Abstract

This paper presents a new approach to ATB constructions without resorting to ATB movement. We first examine the syntactic properties of *same* constructions such as *The same man Mary helped and John ruined,* and propose a derivation for the constructions. We claim that the relational nominal that contains the adjective *same* is base-generated in the first conjunct, and moves out of the coordinate complex. The raised relational nominal binds a silent pro-form in the second conjunct. This analysis of *same* constructions is then extended to ATB constructions. The two types of constructions share syntactic and semantic properties. I argue that the overt extracted element of ATB constructions has a movement chain relation with the gap in the first conjunct alone. The silent argument in the second conjunct never moves out of the conjunct. Various types of non-identity readings of ATB constructions are also explained. This research shows that coordinate constructions do not introduce any special type of movement to the computation system.

The Syntax of *Same* and ATB Constructions[*]

NIINA NING ZHANG

National Chung Cheng University

1. Introduction

Across-The-Board (ATB) constructions are coordinate constructions in which each conjunct contains a gap, like the following English example (1a) and Chinese example (1b):[1,2]

(1)   a.   Who$_i$ did you say that Carrie likes e$_i$ and Sarah hates e$_i$?

   b.   [Zhe zhi mao]$_i$, Lao Li zuotian   diu-le   e$_i$, Lao Ye jintian zhaodao-le e$_i$.

      this CL cat   Lao Li yesterday lose-PRF   Lao Ye today find-PRF

      'This cat, Lao Li lost yesterday and Lao Ye found today.'

The goal of this paper is to propose a new analysis of the syntactic derivation of ATB constructions. It is generally assumed that the constructions are derived by a kind of operation called ATB movement, and such operations "move a constituent out of all the conjuncts of a coordinate structure" (Ross 1967: 107, see also Williams 1977, 1978). In other words, the unique extracted element has been assumed to move from the multiple gaps in the coordinate construction simultaneously. Such movement chains are called "forking chains," and are assumed to occur in coordinate constructions only.
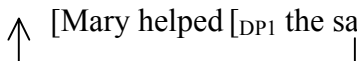
In this paper, I advocate George's (1980) claim that ATB movement does not exist at all (see also Munn 1992, 1993, Franks 1992, Bošković and Franks 2000, and Hornstein and Nunes 2002). I support Munn's (1992, 1993) claim that the extracted element in ATB constructions originates in the first conjunct only, and show the existence of a binding dependency between the extracted element and a silent pro-form in the second conjunct. Both the extraction operation and the pro-form binding dependency are motivated independently of coordinate complexes. This proposed derivation does not require any ad hoc forking chains of movement.

[1] See Qu (1994) and Li (1998a, 2000) for arguments for a movement approach to topicalization in Chinese (contra Xu & Langendoen 1985).

This paper is composed of two parts. In Part A, I present the syntax of the identity adjective *same*, aiming to show the parallelism between *same* constructions and ATB constructions. In my proposed analysis, (2a) is derived from (2b):

(2)　　a.　　The same man Mary helped and John ruined.

　　　　b.　[Mary helped [$_{DP1}$ the same man]$_i$] and [John ruined *pro-ϕP$_i$*].

In (2b), a pro-form in the second conjunct takes the nominal *the same man* as its antecedent. The category of the pro-form is pro-ϕP, which shares its gender, number, and person features with its antecedent (see Déchaine & Wiltschko 2002). The pro-ϕP in *same* constructions can be silent at PF. Moreover, the similarity expression such as *the same man* in (2a) is licensed by the coordinate complex, and it must move out of the coordinate complex, simply because similarity expressions must be out of their licensing elements (see Carlson 1987: 540).

The syntax of *same* gives us clues to the derivations of ATB constructions. In Part B, I will show the similarities between ATB constructions and *same* constructions, and extend my analysis of the latter to the former. Thus, ATB constructions are derived without any forking movement.

Part A has three sections. In Section 2, I list certain syntactic properties of *same* constructions and the important syntactic questions seen in data like (2a). The questions are the research goals of the next two sections. In Section 3, I argue for the existence of a null pro-form in the second conjunct in data like (2a). In Section 4, I argue that the similarity expression such as *the same man* in (2a) must move from the first conjunct and land outside the coordinate complex. Part B has two sections. The content of Section 5 is an application of my analysis of *same* constructions to ATB constructions. In Section 6, I address the issue of the *respectively* reading of ATB constructions. Section 7 is a summary of the paper.

2. The identity adjectives *same* and *tongyang*

My analysis of ATB constructions is based on my analysis of identity adjectives. In this and the next two sections, I will examine the syntax of identity adjectives such as the English *same* and the Chinese *tongyang* 'same.'

---

[2] The abbreviations used in the Chinese examples are: PRF: perfect aspect, CL: classifier, MOD: modification.

Adjectives such as *same, similar, equal*, and *different* express similarity relation. Among them, *different* expresses a negative value of similarity and *same* expresses a positive value of similarity or identity. The counterpart of *same* in Chinese is *tongyang* 'same.'[3] I call expressions that host a similarity adjective "Similarity Expressions" (SE). In (2a) above, for instance, *same* is an identity adjective and *the same man* is an SE.

2.1 The general plural-α licensing of identity adjectives

Some elements need licensors in the context. For instance, a negative polarity item such as *any* is licensed in a negative context. The licensor can be an independent negation word such as *not* (e.g. *He did not eat any candy*), or entailed in a negative word such as *refuse* (e.g. *He refused to eat any candy*). Similarly, verbs such as *combine*, predicates such as *collide*, adverbs such as *respectively* are all licensed in a plural context. A plural context has two or more eventuality participants or two or more eventualities (we will see examples later). Again, the forms of the licensors can vary (a plural nominal or a coordinate complex). I call this general plural context "plural-α context".

Like other similarity adjectives, identity adjectives must be licensed by a plural-α context. Semantically, this is expected from the notion of similarity, which presupposes the existence of multiple entities or multiple parts of wholes so that a certain kind of "implicit comparison" (Carlson 1987: 531) can be established. I divide plural-α contexts into three basic types. In the first type, the SE is thematically related to the multiple verbal phrases, whereas in the latter two types, the SE is not.

2.1.1 The Thematic Licensing *same* Construction (TLC)

In the first type of plural-α contexts, the SE seems to get its theta role from the multiple verbal phrases. I call identity adjective constructions of this type Thematic Licensing *same* Construction (TLC).

The English data in (3) and the Chinese data in (4) represent the TLC. In each example of these data, the coordinate clausal complex provides a context of plural eventualities. In (3a), for instance, it is the combination of the helping eventuality and the ruining eventuality that licenses the SE *the same man*. In every example of these data, moreover, each conjunct of the coordinate complex seems to assign a theta role to the SE, if we ignore the word *same* or *tongyang*. In (3a) for instance, *helped* in the first conjunct assigns a theta role to its object, and

---

[3] I do not distinguish *tong, tongyang, tongyangde*. They all mean 'same.'

it seems that *the (same) man* is the object; similarly, *ruined* in the second conjunct also assigns a theta role to its object, and it seems that *the (same) man* is also this object.

(3)   a.   The same man Mary helped and John ruined.   (= (2a))

        b.   The same man came today and will come tomorrow.

        c.   The same man got drunk and was arrested by the cops.

        d.   The same man laughed and was criticized by Mary.

        e.   The same man is rarely easy to please and eager to please.

        f.   The same man praised you and seemed to hate you.

        g.   The same brush, John used for cleaning the toilet and Mary used for cleaning the kitchen.

(4)   a.   Tongyang yi ge ren, zuotian hai zai jiaoke, jintain que   jin-le jianyu.

              same   one CL person yesterday still PRG teach   today however enter-PRF jail

              'The same person was teaching yesterday but entered a jail today.'

        b.   Tongyang yi bu diannao,   Baoyu xihuan, Daiyu taoyan.

              same   one CL computer, Baoyu like   Daiyu dislike

              'The same computer, Baoyu likes and Daiyu dislikes.'

Putting the role of the identity adjective (*same*) aside, intuitively, this type of constructions is defined in such a way that the relation between the SE and the verb (or verb phrase) of each conjunct is a thematic licensing relation.

The TLC has another version in which the *same*-phrase, the SE, occurs at the right-peripheral position of sentences.

(5)   a.   John avoided and Bill ignored the same man.   (Jackendoff 1977: 192)

        b.   John whistled and Mary hummed the same tune.

        c.   John met and invited the same man.   (Moltmann 1992b: 231)

        d.   Baoyu xiugai he tuijian-le   tong yi pian lunwen.

              Baoyu revise and recommnd-PRF same one CL   article

              'Baoyu revised and recommended the same article.'

I do not discuss the right-edge *same*-constructions. I assume that the constructions belong to or should be dealt together with Right Node Raising constructions, in the sense of Postal (1974) and Abbott (1976). It has been recognized that there are systematic syntactic

differences between left-peripheral argument-sharing constructions (ATB constructions) and Right Node Raising constructions (e.g., the right-edge constraint on the gap positions is seen in the latter but not in the former, and island effects are seen in the former but not in the latter) (Ross 1967, Wilder 1997, Sabbagh 2006, Bachrach & Katzir 2006, among others). For this reason, I do not assume that leftward dependency and rightward dependency can be derived in a unified way.

Since theta-role relation is a syntactic relation, the relation between the SE and its licensor (plural-α), the coordinate verbal phrase, is a syntactic licensing relation in a TLC. In the two types of SE constructions introduced in the following two subsections, the relation between the SE and its licensor (plural-α) is not syntactic.

2.1.2 The Paired Pronoun Thematic Licensing *same* Construction (PPTLC)

One construction in which the relation between the SE and the plural-α is not thematic is the Paired Pronoun Thematic Licensing *same* Construction (PPTLC). As in a TLC, the SE is licensed by a context of plural eventualities in a PPTLC. In (6a), for instance, it is the combination of the coming eventuality and the leaving eventuality that licenses the SE *the same man*. In a PPTLC, moreover, the thematic licensing relation is satisfied by a pronoun in each conjunct, and the two pronouns both take the SE as their antecedent. In (6a), for example, the thematic licensing relation of *came* and *left* are satisfied by the first *he* and the second *he*, respectively, and both pronouns take *the same man* as their antecedent.

(6)   a.   The same man, he came and he left.[4]

        b.   The same brush, John used it to clean the toilet and Mary used it to clean the kitchen.

        c.   Tong yi ge nühair, Baoyu gei <u>ta</u> xie-le   qing-shu, Fanjin gei <u>ta</u>

            same one CL girl   Baoyu to her write-PRF love-letter Fanjin to   her

            song-le   jiezhi.

            send-PRF ring

---

[4] One of the reviewers does not find (6a), (6b), and the examples in (25), which occur later in this paper, acceptable. However, note that first, the pattern of these two groups of data is the same: the two gaps of a coordinate complex are both filled with a pronoun. Since the reviewer does not accept either group, we see that her/his judgment is consistent. I believe there must be some dialect difference between my informants and the reviewer. Second, the relevant Chinese examples are all perfect to me and other speakers of Chinese. It is possible that the construction PPTLC is seen in Chinese and the English dialect of my informants, but not in another dialect of English. Since the discussion of whether PPTLC is available in all English dialects does not affect my analysis of TLCs, I put the issue aside in this paper.

'The same girl, B. wrote love-letters to her and F. sent a ring to her.'

d.   Tong yi   ge ren,   Daiyu xihuan <u>ta</u> de xingge, Baoyu kanzhong <u>ta</u> de shenfen

         same one CL person Daiyu like   he MOD character Baoyu value he MOD status

         'The same person, Daiyu likes his characters and Baoyu values his status.'

This construction can be regarded as a gapless-TLC. Semantically, in a TLC, the missing argument in each conjunct must have the same interpretation as the referent of the SE. Similarly, in a PPTLC, the pronoun in each conjunct must have the same interpretation as the referent of the SE. Neither of the two pronouns can refer to anyone else other than the referent of the SE. The relationship between the SE and the two gaps in a TLC is similar to the bound pronoun binding between the nominal *some sheep* and the two pronouns in (7) (Evans 1980: 339).

(7)   Some sheep are such that John owns them and Harry vaccinates them in the Spring.

Similarly, the relationship between the SE and the two pronouns in a PPTLC is similar to the bound pronoun binding between *some sheep* and the two pronouns in (7). Therefore, in this semantic sense, PPTLCs are similar to TLCs.

Syntactically, however, the formal features of the verb in each conjunct are saturated by the pronoun in a PPTLC. No thematic or Case relation exists between the SE and the coordinate complex. Therefore, it is syntactically different from a TLC. The gapless-TLC data are similar to the constructions in (8) and (9), where one nominal is the antecedent of the two resumptive pronouns or relative pronouns distributed in the two conjuncts:

(8)   Na ge nühair, Baoyu gei <u>ta</u> xie-le   qing-shu, Fanjin gei <u>ta</u>   song-le jiezhi

              that CL girl   Baoyu to her write-PRF love-letter Fanjin to   her send-PRF ring

              'That girl, Baoyu wrote love-letters to her and Fanjin sent a ring to her.'

(9)   a.   The manuscript [[the letter on the front of <u>which</u> and the scribbling on the back

              of <u>which</u>] Harry deciphered] was in Gwambamamban.

       b.   He is the man [<u>whose</u> eldest sister and <u>whose</u> mother are both musicians].

       c.   It's John <u>who</u> likes Mary and <u>who</u> Bill hates.

2.1.3 Non-Thematic Licensing *same* Construction (NTLC)

Another group of constructions in which the relation between the SE and the plural-α is not thematic include four subtypes, but I call all of them Non-Thematic Licensing *same* Construction (NTLC).[5]

<u><I> The discourse plural licensing</u>

First, *same* has an indexical reading, as in (10a). This use of *tongyang* in Chinese is seen in (10b).

(10)   a.   John saw the same tree.

       b.   Lao Li kanjian-le tong yi ke shu.

            Lao Li see-PRF   same one CL tree

            'Lao Li saw the same tree.'

As described in Carlson (1987: 532), in data like (10), the most natural interpretation involves a covert comparison between something referred to in the sentence (a certain tree) and something that is understood by the listener as having been already contextually defined. The speaker is considering both the current eventuality and a previous one in which a tree was mentioned. It is this plurality of eventualities that licenses the identity adjective.

In (10a), the SE *the same tree* has a thematic relation with the selecting verb *saw*. The discourse licensing of the SE does not have any thematic relation involved.

<u><II> The quantifier presupposition plural licensing</u>

Second, *same* may be licensed by a universal quantifier. In (11a), *same* is licensed by *everyone*, and in (11b), *same* is licensed by *all of the furniture*. The Chinese example in (11c) is parallel to (11a).

(11)   a.   Everyone saw the same tree.

       b.   All the furniture is of the same color.

       c.   Meige ren   dou kanjian-le tong yi ke shu.

            every person all see-PRF   same one CL tree

            'Everyone saw the same tree.'

---

[5] The adjective *same* can also appear in comparatives, as in *John found the same solution as Mary*. Since the syntax of comparatives is not clear to me, I do not discuss this construction here.

As we know, when we use a universal quantifier with an individual-denoting nominal in an episodic context, we presuppose the existence of a group of individuals, so that we can mention every item of the group. In (11a) and (11c), the existence of two or more persons is implied, and in (11b), the existence of several pieces of furniture is implied. It is this implied plurality that licenses the identity adjective.

Since a quantified nominal is not a verb or predicate, it does not have any thematic relation with the SE.

<III> The plural licensing with restrictive relative clauses

Third, *same* appears in restrictive relative clause constructions, as in (12).

(12)   The same man {that/who} we saw yesterday came today.

The semantic function of restrictive relative clauses is to restrict the referent in a set of elements. Thus relative clauses also presuppose the existence of plural elements. It is this presupposed plurality that licenses the identity adjective.

In (12), the SE *the same man* has a theta relation with the matrix predicate *came*, rather than with its licenser, the relative clause. Within the relative clause, *we* and the relative pronoun *who* (or a null operator) satisfy all the thematic checking requirements.

<IV> The clause-internal plural licensing

Fourth, *same* occurs in a construction where an explicit plural-α occurs. This plural-α is realized by plural morphemes, coordinate complexes, or plural numerals. The English data in (13) and the Chinese data in (14) represent this type of construction. I underline the plural element in the data. The SE is licensed by the plural persons in (13a), by the two locations of the related eventualities in (13c), and by the two manners of the related eventualities in (13e). Keep in mind that unlike in TLCs, there is no thematic relation between the SE and the plural-α in this construction. In order words, the plural-α does not assign any theta role to the SE. In (13a), for instance, the object *the same picture* is an SE and the plural subject *the students* licenses the SE. The SE gets its theta role from the verb *saw*, rather than its licensor, the subject. Likewise, the subject gets its theta role from the whole predicate *saw the same picture*, rather than the SE. Since the SE and its licensor are both arguments, neither assigns any theta role to the other. Therefore, there is no thematic relation between them.

(13) a. {<u>The students</u>/<u>John and Mary</u>} saw the same picture.

   b. The same salesman sold me <u>these two magazine subscriptions</u>.

<div align="right">(Carlson 1987: 532)</div>

   c. The same child slept <u>in the bed and on the floor</u>.

   d. John played the same sonata <u>on his violin and on his piano</u>.

   e. John played the same sonata <u>slow and fast</u>.   (Moltmann 1992b: 231)

(14)   {<u>Tamen</u>/<u>Baoyu he Daiyu</u>} kan-le   tong yi   chang bisai.

    they/Baoyu   and Daiyu watch-PRF same one CL   competition

    '{They/Baoyu and Daiyu} watched the same competition.'

In this type of data, the plural-α is not a verbal element and thus does not have any thematic relation with the SE in the sentence. Note that the division between this construction and TLCs is whether there is any thematic licensing relation between the SE and the plural-α, rather than whether the plural-α is a verbal coordinate complex. In the following data, the SE adverbials are base-generated out of the coordinate verbal complexes and are licensed by the complexes directly. The formal features of the verbs in the conjuncts are satisfied locally. Thus there is no thematic relation between the SEs and their licensors. They are all NTLCs. [6]

---

[6] In addition to the requirement of a plural-α licensor, identity adjectives have another formal property: they can be ambiguous in type and token identity readings. Consider Carlson's (2002: 304) following example:
(i)   John and Bob work on the same computer.   (<IV>: type & token)
   Carlson observes that "if you say that John and Bob work on the same computer, you could intend that they share a computer at work, or that each has his own computer, but they are of the same type (e.g. they are both Apple G-3 powerbooks)." Thus the word *same* does not tell us whether the encoded identity reading is token-identity or type-identity.
   (i) is an example of type <IV> of NTLC, i.e., the clause-internal plural licensing construction. Other constructions also allow the ambiguity. The following (iia) is an example of type <I>, the discourse plural licensing construction. According to Lasersohn (2000: 83), this sentence can mean either that Enzo and I drive the very same car token, or just that we both drive Ford Falcons. (iib) is an example of type <II>, the quantifier presupposition plural licensing construction. It means either that all of the people are using the very same office token, or that they each use a different office of the same type. (iic) is an example of type <III>, the restrictive relative clause plural licensing construction. As observed by Lasersohn (2000: 83), this sentence means either that Enzo now drives the very same car token as I used to drive, or that he drives a car of the same type as I used to drive - presumably meaning in this case, a car of the same model, or the same year and model. (iid) (= (6b)) is an example of PPTLC, the paired-pronoun licensing construction. Finally, (iie) (= (3g)) is an example of TLC. Both (iid) and (iie) can describe either a specific brush, or a certain type of brush.
(ii)   a.   I drive a Ford Falcon. Enzo drives the same car.   (<I>: type & token)
        b.   Everyone uses the same office.   (<II>: type & token)
        c.   Enzo drives the same car I used to drive.   (<III>: type & token)
        d.   The same brush, John used it to clean the toilet and Mary used it to clean the kitchen.
                                            (PPTLC: type & token)
        e.   The same brush, John used to clean the toilet and Mary used to clean the kitchen.
                                            (TLC: type & token)

(15) a. Zai tong yi tian, Baoyu wancheng-le boshi lunwen, Daiyu sheng-le haizi.

at same one day Baoyu finish-PRF   doctor thesis   Daiyu bore-PRF child

'On the same day, B finished a PhD thesis and D gave birth to a child.'

b. Yinwei tongyang de yuanyin, Baoyu chidao-le,   Daiyu mei lai shangke

because same   MOD reason   Baoyu late.come-PRF Daiyu not come class

'For the same reason, B was late and D did not come to the class.'

c. Weile tongyang de mudi,   Baoyu xue-le   Riyu,   Daiyu xue-le

for   same   MOD purpose Baoyu learn-PRF Japanese Daiyu learn-PRF

Mongguyu.

Mongolian

'For the same reason, B. learned Japanese and D. learned Mongolian.'

2.2 Major syntactic questions of TLCs

After distinguishing TLCs from other SE constructions, we are now ready to examine the syntactic properties of TLCs. Our initial observation is that in TLCs, the identity adjective can be associated with various arguments (agent, theme, goal), and the missing part of the first conjunct does not need to have the same thematic role as that of the second conjunct. For instance, in *The same man laughed and was criticized by Mary* (= (3d)), the missing argument of the first conjunct is the agent of the unergative verb *laughed*, while the missing argument of the second conjunct is the raised patient of the passive verb-complex *was criticized*.

TLCs have been regarded by Jackendoff (1977: 192-194), Abbott (1976: 642), Gazdar (1981: 180), Gazdar et al. (1982: 664), and Postal (1998: 137) as a challenge to generative syntax. Such data are special in that, if the SE is "reconstructed" into each clausal conjunct, the sentence either is unacceptable or does not have the intended reading. For instance, if no man has been mentioned in the discourse, (16b) is not acceptable. One cannot use this sentence to initiate a description of two events that had a certain man involved. If someone has been previously mentioned in the discourse, (16b) is acceptable, but the two occurrences

---

We thus see that both the token and type identity readings are available for all of identity adjective constructions.

However, when we talk about persons, our identity adjective expresses token-identity only. This restriction can be explained pragmatically. It is hard to divide people into types, without any clear criteria in the context. The data in (3a-f), (4a), and (6) all have exclusive token-identity readings.

Note that the referent of the words such as *book, movie* can have multiple copies, and thus when we discuss the contrast between type and token, we have to distinguish version-token from copy-token (see Kratzer 1998).

of *the same man* are semantically linked to the man that has been mentioned in the discourse (i.e., the reading is changed into that of type <I> of NTLCs).

(16)   a.   The same man Mary helped and John ruined.   (= (3a))

    b.   (*)Mary helped the same man and John ruined the same man.

Why cannot the SE surface inside the coordinate complex in TLCs? I call this the Question of the Surface Position of SEs. This question in fact requires us to solve another basic syntactic question, the Question of the Base-Position of SEs: Where are the SEs in the constructions base-generated? This second question entails questions like the following:

Why do we interpret SEs as agent or theme, etc., exactly as what we expect the missing part to be in the conjuncts?

How is the formal feature licensing of the verbal element achieved if the argument that can implement the licensing is missing in each conjunct of a TLC? For instance, in (16a), both *helped* and *ruined* are transitive. The agent of the former is *Mary* and the agent in the latter is *John*. According to the Projection Principle (Chomsky 1981, among others), in the presence of the agent, the transitive verb in each conjunct must have an object. The verb and the object need to have formal feature relations (selection, theta-role, Case, etc.). What is the object in each conjunct of the sentence?

In addition to the above two basic syntactic questions, one more fact is in need of explanation: why the gap position in the second conjunct of a TLC cannot be filled with an overt pronoun, as shown in (17). I call this the Question of Overt Right Link of a Dependency.

(17)   a.   The same man Mary helped and John ruined (*him).

    b.   The same man Mary helped and (*him) John ruined.

All of these questions will be answered in Section 3 and Section 4.

3. Building well-formed conjuncts of TLCs

This section aims to answer the Question of the Base Position of SEs.

3.1 The existence of a silent nominal in the second conjunct

We can see that an SE functions as an argument of the predicate or verb in each conjunct of a TLC, although it does not occur in either conjunct. However, no nominal may satisfy the

formal requirements of two predicates or verbs (selection, theta-role, Case, etc.). Moreover, any argument (sideward) movement chain relation between the two conjuncts is unlikely, either, since it is possible that the tail link and the head link do not have the identical form. In (18), for instance, if the gap position in the second conjunct were the base-position of the SE, *the same picture of herself,* the derivation would crash, since the feminine reflexive *herself* would not be licensed in the conjunct.

(18)   The same picture of herself, Mary painted yesterday and John bought today.

        A plausible hypothesis is that the SE is base-generated as an argument in the first conjunct, and there is another nominal, which is silent, in the second conjunct.

        In each conjunct of a TLC, the existence of a nominal related to the argument gap is first of all required by the general formal feature licensing, as stated above. Secondly, it can also be seen in data like (19), where the reflexive in each finite clausal conjunct must be licensed by a local antecedent. Note that the occurrence of *has* in each conjunct indicates that the construction is a clause rather than VP coordination construction. If the reflexive of the first clausal conjunct in (19) is licensed by *the same guy*, the reflexive of the second clausal conjunct there must be licensed by a different nominal which is base-generated inside the clausal conjunct.

(19)   The same guy has constrained himself in public and has indulged himself in his home.

3.2 The interpretation of the silent argument in the second conjunct

After identifying the existence of an argument in the gap position of the second conjunct of a TLC, we now identify the interpretation of the argument.

        First of all, the ϕ-features of the assumed silent argument in the second conjunct must be identical to that of the SE. The unacceptability of the examples in (20) shows that the ϕ-features of the silent argument are not underspecified. Moreover, these three examples respectively show that the silent argument may not have different gender, number, and person features from those of the SE.

(20)   a.   *The same guy has constrained himself in public and has indulged herself in
                her home.

b.   *The same guy has constrained himself in public and have indulged themselves in their homes.

c.   *The same guy has constrained himself in public and have indulged myself in my home.

Secondly, descriptively speaking, this assumed argument in the second conjunct of a TLC may not have an independent referent. For instance, the TLC in (21) may not be followed by the plural pronoun *they* that takes the combination of the SE and the silent argument as its antecedent.

(21)   The same man came today and will come tomorrow. {He/*They} had a cold yesterday.

From the interpretation perspective, the relationship between the silent argument and the SE is like that between an anaphor or a resumptive pronoun and its antecedent. The former has an unvalued [ID] (for "identification") feature, which is valued by its antecedent (see Adger & Ramchand 2005: 173 and Harley 2005: sec 7 for the formalization of the [ID] feature). Later, in Section 4, we will show that the SE is raised out of the coordinate complex. Thus the silent argument in the second conjunct is c-commanded by its antecedent, the SE.

3.3 The syntactic category of the silent argument in the second conjunct

I now identify the syntactic category of the assumed silent argument in the second conjunct of a TLC. I claim that the argument is a pro-form, rather than a copy of the SE. We have shown in (20) that the φ-features of the silent argument are identical to those of the SE, i.e., those of the head of the SE only. In (22), for instance, the silent argument in the second conjunct must be a pro-form. If the conjunct contained a copy of the SE, the *same picture of herself,* in any step of the derivation, the feminine reflexive *herself* would not be licensed in the conjunct.

(22)   The same picture of herself, Mary painted yesterday and John bought today. (= (18))

We can further identify the anaphor-like pro-form in the second conjunct of a TLC as a pro-φP, defined in Déchaine & Wiltschko (2002). Déchaine & Wiltschko's (2002) cross-linguistic research, including English research, identifies the existence of this type of pro-

forms, which never have independent referents. Also, the existence of this kind of (silent) pro-forms for the lower link of A-bar dependencies is argued for in Adger & Ramchand (2005).

I thus conclude that the silent argument in the second conjunct of a TLC is a silent pro-form, taking the SE as its antecedent. I leave the issue why this pro-form must be silent to 4.3.

Now I can answer the Question of the Base Position of SEs: an SE is base-generated as an argument in the first conjuncts. It satisfies the local formal requirements such as theta-role and Case feature checking. In the second conjunct, there is a silent pro-ϕP in the gap position. The pro-ϕP satisfies the local formal requirements within the conjunct. Note that this conclusion is achieved on the assumption that the verb or predicate of the second conjunct assigns its relevant theta role to a distinct nominal from that of the first conjunct.

We have identified the existence of a silent argument in the second conjunct of a TLC, and its interpretation and category. The SE and this silent argument guarantee the syntactic well-formedness of each conjunct of a TLC respectively.

4. Extraction of SEs out of their licensing coordinate complexes

So far, I have shown two dependencies in a TLC: the binding relation between the SE and a silent pro-ϕP; and the licensing relation of the SE by a plural-α. The two dependencies in natural languages are independently observed. Reflexives encode the former dependency. They encode a binding relation only, and do not need any plural-α licensor. In contrast, relational nominals such as *combination*, *mixture, marriage, comrade, friend*, encode the latter dependency. They express certain relation between multiple individuals, thus need a plural-α licensor. But they do not encode any binding relation.

The SEs that host the word *same* in TLCs are special in that they denote both dependencies.

I have discussed the licensing of SEs of TLCs by the coordination of two clausal conjuncts in 2.1.1, and the binding relation of TLCs in Section 3. In this section, I show that it is the former SE licensing relation that forces the SE to move out of the coordinate complex. Moreover, this obligatory raising also correlates with the obligatory silence of the pro-form in the second conjunct. This will answer the Question of the Surface Position of SEs and the Question of Overt Right Link of a Dependency, raised in 2.2.

4.1 The extraction of SEs out of first conjuncts

We have argued in Section 3 that the SE of a TLC is base-generated in the first conjunct of the construction. Recall that the SE of a TLC cannot be "reconstructed" to the conjuncts (see (16)). I now argue that the association between the SE and the gap in the first conjunct of a TLC is a movement chain. In other words, the left-edge position of the SE of a TLC is derived by movement. My first argument for the movement analysis is the island effects exhibited in such a construction.

(23) a. *The same person, Bill lost business because he hired and Mary praised a lot.
      b. *The same person, Bill lost business after he hired and Jack gained a lot of money after he hired.
      c. *The same student, the teachers who often praise are functionalists, and the teachers who often criticize are formalists.
      d. *The same nurse, John is still wondering whether he should date and Jack has dated.

In the above unacceptable examples, the SEs are originated in islands. In (23a), the SE *the same person* is related to the object of the verb *hired*, and the verb is inside the *because*-adverbial clause. In (23b), the SE *the same person is* related to the object of the verb *hired* in the *after*-adverbial clause. The impossible dependency in both sentences can be covered by the adjunct island effect. In (23c), the SE *the same student* is related to the object of the verb *praise* in the relative clause of the first conjunct. The impossible dependency can be covered by the complex definite DP island effect. Finally, in (23d), the SE *the same nurse* is related to the object of the verb *date*, and the verb is inside a question initiated with the word *whether*. The impossible dependency can be covered by the wh-island effect.

We have argued in Section 3 that the gap in the second conjunct of a TLC is not formed by movement. Then we should not expect any island effects for the gap. This is indeed the case. After checking with my informants, we see the acceptability of (24a), in contrast to (23a), and the acceptability of (24b), in contrast to (23d).

(24) a. The same person, Bill praised a lot and Mary lost because business she hired.
     b. The same nurse, John has dated and Jack is still wondering whether he should date.

The unacceptable TLC examples in (23) are also in contrast to the following acceptable PPTLC examples. Since there is no movement chain in deriving the surface positions of the SE and the pronouns in a PPTLC, the acceptability of the sentences is expected.

(25) a. The same person, Bill lost business because he hired him and Mary praised him a lot.

b. The same person, Bill lost business after he hired him and Jack gained a lot of money after he hired him.

c. The same student, the teachers who often praise him are functionalists, and the teachers who often criticize him are formalists.

d. The same nurse, John is still wondering whether he should date her and Jack has dated her.

My second argument for the movement approach is that a SE may contain a reflexive bound by the subject of the first conjunct:

(26) The same picture of herself, Mary painted yesterday and John bought today. (= (22))

The reconstruction effect of the reflexive indicates the movement possibility.

The above observations show that in TLCs, the dependency between the SE and the gap in the first conjunct is a movement dependency.

One might want to know the relationship between the proposed raising of SEs from first conjuncts and the second part of the Coordinate Structure Constraint (CSC, Ross 1967), which rejects any representation in which a movement chain starts from a single conjunct and ends out of the coordinate complex. Remember that we are dealing with TLCs, in which the combination of the two conjuncts licenses the SE. Thus the two conjuncts of a TLC must be semantically related. If conjuncts are semantically related, elements can be extracted from single conjuncts. Typical examples include the following (Goldsmith 1985, Lakoff 1986, Culicover and Jackendoff 1997, Kehler 2002):

(27) a. How much wine can you drink _ and still stay sober?

b. This is the thief that you just point out the loot and then we arrest _ on the spot.

In (27a), the two conjuncts have a "nevertheless" relation, and in (27b), the two conjuncts have a close temporal sequential relation. The wh movement in (27a) is out of the first conjunct, and the null operator movement for the relativization in (27b) is out of the second conjunct. Both sentences violate CSC, but they are acceptable.

The following examples in (28) tell us that when CSC is violated, the conjuncts must be semantically related. CSC is violated in (28b), but not in (28a). Carlson (1987: 539, also see Kehler 2002) observes that in (28b) there must be a consequential relation between the two eventualities; (28a), however, allows a (less salient) reading in which the two eventualities are not related.

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

Although the semantic relation between the conjuncts of a TLC is a different type of semantic relation, I assume that the relation also makes the construction exempt from CSC.

Data like (27) and (28) suggest that movement launching from a single conjunct is syntactically possible. However, it is not true that all representations derived by such a movement are acceptable. We will return to the issue in 4.3.

4.2 Carlson's (1987) constraint and the motivation of the extraction
In this subsection I explain the motivation of the observed movement of SEs in TLCs. For instance, what drives the SE *the same man* in (29a) and *tongyang yi ge xiaohai* 'the same child' in (30b) to move out of the coordinate complex?

(29)   a.   The same man Mary helped and John ruined.   (= (16a))
       b.   (*)Mary helped the same man and John ruined the same man.   (= (16b))
(30)   a.   *Baoyu xihuan <u>tongyang</u> yi ge xiaohair, Daiyu taoyan _.
             Baoyu like   same   one CL child   Daiyu dislike
       b.   <u>Tongyang</u> yi ge xiaohair, [Baoyu xihuan _, Daiyu taoyan _].
             same   one CL child   Baoyu like   Daiyu dislike
             'The same child, Baoyu likes and Daiyu dislikes.'

Recall that there are two dependencies in TLCs: a binding relation between the SE and a silent pro-φP, and licensing of the SE by a plural-α. It is the latter dependency that requires the extraction of SE out of the coordinate complex. The requirement comes from a constraint noted by Carlson (1987: 540). He notes that the similarity adjectives *same* and *different* cannot surface inside their licensing coordinate complexes. Data like the following, if acceptable, would have indexical readings, in which the SEs are licensed by the discourse context (type <I> of NTLC), rather than the coordinate complexes. Such readings are irrelevant to my discussion here.

(31) a.   *John [spilled his milk and poached the <u>same</u> egg].

   b.   *Berr Rabbit ran [into the briar patch and away from <u>different</u> enemies].

Carlson's constraint is in fact more general than the *same* and *different* constructions. It can be applied to another type of data. Consider the following:

(32) a.   the meeting of {John and Mary/the boys/*the boy}

   b.   *John and the meeting of Mary

(33) a.   the mixture of the wine and oil

   b.   *the wine and the mixture of oil

(34) a.   the combination of this fact and that fact

   b.   *this fact and the combination of that fact

Collective expressions such as *meeting, mixture*, and *combination* are licensed by non-singular arguments. In (32a), for instance, the word *meeting* requires its argument to be plural. Either the coordinate complex *John and Mary*, or the plural nominal *the boys* satisfies the requirement. The singular countable DP *the boy*, however, does not. Theoretically, collective expressions can be licensed by the occurrence of a coordinate complex in the context. Now in the b-sentences in (32) through (34), we do have a coordinate context, which should license the collective expressions, contrary to the fact. Carlson's constraint can explain this: such expressions cannot occur inside their licensing coordinate complexes. I use this rule to explain why the extraction of SEs out of coordinate complexes is obligatory in TLCs.

I claim that the licensing of SEs and collective expressions can occur during the derivation of a construction. After an SE or a collective expression moves out of a coordinate complex, the complex is able to license the SE or the collective expression. This is the case

under discussion: in TLCs, SEs are licensed by coordinate verbal complexes after they move out of the complexes. In (29a), for instance, the SE *the same man* is licensed after it moves out of the coordinate complex.

If an SE or collective expression cannot be licensed in any step of the derivation, the representation will be not acceptable. (29b), (30a), (31), and the b-sentences in (32) though (34) all illustrate this.

All of the data that Carlson discusses are type <IV> of NTLCs. In this type of data, an SE and its licensor both are in the same clause but there is no thematic relation between them. In TLCs, however, an SE does have a thematic relation with a conjunct of the licensing coordinate complex. Carlson's constraint can be used not only to account for why no SE may be contained in its licensing coordinate complex in NTLCs, but also to explain why SEs must be moved out of their licensing coordinate complexes in TLCs. We have argued that in TLCs, the SEs are licensed by the clausal coordinate complexes to their right (2.1.1), and they are base-generated in the first conjuncts of the coordinate complexes (Section 3). In their surface positions, the SEs are separated from their licensers. We have argued that the separated is the result of the movement of the SEs from the first conjuncts. If the SEs do not move, they will remain in the conjuncts, and thus in the coordinate complexes. If the SEs remain in their licensing elements, the whole constructions will violate Carlson's constraint that SEs may not surface inside their licensing coordinate complexes. Therefore, the motivation for the movement of SEs out of the first conjuncts is to satisfy Carlson's constraint on SEs.

One of course can formalize the constraint in terms of feature-checking, or some other licensing relations. I will not commit myself to any specific formalization here. My approach is based on the empirical ground of the constraint, and is compatible with any formalization of the constraint.

So far I have argued that the motivation of the SE extraction out of first conjuncts is to separate SEs from their licensors. It is clear that in a PPTLC, the SE is out of the licensing coordinate complex, thus the SE does not move.

I now can answer the Question of the Surface Position of SEs posed in 2.2: Why must the SEs be out of the coordinate complexes in TLCs? My answer: the coordinate complexes are licensors of the SEs, and no SE can be contained in its licensor, according to Carlson's (1987: 540) generalization of SEs.

4.3 The silence of the pro-form in the second conjunct of a TLC

In Section 3, we identified that the null argument in the second conjunct is a pro-form, rather than a full-fledged DP. We now need to explain why this pro-form must be silent. For instance, why the overt pronoun *he* in (35) makes the sentence unacceptable.

(35)　　*The same man came and he sat down.

　　　　If the gap in each conjunct of a TLC is replaced by a pronoun, the construction becomes a PPTLC (see 2.1.2).

(36)　　The same man he came and he sat down.

　　　　The constraint seen in (35) tells us that when an SE is related to two gap positions (as in a TLC) or two pronouns (as in a PPTLC), the sentence is fine, however, if it is related to one gap in one conjunct and one pronoun in another conjunct at the same time (as in (35)), the sentence is not acceptable (a reviewer mentions that a similar constraint is seen in the data discussed in Cheng & Huang 1996). We have observed that such a constraint is also seen in other coordinate constructions, such as the WH movement construction in (37a) (I am grateful to another reviewer for pushing me to discuss such examples), the Chinese topicalization construction in (37b), and the Chinese relativization construction in (37c).

(37)　　a.　　Which book$_i$ did Mary like t_i and John review (*it$_i$)?
　　　　b.　　Na ge ren$_i$,　Baoyu xihuan t_i, Daiyu taoyan (*ta$_i$).
　　　　　　　that CL person Baoyu like　　Daiyu dislike　he
　　　　　　　'That person, Baoyu likes and Daiyu dislikes.'
　　　　c.　　Zhe jiu　　shi Baoyu qing-le　　ranhou　you xunchi-le (*tamen) de　naxie
　　　　　　　this exactly be Baoyu invite-PRF and.then also scold-PRF they　　MOD those
　　　　　　　xuesheng.
　　　　　　　student
　　　　　　　'Here are those students who Baoyu invited but then scolded.'

　　　　Data like the following, however, indicate that it is not the case that an overt pronoun may not be co-indexed with a gap left by movement:

(38)   Which paper$_i$ did Mary file t$_i$ without reading (it$_i$)?

It thus seems that the constraint that no over pronoun in the second conjunct may be co-indexed with the gap left by the movement in the first conjunct is seen in coordinate constructions only. I stipulate that the constraint is covered by a more general phonological constraint on coordinate constructions: no overt element internal to the right conjunct may be co-indexed with any gap or silent element in the left conjunct. The following examples are cited from Wilder (1997: 59, 60, 67, 94).

(39)   a.   *[__$_i$ came in] and [{Mary$_i$/she$_i$} sat down].

        b.   *[John __$_i$ wine], but [Mary drinks$_i$ beer].

        c.   *[John ~~likes Beethoven~~] and [Mary likes Beethoven].

        d.   *[I said Mary ~~gave~~ a book ~~to John~~] and [you said Sue gave a paper to John].

We can see that the constraint is also seen in ellipsis constructions, and the offending overt forms in the second conjuncts are not restricted to pro-forms.

In this respect, RNR constructions, such as (40), are fine because it is a gap rather than an overt form in the second conjunct that is related to the gap in the first conjunct, and the "shared" element (the underlined part in (40)) is out of the coordinate complex (see Postal 1998, among others).

(40)   John offered __, and Mary actually gave __, a gold Cadillac to Billy Schwartz.

I use this correlation between the silent form of an element (including pro-form) in the right conjunct and the silence of its antecedent in the left conjunct to answer the Question of Overt Right Link of a Dependency, posed in 2.2. At this moment, I do not fully understand this correlation. Nevertheless, it is observed independently of TLCs, and should not be used to argue against my analysis of TLCs. I leave a general explanation of the correlation to future research, however.

An independent issue is how the silence of the pro-forms in TLCs is achieved. There are two ways. The pro-forms can be directly null pronouns, as one version of pro in Japanese (Tomioka 2003). The silence of the pro-forms can also be the result of phonological deletion of an overt pro-ϕP (Déchaine & Wiltschko 2002). There is no indication that the two ways are

exclusive each other, though. Before I find any indication for the choice in any specific language, I claim that either way is possible to achieve the silence of the pro-forms in TLCs.

I conclude that syntactically, an SE is raised from the first conjunct and there is a silent pro-form in the second conjunct of a TLC, and, semantically, as I mentioned in 2.1.2, the relation between the raised SE and the gap positions of the construction is similar to bound pronoun binding (see Evans 1980: 339). The raised SE c-commands the gaps. This conclusion provides a new analysis to ATB constructions.[7]

5. The computations of TLCs are applicable to ATB constructions

The so-called ATB constructions are in fact identity constructions, without an explicit identity adjective. I claim that all argumental ATB constructions are derived in the same way as TLCs. This means that the apparent shared arguments in ATB constructions are SEs with an implicit morpheme meaning "same." My derivation of (41a) is illustrated in (41b).[8]

(41) a. Which picture of himself did Tom paint and Mary buy?

    b. ⬆ [[$_{DP2}$ which $\varnothing_{<same>}$ picture of himself] did Tom paint t_{DP2} and *pro-ϕP_i* ~~did~~ Mary

      buy t_i]

In (41b), the DP2 *which $\varnothing_{<same>}$ picture of himself*, which is base-generated in the first conjunct, moves out of the coordinate complex, and binds a wh *pro-ϕP* in the second conjunct.

In this section, I present arguments for my TLC approach to ATB constructions. My extension of the analysis of TLCs to an analysis of ATB constructions is motivated by three

---

[7] The issue of pro-form binding with respect to the adjective *same* is discussed in Moltmann (1992a). However, she does not discuss TLCs. Comparing data like *John and Mary bought the same book* (a NTLC, similar to my examples in (13)) with data like *John and Mary think they love each other*, she analyzes the nominal containing the word *same* as a bound element similar to a reciprocal. Her analysis covers certain types of NTLCs. In my approach, I claim that in TLCs, the SE, which is also a nominal containing the word *same,* is a binder of a silent pro-form, and the SE and the pro-form are separately base-generated in different conjuncts. My research and her research cover different SE constructions.

[8] In section 6, I will claim that adjunct ATB constructions in English are not TLCs. Rather, they are NTLCs, and are parallel to the data in (15).

  Moreover, it seems that there is no evidence for the existence of any head-ATB dependency. Consider data like (i-a), where the auxiliary *will* seems to be shared by both conjuncts. It is however hard to exclude a deletion analysis of such data. It is possible that (i-a) is derived from (i-b) by deletion. The representation of (i-b) is similar to (i-c), where the heads of the conjuncts are different, and thus no deletion applies.

(i)   a.   Who will Peter defend and John argue against?
       b.   Who will Peter defend and ~~will~~ John argue against?
       c.   Which book did Mary read and is Bill going to read?

observations of ATB constructions, which will be presented in the three subsections of this section: such constructions always have an identity reading (5.1); there is a silent argument in the gap position of the second conjunct (5.2); and there is a correspondence between wh-extraction and binding reading in wh in situ languages (5.3). These observations, as well as Munn's (1992, 1993) observation that the extraction of ATB constructions launches from the first conjunct only, lead me to the new analysis of ATB construction, as illustrated in (41b).

5.1 The identity readings of ATB constructions

My extension of the analysis of TLCs to an analysis of ATB constructions is first of all motivated by my following observation: an identity reading is always available for ATB constructions. As described by Moltmann (1992b: 126, 132), (42a) implies that the person that John married is also the person that Bill proposed to; and (42b) implies that the product of John's writing and Bill's composing is a single masterwork. Likewise, (42c) can be only about one man who walked down the street and was killed; (42d) can be only about a particular mistake. Similarly, in (42e) and (42f) (Gazdar 1981: 174 (60d) and (61d)), the person that Mary likes must also be the person who will win.

(42)   a.   Which woman did John marry and Bill propose to?

       b.   Which masterwork did John write and Bill compose?

       c.   A man walked down the street and was killed.

       d.   A mistake was made and will be corrected.

       e.   I know a man who Mary likes and hopes will win.

       f.   I wonder who Mary likes and hopes will win.

The identity reading of ATB constructions is confirmed by the parallelism between (43a) (Heycock & Zamparelli 2000: (42)) and (43b):

(43)   a.   #Tell me which documents John wrote today and Mary filed yesterday.

       b.   #The same documents, John wrote today and Mary filed yesterday.

Johnson (1996), however, assumes that gapping can be viewed as the result of head-ATB movement. If gapping is the result of PF-deletion (for recent advocates of this deletion approach, see Schwarz 1999, V. Lin 2002, Ai 2005, among others), we see no instance of head-ATB dependency.

The oddness of both (43a) and (43b) is accounted for by the common sense that the same documents cannot be written today after being filed yesterday.

The left-peripheral nominal in ATB constructions can also be kind-denoting:

(44)   Xiao mao, Baoyu xihuan, Daiyu taoyan.

small cat   Baoyu like   Daiyu dislike

'Small cats, Baoyu likes and Daiyu dislikes.'

The sentence in (44) does not allow the reading that Baoyu likes small cat A, and Daiyu dislikes small cat B. Instead, it means that Baoyu likes all small cats and Daiyu dislikes all small cats. I can say that in this case, the ATB construction has an exhaustive token-identity reading.

Actually, if the extracted argument of an ATB construction is definite, adding (*the*) *same* to the argument does not change the meaning of the construction. The two sentences of each pair below are synonymous.

(45)   a.   John robbed the bank and ran for president.

        b.   The same John robbed the bank and ran for president.

(46)   a.   The man robbed the bank and ran for president.

        b.   The same man robbed the bank and ran for president.

(45a) and (46a) are ATB constructions, whereas (45b) and (46b) are TLCs. It is plausible to assume that the ATB constructions are TLCs with an implicit identity adjective.[9]

---

[9] One difference between this assumed null identity adjective and the overt form *same* is that the latter generally needs to occur with the article *the*, a fact emphasized by Lasersohn (2000: 86). *Same* may occur neither with the determiner *a*, nor in a determinerless nominal, as shown in (ia) and (iib). This is different from the adjective *different*, which can occur with the determiner *a*, as in (ib), and in a determinerless nominal, as in (iib).

(i)   a.   Ada and I have {the/*a} same hobby.

         b.   She is wearing a different dress every time I see her.

(ii)   a.   Meet friends with {the/*∅} same hobbies.

         b.   All the men are from different towns.

   Similarly, the German *gleich* 'same' must occur with a definite determiner. It cannot occur with an indefinite determiner, nor in a determinerless nominal.

   It is reasonable to assume that the null identity adjective does not have this morphological property. This assumption implies that in data like (42), the silence of the assumed identity adjective comes from the null form of the adjective, rather than any phonological deletion of the word *same*. Obviously, the wh-phrases in (42a,b,e,f) and the indefinite nominals *a man* in (42c) and *a mistake* in (42d) are not compatible with *the*.

Identity readings are available for all types of ATB constructions. However, Munn (1999) claims that some ATB constructions may also have non-identity readings. I will address the issue of non-identity reading of ATB constructions in section 6.

One intriguing case that needs to be clarified is seen in data like (47) (such data are reported in Moltmann 1992b: 137, Fox 2000).

(47)   a.   I would like to know how many books every student liked and every professor disliked.

       b.   A guard is standing in front of every church and sitting at the side of every mosque.

Among several readings of (47a), we care about only one of them (see Moltmann 1992b: 137 for a discussion of various possible readings). In this reading, as stated by Moltmann, *how many books* takes wide scope over *every* and an appropriate answer has to specify the quantity of books x such that every student liked x and every professor disliked x. Note that x is a quantity, not individual. It is in this sense that the sentence is an ATB construction. In this ATB construction, the wh-phrase takes scope over the conjunction. The identity reading is seen in terms of quantity. The speaker asked about the same quantity.

In (47b), it is the quantity and property reading of *a guard* that is "shared" by the two conjuncts. Our world knowledge rules out the individual reading of *a guard*, since the same person cannot appear in different locations at the same time. The sentence makes sense only in the quantity and property reading (see Li 1998b for the claim that quantity-denoting indefinite nominals are NumPs rather than DPs). In this kind of ATB constructions, the identity reading is seen in terms of quantity and property.

5.2 The syntactic reality of a silent argument in the second conjunct

My extension of the analysis of TLCs to an analysis of ATB constructions is also motivated by the following observations: the left-peripheral extracted element is not moved from the second conjunct, and there is a silent argument nominal related to the gap position of the second conjunct.

Extracted reflexives in ATB constructions cannot be reconstructed into the non-initial conjunct either semantically or syntactically. Citing Haik (1985), Moltmann (1992: 126) claims that (48) could mean 'John likes himself and Bill hates himself' if the reflexive were

reconstructed into the second conjunct, but most speakers can interpret (48) only as 'John likes himself and Bill hates John'.

(48)   Himself, John likes t and Bill hates t.

Munn's (1992: 9-13) following examples illustrate the same fact:

(49)   a.   Which picture of {himself/*herself} did John paint and Mary buy?
         b.   Which pictures of himself$_{*i/j}$ did John$_j$ buy and Bill$_i$ paint?

In (49a), the extracted element, *which picture of himself*, cannot originate in the second conjunct. If the derivation of this sentence contained the representation of (50) at any step, it should have crashed immediately after this step, and thus, no more derivation, including the assumed ATB movement, would be possible.

(50)   *Mary bought which picture of himself

The above data tell us that the wh-phrase can only be base-generated in the first conjunct, where the anaphor *himself* is licensed by the c-commanding and local *John*.

Moreover, there are island effects for the gap in the first but not the second conjunct of an ATB construction. In (51a), the gap in the first conjunct is in an adjunct island, and the sentence is not acceptable, whereas in (51b), the gap in the second conjunct is in the same adjunct island, and the sentence is acceptable.

(51)   a.   *Who did Bill lose business because he hired and Mary praise a lot?
         b.   Who did Bill praise a lot and Mary lose business because she hired?

Furthermore, if elements were extracted from two conjuncts at the same time, one we would expect that two distinct wh-elements to be extractable from two conjuncts, respectively, at least in the multiple wh-fronting languages. However, this is never the case:

(52)   a.   *Koga$_1$ sta$_2$ on [vidi t$_1$] i   [jede t$_2$]?
                whom   what he sees   and eats
                'Whom what does he see and eat?   (Russian, Kasai 2004: 169)

b.　　*Kogo$_i$ kogo$_j$ Jan lubi　t$_i$ a　　Maria kocha t$_j$?

　　　　whom whom Jan likes　　and　Maria loves

　　　　'Whom does Jan like and Maria love?'　　　(Polish, Citko 2003: (7))

In (52), for instance, *koga* 'whom' is extracted from the first conjunct and *sta* 'what' is extracted from the second conjunct. The multiple extraction operations are impossible.

Now I turn to the observation that there is a silent argument nominal related to the gap position of the second conjunct of ATB constructions. This can be seen in three perspectives.

First, in data like (53), the predicate requires an external argument to check the relevant theta-features, and a silent argument nominal will satisfy this requirement. In (53a), for instance, *entertaining* requires an external argument, and our assumed silent pro-ϕP satisfies the requirement.

(53)　a.　　Who brought his guitar here and is entertaining himself now?

　　　b.　　Mary$_i$ has invited John$_j$ and will ask about {herself$_i$/*himself$_j$}.

Second, in data like (53), the reflexive *himself* in the second clausal conjunct needs a local licensor in the tensed clause; and a silent argument nominal will satisfy this requirement.

Third, in data like (53) above, the finite Infl of the second conjunct needs a nominal to check its Case and EPP features, and an assumed nominal will satisfy this requirement, before the nominal gets deleted at PF. According to Chomsky (1995), EPP is a strong feature, which must be checked immediately, before any new projection is established. If the EPP of a finite clause conjunct has not been checked, the conjunct cannot merge with a coordinator.

This issue has been addressed by Ingham (2001). To account for why EPP does not seem to be satisfied but the construction in (53b) is still acceptable, he claims that "the feature composition of the second conjunct is defective here." However, defective T is a label for the nonfinite T in raising constructions (*John {expected/seemed} to win*) (Chomsky 2000), and the T of the second conjunct here is not nonfinite. Thus, identifying the T of the second conjunct with the nonfinite T of the ECM construction is ad hoc.

Cross-linguistically, the following Icelandic data (Rögnvaldsson, undated manuscript, example (17)) suggest that the missing argument in the second conjunct does exist syntactically:

(54) a. Margir stúdentar náðu prófinu og var hrósað fyrirþað.   [Icelandic]

      many students passed test-the and were praised for it

      'Many students passed the test and were praised for it.'

   b. Margir stúdentar náðu prófinu og <u>þeim</u> var hrósað fyrirþað.

      many students passed test-the and they.D were praised for it

      'Many students passed the test and they were praised for it.'

The syntactic contrast between (54a) and (54b) is that the former has no overt subject in the second conjunct, whereas the latter has the dative subject *þeim* 'they.' Rögnvaldsson describes the above data (= his (17)) as follows. "Note that the argument which is missing from the second conjunct in (17a) should have dative case, as shown in (17b)." "this means that the second conjunct must have a separate subject position, even when the subject is not phonologically realized, as in (17a). This is shown by the fact that the verb and the participle in (17a) have disagreeing forms, *var* and *hrósað*, instead of the forms *voru* and *hrósaðir*, which would be expected if the overt nominative subject *Margir stúdentar* were the only available subject at all levels of derivation."

The Icelandic data in (54) might provide morphological evidence for the claim that the conjuncts in data like (53b) cannot be intermediate projections. Instead, each conjunct must be a full-fledged TP, where a subject occurs at SpecT.

Parallel to TLCs, I thus claim that there is a silent argument in the second conjunct in ATB constructions, and that the argument is a silent pro-ϕP, which takes the extracted DP as its antecedent. The extracted DP is base-generated in the first conjunct, e.g. *who* in (53a), and *Mary* in (53b).

The above claim also implies that there is no conjunct of intermediate projection (see Borsley 2005 for a discussion of the issue).

In the literature of ATB constructions, it has been proposed that there is a pro in the gap position of the second conjunct (see McNally 1992: 337 for a review). The main reason for people to reject the pro approach is the following: the generally recognized pro can have independent referent, however, the gap in the second conjunct of ATB constructions cannot have a referent independent of that of the extracted nominal. Godard (1989) and McNally (1992: 338) correctly point out that if we use an overt pronoun instead of a pro, we will see the contrast:

(55) a. Few politicians behave morally and are rewarded for doing so.

b.   Few politicians behave morally and they are rewarded for doing so.

These two sentences do not mean the same. The reading of (55a) is that there are few politicians who both behave morally and are rewarded for doing so. However, it is possible that there are also some politicians who behave morally but are not rewarded for doing so. The implicit theme of the second conjunct is bound by the quantifier phrase *few politicians*. On the other hand, the reading of (55b) must be that few politicians behave morally and all of them are rewarded for doing so. In (55a), the quantificational DP takes scope over both conjuncts, whereas in (55b), the quantificational DP scopes over the first conjunct only (see Evans 1980: 339, a similar contrast was originally noted by Partee 1970). The pro analysis predicts that (55a) will have a reading identical to (55b). This is obviously a wrong prediction. In (55b), the quantificational nominal is not able to bind the pronominal subject of the second conjunct.

The contrast between (55a) and (55b) is accounted for in my TLC approach to ATB constructions. I claim that (55a) patterns with a TLC in that, first, *few politicians* is moved out of the coordinate complex, and that is why the quantifier scopes over the second conjunct. Second, there is a silent pro-form in the second conjunct. In this case, the pro-form is a variable, bound by the raised *few politicians*. This pro-form is co-indexed with a gap in the first conjunct, and thus, as we discussed in 4.3, may not be overt. In (55b), an overt pronoun *they* occurs in the second conjunct. The occurrence of this overt pronoun means that this sentence has a different structure from that of a TLC. Specifically, in (55b), *few politicians* remains in the first conjunct, and that is why the quantifier fails to scope over the second conjunct. If *few politicians* remains in the first conjunct, the construction is not an ATB construction any more, and thus it does not have an identity reading.

5.3 The correspondence between extraction and binding readings

My extension of the analysis of TLCs to an analysis of ATB constructions is furthermore motivated by my following observation: there is a correspondence between wh-extraction and binding reading in wh in situ languages.

I showed in 4.3 that an SE must be separated from its licensing coordinate complex, regardless of whether it has a thematic relation with any conjunct of the complex. In ATB constructions, it is recognized that the left-peripheral element is outside of the coordinate clausal complex. In this subsection, I present a correlation between the extraction of wh-elements in ATB constructions and the presence of a binding reading of the constructions.

The correlation is observed in two sides: on the one hand, parallel conjunct-internal wh-phrases do not have a binding relation; and on the other hand, the extraction of wh-phrases out of coordinate complexes is obligatory for an identity reading.

Two identical wh-expressions distributed in two conjuncts do not have an identity reading, cross-linguistically. Such constructions are either unacceptable, as in (56a) (Bošković & Franks 2000: 110), or have exclusive *respectively*-readings, as shown by (56b) and (56c) (Bošković & Franks 2000: 111-112, Moltmann 1992b: 126). Exclusive *respectively*-readings are also seen in the Korean and Japanese data in (57a) and (57b) (Cho and Zhou 2000).

(56)   a.   *Who said that John bought <u>what</u> and that Peter sold <u>what</u>?

        b.   Which man said that John bought <u>which house</u> and that Peter sold <u>which house</u>?

        c.   <u>Which woman</u> did John marry and <u>which woman</u> did Bill propose to?

(57)   a.   John-i <u>enu   salam-ul</u>   salangha-ko Mary-ka <u>enu salam-ul</u>   miweha-ni?

               J-NOM which person-ACC like-and   M-NOM which person-ACC hate-Q

               'Which person x, John loves x and which person y, Mary hates y?'

               Not: which person x, John loves x and Mary hates x   (Korean)

        b.   John-ga <u>dono hito-o</u>   aisitei-te Mary-ga <u>dono hito-o</u>   nikundeiru-no?

               J.-NOM which person-ACC love-and M.-NOM which person-ACC hate-Q

               'Which person x, John loves x and which person y, Mary hates y?'

               Not: which person x, John loves x and Mary hates x   (Japanese)

Similarly, in Chinese, in situ wh phrases distributed in conjuncts do not have a binding reading, either. Instead, they have a *respectively*-reading.

(58)   a.   Baoyu <u>zenme</u> qipian ni, Daiyu you <u>zenme</u> weixie   ni?

               Baoyu how   cheat you Daiyu also how   threaten you

               'How did Baoyu cheat you and how did Daiyu threaten you, respectively?'

        b.   Baoyu <u>weishenme</u> qipian ni, Daiyu <u>weishenme</u> weixie   ni?

               Baoyu why   cheat you Daiyu why   threaten you

               'Why did Baoyu cheat you and why did Daiyu threaten you, respectively?'

The ban of SE wh-phrases in conjuncts is parallel to what we see in (59) (2.2):[10]

(59)   (*)Mary helped the same man and John ruined the same man. (= (16b))

In contrast to the above type of data, the binding reading emerges when a wh-phrase is moved out of the coordinate complex in wh in situ languages. In this case, there is only one overt wh-phrase. The construction is just like ATB constructions in English: the wh phrase is an SE, extracted from the first conjunct only.

(60)   a.   <u>Enu   salam-ul</u>   John-i salangha-ko Mary-ka miweha-ni?   (Korean)
             which person-ACC J-NOM like-and   M-NOM hate-Q
             'Which person x, John loves x and Mary hates x?'
             Not: which person x, John loves x and which person y, Mary hates y

       b.   <u>Dono hito-o</u>   John-ga aisitei-te Mary-ga nikundeiru-no?   (Japanese)
             which person-ACC J.-NOM love-and M.-NOM hate-Q
             'Which person x, John loves x and Mary hates x?'
             Not: which person x, John loves x and which person y, Mary hates y.

       c.   <u>Weishenme</u> Baoyu qipian ni, Daiyu weixie ni?   (Chinese)
             why   Baoyu cheat you Daiyu threaten you
             'Why did Baoyu cheat you and Daiyu threaten you?'

I conclude that wh-phrases with an implicit identity adjective, like other SEs, must be raised out of the related coordinate complexes, cross-linguistically.

One reviewer points out to me the following Chinese examples, in which it is not clear whether the wh-element *weishenme* 'why' remains in situ or has moved. The examples have binding readings. If the wh-elements have moved, such data support my above conclusion, but if they remain in situ, the data do not support the conclusion.

---

[10] A related fact is the following. Heim (1982: 150) observes that (i-a) cannot mean that he likes a cat and she hates the same cat. The Chinese version of the sentence in (i-b) cannot have an identity reading, either. Similarly, as noted by van Oirsouw (1987: 32), the co-referential reading of the two *someone*s in (i-c) is not preferred.
(i)   a.   He likes <u>a cat</u> and she hates <u>a cat</u>.
       b.   Baoyu xihuan <u>yi zhi mao</u>, Daiyu taoyan <u>yi zhi mao</u>.
                Baoyu like   one CL cat   Daiyu dislike one CL cat
                'Baoyu likes a cat, and Daiyu dislikes a cat.'
       c.   <u>Someone</u> bought a box of cigars and <u>someone</u> bought a bottle of gin.

(61) a. Baoyu weishenme zuotian   qipian ni, jintian weixie ni?

Baoyu why   yesterday cheat you today threaten you

'Why did Baoyu cheat you yesterday and threaten you today?'

b. Shei zhidao taiyang weishenme zaochen zai dongbian, xiawu   zai xibian?

who know sun   why   morning at east   afternoon at west

'Who knows why the sun is in the east in the morning and is in the west in the

afternoon?'

In both examples, the wh-element *weishenme* 'why' appears to the left of a circumstantial temporal expression, *zuotian* 'yesterday' in (61a) and *zaochen* 'morning' in (61b). Such temporal expressions have high structural positions (they are called "sentential adverbs" in Li & Thompson 1981: 321). Does *weishenme* appear in its base-position in (61)? One way to see the base-order of *weishenme* and a temporal expression is to check the possible order of *weishenme* with the wh-temporal expression *shenmeshihou* 'when', since the latter occurs in the same position as non-wh-temporal expressions:

(62) a. Baoyu shenmeshihou weishenme qu-le   Taipei?

Baoyu when   why   go-PRF Taipei

'When and why did Baoyu go to Taipei?'

b. *Baoyu weishenme shenmeshihou qu-le Taipei?

Baoyu why   when   go-PRF Taipei

The unacceptability of (62b) tells us that *weishenme* is not base-generated to the left of a temporal expression. This observation suggests that in (61), *weishenme* is base-generated to the right of the temporal expression and its surface position is achieved by the movement. If so, the constituency of the examples should be the following, assuming *Bayou* in (61/63a) and *taiyang* 'sun' in (61/63b) surface at a topic position.

(63) a. Baoyu weishenme [zuotian   qipian ni, jintian weixie ni]?

Baoyu why   yesterday cheat you today threaten you

b. Shei zhidao taiyang weishenme [zaochen zai dongbian, xiawu   zai xibian]?

who know sun   why   morning at east   afternoon at west

The above discussion shows that data like (61) are compatible with our conclusion that wh-phrases with an implicit identity adjective must be raised out of the related coordinate complexes.

Recall that SEs which contain an identity adjective cannot return to their licensing coordinate complexes. If they did, the sentences would not be acceptable (see (59) above). Now in ATB constructions, I have assumed that the extracted wh elements are SEs, and we have seen that if the SEs are not extracted out of the coordinate complexes, no SE reading will be available. The correlation between the extraction of wh-elements in ATB constructions and the presence of a binding reading of the constructions is expected in my TLC approach to ATB constructions.

I have presented three observations that lead me to extend my analysis of TLCs to ATB constructions. Based on these observations, I claim that ATB constructions are TLC constructions with an implicit adjective meaning "same."

5.4 The compatibility between two types of wh phrases

In this subsection I present the fact that wh expressions with an implicit identity adjective and wh expressions without an implicit identity adjective can co-occur, and thus they are not in the complementary distribution relation, which in turn indicates that they are different types of wh-expressions.

5.4.1 In multiple wh-fronting languages

Bošković and Franks's (2000: 111) following data show that the wh element of the matrix clause and the raised wh element from an embedded coordinate complex can occur side by side.

(64)   a.   Koj$_i$ kakvo$_j$ e$_i$ kaza [ce Ivan e kupil   e$_j$] i [ce Petâr e prodal e$_j$].

who what   said that Ivan is bought   and that Peter is sold

'Which person x, which stuff y, x said that Ivan bought y and that Peter sold y?'   (Bulgarian)

b.   Ko$_i$ šta$_j$ e$_i$ tvrdi [da Jovan kupuje e$_j$] i [da Petar projaje e$_j$]?

who what   asserts that John buys   and that Peter sells

'Which person x, which stuff y, x asserts that John buys y and that Peter sells y?'   (Serbo-Croatian)

In these data, the theta position of the first wh-word is in the matrix clause. The second wh-word is an SE, bringing a binding dependency in the coordinate complex. This latter wh word is extracted from the TLC, which is selected by the matrix verb *kaza* 'said' in (64a) and *tvrdi* 'asserts' in (64b).

5.4.2 In Chinese

My following Chinese data show that the in situ wh element of the matrix clause can also occur with the raised wh element from the embedded coordinate complex.

(65)   a.   Shei zhidao weishenme [zaochen taiyang zai dongbian], [xiawu

           who know why   morning sun at east   afternoon

           taiyang zai xibian]?

           sun   at west

           'Who knows why the sun is in the east in the morning and is in the west in the afternoon?'

     b.   Ni zenme zhidao weishenme [Baoyu jie-le   jiu]   [Daiyu jie-le   yan]?

           you how know why   Baoyu stop-PRF alcohol Daiyu stop-PRF smoking

           'How do you know why B. stopped drinking and D. stopped smoking?'

In (65a), the theta position of the first wh-word *shei* 'who' is in the matrix clause. This wh-word is not an SE. However, the second wh-word *weishenme* 'why' is an SE, inquiring an identical reason for the two states expressed by the two conjuncts. Similarly, in (65b), the base-position of the first wh-word *zenme* 'how' is in the matrix clause. This wh-word is not an SE. However, the second wh-word *weishenme* 'why' is an SE, inquiring an identical reason for the two eventualities expressed by the two conjuncts.

The above observations of ATB constructions and the observations of TLCs presented before drive me to extend my analysis of TLCs to ATB constructions. Reflecting how this extension is plausible, one can see that since there is no overt identity adjective such as *same* in ATB constructions, the illusion occurs that the extracted elements are moved from all conjuncts of the constructions simultaneously. TLCs lead me to realize that the so-called ATB movement is indeed an illusion. The shared syntactic and semantic properties of TLCs and ATB constructions suggest that they are derived in the same way.

<center>6. The *respectively* readings of certain ATB constructions</center>

In this section, I divide ATB constructions into two types, argumental and non-argumental ones, and claim that since the latter are not TLCs, they allow both identity readings and *respectively*, i.e., functional, readings.

6.1 Munn's (1999) non-identity readings

Munn (1999) claims that some ATB constructions in English may allow non-identity readings. For instance, (66a) can be answered by (66b). The latter is based on a non-identity reading of the former.

(66)   a.   Where did Mary vacation and Bill decide to live?

        b.   Mary vacationed in Paris and Bill decided to live in Toronto.

It needs to be mentioned that the reported non-identity readings of the ATB constructions in Munn (1999) have been refuted, actually, by all of my informants. Moltmann (1992b: 131) also reports that not all speakers can get such readings. I thus believe that the readings are dialectal. Nevertheless, Gawron & Kehler (2003, 2004) do give an account for the reported non-identity readings of data like (66) above.

Gawron & Kehler point out that the *respectively* readings are unavailable with unambiguously singular nominals. They show the contrast between (67) and (68) below:

(67)   a.   In what <u>city</u> did Mary vacation and Bill decide to live?

        b.   #Mary vacationed in Paris and Bill decided to live in Toronto.

(68)   a.   In what <u>cities</u> did Mary vacation and Bill decide to live?

        b.   Mary vacationed in Paris and Bill decided to live in Toronto.

(67b) cannot be an answer of (67a), where the question expression *what city* is singular. However, (68b) can be an answer of (68a), where the question expression *what cities* is plural. They state that if a plural reading is not excluded, an ATB construction might have a *respectively*-reading. They further present a semantic account for the issue.

Munn (1999: 424, 2001: 383) reports that in data like (69a) and (70a), where the extracted element is a subject in the first conjunct, no *respectively*-reading is possible, and thus (69b) and (70b) cannot be their answers.

(69) a. Which man murdered Sam and killed Bill?

b. #Fred murdered Sam and Joe murdered Bill.

(70) a. Which restaurant t was reviewed t by Bill and criticized t by Fred?

b. #His first restaurant was reviewed by Bill and his second restaurant was criticized by Fred.

We can see that in (69a) and (70a), the extracted wh-nominal is also singular. The obligatory identity reading is predicted by Gawron & Kehler (2003, 2004).

However, not all left-peripheral plural elements permit the *respectively*-readings. In data like (71), although the extracted nominal *which documents* is plural, the *respectively*-reading is still impossible.

(71) #Tell me which documents John wrote today and Mary filed yesterday. (= (43a))

It seems that non-singularity of the left-peripheral element is not sufficient to ensure a possible non-identity reading of ATB constructions. I present another condition in 6.2.

6.2 The availability of non-identity readings in modification constructions

In this subsection I present contrasts between modification and formal-feature saturation constructions with respect to the availability of non-identity readings of ATB constructions.

It seems that there are two cases in which *respectively*-readings are possible.

6.2.1 The left-peripheral phrase is a modifier of the coordinate complex

If the left-peripheral phrase is an adjunct, a non-identity reading is possible (Moltmann (1992b: 185, 233):

(72) a. In these two rooms, John died and Mary was born.

b. I can't remember in which two rooms John died and Mary was born.

Moltmann reports that "Almost most speakers get the reading of (81a) [= (72a)] and of (81b) [= (72b)] in which John died in one of the two rooms and Mary was born in the other one." Munn (1999) also reports that non-identity readings are more likely in adverbial-ATB constructions.

6.2.2 The left-peripheral phrase is modified by the coordinate complex

If the conjoined clauses are relative clauses, non-identity readings are possible (Moltmann (1992b: 233. For more such data, see Gawron & Kehler 2004 (47) and (48)):

(73) a. These are the masterworks that Bill painted and John composed.

  b. The two masterworks that Bill painted and John drew are in this room.

  c. These are the two women that Bill married and John proposed to.

If the relative clauses of this type of data are changed into PPs, *respectively*-readings are also possible (Moltmann (1992b: 185):

(74) a. the man and the woman with the two black dogs

  b. the blue carpet and the red carpet in the bedroom and the living room

  c. a man and a woman from two remote islands

We thus see that if a plural expression is modified by a coordinate complex, a *respectively*-reading is possible. There is a contrast between modification and formal-feature saturation constructions with respect to the availability of non-identity readings of ATB constructions. The contrast is also seen in Chinese:

(75) a. Zhe liang ge xiaohair, Baoyu zai shan-shang kanjian-guo, Daiyu zai

  this two CL child Baoyu at hill-on see-EXP Daiyu at

  shulin-li pengdao-guo. (not a respectively-reading)

  bush-in meet-EXP

  'These two children, Baoyu saw on the hills and Daiyu met in the bush.'

  b. Zhe jiu shi Baoyu zai shan-shang kanjian, Daiyu zai shulin-li pengdao

  this exactly be Baoyu at hill-on see Daiyu at bush-in meet

  de liang ge xiaohair (na ge zai shulin-li de xiaohair conglai mei

  MOD two CL child that CL at bush-in MOD child ever not

  shang-guo shan).

  go-EXP hill

'These are exactly the two children that Baoyu saw on the hill and Daiyu met in the bush (the child that was in the bush had never gone to a hill).'[11]

In (75a), the left-peripheral DP *zhe liang ge xiaohai* 'these two children' is the object of the verb *kanjian-guo* 'see-EXP.' The two children denoted by the DP must be both the children that Baoyu saw and the children that Daiyu met. It is impossible that Baoyu saw one of them and Daiyu met the other. In (75b), however, *liang ge xiaohai* 'two children' is modified by the two relative clauses. In this case, it is possible that Baoyu saw one of them and Daiyu met the other. This is a *respectively*-reading.

The above data lead me to the following generalization: a *respectively*-reading is available in a non-thematic licensing relation between two plural elements. In other words, Gawron & Kehler's (2003, 2004) plurality condition and a non-thematic licensing relation together may license a non-identity reading of ATB constructions.

We now consider (68a) again. A non-identity reading is possible, because the left-peripheral element *in what cities* is firstly plural and secondly has no thematic relation with the coordinate conplex. In (71), however, although *which documents* is plural, it has a thematic relation with the verb inside the coordinate complex, according to my generalization, the sentence cannot have a non-identity reading.

One account for the generalization could be that if there is no formal feature (Case, theta-role, etc.) relations between the left peripheral element and the coordinate complex, the construction is not a TLC. If it is not a TLC, the left-peripheral can be either still an SE or not an SE. If it is an SE, the construction has an identity reading. The ATB construction is parallel to the <IV> type of NTLCs. The SE and the coordinate complex are base-generated independently each other. The relationship between the SE and the complex is just like that between *on the same day* and *three brothers* in *Three brothers reached the summit of Everest on the same day*. Such a syntactic analysis of adjunct ATB constructions has been proposed by Woolford (1987: 168). If the left-peripheral element is not an SE, the construction is not an identity construction, therefore, it may have a non-identity reading, or *respectively*-reading.

---

[11] Note that the modifier in (75b) can also follow the numeral-classifier cluster:
(i) Zhe jiu   shi na liang ge Baoyu zai shang-shang kanjian, Daiyu zai shulin-li pengdao de   xiaohair
     this exactly be that two CL Baoyu at hill-on   see   Daiyu at bush-in meet   MOD child
     (*na ge zai shulin-li de   xiaohair conglai mei shang-guo shan)
      that CL at bush-in   MOD child   ever   not shang-guo shan)
     'These are exactly the two children that Baoyu saw on the hill and Daiyu met in the bush (the child that was
      in the bush had never gone to a hill).'
In this word order, the *respectively*-reading is blocked. Thus the availability of a *respectively*-reading is restricted. I leave this for future research.

7. Summary

In this paper, I have presented a new approach to ATB constructions without resorting to ATB movement. I have examined the syntactic properties of *same* constructions and proposed a new analysis for the syntactic derivation of constructions such as *The same man Mary helped and John ruined* (TLC). In the proposed derivation, the similarity nominal that contains the adjective *same* is base-generated in the first conjunct, and moves out of the coordinate complex. The raised relational nominal binds a silent pro-form, a pro-φP, in the second conjunct. This new analysis of *same* constructions has been extended to ATB constructions.

I reached the following conclusions.

<i> Cross-linguistically, a TLC is derived by two major dependencies: a movement chain of the SE out of the coordinate complex, and a binding dependency between the SE and a silent argument in the second conjunct.

<ii> ATB constructions are TLCs, cross-linguistically. The two constructions share syntactic and semantic properties.

<iii> There is no forking movement chain in language, and thus there is no syntactic operation that is exclusively used in coordination. I have argued that the overt extracted element of ATB constructions has a movement chain relation with the gap in the first conjunct alone. Like SEs, the extracted elements of ATB constructions cannot be originated in the two conjuncts at the same time. They are instead extracted from the first conjuncts only. I have argued that the silent pro-φP argument in the second conjunct never moves out of the conjunct. Thus, ATB constructions do not involve any special movement mode. This research shows that forking chains, which have been stipulated for coordinate constructions only, do not exist at all. Thus coordinate constructions do not introduce any special type of movement to the computation system.

With respect to <iii> alone, my conclusion is the same as that of Munn (1992). However, this paper is different from Munn's paper in at least two major aspects. First, I presented more arguments for the conclusion. Specifically, I considered the similarities between ATB constructions and TLCs, and argued that the two constructions are derived in the same way. Second, I proposed a syntactic analysis of TLCs, which have been considered as a real challenge to generative syntax since Jackendoff (1977: 192-194) (see my 2.2 above). As far as I know, this paper is the first effort to respond to the challenge. My proposed analysis of TLCs shows that our syntactic theories are not only adequate enough to derive

TLCs, but also adequate enough to derive ATB constructions without the ad hoc forking mode of movement.

One consequence of the conclusion reached in this paper is that we need to reconsider the nature of the second part of the Coordinate Structure Constraint (CSC, Ross 1967), which rejects any representation in which a movement chain starts from a single conjunct and ends out of the coordinate complex. Traditionally, ATB constructions have been assumed to have parallel movement chains initiated in each of the conjunct, and thus they are not subject to CSC. Now if the constructions are indeed derived by movement chains from single conjuncts, as claimed in this paper, the derivation obviously violates CSC. At the end of 4.2, I assumed that it is the semantic relatedness between the two conjuncts in such constructions that makes the constructions exempt from CSC. Whether the assumption is plausible, I leave it for future study.

References
Abbott, Barbara. 1976. Right Node Raising as a test for constituenthood. *Linguistic Inquiry* 7: 639-642.
Adger, David & Gillian Ramchand. 2005. Merge and Move: Wh-Dependencies Revisited. *Linguistic Inquiry* 36: 161-193.
Ai, Ruixi. 2005. Topic-Comment Structure, Focus Movement and Gapping Formation. NELS 36, University of Massachusetts at Amherst.
Bachrach, Asaf and Roni Katzir. 2006. Right-Node Raising and delayed spellout. Ms. MIT.
Borsley, Robert D. 2005. Against ConjP. *Lingua* 115 (4), 461-482.
Bošković, Željko and Steven Franks. 2000. Across-the-Board Movement and LF. *Syntax* 3, 107-128.
Carlson, Greg. 1987. Same and different: some consequences for syntax and semantics. *Linguistic and Philosophy* 10, 531-565.
Carlson, Greg. 2002. Interpretive asymmetries in major phrases. In Anna Maria Di Sciullo, ed., *Asymmetry in Grammar*, John Benjamins. 301-313.
Cheng, Lisa L.-S. & C.-T. James Huang. 1996. Two types of donkey sentences. *Natural Language Semantics* 4: 121-163.
Cho, Sunggeun and Xuan Zhou. 2000. The interpretations of Wh-elements in conjoined Wh-questions. In Noriko Akatsuka, Susan Strauss, and Bernard Comrie, eds., *Japanese/Korean Linguistics* 10, CSLI publications, Stanford University, 522-531.
Chomsky, Noam. 1981. *Lectures on Government and Binding*. Foris, Dordrecht.
Chomsky, Noam. 1995. *The Minimalist Program*. Cambridge, MA: MIT Press.
Citko, Barbara. 2003. ATB wh-questions and the nature of Merge. *The Proceedings of NELS 33,* edited by Makoto Kadowaki and Shigeto Kawahara, GLSA Publications, Umass, Amherst.
Culicover, Peter W. and Ray. Jackendoff. 1997. Semantic subordination despite syntactic coordination. *Linguistic Inquiry* 28, 195-217.
Dechaine, Rose-Marie and Martina Wiltschko. 2002. Decomposing Pronouns. *Linguistic Inquiry* 33, 409-442.
Evans, G. 1980. Pronouns. *Linguistic Inquiry* 11(2): 337-362.
Fox, Danny. 2000. *Economy and Semantic Interpretation*. Cambridge: The MIT Press.

Franks, Steven. 1992. A prominence constraint on null operator constructions. *Lingua* 87, 35-54.

Gawron, Jean Mark and Andrew Kehler. 2003. Respective answers to coordinate questions. *SALT* abstract.

Gawron, Jean Mark and Andrew Kehler. 2004. The semantics of respective readings, conjunction, and filler-gap dependencies. *Linguistic and Philosophy* 27: 169-207.

Gazdar, Gerald. 1981. Unbounded dependencies and coordinate structure. *Linguistic Inquiry* 12, 155-183.

Gazdar, Gerald., Ewan Klein, Geoffrey Pullum, and Ivan Sag. 1985. *Generalized phrase structure grammar*, Basil Blackwell, Oxford.

George, Leland. 1980. Analogical generalization in natural language syntax. Doctoral dissertation, MIT, Cambridge, MA.

Godard, Danièle. 1989. Empty categories as subjects of tensed Ss in English or French? *Linguistic Inquiry* 20, 497-506.

Goldsmith, John. 1985. A Principled Exception to the Coordinate Structure Constraint. *CLS*, 133-143.

Haik, I. 1985 The syntax of operators. Doctoral dissertation, MIT, Cambridge, MA.

Harley, Heidi. 2005. One-replacement, unaccusativity, acategorial roots, and Bare Phrase Structure. *Harvard Working Papers on Linguistics.* Vol. 9, ed. by Slava Gorbachov and Andrew Nevins.

Heim, Irene. 1982. The semantics of definite and indefinite noun phrases. Doctoral dissertation. University of Massachusetts, Amherst.

Heycock, Caroline and Roberto Zamparelli. 2000. Friends and colleagues: plurality and NP-coordination. *NELS* 30.

Hornstein, Norbert and Jairo Nunes. 2002. On Asymmetries Between Parasitic Gap and Across-the-Board Constructions. *Syntax* 5, 26-54.

Ingham, Richard. 2001. Unbalanced co-ordination and feature strength: two arguments for defective second conjuncts. Workshop of Coordination, Salford.

Jackendoff. Ray. 1977. *X' Syntax: A Study of Phrase Structure.* Cambridge: MIT Press.

Johnson, Kyle. 1996. Gapping. Ch. 2 of: In search of the English middle field. Unpublished manuscript, University of Massachusetts-Amherst.

Kasai, Hironobu. 2004. Two notes on ATB movement. *Language and Linguistics* 5.1: 167-188.

Kehler, Andrew. 2002. *Coherence, Reference, and the Theory of Grammar.* Stanford, CA: CSLI Publications.

Kratzer, Angelika. 1998. Scope or pseudoscope? Are there wide-scope indefinites? In S. Rothstein, ed., *Events and Grammar*, 163-196. Dordrecht: Kluwer Academic Publishers.

Lakoff, George. 1986. Frame semantic control of the coordinate structure constraint. Anne M. Farley et al., eds., *Chicago Linguistic Society* 22, Part2*: Papers from the Parasession on Pragmatics and Grammatical Theory*, pp. 152-167. Chicago: CLS.

Lasersohn, Peter. 2000. *Same*, models and representation. *Proceedings of SALT X,* CLC Publications, Ithaca, N.Y. 83-97.

Li, Charles and Sandra Thompson. 1981. *Mandarin Chinese: A functional reference grammar*. Berkeley: University of California Press.

Li, Yen-hui Audrey. 1998a. Minimalism and Optionality. *The Tsing Hua Journal of Chinese Studies* 28-3, 221-254.

Li, Yen-hui Audrey. 1998b. Argument Determiner Phrases and Number Phrases. *Linguistic Inquiry* 29**,** 693-702.

Li, Yen-hui Audrey. 2000. Topic Structure and Minimal Effort. *ZAS Papers in Linguistics* 20, 1-20.

Lin, Vivian. 2002. Coordination and Sharing at the Interfaces. Doctoral dissertation, MIT, Cambridge, Mass.

McNally, Louise.1992. VP-Coordination and the VP-Internal Subject Hypothesis. *Linguistic Inquiry* 23, 336-341.

Moltmann, Friederike. 1992a. Reciprocals and same/different: Towards a semantic analysis. *Linguistics and Philosophy* 16, 411-462.

Moltmann, Friederike. 1992b. Coordination and Comparatives. Doctoral dissertation, MIT.

Munn, Alan. 1992. A null operator analysis of ATB gaps. *The Linguistic Review* 9, 1-26.

Munn, Alan. 1993. Topics in the syntax and semantics of coordinate structures. Doctoral dissertation, University of Maryland, College Park.

Munn, Alan. 1999. First conjunct agreement: Against a clausal analysis, *Linguistic Inquiry*, 643-668.

Munn, Alan. 2001. Explaining parasitic gap restrictions. In *Parasitic gaps*, ed. P. Cullicover and P. Postal, 369-392. Cambridge, Mass.: MIT Press.

van Oirsouw, Robert. 1987. *The Syntax of Coordination*. New York: Croom Helm.

Partee, Barbara H. 1970. Negation, conjunction, and quantifiers: syntax vs. semantics. *Foundations of Language* 6, 153-165.

Postal, Paul Martin. 1974. *On raising: One rule of English grammar and its theoretical implications*. Cambridge, MA: MIT Press.

Postal, Paul Martin. 1998. *Three Investigations of Extraction*. Cambridge, MA: MIT Press.

Qu, Yanfeng. 1994. Object noun phrase dislocation in Mandarin Chinese. Doctoral dissertation. UBC.

Ross, John Robert. 1967. Constraints on variables in syntax. Ph.D. dissertation, MIT, Cambridge, Mass.

Rögnvaldsson, Eiríkur. undated manuscript. Coordination, ATB-extraction, and the identification of pro. University of Iceland and Harvard University.

Sabbagh, Joseph. 2006. Ordering and linearizing rightward movement. To appear in *Natural Language and Linguistic Theory*.

Schwarz, Bernhard. 1999. *On the Syntax of Either ...Or. Natural Language and Linguistic Theory* 17, 339-370.

Tomioka, Satoshi. 2003. The semantics of Japanese null pronouns and its cross-linguistic implications. In Kerstin Schwabe and Susanne Winkler, eds., *The interfaces:Deriving and interpreting omitted structures.* Amsterdam: John Benjamins Pub.Co. 321-339.

Wilder, Chris. 1997. Some properties of ellipsis in coordination. In Artemis Alexiadou and T. Alan Hall, eds., *Studies on Universal Grammar and Typological Variation*, 59-107. Amsterdam: John Benjamins.

Williams, Edwin S. 1977. Across-The-Board application of rules. *Linguistic Inquiry* 8, 419-423.

Williams, Edwin S. 1978. Across-The-Board rule application. *Linguistic Inquiry* 9, 31-43.

Woolford, Ellen. 1987. An ECP account of constraints on Across-The-Board extraction. *Linguistic Inquiry* 18, 166-171.

Xu, Liejing & T. Langendoen. 1985. Topic structure in Chinese. *Language* 61: 1-27.