Sledd states:

"Subordinating coordinators typically incorporate whole clauses into larger sentence structures; the clauses so incorporated often have considerable freedom of position, standing initially or medially or finally. For example:

When the rain stopped, the Yankees and the Indians finished the second game of their double-header.

The Yankees and the Indians, when the rain stopped, finished the second game of their double-header.

The Yankees and the Indians finished the second game of their double-header, when the rain stopped.

A clause introduced by a coordinating coordinator cannot be shifted about in this way. We can say,

The rain stopped and they finished the second game

but we cannot say

and they finished the second game the rain stopped"

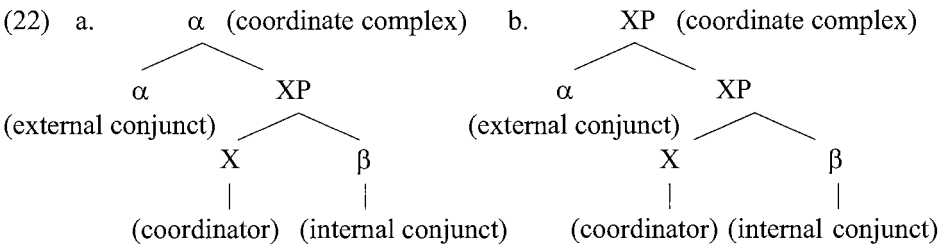
Dik uses the constraint that coordinators cannot be moved together with the second conjunct to argue that they do not form a constituent. He concludes that coordinate complexes must have a flat structure, as in (1b). Recently, Dik's argumentation and conclusion reappear in Bánréti (2003: §1). Unfortunately, advocates of the binary structure of coordinate complexes make no comment on Dik's challenge. I shall answer this challenge in §3.1. Briefly speaking, the immobility of the constituent comes from its categorial level: it is an intermediate projection rather than a maximal projection. This property itself distinguishes coordinate structure, which I shall argue to be a complementation structure, from adjunction structure.

I end this section with the following claims. Coordinate complexes have a binary-branching structure. A coordinator forms a constituent with one of the conjuncts only, the internal conjunct. The asymmetry between external and internal conjuncts has an important impact on the computations of coordinate complexes cross-linguistically. Thus any multi-daughter structure is problematic. Finally, all of Dik's challenges can be refuted.

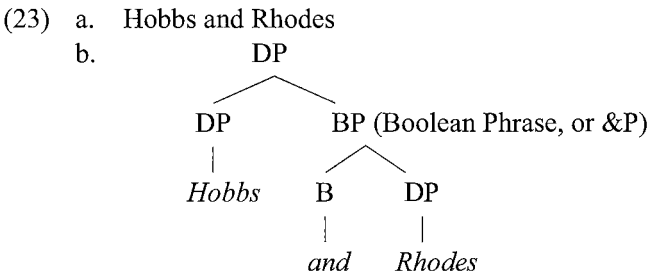
In this section, I have focussed attention on the constituency issue of coordinate complexes. I leave the issue of configuration to the next section, where I shall argue that external and internal conjuncts are in the Spec-Complement relation in all types of coordinate complexes, regardless of whether the coordinators show c-selection restrictions or not.

3. The syntactic relation between external and internal conjuncts

So far, I have not shown the syntactic status of the sister of the external conjunct in (19), [&β]. There are three possibilities. One is that [&β] here is an adjunct to the first conjunct α (Munn 1992, 1993), as shown in (22a).



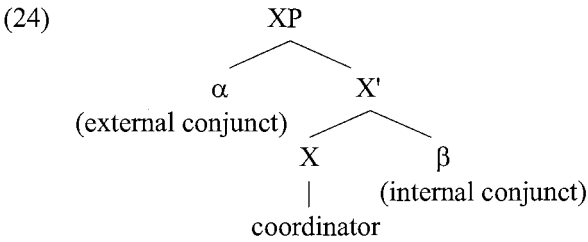
Munn (1992, 1993) proposes a structure of the type of (22a). His structure is shown in (23). In this structure, the projection headed by a coordinator is a right-adjunct to the first conjunct. Consequently, it is the first conjunct that is c-selected by the sister of the coordinate complex.



Munn’s proposal is adopted by Boskovic & Franks (2000, B&F) and Hartmann (2000). If coordination were adjunction, it would be identical to subordination in syntactic configurations. Munn (1993:63) seems to claim that the two have identical syntactic configurations and are different only semantically.

The second possibility is that an external conjunct is an adjunct to the constituent formed by the coordinator and the internal conjunct, as shown in (22b).

Both (22a)/(23b) and (22b) can be rejected if I can find evidence to show that the external conjunct and the internal conjunct are in the Spec-Complement relationship. This is the third possibility. In this section, I advocate this possibility. The complementation structure is shown in (24):



In (24), the external conjunct is in the Spec position, whereas the internal one is the complement of the coordinator.

This structure has been previously proposed by Munn (1987), Larson (1990), Johannessen (1998), and Zoerner (1995). One of Zoerner's arguments will be introduced in my §3.2-I later. Other arguments presented by these works are not directly related to the claim. For instance, although conjuncts can be asymmetric in their nominal and verbal inflections (e.g., agreement, case, and finiteness morphology; see Payne 1985:27), the inflection consideration is not directly related to the complementation structure. The argument of inflection manifestations of conjuncts has been shown to be problematic (see Sobin 2004:507), and is used by Peterson (2004:650f) to argue for a headless structure of coordinate complexes. I shall present the following more reliable arguments for the complementation structure:

No stranding of external conjuncts (§3.1)

The existence of interactions between coordinators and internal conjuncts (§3.2)

The possibility of extraction from either internal or external conjuncts (§3.3)

The absence of adjunction pattern in classifier resolution (§3.4)

3.1 No stranding of external conjuncts

My first argument for the complementation structure of coordinate complexes is the movement impossibility of the combination of a coordinator and the internal conjunct.

A coordinate complex can move, as seen in (25a), whereas the constituents that are composed of a coordinator and an internal conjunct cannot, as seen in (25b).

- (25) a. [Tall and slim]_i though Helen is t_i, ...
 b. *[And slim]_i though Helen is [tall t_i], ... (Postal 1998:191)

It is a puzzle why the sister of external conjunct cannot move. I list more examples below:

- (26) a. The boy laughed and the girl was silent. (Dik 1968:38)
 b. *And the girl was silent the boy laughed t.
 (27) a. John came and Paul left.
 b. *[And Paul left]_i [[John came] t_i]
 (28) a. Akiu yao tiaowu, [**keshi** wo yao hui-jia]. (Chinese)
 Akiu want dance but I want return-home
 'Akiu wanted to dance but I wanted to go home.'

- b. *[**Keshi** wo yao hui-jia]_i, Akiu yao tiaowu, t_i.
but I want return-home Akiu want dance
- (29) a. Aiyinsitan zhuiqiu zhenli, [**erqie** re'ai heping].
Einstein seek truth and love peace
'Einstein sought truth and loved peace.'
- b. *[**Erqie** re'ai heping]_i, Aiyinsitan zhuiqiu zhenli, t_i.
and love peace Einstein seek truth

The above coordination data are in contrast to the following adverbial data, in which the combination of the subordinator and its complement can be fronted:

- (30) a. The boy laughed because the girl was silent.
b. Because the girl was silent, he boy laughed.
- (31) a. Hephaestus had escaped, before the executioner arrived.
b. Before the executioner arrived, Hephaestus had escaped.
- (32) a. Hephaestus was asleep, when the executioner arrived.
b. When the executioner arrived, Hephaestus was asleep.
- (33) a. Hephaestus wept, after the executioner left.
b. After the executioner left, Hephaestus wept.

The contrast between (26a) and (26b) shows that the combination of the coordinator and the internal conjunct cannot move. The contrast in (27) through (29) shows the same point. The examples in (30) however tell us that the causal adjunct can move. The same is true of the temporal adverbial data in (31), (32), and (33). Moreover, McCawley's (1988a:267) following data show that cleft is possible for adverbials but not for the combination of the coordinator and the internal conjunct. If cleft has movement involved, the contrast in (34) is parallel to the contrast presented above.

- (34) a. It was before Jane arrived that Tom left. (McCawley 1988a:267)
b. *It was and Jane arrived that Tom left.

Recall that Dik (1986:54) uses the immobility of the combination of the coordinator and the internal conjunct to challenge the binary-branching analysis of coordinate complexes (my §2.2). Dik's challenge has not been answered in the literature. McCawley (1988a:267) states that "*and S* is not a constituent of a type that allows the mobility that time adverbs be such as *before S* have," but he does not give any explanation. The puzzle disappears when one realizes that the combination of a coordinator and its internal conjunct is an intermediate projection, which is composed of a head and its

complement, excluding the Spec, as seen in the structure in (24). As generally recognized in generative syntax (Chomsky 1994, also 1995:253), a movement chain is maximal, minimal, or neither. The illegal movement of an intermediate projection can be illustrated by the following examples. In (35a), there is an I' topicalization, stranding the subject, which is at Spec of IP. In (35b), similarly, there is a P' wh-movement, assuming *directly* is in Spec of PP. In (35c), there is a P' wh-movement, adopting the general assumption that *right* is at a Spec position if it precedes a spatial or temporal PP (see Emonds 1972, among others) (I thank Chris Wilder for writing (35a) and (35b) a few years ago to illustrate this point).

- (35) a. *[Will see John]_i, (she thinks that) [Peter t_i].
 b. *[Under which book] was it [directly t_i]?
 c. *[To which town] did you take the car [right t_i]?

If an intermediate projection is not able to move, the constituent composed of a coordinator and an internal conjunct can never move together, stranding the external conjunct. The immobility of such constituents makes the structure of coordinate complexes significantly different from that of adjunction constructions. As is well known, adjuncts introduced by words like *after*, *before*, *since*, etc., enjoy the freedom of A-bar movement. We have seen such examples in (30) and (34a). The mobility of the adjuncts indicates that they are maximal projections.

My above analysis might be challenged by Borsley's (1994) following derivation. He claims that (36a) is derived from (36b) by the raising of [*and he is an expert*]:

- (36) a. The professor, and he is an expert, thinks the recession will continue.
 b. The professor thinks the recession will continue [*and he is an expert*].

Although this looks like a problem to my analysis, two major doubts can be expressed about Borsley's putative derivation relation between (36a) and (36b). First, this movement cannot be an A-movement, and it lands to the right of the subject. We do not see any parallel movement in English. The syntactic status of this landing site in the language is not clear. Second, the proposed movement cannot land to the left-peripheral position, the default landing site for A-bar movement in English:

- (37) *[And {he/the professor} is an expert], {he/the professor} thinks the recession will continue.

I thus do not adopt this movement approach to data like (36a). As we know, the

distinction between a maximal projection and an intermediate projection is relative: When there is no Spec element, the constituent formed by a head and its complement can be viewed as a maximal projection. I thus claim that [*and he is an expert*] in (36a) does not have an external conjunct. It is a maximal projection, functioning as a parenthesis. Parentheses could be analyzed as adverbials, in the spirit of Potts (2002). Importantly here, the complex does not undergo any movement. In contrast, the string [*and he is an expert*] in (36b) does have an external conjunct, which is the clause *The professor thinks the recession will continue*.

I not only argue against any leftward movement of the sister of the external conjunct, but also against any rightward movement of such an element. Data like the following (38) have been cited to show that constituents that are composed of a coordinator and a conjunct can be extraposed in English, stranding the other conjunct, and thus such constituents have been claimed to be maximal projections (Collins 1988, Munn 1992:19, 1993:15, Zoerner 1995:10, 85, Progovac 1998, Cowper & Hall 2000:33):

- (38) a. John bought a book yesterday, and a newspaper.
 b. Tomorrow he will come, I think, or the day after.
 c. The bouncer was muscular, and a guitarist (too).

Such data are called Split Coordination in Höhle (1990:141 fn.). Similar examples can be found in German, as in (39), and in many other languages (see Johannessen 1998: §6.2.1).⁷

- (39) Hans hat gestern ein Buch gekauft, und eine Zeitung.
 Hans has yesterday a book bought and a newspaper
 'Hans bought a book yesterday, and a newspaper.'

The extraposition analysis is not convincing. Cross-linguistically, we have not seen any similar instance of extraposition in the languages that allow extraposition. For instance, Amele, a Papuan language from New Guinea, allows extraposition of adverbial clauses, but not of constituents that are composed of a coordinator and a conjunct. This is shown in (40) and (41) (Roberts 1988:55). (TOD.P = today's past tense)

- (40) a. [Ija ja hud-ig-en fi] uqa sab man-igi-an.
 1S fire open-1S-FUT if 3S food roast-3S-FUT
 'If I light the fire she will cook the food.'

⁷ I am grateful to André Meinunger for discussing the German example with me.

- b. Uqa sab man-igi-an [ija ja hud-ig-en fi].
 3S food roast-3S-FUT 1S fire open-1S-FUT if
 'She will cook the food if I light the fire.'
- (41) a. [Ija ja hud-ig-a qa] uqa sab man-i-a.
 1S fire open-1S-TOD.P but 3S food roast-3S-TOD.P
 'I lit the fire but she cooked the food.'
- b. *Uqa sab man-i-a [ija ja hud-ig-a qa].
 3S food roast-3S-TOD.P 1S fire open-1S-TOD.P but

In this language, the coordinator *qa* is attached to the end of the left-conjunct, which should be the internal conjunct, and thus the internal structure of the complex is left-branching. Roberts uses the above data to show that the combination of the *fi* 'if' and its complement can be extraposed, as seen in (40), whereas the constituent formed by the coordinator *qa* 'but' and the conjunct cannot, as seen in (41).

An alternative analysis of data like (38) is available. This is the Bare Argument Ellipsis (BAE) analysis (Hudson 1976, Neijt 1979, Moltmann 1992:22, 48, 228, Johnson 1996, Schwarz 1999:354-355). BAE leaves only one non-verbal element in the elided sentence. In this analysis, the second conjunct is regarded as a reduced sentence fragment (see Lang 1984:21 for a review of early studies using this approach). Thus (38a) can be analyzed as follows:

- (42) John bought a book yesterday, and ~~he also bought~~ a newspaper ~~yesterday~~.

In Heim & Kratzer (1998:249), it is assumed that in BAE, "the 'remnant' argument always has been topicalized (adjoined to S) before the deletion." The above sentence, for instance, should have the following representation:

- (43) John bought a book yesterday, and [[a newspaper]; ~~he also bought t_i yesterday~~].

Johnson (1996) argues against the extraposition account from the viewpoint of the semantic type of the predicate involved. He observes that the account fails to predict the pattern of grammaticality illustrated in (44) below (Johnson 1996:69; see Neijt's 1979 arguments against the extraposition account from an agreement perspective):

- (44) a. I introduced Carrie and Will to each other.
 b. *I introduced Carrie to each other and Will.
 c. *I introduced Carrie to each other and I introduced Will to each other.

Under the extraposition account, the ungrammaticality of (44b) requires the *ad hoc* restriction that a DP coordinate complex with a group interpretation may not be discontinuous at S-structure. On the other hand, if (44b) is assumed to be related to (44c) through gapping, then the ungrammaticality of (44b) follows automatically. It is indeed the case that neither gapping nor BAE can have a collective predicate, as pointed out by Moltmann (1992:49):

- (45) a. *John shared the coffee and Bill the cake.
b. *John met and Bill (too).

Another restriction shared by BAE and gapping is that they cannot occur in embedded clauses (K. Carlson 2002:11):

- (46) a. Bill ordered beans and Sam rice. (Gapping)
b. *Bill ordered beans and I think Sam rice. (Gapping)
(47) a. Bill ordered beans for supper and Sam too. (BAE)
b. *Bill ordered beans for supper and I think Sam too. (BAE)

The word *too* in data like (47a) has also been analyzed as an anaphoric element, referring back to the VP in the first conjunct. If so, there is no ellipsis (Goodall 1987: 28). However, as stated in Heim & Kratzer (1998:259), not all examples of ellipsis include such a particle. In the cases where no *too* occurs, ellipsis is still possible.

I conclude that the plausibility of the deletion analysis makes it likely that the extraposition analysis is not on the right track. In the deletion analysis, the constituent that is composed of the coordinator and the internal conjunct is built independently of the preceding clause.

It needs to be mentioned that Reinhart & Rooth (1991) propose an LF right-adjunction approach to BAE. Exactly the same arguments are used in Cowper & Hall (2000) for an overt rightward movement of the *and*-DP cluster. The approach is convincingly argued against by Moltmann (1992:229).

I conclude that the movement impossibility of the combination of an internal conjunct and a coordinator suggests that the combination is an intermediate projection. The relation between an external conjunct and internal conjunct looks like a Spec-Complement relation.

3.2 The existence of interactions between coordinators and internal conjuncts

The proposed complementation relation is also supported by the interactions between coordinators and internal conjuncts. Such an interaction is impossible if one is an adjunct of the other. However, Moltmann (1992) indeed claims that coordinators adjoin to conjuncts. The goal of this subsection is to rule out this possibility. I present two types of syntactic interactions between coordinators and internal conjuncts: the launching of the head raising from internal conjuncts, which has been used by Zoerner (1995:41) as an argument for the head-complement relation between coordinators and second conjuncts, and the syntactic positions of the floating coordinators in Mandarin Chinese, which has not been analyzed, as far as I know.

I. The occurrence of head raising from internal conjuncts to the positions of coordinators

One case of the interactions between coordinators and internal conjuncts is found in the Uto-Aztecan language Papago (O'odham). In this language, we see an instance of head raising from I of the internal conjunct to the position of coordinators. The canonical word order of the language is S-Aux-V, as seen in (48a) and (48b). However, when two clauses conjoin, the Aux of the second conjunct precedes the subject of the second conjunct, as seen in (48c; Zepeda 1983:25-27). (The second auxiliary verb has lost its initial vowel through an independent phonological operation in (48c).)

- (48) a. 'Uwi 'o cipkan (Papago)
 woman is working
 'The woman is working.'
- b. 'A:ñi 'añ ko:s
 I am sleeping
 'I am sleeping.'
- c. 'Uwi 'o cipkan ñ 'a:ñi ko:s
 woman is working am I sleeping
 'The woman is working and I am sleeping.'

In Zoerner (1995:41), this phenomenon is analyzed as head raising from I of the second conjunct to the position of the coordinator. One can treat the landing site of this head raising as a position of a second position clitic, assuming the auxiliary *ñ* is such a clitic and 'Uwi 'o *cipkan* is in the first position of the whole clause. If this head raising

analysis is right, the second conjunct must be the complement of the coordinator, since head movement cannot launch from any adjunct.

II. The syntactic positions of the floating coordinators

Another case of the interactions between coordinators and internal conjuncts is found in Mandarin Chinese and Hungarian. I shall use Chinese data to shown my point. The same conclusion can be reached by observing the parallel Hungarian data.

I have presented the fact that the coordinators *ke(shi)* ‘but’ and *yushi* ‘and thus’ can either immediately precede internal conjuncts or immediately follow the subjects (or topic) of internal conjuncts (§2.1, Argument III). Some of the relevant data are repeated here:

- (49) a. Baoyu yao tiaowu, **ke(shi)** wo yao hui-jia.
Baoyu want dance but I want return-home
‘Baoyu wants to dance, but I want to go home.’
b. Baoyu yao tiaowu, wo **ke(shi)** yao hui-jia.
Baoyu want dance I but want return-home
‘Baoyu wants to dance, but I want to go home.’
- (50) a. Xia yu le, **yushi** Xiao Wang jue ding liu zai wuzi-li.
fall rain PRT and Xiao Wang decide stay at room-in
‘It rained, and thus Xiao Wang decided to stay in the room.’
b. Xia yu le, Xiao Wang **yushi** jue ding liu zai wuzi-li.
fall rain PRT Xiao Wang and decide stay at room-in
‘It rained, and thus Xiao Wang decided to stay in the room.’

The floating phenomenon indicates that the coordinators have two possible positions with respect to internal conjuncts. The availability of the two positions for the coordinators indicates that the coordinators and internal conjuncts interact. I have already shown that a coordinator and the internal conjunct are sisters (§2). We also know that if there are interactions between sisters, they are in a head-complement relation. Accordingly, internal conjuncts must be the complement of the coordinators. If internal conjuncts were adjuncts, the dependency relation between the two positions would be impossible. The floating phenomenon supports the complementation configuration proposed in (24).

One property of the coordinator floating constructions is that the “fronted” element to the left of the coordinator must be able to function as a topic. Adverbs, which are not

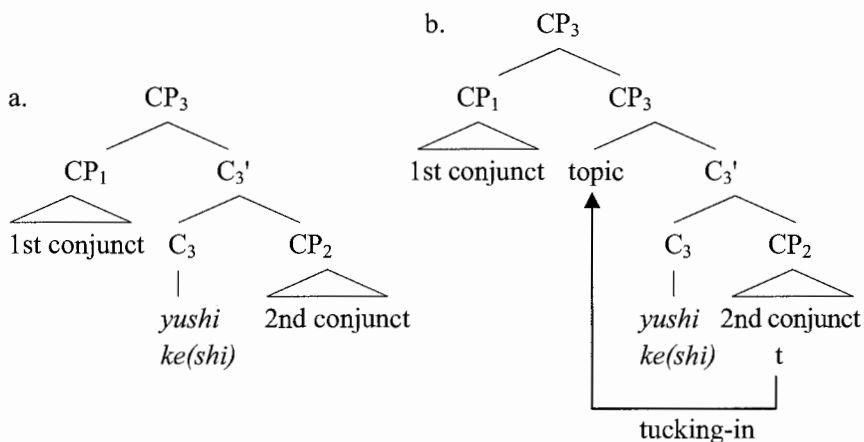
able to function as topics, cannot precede any coordinator. In (51), for instance, the manner adverbial *buxiaoxin* ‘carelessly’ is not a topic and it cannot precede *keshi*.

- (51) a. ta jijimangmangde qie cai, keshi buxiaoxin qie-po-le shouzhǐ.
 he hurriedly cut vegetable but carelessly cut-broken-PRF finger
 ‘He cut the vegetable hurriedly, but he cut his finger carelessly.’
 b. *ta jijimangmangde qie cai, buxiaoxin keshi qie-po-le shouzhǐ.

Another property of the coordinator floating constructions is that in addition to the topic of the second conjunct, the first conjunct also functions as a topic of the rest of the second conjunct. The former is a contrastive topic, and the latter is a background topic. In (49b), for instance, *wo* ‘I’ is a contrastive topic, and the first conjunct *Baoyu yao tiaowu* ‘Baoyu wants to dance’ is a background topic.

Multiple topics, like multiple *wh* elements in certain languages, and multiple verbs in serial verb constructions, can be represented by tucking-in structures, based on the Minimal Link condition and Local Move condition. (See Collins 2002:10 for an implementation of Richards 1997.) Accordingly, I propose the following derivation for the multiple topic constructions. If two CPs are coordinated, the head of the whole coordinate complex is also C. When the coordinator *ke(shi)* or *yushi* occurs at this C, and when every element inside the internal conjunct does not move out of the conjunct, the coordinator precedes the whole internal conjunct, as shown in (52a). In contrast to this, I claim that when the coordinator follows the topic of the internal conjunct, the topic has tucked in to an inner Spec position, as shown in (52b).

(52)



Note that in multiple *wh* and serial verb constructions, all of the relevant elements move, whereas in (52b), the outer Spec element is base-generated there. This difference does not affect the tucking-in analysis, however. This is because the Local Move condition forces the mover to land in the inner Spec position if the outer Spec is occupied by an element of the same type, regardless of whether the latter element is base-generated there or not.

Topic movement across a C-element is also seen in clausal subordination in Chinese. In Chinese clausal subordination, complementizers such as *yaoshi/ruguo* ‘if,’ *yinwei* ‘because,’ *suiran/suishuo* ‘although,’ *jiran* ‘since’ can also follow subjects/topics (Shi 1986: §3.7, McCawley 1988b:181, Zhou 2002:ch.5). In the following data, the two sentences of each pair are near synonymous.⁸

- (53) a. Ruguo qingkuang shushi, najiu jianjue geiyi zhicai.
if case true then resolutely enforce punishment
‘If the case is true, then (we) must enforce punishment resolutely.’
b. Qingkuang ruguo shushi, najiu jianjue geiyi zhicai.
- (54) a. Yinwei Baoyu tai ai, (ta) bu neng can jun.
because Baoyu too short he not can join army
‘Because Baoyu is too short, he cannot join the army.’
b. Baoyu yinwei tai ai, (ta) bu neng can jun.

The topics to the left of the complementizers are background topics rather than contrastive topics.

As in the coordinate complex (51a), adverbs, which cannot be topics, cannot precede a complementizer. In (55), for instance, the adverb *jingchang* ‘often’ cannot precede *ruguo* ‘if.’

⁸ In classical Chinese (as in the papers *Zuo Zhuan* and *Lun Yu*), the conjunction *er* could also occur between the subject/topic and the predicate of the second conjunct of a coordinate complex.

In Classical Latin poems and prose, subordinators such as *cum* ‘when’ can also be “shifted” inside the relevant subordinate clause. Andrew A. Cooper calls the inversion topicalization. (See Huttar 2004.)

In Nupe, conditional *ga* ‘if’ also follows the subject of the conditional clause, and like Hungarian *meg*, the conjunction *ma* and *ci* must follow the topic of the second conjunct (Kandybowicz 2005: §2.2).

- (55) a. Ruguo jingchang xiayu, najiu bu yao jiaoshui le.
 if often rain then not should water PRT
 ‘If it rains often, do not water (the plants) any more.’
 b. *Jingchang ruguo xiayu, najiu bu yao jiaoshui le.

We can see that the behaviors of coordinate coordinators pattern with that of typical complementizers. This fact shows that coordinators are head elements. I have assumed that the observed floating phenomenon is an indication of topic movement. Since syntactic movement can start from complement rather than adjunct, the floating phenomenon suggests that internal conjuncts are complements rather than adjuncts.

In §2.1 I introduced the Hungarian fact that *meg* ‘and’ must follow the topic of the second conjunct. If I extend my above analysis to the Hungarian coordinate complexes headed by *meg*, I can claim that the topic movement of the second conjunct to the left of *meg* is obligatory, assuming that there are certain strong features involved.

3.3 The possibility of extraction from either internal or external conjuncts

The possibility of phrasal extraction from either internal or external conjuncts distinguishes coordination from subordination relation, and thus from adjunction structure.

The possibility is not predicted from the Coordinate Structure Constraint (CSC, Ross 1967:89). This constraint states: “In a coordination structure, no conjunct may be moved, nor may any element contained in a conjunct be moved out of that conjunct.” Since Grosu (1973), CSC has been split into two parts. The first part is that no conjunct may be moved, and the second part is that no element may be extracted from conjuncts. Following Grosu (1973), I call the first part of the CSC the Conjunct Constraint (CC), and the second part the Element Constraint (EC). CC and EC are illustrated in (56a) and (56b), respectively.

- (56) a. *Which boy did John kiss [t and which girl]? (CC violation)
 b. *What kind of herbs did you [[eat t] and [drink beer]]? (EC violation)

Unlike the CC, the status of the EC is controversial. It is well recognized that the CC cannot be violated in English. As for EC, Grosu (1973), Goldsmith (1985), and Lakoff (1986) present quite a lot of English data to show that EC can be violated. Postal (1998), however, claims that none of Lakoff’s data can challenge CSC, since some of the data do not have typical coordination readings, or they are constrained in various ways. One weak point of such an argumentation is shown in the understanding of the relation between the CC and EC. Both parts of the CSC have been supposed to apply to

coordinate constructions exclusively. Logically, if Lakoff's data cannot be regarded as coordination data, they should not be subject to the other part of the CSC as well. The fact is, as correctly pointed out by Postal, "The Conjunct Constraint is almost never questioned; nothing in Lakoff 1986 is intended to challenge it" (p.83). Postal then shows how exactly the same data used by Lakoff to challenge whether the EC must obey the CC. If Lakoff's data strictly obey the CC, and if elements that are not conjuncts, say, objects, are not constrained by either the CC or EC, the conclusion must be that his data are indeed coordination data, and the EC can indeed be violated in certain cases. I therefore accept Grosu (1973), Goldsmith (1985), and Lakoff's (1986) conclusion that the EC can be violated.

In (57), I list some fully acceptable data that violate EC (See Ross 1967: §5.2.2, Schachter 1977:299, Heycock & Kroch 1994:272, Wilder 1999:9, Culicover & Jackendoff 1997:201, Comack & Smith 2001: (29), (32)):⁹

- (57) a. Let's get to our first guest, who I asked for _ and was so delighted that he could make it. (RC)
(Potts 2002:15 (38), from Prince 1990: (4), citing Orson Wells on *The Tonight Show*)
- b. This is the thief that [you just point out the loot] and [then we arrest _ on the spot].
- c. How much wine can you drink _ and still stay sober? (wh-Ques)
- d. What did she turn around and say _ to you?
- e. Swiftly John will run _ and end up falling down. (Adv-fronting)
(Benjamin Shaer, p.c., see Shaer 2003:243)
- f. Off the boy went _, and told his friends the news.
- g. [This advice] the committee decided to follow _ and proceeded to set up a new subcommittee. (DP-topic)
- h. Kiss her, I didn't _, and will probably regret it. (VP-topic)

In (57a) and (57b), the relativization occurs in the first and second conjunct respectively. In (57c) and (57d), the wh-phrase moves from the first and second conjunct respectively. In (57e) and (57f), the manner and the direction adverbs are fronted from the first conjunct, respectively. In (57g) and (57h), the DP topic and VP topic are

⁹ In addition to the data listed in (57), the following data show that locative inversion can occur in the first conjunct. It is not clear to what extent data like these might challenge the EC, since the fronting could be conjunct-internal.

- (i) In came John and sat down. (locative inversion)
- (ii) Under the bush lay a diamond and sparkled in the sunlight.

fronted, respectively.

Moreover, extraction from either conjunct is possible in (58) (Lakoff 1986):

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

Note that although most of the data above contain VP-conjuncts, some of them have IP conjuncts (57a), (57b). In (57a), the second conjunct starts with the copula *was*, which surfaces at T, and thus the whole conjunct is TP rather than VP. Also, in (57b), the second conjunct contains the preverbal subject *we*, which surfaces at Spec of TP, and thus the whole conjunct is TP rather than VP. The data listed here have a wider range than Goldsmith's, Lakoff's, and Culicover & Jackendoff's (1997) data. Postal (1998) is wrong in claiming that AC is restricted to VPs.

The data in (57) and (58) belong to the so-called Asymmetrical Coordination (AC Ross 1967, Schmerling 1975, Lakoff 1986).¹⁰ As in English, extraction from either conjunct in AC is also possible in Chinese. The following data show relativization from either conjunct of the *yushi* construction:

- (59) a. Zhe jiu shi Akiu kan-le _ yushi shuibuzhaojiao de na ben xiaoshuo.
 this just be Akiu read-PRF and sleepless MOD that CL novel
 'This is the very novel that Akiu read and (he) was not able to sleep.'
 b. Zhe jiu shi Akiu ting-le _ yushi daku-qilai de xiaoxi.
 this just be Akiu hear-PRF and weep-INCH MOD news
 'This is the very news that Akiu heard and started to weep.'
 c. Zhe jiu shi Akiu mang-le yi zheng tian
 this just be Akiu busy-PRF one whole day
 yushi xie-chulai _ de wenzhang.
 and write-up MOD article
 'This is the very article that Akiu was busy for the whole day and wrote.'
 d. Zhe jiu shi Akiu kan-le na chang dianying
 this just be Akiu watch-PRF that CL movie
 yushi bian-chulai _ de xiaohua.
 and make-up MOD joke
 'This is the very joke that Akiu watched that movie and made.'

¹⁰ Note that the term Asymmetrical Coordination used here is in a semantic sense. Such coordination is also called "fake coordination" (see Szabolcsi & den Dikken 1999 for a recent use of this term). Syntactically speaking, all conjuncts are syntactically asymmetrical. (See §2.1.)

The violation of the EC is also found in other languages such as German and Dutch (Johannessen 1998:217). Summing up, there are good reasons to believe that the EC can be violated.

The extractability shows that AC does not have an adjunction structure. As presented in Culicover & Jackendoff (1997:209), extraction from AC conjuncts is possible, whereas it is impossible from any adjunct subordinate clause, which is an island. We have seen that coordination coordinators like *and* allow extraction from either internal or external conjuncts. The extraction contrast supports the structure in (24), where neither conjunct is in an adjunct position. They cannot be hosted in an adjunct, either. This suggests that neither (22a) nor (22b) is likely.

In my proposal, external conjuncts are Spec elements. Now I have shown that elements can be extracted from external conjuncts. One might doubt the extractability of any element out of Spec positions. This doubt is based on the observations that subjects are Spec elements and that no element can be extracted from subjects (Condition on Extraction Domains, or CED, Huang 1982). However, Takahashi (1994), Stepanov (2001), and Sabel (2002) have convincingly argued that elements can be extracted from subjects when the subjects remain *in situ*. In other words, CED is effective only when subjects have been raised. Now, to return to our coordination issue. In all of the data above, conjuncts are not in any derived position. Accordingly, extraction of elements out of external conjuncts is as legal as extraction of elements out of *in situ* subjects.¹¹

3.4 The absence of the adjunction pattern in classifier resolution

In this section, I present another argument against the adjunction hypothesis of the structure of coordinate complexes.

In morphology, resolution refers to a rule that specifies the form of an agreeing element when the controller consists of conjoined nominals (Givon 1970, Corbett 1991: 261). If we translate a sentence like {*Mary and John are happy.*} into a language like French, where predicative adjectives agree with subjects in gender, we need resolution to establish the gender of the adjective, since one conjunct of the subject is feminine and the other is masculine. In this subsection, I show that while both conjuncts are considered in a syntactic resolution of classifiers, no adjunct is considered in such a resolution. The goal of the comparison is to show that the syntactic properties of conjuncts are fundamentally different from that of adjuncts.¹²

¹¹ The unacceptability of data like (56a) and (56b) are accounted for in Zhang (2004).

¹² As pointed out by an anonymous reviewer, morphological resolution is an issue of formal features within complex nominals (such as *Mary and John*), rather than between two nominals

Consider classifier resolutions for the coreference of headless nominals in Chinese. Classifiers can be regarded as gender particles in a broader sense. Since gender features are interacted with two other types of ϕ -features, person and number, in many languages, I make it clear that no such interaction exists in our data here. I use inanimate nominals only. In Chinese, no number marker is used in nominals referring to inanimate entities.

Let us first of all look at the matching of two nouns, *tai-deng* 'table-lamp' and *zhuozi* 'table,' with three classifiers, *zhan*, *zhang*, and *ge*.

- (60) a. Akiu mai-le yi zhan da tai-deng he yi zhan xiao tai-deng.
 Akiu buy-PRF one CL big table-lamp and one CL small table-lamp
 Liang {zhan/*zhang/ge} dou hen zhiqian.
 two CL/CL/CL all very expensive
 'Akiu bought a big table lamp and a small table lamp. Both are very expensive.'
- b. Akiu mai-le yi zhang da zhuozi he yi zhang xiao zhuozi.
 Akiu buy-PRF one CL big table and one CL small table
 Liang {*zhan/zhang/ge} dou hen zhiqian.
 two CL/CL/CL all very expensive
 'Akiu bought a big table and a small table. Both are very expensive.'

These data show that the classifier *ge* is a general classifier, which can be used for both *tai-deng* 'table-lamp' and *zhuozi* 'table', and that the classifier *zhan* is used for *tai-deng* 'table-lamp', whereas the classifier *zhang* is used for *zhuozi* 'table'. In the second clause of each example, the subject is a nominal without a head. The classifier is either the same one used in the previous clause, or the general *ge*.

Now we look at classifier resolution. In (61a) and (61b), the object of the first clause contains a modifier, which has an adjunction structure involved. In the adjunction complexes, the head noun and the modifier noun require different classifiers. The classifier in the second clause can be identical to that of the modifiee of the complex object in the first clause. In (62), however, the object of the first clause is a coordinate DP complex. In the coordinate complex, the two conjuncts also require different classifiers. The classifier in the second clause cannot be identical to that of either conjunct.

distributed in different clauses (such as *Mary* and *John* in {*After Mary came, John left.*}).

- (61) a. Akiu mai-le san {zhan/*zhang/ge} zhuozi dixia de tai-deng.
 Akiu buy-PRF three CL/CL/CL table under MOD table-lamp
 Mei {zhan/*zhang/ge} dou hen zhiqian.
 each CL/CL/CL all very expensive
 ‘Akiu bought three table-lamps under the table(s). Each one is very expensive.’
- b. Akiu mai-le san {*zhan/zhang/ge} tai-deng hougian de zhuozi.
 Akiu buy-PRF three CL/CL/CL table-lamp behind MOD table
 Mei {*zhan/zhang/ge} dou hen zhiqian.
 each CL/CL/CL all very expensive
 ‘Akiu bought three tables behind the table-lamp(s). Each one is very expensive.’
- (62) Akiu mai-le yi zhan tai-deng he yi zhang zhuozi.
 Akiu buy-PRF one CL table-lamp and one CL table
 Mei {*zhan/*zhang/ge} dou hen zhiqian.
 each CL/CL/CL all very expensive
 ‘Akiu bought a table-lamp and a table. Each one very expensive.’

The classifier resolution is seen in the headless subject of the second clause of (61) and (62). The contrast is summarized in (63); (63a) represents the pattern in (61a) and (61b), and (63b) represents the pattern in (62).

- (63) a. [CP₁...[DP₁ ...Cl_i...]. [DP₂ ... Cl_j...]...]. [CP₂Cl_{i/j}...]
 (DP₁ is in a modifier of DP₂)
- b. [CP₁...[DP₁ ...Cl_i...].&.[DP₂ ... Cl_j...]...]. [CP₂Cl_{i/*j}...]
 (DP₁ and DP₂ are conjuncts)

The data in (61) tell us that in the case of adjunction, the adjunct is excluded in the classifier resolution, since the classifier specific to the head noun can be used, without causing any clash with respect to the different classifier specification. The example in (62), however, tells us that in the case of coordination, both conjuncts are taken into consideration in the classifier resolution, since neither *zhang* nor *zhan* is possible. Consequently, only the general one, *ge*, is used. In other words, adjuncts are excluded, whereas no conjunct can be excluded in classifier resolutions.

The contrast between (63a) and (63b) is also seen in another type of data. Classifiers can be reduplicated to encode a distributive meaning. The classifier resolution in the reduplication is the same as above:

- (64) a. Akiu mai-le liang {zhan/*zhang/ge} zhuzi dixia de tai-deng.
 Akiu buy-PRF two CL/CL/CL table under MOD table-lamp
 {zhanzhan/*zhangzhang/gege} dou hen zhiqian.
 CL_{RED}/CL_{RED}/CL_{RED} all very expensive
 ‘Akiu bought two table-lamps under the table(s). Each item is very expensive.’
- b. Akiu mai-le liang {*zhan/zhang/ge} tai-deng hounian de zhuzi.
 Akiu buy-PRF one CL/CL/CL table-lamp behind MOD table
 {*zhanzhan/zhangzhang/gege} dou hen zhiqian.
 CL_{RED}/CL_{RED}/CL_{RED} all very expensive
 ‘Akiu bought two tables behind the table-lamp(s). Each item is very expensive.’
- (65) Akiu mai-le yi zhan tai-deng he yi zhang zhuzi,
 Akiu buy-PRF one CL table-lamp and one CL table
 {*zhanzhan/*zhangzhang/gege} dou hen zhiqian.
 CL_{RED}/CL_{RED}/CL_{RED} all very expensive
 ‘Akiu bought a table-lamp and a table. Each item is very expensive.’

The data in (64) tell us that in the case of adjunction, the adjunct is excluded in the classifier resolution, since the classifier specific to the head noun can be used, without causing any clash with respect to the different classifier specification. The example in (65), however, tells us that in the case of coordination, both conjuncts are taken into consideration in the classifier resolution, since neither *zhangzhang* nor *zhanzhan* is possible. Consequently, only the general one, *gege*, is used. In other words, adjuncts are excluded, whereas no conjunct can be excluded in classifier resolutions.

The consistent classifier resolution patterns do not support any adjunction approach to coordinate complexes.¹³

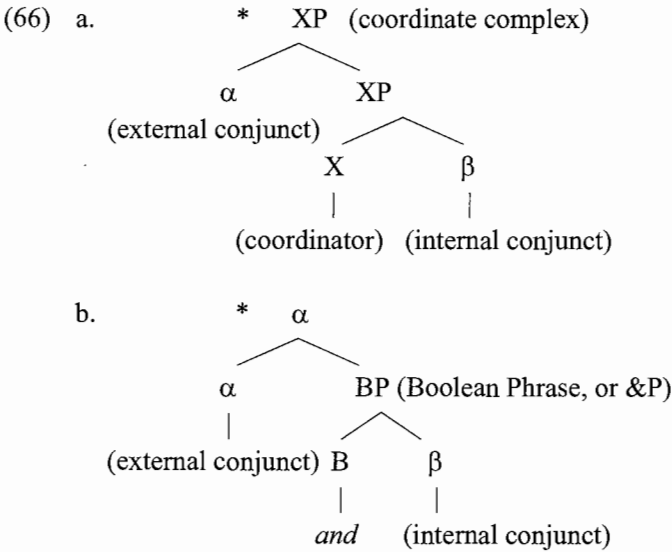
3.5 External and internal conjuncts are in a Spec-Complement relation

My conclusion drawing from the above four arguments is that external and internal conjuncts are in a Spec-Complement relation, and conjunctions are realizations of the head of the projection. These arguments are: the immobility of the constituent composed of a coordinator and internal conjunct (§3.1), the existence of interactions between coordinators and internal conjuncts (§3.2), the possibility of extraction from conjuncts

¹³ Kandybowics (2005: §1.2) uses the fact that ϕ -feature resolution in Nupe must take both conjuncts into consideration to argue for the complementation structure and against the adjunction structure of coordination. His conclusion is the same as mine.

(§3.3), and the absence of adjunction pattern in classifier resolution for the co-reference between headless nominals and coordinate complexes (§3.4).

My conclusion rules out both the structure in (66a) (22b), where the external conjunct is an adjunct, and Munn’s structure in (66b) (\approx (23b)), where the sister of external conjunct is an adjunct.



The adjunction structure in (66b) not only fails to cover the facts presented in this section, but also has other problems. Claiming a category (BP) to be a permanent adjunct is *ad hoc*. No other category in syntax has such a restriction. Thus BP is not only born to be a construction-specific category, occurring only in coordinate constructions, but also born to be an adjunct, a function-specific category. Neither of the two properties of BP is shared by any other categories.

Moreover, my conclusion does not support Moltmann’s (1992:52) claim that “coordinators are formal adjuncts of (at least) one of the conjuncts.” This assumption fails to capture the interactions between coordinators and internal conjuncts (my §3.2). The interactions show a complementation relation between coordinators and internal conjuncts.

Furthermore, in both Moltmann’s (1992, esp. p.54 (87b)) and Munn’s approaches, the constituents that are composed of coordinators and internal conjuncts are regarded as maximal projections. The immobility of the constituents (§3.1) cannot be accounted for by these approaches.

It is necessary to point out that Kandybowics’s arguments for the adjunction

structure in (66b) for clausal coordination in Nupe are not convincing to me. First, he claims that the adjunction structure can accommodate the fact that in data like {*Every man slept and his child went to school.*} the word *every man* seems not to c-command *his*. However, as we know, the binding relation also occurs in nominal coordination such as *the independence of every man and his right to free speech*. This binding issue does not support his claim that clausal coordination has an adjunction structure, whereas nominal coordination has a complementation structure. Second, he tries to show that extraction is possible from the first clausal conjunct but not possible from the second conjunct. However, as he acknowledges, since the relevant clausal coordinate complexes cannot be embedded for independent reasons, it is hard to exclude the possibility that the apparent extraction in the first conjunct is in fact a conjunct-internal movement, which is irrelevant to the argumentation. It is possible that in symmetrical clausal coordination, nothing can be extracted from either conjunct. If so, there is nothing to support the claim that the first conjunct is not an island whereas the second one is (since it is assumed to be an adjunct).

I conclude that the relationship between external and internal conjuncts is a Spec-Compl relationship, and that coordinators are the heads to host them. Thus neither conjuncts nor coordinators are adjuncts.

The Spec-Compl relation is fundamentally different from an adjunction relation. In Chomsky's (2000) terminology, the former is built via Set-Merge, while the latter is built via Pair-Merge.

I have argued against not only the flat multiple-branching representation but also the adjunction representation of coordination. Instead, I have argued for complementation representation. My analysis shows that coordination does not introduce any new configuration in the computation system. This is the conclusion of this paper:

NO SPECIAL CONFIGURATION EXISTS IN COORDINATION.

The complementation configuration of the structure of coordinate complexes follows the general phrase structure. The structure is built by the regular operation Merge (also Remerge). No new operation such as coordinate- α (Johannessen 1998) or union of phrase markers (Goodall 1987:36) exists. Nor is any new mode of merger needed, such as Muadz (1991) and Moltmann's (1992) three-dimensional phrase marker structure. The syntax of coordination as second-order syntax (Lang's 1984 term) uses no new tools that are not found in first-order syntax, which builds the sub-components of coordinate complexes.¹⁴

¹⁴ Parallel to the configuration issue of coordination is the categorial issue of coordinate complexes: how the category of a coordinate complex is decided. The issue is extensively

4. The “illogical” relationship between modifiers and conjuncts

I have argued against the adjunct status of conjuncts syntactically. Semantically, there is no sharp contrast between conjuncts on the one hand, and certain adverbials and attributives on the other. For instance, conjuncts can be semantically modifiers. Consider:

- (67) a. I need something like a book. (Lang 1984:25)
- b. I need a book or something.
- (68) a. Tom left before Jane arrived. (McCawley 1988a:262)
- b. Tom left and then Jane arrived.
- (69) a. Although it is raining, we are going for a walk. (Haspelmath 2000: (74))
- b. It is raining, but we are going for a walk.

In (67), the two sentences are synonymous. In (67a), *like a book* is syntactically a modifier of *something*, whereas in (67b), no such syntactic modification occurs. Instead, *something* and *a book* are two conjuncts. The two sentences in (15) are also synonymous, although (15b) is a coordinate construction, whereas (15a) is not. The relationship between the two sentences in (69) is analogous.

The “illogical” relationship between modifiers and conjuncts is seen not only in the type of data discussed above, but also in the Asymmetrical Coordination constructions discussed in §3.3. For instance, in the following (70a), the second conjunct functions as a purpose adverbial, and in (70b), the first conjunct functions as a “despite” adverbial (For more data, see Goldsmith 1985, Lakoff 1986):

- (70) a. The screw which_i I’ve got to [try] and [find t_i] holds the frammis to the myolator. (Ross 1967:4.108)
- b. What kind of music can you listen to t and still get your work done?

In all of these cases, the semantic differences between conjuncts and adverbials are blurred. We thus should not expect any construction-specific semantics to correlate with any assumed construction-specific configuration in our analysis of coordination complexes. Dik (1968:2) correctly points out that “there is no guarantee that there is a one-to-one relation between linguistic structures on the one hand, and logical or psychological organization on the other: Items which are logically or psychologically ‘coordinated’ may be linguistically expressed in subordinative constructions, and vice

discussed in Zhang (2004), where the analysis of the categorial dependency of coordinate complexes on conjuncts leads to a new syntactic account for the observed Conjunct Constraint.

versa. Consequently, the explanation of the linguistic facts in terms of logical or psychological phenomena almost automatically leads to a division of linguistically similar items and to a grouping together of linguistically diverse ones, on the basis of extra-linguistic considerations." A typical distortion of syntactic facts is to replace the coordinator in (70a) with the word *to* (in fact, this has been suggested to me), and similarly, replace the coordinator in (70b) with the adverb *yet*, and then announce that these data are not coordination data (e.g., Zoerner 1995:80). This replacement approach is *ad hoc*. No syntactic principle can tell us why the *and* in (70a) cannot be replaced by *yet* and why the *and* in (70b) cannot be replaced by *to*. Ideas similar to the above citation of Dik can be found in Carston (2002, ch.3). I have argued in §3.3 that data like (70) are true coordination data. My conclusion is that conjuncts can be semantically asymmetrical and thus some may semantically function like modifiers.

5. The issue of so-called bar-level sharing

Borsley (1994:233) claims that there are two types of sharing between conjuncts and their hosting complexes: "a coordinate structure must not only share categorial features with its conjuncts but must also share their bar-level." I shall leave the issue of categorial sharing for another paper. In this section, I address the issue of so-called bar-level sharing.

The issue of constituent-level in coordinate complexes looks theoretical; however, it does have empirical significance.

Pesetsky (1982:440) states that conjuncts have the same bar-level as their mother. He speculates that "the constituent formed by the coordination of occurrences of X^n , where n is some number of bars, is itself X^n ." Since the mother and daughters share the same bar-level in this case, the aunt of a conjunct (i.e., the sister of the coordinate complex) counts as a sister of the conjunct for all grammatical purposes. Although Pesetsky claims that "nothing important seems to follow from this stipulation" (p.440), some other authors do think the bar-level of conjuncts is an important issue, and the claims made about this issue have been related to the analyses of the configuration of coordinate complexes.

A generally adopted assumption is that only maximal projections, which are understood to be phrases, may appear as specifiers and complements (e.g., Stowell 1981, Chomsky 1994). In a coordinate complex, if the coordinator is the head, conjuncts must, accordingly, be maximal projections, if they are specifiers and complements. This is clearly seen in Kayne (1994). Borsley (1994) argues that since conjuncts do not need to be maximal projections, the hypothesis that coordinate complexes have a complementation configuration is not convincing. In §3, I argued for the complementation configuration

for coordinate constructions. Now I address Borsley's challenge in this section. I consider word and word fragment conjuncts, which are smaller than phrases. I shall show that the non-projecting elements, specifically specifiers or complements, do not need to be phrases. If this theoretical issue is clarified, the complementation hypothesis remains unaffected.

Under the hypothesis that conjuncts must be phrases, Kayne (1994) claims that apparent word-level coordination involves conjoined phrases to which a deletion process has applied. (See also Wilder 1997:63.) I now show the empirical problems of this claim.

Let us consider coordination of verbs, to see whether they should be "bigger" than words. Examples like the following have been noted since Abbot (1976), and discussed in Jackendoff (1977:192). The reading of the a-sentences is in contrast to the corresponding b-sentences.

- (71) a. Hobbs whistled and hummed a total of 16 tunes.
 b. Hobbs whistled a total of 16 tunes and hummed a total of 16 tunes.
- (72) a. Hobbs whistled and hummed the same tune.
 b. Hobbs whistled the same tune and hummed the same tune.
- (73) a. Hobbs criticized and insulted many people.
 b. Hobbs criticized many people and insulted many people.

In (71a), for instance, there are 16 tunes involved, whereas in (71b), there are 32 tunes involved. Obviously it is impossible for (71a) to be derived from (71b) by deletion, since deletion must obey the recoverability constraint (Chomsky 1965, 1968). This constraint in effect eliminates the possibility of different semantic representations between the ellipsis site containing conjuncts and the antecedent containing conjuncts. Based on such data, Borsley (2005: §4) correctly points out that Kayne's deletion analysis of word coordination is wrong, since the data indicate that even verbs can be conjuncts. Takano (2004) uses similar arguments to show that verb conjuncts exist in both English and Japanese. Bresnan & Thráinsson (1990) also convincingly argue for the existence of verb coordination in Icelandic, independent of verb phrase coordination and ellipsis constructions.

We have seen that empirically, non-phrasal elements can be conjoined. However, in Kayne's (1994) theoretical framework, conjuncts are Specifiers and Complements, and Specifiers and Complements are assumed to be maximal projections. Borsley uses the existence of word-level conjuncts to argue against the Specifier and Complement status of conjuncts, adhering to the assumption that Specifiers and Complements must be maximal projections, and maximal projections must be phrasal.

This part of the debate, however, is related to how to understand the relationship between projectivity and the levels of constituents. If we adopt Chomsky's (1994) bare phrase structure theory, Specifiers and Complements are simply non-projecting elements in a binary branching representation. Their sisters project, whereas they do not. The crucial property of Specifiers and Complements is their non-projectability, rather than their constituent level. We need to distinguish two types of dichotomy: word vs. element larger than a word, and projecting vs. non-projecting. The former is a morphological classification, whereas the latter is a purely syntactic classification. The status defined by the former is stable, whereas the status defined by the latter is relative to the merger.

Accordingly, since verb conjuncts do not project within the coordinate complex, although they are words rather than phrases, they are still regarded as non-head elements. On the other hand, the coordinate complexes formed by the verbs can be regarded as heads, if they select a complement and project a VP. I list four possibilities in (74), and some examples in (75).

(74)	word	larger than a word
projecting element	e.g., coordinators in coordinate complexes, such as <i>and</i> in (75b/c)	e.g., coordinate verb complexes, such as <i>whistled and hummed</i> in (75b)
non-projecting element	e.g., word conjuncts, such as <i>whistled</i> in (75b)	e.g., phrasal conjuncts, such as <i>a Tibetan folk song</i> in (75c)

- (75) a. Hobbs [_{VP} whistled [a total of 16 tunes]].
 b. Hobbs [_{VP} [_V whistled and hummed] a total of 16 tunes].
 c. Hobbs [_{VP} whistled [_{DP} *Jingle Bells* and a Tibetan folk song]].

In (75a), the verb *whistled* is a head, since it selects the DP [*a total of 16 tunes*], and projects the VP. In (75b), however, the verb *whistled* alone is not a head in the coordinate complex [*whistled and hummed*], since it does not project, although it is a word. Moreover, the whole complex headed by the coordinator is still a verb. The coordinate complex is also a head, since it selects the DP [*a total of 16 tunes*], and projects the VP, although it is larger than a word. In (75c), the coordinator projects a DP. Accordingly, the coordinator is a head, in the coordinate DP complex. The projected DP is not a projecting element when it is merged with the verb *whistled*. Instead, the DP is selected by the verb, and the verb projects a VP. Thus the verb is the head of the VP.

In this approach, the notion of bar-level should be given up, and the relativity perspective of Chomsky's (1994) bare-phrase structure must be adopted. Whether an element is a head or not depends on whether it projects when it merges with another element. In this sense, I second Koopman & Szabolcsi's (2000:223 fn.8 & p.39)

statements: “We are not assuming that the material that counts as a word for the purpose of phonology is dominated by any particular kind of syntactic label.” “Words do not correspond to syntactic atoms or heads.”¹⁵

I have clarified that the phrase-level of an element is not related to the syntactic status of head or Spec/Complement. In fact, the issue of phrase-level itself is far from clear. The fuzziness can also be seen in so-called co-compounds (Wälchli 2003, and see also Heycock & Zamparelli 2003:451 fn.5), such as *bow and arrow*, *brother and sister*, *night and day*. In such compounds, bare nouns are conjoined by a conjunction, expressing a close lexico-semantic relationship between them. Wälchli (2003: abstract) claims that “co-compounds in most languages are intermediate between words and phrases.”

An issue related to the above discussion is the syntactic significance of word fragment coordination. Word fragments are not phrases but they can be conjuncts. Such elements are simply non-projecting elements in the relevant coordinate complexes.

- (76) a. ... to study psycho- and socio-linguistics
 b. It both under- and over-generates.
 c. Kim is studying pre- and post-verbal clitics.
 d. Bill and Martha are ortho- and periodontists.
 e. postmen and -women
 f. inteligente y profunda-mente [Spanish, Alexiadou 2001:35]
 ‘intelligent and profoundly’
 g. glücklicher- oder unglücklicher-weise [German, Alexiadou 2001:35]
 ‘fortunate- or unfortunately’

Coordinate complexes of word fragments might be considered as Across-The-Board (ATB) or Right Node Raising (RNR) constructions, regardless of how the constructions are derived: by extraction (application of Postal 1998), deletion (see Booij 1985, Munn 1993:8), or incremental merger (application of Phillips 2003). Under such an approach, each conjunct in data like (76) is supposed to be a word. If so, my above analysis of the word conjuncts applies here and thus there is nothing new to say. However, Artstein (2005) convincingly argues that the coordination is at exactly the word-fragment-level, rather than at any word or higher level. His conclusion suggests that the claim that bound forms are not conjoinable is wrong. (See textbooks such as

¹⁵ In Cowper & Hall (2000:26), the issues of word-level element coordination is ascribed to Marantz’s (1997) assumption that the same principles of composition govern phrasal, non-phrasal, and morphological structures, and to Béjar’s (2000) claim that Merge applies to constituents as small as single features, creating non-phrasal constituents in the course of syntactic computation. Their approach is compatible with mine.

Haspelmath 2002:151 for such a claim.) His analysis seems to be intuitively natural, although he does not mention the issue of projectivity at all.

Not only conjuncts can be part of a word, but also a whole coordinate complex can be part of a word. In the following Chamorro example, the incorporated object is a coordinate complex (Chung & Ladusaw 2003:87):

- (77) Kao man-gäi-[fotgun kandit yan kahun ais] siha?
 Q AGR-have-stove electricity and box ice they
 ‘Do they have an electric stove and a refrigerator?’

I can conclude that neither the existence of non-phrasal conjuncts nor the existence of word-internal coordinate complexes pose any real challenge to the complementation structure of coordinate complexes. Instead, it may help us to get a deeper understanding of the relation between structural and size properties of syntactic elements.

In this section, I have examined an aspect of the projectivity issue of coordinate complexes. I have shown that the bare phrase structure hypothesis, which abandons bar-levels of syntactic elements, provides us with a simple and thus desirable analysis of word conjunct complexes. By this clarification, I maintain my conclusion reached in §3: Coordinate complexes are in a complementation structure.

6. Summary

The structure of coordinate complexes is not different from that of other syntactic complexes. I have argued that a coordinate complex has a binary-branching structure, and between the two conjuncts, one is internal and the other is external to the coordinator. I also argued that the relation between external and internal conjuncts is a Spec-Comp relation (contra Borsley 2005). This is different from either any right-adjunction analysis such as Munn (1992) or heterogeneous structure analysis such as Kandybowicz (2005). Moreover, the semantic relation between conjuncts does not need to be symmetrical. Furthermore, I clarified that conjuncts, which are non-projecting elements in coordinate complexes, can be of any constituency level (word-fragment, word, phrase).

The theoretical implication of my conclusions is that unlike complementation and adjunction, the notion “coordination” is not primitive in syntactic computation. The structure of coordination is complementation, and coordinators are lexicalizations of the head of this complementation structure.

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並列式的句法結構

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本文提出新的論據論證如下四個論點。首先，並列式的句法結構為二分式，因此連接詞總與某一個並列項結合，而不是同時與所有的並列項結合。第二，並列式的句法核心是由連接詞來表現的，而且兩個並列項分別為此核心的限定成分和補足成分。本文反駁了對並列式的右向附加語分析和混合結構分析。第三，並列項之間不一定呈平衡關係。第四，並列項不是投射成分，且可以是任何層級的語言單位（比詞小的單位、詞、片語等）。

關鍵詞：並列式，連接詞，補足式結構，不平衡並列式