# APPLICATIVE AND THE DOUBLE OBJECT CONSTRUCTION IN MANDARIN CHINESE[*]

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**ABSTRACT**

In this paper I examine Paul and Whitman's (2010) Raising Applicative Hypothesis for the Mandarin V-GEI double object construction. This hypothesis posits a single applicative projection which hosts both base-generated and raised applied NPs. Although this proposal is quite intriguing, I show that the major argument for the raising applicative proposal is not tenable. However, the IO-raising mechanism involved in the raising applicative proposal is still worth pursuing. Following Citko (2011), I then propose a revised low applicative analysis which imposes a light applicative projection in the Mandarin V-GEI double object construction. The revised structure not only captures all the relevant features examined in this paper for the Mandarin V-GEI double object construction, but also echoes the proposal by Soh (2005) who suggests the co-occurrence of a low applicative and a functional projection for the Mandarin double object construction.

Key words: double object construction, the raising applicative hypothesis, distributive quantifier, the c-commanding constraint, A/A'-movement symmetry/asymmetry

## 1. INTRODUCTION

In this paper, I examine the double object construction in Mandarin Chinese under the applicative framework. In the literature, one of the well-known theoretical proposals for the structures of the double object construction is Pylkkänen (2008). As proposed in Pylkkänen (2008) (see also Marantz 1993; McGinnis 2001; McGinnis and Gerdts 2004; Pylkkänen 2002, and others), there are two possible applicative projections which may emerge in the double object constructions, and the choice lies in the relation between the two NPs involved or between the applied NP and the whole verbal event. A high applicative projection denotes a relation between an event (the VP) and an extra/applied individual (the NP at Spec, high ApplP), in which the individual is affected by the whole event. A low applicative projection, on the other hand, denotes a transferring relation between an individual (the NP at the complement of the low ApplP) and a Source/Recipient (the NP at Spec, low ApplP). These two projections are illustrated in (1) and (3). The relevant examples are shown in (2) and (4), respectively.

(1) High Applicative Projection [ApplHP]
$[_{vP} [_{ApplHP} NP_{BENEFACTIVE} [_{ApplH'} ApplH [_{VP} V NP_{THEME} ]]]]$

(2) Nd-o-tandulela        tshimu      ya  mukegulu.       (Venda)
    1SG-PAST-survey     old.woman    the  field
    'I surveyed the field for the old woman.'        (Pylkkänen 2008:19)

(3) Low Applicative Projection [ApplLP]
$[_{VP} V [_{ApplLP} NP_{SOURCE/RECIPIENT} [_{ApplL'} ApplL NP_{THEME} ]]]$

(4) Tony baked Kate a cake.

In the past decade, the applicative system proposed by Pylkkänen (2002, 2008) for the structure of double object construction cross-linguistically has received various refinements. In Pylkkänen's (2002, 2008) proposal, the high applicative is located right above VP, while the low applicative is in the complement position of the verb. However, Paul

and Whitman (2010) (see also Georgala, Paul, and Whitman 2008) propose a single applicative which combines the functions of both high and low applicative projections by Pylkkänen (2008) (henceforth the Raising Applicative Hypothesis). That is, whenever a light verb applicative emerges in the structure, it is always located above the lexical VP, no matter whether this light verb applicative shows the syntax and semantics of "high" or "low" applicative. But the high and low applicative can still be distinguished thematically (and therefore satisfy different diagnoses for high and low applicative projections by Pylkkänen 2008, see below) since they involve something different structurally. This is shown in (5) and (6).

(5) Thematic applicative:

[$_{ApplP}$ NP$_{BNENFACTIVE}$ [$_{Appl'}$ Appl [$_{VP}$ V NP$_{THEME}$ ]]]

(6) Raising applicative:

[$_{ApplP}$ NP$_{GOAL}$ [$_{Appl'}$ Appl [$_{VP}$ t$_{GOAL}$ [$_{V'}$ V NP$_{THEME}$ ]]]]

(Paul and Whitman 2010:263)

Under Paul and Whitman's (2010) categorization, the thematic applicative in (5) roughly corresponds to the high applicative by Pylkkänen (2008). There is a base-generated argument at Spec, ApplP. On the other hand, the applicative head in (6) does not introduce a base-generated non-core argument at Spec, ApplP. Its specifier position simply serves as a landing site for a moved VP argument. Empirically, Paul and Whitman show that a Mandarin double object construction such as the one in example (7), with the presence of a lexical item GEI following the verb (the V-GEI DOC henceforth), illustrates the case of raising applicative. As shown in structure (8), the indirect object *Kate* is not a base-generated applied argument, but a moved applied argument from the lower VP specifier.

(7) Dongni      xie-gei-le           Kaite        yi-feng     xin.
    Tony        write-give-ASP       Kate         one-CL      letter
    'Tony wrote Kate a letter.'

(8) Dongni [$_{AspP}$    xie-gei-le     [$_{ApplP}$     Kaite     $t_{xie\text{-}gei}$
    Tony          write-GEI-ASP        Kate
    [$_{VP}$     $t_{Kaite}$     [$_{V'}$    $t_{xie}$    yi-feng xin     ]]]].
                              one-CL letter

In the following discussion, I will first present the Raising Applicative Hypothesis for the Mandarin V-GEI DOC in detail.[1] In Section 3, I then examine the main argument which supports the IO-raising mechanism proposed by Paul and Whitman (2010) and show that this argument is not tenable. However, based on the A/A'-movement asymmetry exhibited by the Mandarin V-GEI DOC, I believe that the IO-raising mechanism is the proper explanation and should be adopted. In Section 4, following Soh (2005) and Citko (2011), I propose a revised analysis which incorporates both Pylkkänen (2008) and Paul and Whitman's (2010) analyses. Certain syntactic phenomena regarding the Mandarin V-GEI DOC observed by Paul and Whitman (2010) can also be explained under the new proposal. In addition, some related concerns and constructions are also examined following the current proposal. I conclude this paper in the last section.

## 2. THE RAISING APPLICATIVE HYPOTHESIS

Before I examine the raising applicative hypothesis proposed by Paul and Whitman (2010), let us take a small detour to introduce some applicative related diagnoses and data beforehand. As mentioned in Section 1, under Pylkkänen's (2008) system, there are two different applicative projections. Whether a double object construction contains a

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[1] Note that the proposed analysis in this paper mainly deals with the double object constructions with the presence of a lexical item GEI following the verb (i.e. the V-GEI DOC). Li and Thompson (1981) discuss three types of double object construction in Mandarin Chinese, whose main characteristics lie in the fact of whether a GEI following the verb is presented or not. In most parts of this paper, I discuss and examine the one with an obligatory GEI in the structure. The DOC with an optional GEI (the second type) will be addressed briefly in Section 4.2.2, and the DOC with a prohibited GEI (the third type) should involve a different structure and is not within the scope of current discussion (see Huang 2007, 2008; Tsai 2007, 2008, and others).

high or a low applicative can be detected by the following two diagnoses provided by Pylkkänen (2008). For instance, the English example in (9) has been argued to involve a low applicative projection. As proposed in Pylkkänen (2008), a low applicative is incompatible with an intransitive or a static predicate. The relevant examples are shown in (10).

(9) Tony baked Kate a cake.

(10) a. *Tony worked Kate.          (intransitive predicate)
      b. *Tony held Kate the pot.    (static predicate)

Recall that the low applicative denotes a transferring relation between an individual and a Source/Recipient. Hence the low applicative projection is incompatible with an intransitive predicate since there will be no internal argument/direct object available. A low ApplP simply cannot appear in a structure that lacks an internal argument. Furthermore, it is also not possible for a static predicate to be introduced to a low applicative projection. A low applicative projection implies a transfer of possession, which is semantically incompatible with a static predicate.

Paul and Whitman (2010) examine the Mandarin V-GEI DOC, repeated here as (11) (= (7)). To see whether this V-GEI DOC example involves a high or a low applicative, they have applied the diagnoses shown above to example (11). The interactions between the Mandarin V-GEI double object construction and the intransitive predicate *xiaoxin* 'be careful' and the static predicate *na-zhe Lisi de bao* ('hold Lisi's bag') are shown in (12) and (13). The incompatibility between the Mandarin V-GEI DOC and intransitive and static predicates implies a low applicative to be involved in the structure.

(11) Dongni    xie-gei-le          Kaite      yi-feng    xin.
     Tony      write-give-ASP      Kate       one-CL     letter
     'Tony wrote Kate a letter.'

(12) *Ni    xiaoxin-gei    wo.                    (intransitive predicate)
      you   be.careful-GEI  I
     'Do me the favor of being a bit more careful.'

(13) *Wo  na-gei-zhe      Mali  Lisi de bao.      (static predicate)
    I    hold-GEI-ASP Mary  Lisi DE bag
    'I held Lisi's bag for Mary.'

                         (Georgala et al. 2008:185)

Paul and Whitman (2010) have also cited Zhu (1979) and shown that example (14) is semantically associated with the implication of successful transfer of possession. The possession-transfer interpretation also aims for the presence of a low ApplP.

(14) Zhangsan qia-gei-le      Lisi    yidianr    cong,
    Zhangsan nip-GEI-ASP  Lisi    a.little    scallion
    (?? keshi  Lisi   meiyou   jiezhu).
       but    Lisi   not      get
    'Zhangsan nipped off Lisi a bit of scallion, but Lisi didn't get it.'
                                (Zhu 1979:82)

It seems that the above two pieces of data stress the need for a low applicative projection in the structure of the Mandarin V-GEI DOC example (11). But Paul and Whitman (2010) object to the proposal of adopting Pylkkänen's (2008) low ApplP analysis for the Mandarin V-GEI DOC. They point out that if *gei* ('GEI') is realized as the low applicative head as shown in (15), the correct word order cannot be derived after the verb raising (\**xie-le Kaite gei* …) or GEI raising (\**gei-xie-le Kaite* …).[2]

(15) Dongni [$_{AspP}$ le [$_{VP}$ xie [$_{applLP}$ Kaite gei   yi-feng xin   ]]].
    Tony        ASP    write       Kate   GEI  one-CL letter

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[2] In Paul and Whitman's paper, they have convincingly shown that the combination of verb-GEI in the transitive V-GEI DOC cannot be derived from lexicon via the verb-copying and A-not-A question tests. The verb-GEI combination has to be derived from a certain syntactic operation. That is, on its way to a higher functional head such as the *v* head position, the verb incorporates with GEI via head movement. The remaining question then is where the verb and GEI are in the structure.

Hence they argue that the particular verb cluster order in the Mandarin V-GEI DOC is a piece of evidence for one single applicative projection. The proposed structure (8) is repeated here as (16), in which they place GEI at the proposed ApplP head position. In this way, after the verb undergoes head movement, the correct word order in the verb cluster can be derived.

(16) Dongni [$_{AspP}$   xie-gei-le        [$_{ApplP}$      Kaite        t$_{xie-gei}$
      Tony              write-GEI-ASP            Kate
      [$_{VP}$   t$_{Kaite}$   [$_{V'}$   t$_{xie}$      yi-feng xin       ]]]].
                                          one-CL letter

Also note that under Paul and Whitman's (2010) proposal of Raising Applicative, the IO (applied argument) raises from Spec, VP to Spec, ApplP in (16). They argue that the IO must have raised because of its relative position to the distributive quantifier [DQ] *mei-ren/yi-ren* ('each') in the structure. As shown in the translation of example (17), the distributive quantifier scopes over the underlined IO: each of the students should receive three letters individually. Adopting Fitzpatrick (2006) who has argued that this kind of distributive interpretation is derived by A-movement of the IO over the distributive quantifier, Paul and Whitman propose that *mei-ren/yi-ren* adjoins to VP, and the IO moves from Spec, VP to Spec, ApplP, as illustrated in (18). This then explains the distributive reading imposed on the IO.

(17) Dongni    xie-gei    <u>xuesheng-men</u>  **mei-ren/yi-ren**
      Tony       write-GEI student-PLU      everyone/each-one
      san-feng   xin.
      three-CL   letter
      'Tony wrote the students each three letters.'

(18) Dongni    xie-gei    [$_{ApplP}$ <u>xuesheng-men</u>$_i$ [$_{VP}$ **mei-ren/yi-ren**
      Tony       write-GEI            student-PLU                everyone/each-one
      [$_{VP}$  t$_i$   [$_{V'}$   san-feng xin    ]]]].
                        three-CL  letter

To support the proposal that there is IO-raising, the following examples regarding the distributive quantifier *mei-ren/yi-ren* are also discussed. They show that the distributive quantifier never forms a constituent with the associated NP, in either NP-DQ or DQ-NP order. The relevant examples are cited below in (19) and (20).

(19) *Xiaozhang    fen-gei    [mei/yi(-gen) ren    women]
     Principal     allot-GEI  every(one)/each      we
     shi-ge        daxuesheng.
     ten-CL        college-student
     'The principal allotted us each ten college students.'
                              (Paul and Whitman 2010:(31a) and (31b))

(20) *Wo ma-le      [haizi-men      mei-ren/yi-ren].
      I    scold-ASP child-PL        every(one)/each
     *'I scolded the children everyone/each.'
                              (Paul and Whitman 2010:(32a) and (32b))

Moreover, they show that the distributive quantifier cannot appear to the right of the IO or the DO in a PP-dative construction, as in (21), or to the right of the DO in a regular transitive sentence (see (20)).

(21) *Wo song-le    yi-bai-kuai         qian      [gei  haizi-men]
      I    give-ASP one-hundred-CL       money     to    child-PL
     mei-ren/yi-ren.
     every(one)/each
     ??'I gave 100 dollars each to the children.'
                              (Paul and Whitman 2010:(34))

Paul and Whitman point out that all the examples from (19) to (21) can be explained by their proposal. That is, there has to be A-movement of the associated NP (the IO) across the distributive quantifier *mei-ren/yi-ren*. If not, the sentences result in ungrammaticality.

From the above discussion, we can see that the A-movement of the IO is co-related with the licensing of the distributive quantifier *mei-ren/yi-ren*. However, in the following section, I will show that the

employment of *mei-ren/yi-ren* as the main argument for the necessary A-movement of the IO is problematic and needs to be re-examined.

## 3. THE DISTRIBUTIVE QUANTIFIERS

### 3.1 *ge* ('each')

In the above discussion, *mei-ren/yi-ren* is shown to be a kind of VP-adjoined distributive quantifier. In the literature regarding distributive quantifier in Mandarin Chinese, *ge* ('each') receives most of the attention (i.e. Kung 1993; Lin 1998; Soh 2005; Kuo and Yu 2012; Yang 2013, and others). Two relevant examples are shown in (22). Note that there are two possible positions for *ge* in (22). The syntactic analysis for *ge* is to consider it an adverbial quantifier, adjoining to *v*P in (23) or VP in (24) as proposed in Soh (2005).

(22) a. Tamen **ge**  yao-le   na-ge    pingguo   yi-kou.
        they    each bite-ASP that-CL  apple     one-CL
        'They each took a bite off the apple.'
     b. Ta       yao-le   na-san-ge     pingguo  **ge**  yi-kou.
        He       bite-ASP that-three-CL apple     each one-CL
        'He took a bite off each of the three apples.'

                                              (Soh 2005:162, (17))

(23) *v*P-adjoined *ge*
     [$_{TP}$ They [$_{vP}$ **ge**  [$_{vP}$ bite$_i$  [$_{FP}$ that apple$_j$ [$_{VP}$ one bite
     [$_{VP}$ t$_i$  t$_j$ ]]]]]]

(24) VP-adjoined *ge*
     [$_{TP}$ He [$_{vP}$ bite$_i$ [$_{FP}$ those three apples$_j$ [$_{VP}$ **ge** [$_{VP}$ one bite
     [$_{VP}$ t$_i$  t$_j$ ]]]]]]

In example (22a), *ge* adjoins to *v*P as in (23). The subject which originates at Spec, *v*P undergoes movement to Spec, TP and the current word order can be derived. In (22b), *ge* adjoins to VP as in (24). The

direct object *na-san-ge pingguo* ('those three apples') has undergone raising to a FP right above VP (i.e. Soh 1998). Note that the verb also undergoes raising from V to *v* head position (see Chomsky 1995 and Huang, Li and Li 2009).

Recall that for Paul and Whitman (2010), *mei-ren/yi-ren* is also a VP-adjoined distributive quantifier. The relevant example is repeated in (25), and the structure in (26).

(25) Dongni   xie-gei   <u>xuesheng-men</u>   **mei-ren/yi-ren**
      Tony      write-GEI student-PLU     everyone/each-one
      san-feng   xin.
      three-CL   letter
      'Tony wrote the students each three letters.'

(26) Dongni   xie-gei   [$_{ApplP}$ <u>xuesheng-men</u>$_i$ [$_{VP}$ **mei-ren/yi-ren**
      Tony      write-GEI       student-PLU       everyone/each-one
      [$_{VP}$ t$_i$     [$_{V'}$   san-feng xin    ]]]].
                   three-CL   letter

We have seen that *ge* can also adjoin to VP in (24). Hence the prediction is that *mei-ren/yi-ren* in (25) can be replaced by *ge*. This prediction is borne out in (27), in which *mei-ren/yi-ren* is replaced by *ge*.[3] The relevant structure is shown in (28). As one can see, the only difference between (25) and (27) (or (26) and (28)) lies in the employment of different distributive quantifiers. Under Paul and Whitman's (2010) proposal, the similarity between (25) and (27) can be explained since both distributive quantifiers are VP-adjoined.

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[3] According to Paul and Whitman (2010), *mei-ren/yi-ren* is used instead of *ge* in their paper because their consultants did not like *ge* to be located between the IO and the DO (the VP-adjoined position) in an example like (22b). The distributive quantifier *mei-ren/yi-ren* is then suggested by their consultants. Some consultants of mine also did not like *ge* in the VP-adjoined position. However, since there is literature such as Kung (1993) and Soh (2005) showing that *ge* is acceptable in the VP-adjoined position for some speakers, I consider *ge* either a *v*P-adjoined or a VP-adjoined distributive quantifier.

(27) Dongni    xie-gei         <u>xuesheng-men</u>        **ge**
     Tony      write-GEI       student-PLU              each
     san-feng  xin.
     three-CL  letter
     'Tony wrote the students each three letters.'

(28) Dongni  xie-gei      [<sub>ApplP</sub>      <u>xuesheng-men</u><sub>i</sub>  [<sub>VP</sub>  **ge**
     Tony    write-GEI                  student-PLU                  each
     [<sub>VP</sub>  t<sub>i</sub>    [<sub>V'</sub>   san-feng  xin     ]]]].
                        three-CL  letter

   Although superficially *mei-ren/yi-ren* and *ge* seem to be the same in the relevant examples, I argue that they in fact behave differently. I present three pieces of evidence to argue against the proposal by Paul and Whitman (2010) that *mei-ren/yi-ren* is a VP-adjoined quantifier. First of all, the distributive quantifier *ge* cannot be higher than modals, as shown in (29) and (30). However, if the distributive quantifier is *mei-ren/yi-ren* instead, the sentence becomes grammatical, as in (31).[4,5]

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[4] As pointed out by Lin (1998), in addition to the interpretation of "each", *ge* can be interpreted as "respectively" as well. When interpreted as "respectively", the restricted element by *ge* is a combination of two NPs, as shown in example (i).

(i) Lao-Li he  Lao-Wang   ge            mai-le      yi-ding      hong-se    he
    Old-Li and Old-Wang   respectively  buy-ASP     one-CL       red-color  and
    lu-se        de       maozi.
    green-color  DE       hat
    'Laoli and Laowang bought a red and a green hat, respectively.'

                                                    (Lin 1998:footnote 1, (ib))

Interestingly, the *Google* search shows that when *ge* is interpreted as "respectively', *ge* can appear before the modal, as shown in (ii).

(ii) Keting        he    canting       ge            yinggai    pu        shemeyan-de
     living-room   and   dining-room   respectively  should     put       what-DE
     kuanshi       he    yanse-de      dizhuan?
     style         and   color-DE      tile
     'What kind of style and color of the tiles should we put for the floors of the living room and dining room, respectively?'                        (by *Google*)

In this paper, I only focus on the interpretation of "each" of *ge*. Hence examples like (i) and (ii) have to be put aside and need further study in the future.

(29) <u>Zhe-wu-ge</u>    xuesheng yinggai **ge**     mai san-ben shu.
    this-five-CL    student    should each    buy three-CL book
    'These five students each should buy three books.'

(30) *<u>Zhe-wu-ge xuesheng</u>    **ge**    yinggai    mai san-ben shu.
     this-five-CL student     each should    buy    three-CL book
    'These five students each should buy three books.

(31) <u>Zhe-wu-ge</u>     xuesheng **mei-ren/yi-ren** yinggai    mai
    this-five-CL    student    each         should    buy
    san-ben    shu.
    three-CL    book
    'These five students each should buy three books.'

Similarly, when the restricted nominal is in the topic position, only the distributive quantifier *mei-ren/yi-ren*, not *ge*, can be used, as illustrated in (32) and (33), respectively. Note that the restricted nominal marked by the exclamation marker *a* shows that the nominal is in the topic position.

(32) *<u>Xuesheng-men</u>    **ge**       a,
     student-PLU      each    EXCL
    yinggai    song san-ben    shu gei laoshi.
    should    give three-CL    book to    teacher
    'Students each should give three books to the teacher.'

(33) <u>Xuesheng-men</u> **mei-ren/yi-ren** a,
    student-PLU    each         EXCL
    yinggai    song san-ben    shu gei laoshi.
    should    give three-CL    book to    teacher
    'Students each should give three books to the teacher.'

Secondly, the two distributive quantifiers can appear simultaneously in the same sentence, as shown in (34) and (35). Example (34) is not

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[5] The sentence is also acceptable if *mei-ren-/yi-ren* is lower than the modal in (31).

surprising, though. Multiple VP-adjunctions are common syntactic strategies found in syntactic literature. However, in example (35), the distributive quantifier *mei-ren/yi-ren* is in the topic position, while the distributive quantifier *ge* is in the *v*P domain. These two distributive quantifiers can be separated in different syntactic positions.

(34) Lisi song-le <u>zhe-xie    laoshi</u>    **mei-ren/yi-ren ge**
     Lisi give-ASP this-CL    teacher    each            each
     san-ben    shu.
     three-CL  book
     'Lisi gave these teachers each three books.'

(35) <u>Xuesheng-men</u> **mei-ren/yi-ren** a,
     student-PLU    each            EXCL
     yinggai    **ge**    song san-ben    shu gei    laoshi.
     should    each give three-CL    book to    teacher
     'Students each should give books to the teacher.'

Lastly, although it is possible to have *ge* and *mei-ren/yi-ren* emerging simultaneously in the structure as in (34), the order between *ge* and *mei-ren/yi-ren* is in fact fixed. As shown in (36), if *mei-ren/yi-ren* follows *ge*, this sequence results in an ungrammatical sentence. Only the order NP - *mei-ren/yi-ren - ge* is allowed as in (34).

(36) *Lisi      song-le    <u>zhe-xie      laoshi</u>    **ge    mei-ren/yi-ren**
      Lisi      give-LE    this-CL      teacher    each each
     san-ben    shu.
     three-CL  book

To summarize, the above three contrasts indicate that the distributive quantifier *ge* is lower than the TP domain since it cannot be higher than modals, nor appear with a topic NP. On the other hand, the syntactic positions of the distributive quantifier *mei-ren/yi-ren* seem quite free. It can appear in the CP, TP or VP domain. Moreover, the co-occurrence of these two distributive quantifiers shows that they do not have to occupy the same syntactic position. Even if *ge* and *mei-ren/yi-ren* are adjacent to

each other, there is a fixed order which has to be obeyed. This is quite unexpected if both of them are in the VP-adjoined positions.

## 3.2 Two Types of Distributive Quantifier

The discussion in Section 3.1 implies that the distributive quantifiers *ge* and *mei-ren/yi-ren* are different syntactic elements. In this section, I propose that we should follow the categorization of Gil (1982) (see also Zimmermann 2002; Fitzpatrick 2006; Joh 2009, and others) and consider *ge* an adverbial quantifier (i.e. Lin 1998 and Soh 2005) and *mei-ren/yi-ren* an adnominal quantifier. More precisely, the distributive quantifier *ge* should adjoin to Spec, *v*P/VP as an adverbial, and the distributive quantifier *mei-ren/yi-ren* should form a constituent with the nominal that it restricts.

This proposal immediately explains the first contrast between *ge* and *mei-ren/yi-ren* presented in Section 3.1 The relevant examples are repeated below. Recall that from these examples it is apparent that the distributive quantifier *ge* cannot be higher than the TP/CP domain (example (37), (38) and (40)), while the distributive quantifier *mei-ren/yi-ren* can be anywhere (example (39) and (41)).

(37) <u>Zhe-wu-ge</u> xuesheng yinggai **ge** mai san-ben shu.
this-five-CL student should each buy three-CL book
'These five students each should buy three books.'

(38) *<u>Zhe-wu-ge xuesheng</u> **ge** yinggai mai san-ben shu.
this-five-CL student each should buy three-CL book
'These five students each should buy three books.'

(39) <u>Zhe-wu-ge</u> xuesheng **mei-ren/yi-ren** yinggai mai
this-five-CL student each should buy
san-ben shu.
three-CL book
'These five students each should buy three books.'

(40) *<u>Xuesheng-men</u>      **ge**          a,
 student-PLU       each       EXCL
yinggai    song san-ben  shu gei  laoshi.
should     give three-CL book to    teacher
'Students each should give three books to the teacher.'

(41) <u>Xuesheng-men</u> **mei-ren/yi-ren** a,
student-PLU    each            EXCL
yinggai    song san-ben   shu gei  laoshi.
should     give three-CL book to    teacher
'Students each should give three books to the teacher.'

Following the current analysis, the above contrast is expected since the adverbial quantifier *ge* has to adjoin to *v*P/VP. It is therefore followed that *ge* cannot appear in the TP or CP domain. On the other hand, the adnominal quantifier *mei-ren/yi-ren* follows the nominal that it restricts. Therefore, it is also unsurprising to see that *mei-ren/yi-ren* can be in CP, TP or *v*P/VP domains.

Next, the co-occurrence of *ge* and *mei-ren/yi-ren* in different syntactic positions is also expected, repeated here as (42). In (42), the adverbial quantifier *ge* is in the *v*P/VP-adjoined position. On the other hand, the adnominal quantifier *mei-ren/yi-ren* is in the CP domain, modifying the topic NP.

(42) <u>Xuesheng-men</u> **mei-ren/yi-ren** a,
student-PLU    each            EXCL
yinggai   **ge**   song san-ben   shu        gei   laoshi.
should    each give three-CL book       to    teacher
'Students each should give books to the teacher.'

Lastly, the fixed order between *mei-ren/yi-ren* and *ge* when they are adjacent to each other is also expected, repeated here as (43) and (44). The contrast between (43) and (44) is a natural consequence since the adnominal quantifier has to form a constituent with the restricted nominal. For the surface order, *mei-ren/yi-ren* then has to precede *ge* but not vice versa.

(43) Lisi  song-le   <u>zhe-xie   laoshi</u>   **mei-ren/yi-ren ge**
Lisi  give-ASP this-CL   teacher   each       each
san-ben   shu.
three-CL  book
'Lisi gave these teachers each three books.'

(44) *Lisi     song-le   <u>zhe-xie   laoshi</u>   **ge  mei-ren/yi-ren**
Lisi     give-LE   this-CL   teacher   each each
san-ben   shu.
three-CL  book

Most importantly, the current analysis shows that the proposal of considering *ge* and *mei-ren/yi-ren* both VP-adjoined adverbial quantifiers is simply a false impression. Recall that according to Paul and Whitman (2010), *ge* can be replaced by *mei-ren/yi-ren* in the two examples, repeated here as (45) and (46) (= (25) and (27)). The two distributive quantifiers are both located between the direct object and the indirect object.

(45) Dongni   xie-gei   <u>xuesheng-men</u>   **mei-ren/yi-ren**
Tony     write-GEI student-PLU        everyone/each-one
san-feng   xin.
three-CL  letter
'Tony wrote the students each three letters.'

(46) Dongni   xie-gei   <u>xuesheng-men</u>   **ge**
Tony     write-GEI student-PLU        each
san-feng   xin.
three-CL  letter
'Tony wrote the students each three letters.'

Under the current analysis, the possible substitution between *ge* and *mei-ren/yi-ren* in (45) and (46) is only apparent. The structures for (45) and (46) are shown in (47) and (48), respectively. The distributive quantifier *ge* adjoins to Spec, VP. However, the distributive quantifier

*mei-ren/yi-ren* forms a constituent with the restricted nominal. [6] Moreover, even if the Raising Applicative Hypothesis is adopted, the employment of *mei-ren/yi-re*n does not ensure that there has to be IO-raising in the structure.

(47) Dongni    xie-gei    [$_{ApplP}$    <u>xuesheng-men</u>$_i$ [$_{VP}$ **ge**  [$_{VP}$ t$_i$
      Tony     write-GEI              student-PLU          each
      [$_{V'}$  san-feng xin    ]]]].
           three-CL  letter

(48) Dongni    xie-gei    [$_{ApplP}$ [$_{NP}$ <u>xuesheng-men</u> **mei-ren/yi-ren**]$_i$
      Tony     write-GEI              student-PL         each
      [$_{VP}$  t$_i$   [$_{V'}$  san-feng xin ]]].
                   three-CL  letter

In short, the distributive quantifier *ge* and *mei-ren/yi-ren* should be distinguished from each other. With this proposal, we then can explain the various syntactic differences between *ge* and *mei-ren/yi-ren*. Importantly, the possible substitution between these distributive quantifiers is only a coincidence superficially.

## 3.3 The C-commanding Constraint

After showing that *mei-ren/yi-ren* is not a VP-adjoined adverbial distributive quantifier, in this section I discuss the following three

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[6] The proposal that *mei-ren/yi-ren* and the restricted nominal form a constituent does not entail that they have to always be adjacent to each other for the surface structure. For example, example (i) shows that the adnominal quantifier is separated from the restricted nominal by the modal.

    (i) Xuesheng-men    yinggai    mei-ren/yi-ren zuo    ji-jian    hao-shi.
        student-PLU      should     each            do     one-CL    good-thing
        'Students each should do one good thing.'

The example in (i) is not a counterexample to the current analysis. The separation between the restricted nominal and the adnominal quantifier can be explained by the analysis of floating quantifiers (see Sportiche 1988). That is, the restricted nominal and the adnominal quantifier form a constituent when they enter the structure, and the restricted nominal undergoes movement later to the subject position.

ungrammatical examples (19), (20) and (21), repeated here from (49) to (51). Recall that in Paul and Whitman (2010), the ungrammaticality of these three examples is because there is no A-movement of the IO to license the distributive quantifier *mei-ren/yi-ren*.

(49) *Xiaozhang     fen-gei    [mei/yi(-gen) ren      women]
    Principal          allot-GEI   every(one)/each       we
    shi-ge        daxuesheng.
    ten-CL        college-student
    'The principal allotted us each ten college students.'
                      (Paul and Whitman 2010: (31a) and (31b))

(50) *Wo ma-le       [haizi-men        mei-ren/yi-ren].
     I     scold-ASP child-PL            every(one)/each
    *'I scolded the children everyone/each.'
                      (Paul and Whitman 2010: (32a) and (32b))

(51) *Wo song-le    yi-bai-kuai           qian       [gei  haizi-men]
     I   give-ASP one-hundred-CL           money       to   child-PL
    mei-ren/yi-ren.
    every(one)/each
    ??'I gave 100 dollars each to the children.'
                      (Paul and Whitman 2010: (34))

However, I argue that the ungrammaticality of these three sentences can also be explained by other syntactic reasons. For example, the ungrammaticality of (49) can be explained by saying that *mei-ren/yi-ren* is a post-nominal distributive quantifier. As shown in (52), *mei-ren/yi-ren* can only modify the topic post-nominally. To have *mei-ren/yi-ren* in a pre-nominal position simply results in ungrammaticality.

(52) a. Women mei/yi(-ge) ren   a,         mai-le      liang-ben shu.
      We       every(one)/each EXCL    buy-ASP  two-CL    book
      'We each bought two books.'
    b. *Mei/yi(-ge) ren    women a,         mai-le      liang-ben shu.
      every(one)/each   we        EXCL buy-ASP  two-CL    book

As for examples (50) and (51), the ungrammaticality can also be explained by a particular constraint exhibited by *mei-ren/yi-ren*, which can also be observed on *ge*. This particular syntactic constraint has been noticed by Lin (1998) and Soh (2005) for *ge*. That is, for the adverbial quantifier *ge*, it has to c-command an indefinite expression in the sentence, as shown in (53). The adverbial quantifier *ge* is only compatible with a transitive (53a) or a ditransitive construction (46). If the main verb is intransitive or unaccusative as in (53b) or (53c), the sentence becomes unacceptable (see also Kung 1993).[7] This is because there is no indefinite expression c-commanded by *ge*. Also note that this constraint is a surface order constraint. As shown in (54), once the c-commanded indefinite expression undergoes topicalization, the sentence becomes ungrammatical.[8]

(53) a. Xuesheng-men     (ge)     mai-le     yi-ben     shu.
        student-PLU     each     buy-ASP     one-CL     book
        'Students (each) bought a book.'
     b. Xuesheng-men     (*ge)          xiao-le.
        student-PLU     each          laugh-ASP
        'Students each laughed.'

---

[7] Note that there aren't any modifying elements following the intransitive or unaccusative verb in (53b) and (53c). As pointed out by both reviewers, if there is an additional indefinite expression such as a duration phrase following the intransitive verb as in (i), the sentence can become grammatical. This is expected since the c-commanding constraint of *ge* is satisfied.

(i) Xuesheng-men     ge xiao-le     *(liang     fenzhong).
    student-PLU     each laugh-ASP     two     minute
    'Students each laughed for two minutes.'

The same phenomenon can be observed with *mei-ren/yi-ren* as well, as shown in (ii).

(ii) Xuesheng-men     mei-ren/yi-ren     xiao-le     *(liang     fenzhong).
     student-PLU     each          laugh-ASP     two     minute
     'Students each laughed for two minutes.'

[8] There is an additional demonstrative added to the topicalized indefinite expression in (54b). In Mandarin Chinese, a topic/subject has to be definite or generic as shown in Li and Thompson (1981), Hsin (2002) and Tsai (2001). Therefore a demonstrative is added before the indefinite expression to avoid the unnecessary interference. Also note that the same or a similar modification applies to the topics/subject in examples where the specificity/definiteness requirements are needed throughout the paper.

c. Xuesheng-men (*ge) daoda-le.
  student-PLU each arrive-ASP
  'Students each have arrived.'

(54) a. Zhangsan fa-gei-le xuesheng-men ge
  Zhangsan distribute-GEI-ASP student-PLU each
  yi-tao jiazhi-wu-bai-yuan-de wen-ju.
  one-CL value-five-hundred-money-DE stationary
  'Zhangsan distributed the students each one set of stationary
  which is worth five hundred dollars.'
  b. *[Zhe-yi-tao jiazhi-wu-bai-yuan-de wen-ju]$_i$,
    this-one-CL value-five-hundred-money-DE stationary
    Zhangsan fa-gei-le xuesheng-men ge t$_i$ .
    Zhangsan distribute-GEI-ASP student-PLU each

Interestingly, as shown in (55) and (56), the same pattern regarding this particular c-commanding constraint can be observed in the adnominal quantifier *mey-ren/yi-ren* as well.

(55) a. Xuesheng-mem (mei-ren/yi-ren) mai-le yi-ben shu.
  student-PLU each buy-ASP one-CL book
  'Students (each) bought a book.'
  b. Xuesheng-men (*mei-ren/yi-ren) xiao-le.
  student-PLU each laugh-ASP
  'Students each laughed.'
  c. Xuesheng-men (*mei-ren/yi-ren) daoda-le.
  student-PLU each arrive-ASP
  'Students each have arrived.'

(56) a. Zhangsan fa-gei-le xuesheng-men mei-ren/yi-ren
  Zhangsan distribute-GEI-ASP student-PLU each
  yi-tao jiazhi-wu-bai-yuan-de wen-ju.
  one-CL value-five-hundred-money-DE stationary
  'Zhangsan distributed the students each one set of stationary
  which is worth five hundred dollars.'

    b. \*[Zhe-yi-tao        jiazhi-wu-bai-yuan-de          wen-ju]$_i$,
      this-one-CL     value-five-hundred-money-DE  stationary
    Zhangsan   fa-gei-le             xuesheng-men
    Zhangsan   distribute-GEI-ASP    student-PLU
    mei-ren/yi-ren       t$_i$ .
    each

For examples (50) and (51), note that there is no indefinite expression c-commanded by *mei-ren/yi-ren* in either example. Hence we cannot be certain that the ungrammaticality of (50) and (51) is absolutely due to the reason that there is no A-movement of the IO moving across the DQ.

To sum up, we have seen that *mei-ren/yi-ren* is not a VP-adjoined distributive quantifier. In addition, the claim that the IO has to move over the DQ in order to license the DQ is also problematic since there exist other confounding factors. However, in the following discussion, I believe that IO-raising is still needed independently for the derivation of the Mandarin V-GEI DOC because of the A/A'-movement patterns exhibited.

## 4. A RECONCILED PROPOSAL

### 4.1 The Analysis

In the literature regarding ApplP, one central issue of the applicative involved structure is the A-movement symmetry/asymmetry of the applied arguments (see Baker 1988; Marantz 1993; Ura 1996; McGinnis 2001, 2002; McGinnis and Gerdts 2004; Anagnostopoulou 2003; Lee 2004, 2005; Jeong 2006; Citko 2009, 2011, among many others). Paul and Whitman argue that the raising applicative can explain both the A-movement and the A'-movement patterns exhibited in the Mandarin V-GEI DOC. As shown in both A-movement constructions (57) and (58), only the DO of the Mandarin V-GEI DOC can undergo movements.[9]

[9] The passive in Mandarin Chinese is mainly the BEI construction. As proposed by Ting (1998) and Huang (1999), the short passive in (57), where the Agent is omitted, involves

(57) Short Passivization (A-movement): *IO, <sup>OK</sup>DO

   a. *Kaite bei   xie-gei-le           yi-feng    xin.
      Kate BEI   write-GEI-ASP       one-CL    letter
      'Kate was written a letter.'
   b. Zhe-feng       xin        bei  xie-gei-le        Kaite.
      this-CL        letter      BEI  write-GEI-ASP   Kate
      'This letter was written to Kate.'

(58) The BA Construction (A-movement): *IO, <sup>OK</sup>DO

   a. *Dongni        ba   Kaite xie-gei-le          yi-feng    xin.
       Tony          BA   Kate  write-GEI-ASP      one-CL     letter
       'Tony wrote Kate a letter.'
   b. Dongni ba   yi-feng    xin   xie-gei-le             Kaite.
      Tony    BA   one-CL    letter write-GEI-ASP         Kate
      'Tony wrote Kate a letter.'

In addition, the same pattern can be observed in the following two A'-movement constructions as well.

(59) Long Passivization (A'-movement): *IO, <sup>OK</sup>DO

   a. *Kaite bei   Dongni   xie-gei-le           yi-feng    xin.
       Kate BEI   Tony      write-GEI-ASP       one-CL     letter
       'Kate was written a letter by Tony.'
   b. Zhe-feng       xin   bei     Dongni    xie-gei-le        Kaite.
      this-CL        letter BEI     Tony      write-GEI-ASP   Kate
      'This letter was written to Kate by Tony.'

(60) Topicalization (A'-movement): *IO, <sup>OK</sup>DO

   a. *Kaite, Dongni    xie-gei-le           yi-feng    xin.
       Kate Tony        write-GEI-ASP       one-CL     letter
       'Kate, Tony wrote her this letter.'

---

A-movement. The long passive in (59), on the other hand, involves A'-movement and the Agent shows up in the structure. As for the BA construction, I follow the A-movement proposal by Goodall (1987), Sybesma (1999), Paul and Whitman (2010), and others.

b. Zhe-feng　　xin,　　　Dongni　xie-gei-le　　　　Kaite.
　 this-CL　　 letter　　 Tony　 write-GEI-ASP　　 Kate
　 'This letter, Tony wrote to Kate.'

Under Paul and Whitman's Raising Applicative analysis, the immobility of the IO is explained as follows: For a typical V-GEI DOC, the Case of the IO is checked/valued by the ApplP head/GEI via Agree since it is the closest candidate. The Case-checked/valued IO then undergoes movement/raising to Spec, ApplP because of the EPP feature. This is illustrated in (61).

(61) [$_{vP}$ Subject $v$ [$_{ApplP}$ IO$_i$　GEI [$_{VP}$　　t$_i$　verb　DO　]]]
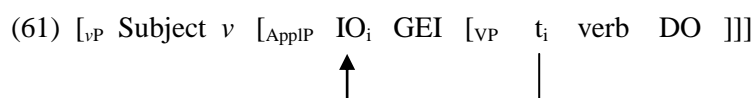
The DO is Case checked/valued via the $v$ head in (61). Hence to passivize a V-GEI DOC whose structure is (61), the DO becomes the only possible candidate for A-movement. As for the A'-movement, once the IO raises from Spec, VP to Spec, ApplP, its EPP feature will be checked/valued. Hence the IO is frozen for any further movement. Unlike the IO whose EPP feature has been checked/valued, the DO is free to undergo A'-movement if there is one.

Although Paul and Whitman have shown that the A/A'-movement asymmetry can be explained nicely by their raising applicative hypothesis, I have shown that there are problems with their argument for a Raising Applicative Hypothesis. For such a dilemma, I propose a revised structure which incorporates all the relevant facts regarding the Mandarin V-GEI DOC in the following discussion.

What we have observed so far for the Mandarin V-GEI DOC can be summarized as follows: First of all, semantically we need a low applicative from the diagnoses presented in Section 2. However, if the lexical item GEI is an applicative head, it has to be higher than the VP syntactically because the correct order of the verb cluster can only be derived in this way. That's why Paul and Whitman posit a single applicative projection above VP. In addition, the A/A'-movement asymmetry can be explained nicely by the occurrence of their applP right

above VP because the explanation comes from IO-raising. But I have shown that the major argument for the Raising Applicative Hypothesis is questionable.

Putting all these concerns together, the most ideal structure should be constructed as follows: In addition to Pylkkänen's low applicative, what we need for the Mandarin V-GEI DOC seems to be an additional applicative related functional projection right about VP, whose head then can be realized as an overt applicative head such as GEI in the Mandarin V-GEI DOC. With this applicative related projection, the A/A'-movement asymmetry can be explained via IO-raising to this additional functional projection. This idea is not brand-new, though, since it has been proposed by Soh (2005) for the Mandarin DOC. Recall that for the adverbial quantifier, *ge* can adjoin to *v*P or VP. As pointed out by Soh (2005), if the applicative framework by Pylkkänen is adopted and *ge* adjoins to VP in the structure as in (63), the correct word order in (62) cannot be derived.

(62) Dongni    song    tamen    ge      yi-ben    shu.
     Tony      give    them     each    one-CL    book
     'Tony gave them each a book.'

(63) [$_{vP}$ Tony give$_i$ [$_{VP}$ ge [$_{VP}$ t$_i$ [$_{applLP}$ them ApplL a book ]]]].

Soh (2005) therefore suggests a reconciled way to solve this problem. She assumes that the IO may raise to a higher position in the structure. In this way the correct word order can be derived. Combining the vital proposal by Soh (2005) and Paul and Whitman (2010), I propose that we may follow Citko's (2011) light applicative proposal for the double object construction in Polish. Citko (2009, 2011) employs a Case-based account to explain the different A-movement patterns observed in DOCs cross-linguistically. Some languages such as Kinyarwanda in (64) show A-movement symmetry. That is, both the IO and the DO can be passivized. In some languages such as Chichewa, only the IO can be passivized as in (65). Moreover, in languages such as Polish, only the DO can be passivized as in (66). Note that these DOCs all involve high

applicatives since there are relations between an individual and an event presented in these examples.

(64)  Kinyarwanda: both the IO and the DO can be passivized

   a. Umukoôbwaᵢ a-ra-andik-ir-w-a          tᵢ   íbárúwa
      girl         SP-PR-write-APPL-PAS-ASP        letter
      n'ûmuhuûngu.
      by boy
      'The girl is having the letter written for her by the boy.'
                                                  (Kimenyi 1980:3c)

   b. Íbárúwaᵢ   i-ra-andik-ir-w-a          umukoôbwa   tᵢ
      letter       SP-PR-write-APPL-PAS-ASP   girl
      n'ûmuhuûngu.
      by boy
      'The letter is written for the girl by the boy.'
                                                  (Kimenyi 1980:3b)

(65)  Chichewa: only the IO can be passivized

   a. Atsíkãna       a-na-gúl-ír-idw-á          mphâtso
      2.girls         2S-PST-buy-APPL-PAS-FV     9.gift
      (ndi  chitsîru).
       by  7.fool
      'The girls were bought a gift (by the fool).'

   b. *Mphâtso      i-na-gúl-ír-idw-á          átsíkãna
       9.gift         9S-PST-buy-APPL-PAS-FV     2.girls
      (ndi  chitsîru).
       by  7.fool
      'A gift was bought for the girls (by the fool).'
                                                  (McGinnis 2002:29)

(66)  Polish: only the DO can be passivized

   a. Pólka        zostala      przytrzymana   (Ewie)   przez  Janka.
      shelf.NOM    was          held           Eve.DAT  by     John
      'The shelf was held for Eve by John.'

b. *Ewa       zostala   przytrzymana   półkę      przez   Janka.
    Eve.NOM   was      held         slhelf.ACC by      John
    'Eve was held a shelf by John.'

                                     (Dziwirek 1994:84)

To explain these different A-movement patterns under a unified account, Citko proposes that both *v* and the ApplHP head can value accusative Case. In a structure with a high applicative, the *v* head values *u*Case on IO, while the ApplHP head values *u*Case on DO, as illustrated in (67).

(67) [$_{vP}$ *v* [$_{ApplHP}$ Goal/IO [$_{ApplH'}$ ApplH [$_{VP}$ V Theme/DO ]]]
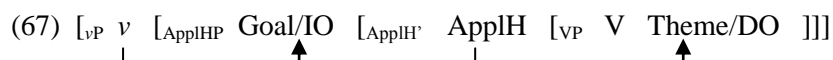
As a language parameter, passivization may result in different Case absorption of these two heads. If it is the Case feature of the *v* head being absorbed, the IO can be passivized. This option then gives us an asymmetric movement pattern as the one in Chichewa. If a language can have either the Case feature of the *v* head or the ApplHP head being absorbed, we get a symmetric movement such as the one in Kinyarwanda. However, if we want to get the DO-only passivization pattern in Polish, this implies that the Case of the *v* head in Polish can never be absorbed, which seems quite unnatural since we do find other passive sentences in which the Case feature of the *v* head is absorbed in Polish. Therefore the DO-only A-movement in Polish DOCs has a slightly different analysis. Cross-linguistically, Citko observed that for the DO-only passivization languages such as German, Spanish or Polish, their indirect objects are marked with inherent Case as shown in (66a). She then proposes that the dative/inherent Case on the indirect object in (66a) can be analysed as a combination of *i*Case and *u*Case (see Woolford 2006). To check/value the Case of the IO, a light applicative projection, whose position is right above ApplHP, is proposed in the structure to license the inherent Case. After the IO undergoes raising to have its Case licensed, it becomes immobile.

The same DO-only passivization pattern is observable in the Polish DOC with a low applicative as shown in (68). And a similar proposal is

made for the low applicative. That is, a light applicative is posited right above VP to check/value the Case of the IO.[10] The IO also becomes immobile after its Case licensing as shown in (69).
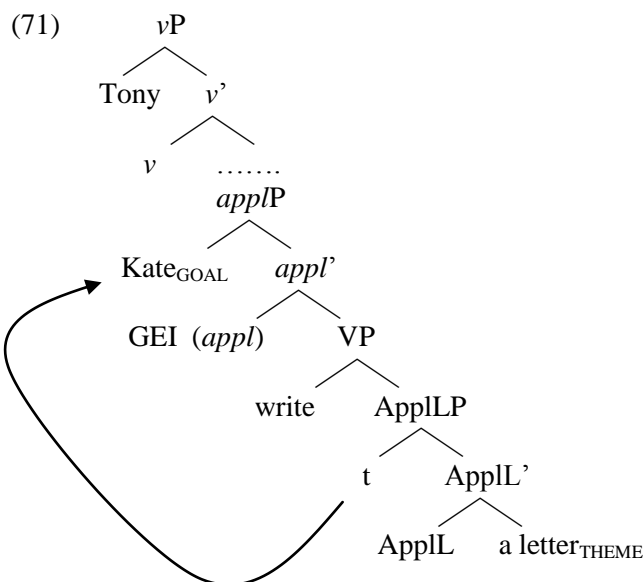
(68) Jan          wysłał    Piotrowi    książkę.
      John.NOM    sent       Peter.DAT    book.ACC
      'John sent Piort a book.'

(69) a. Ksiqzka$_i$    zostala    wyslana  Piotrowi        t$_i$.    (DO)
       book.NOM  became    sent      Piotr.DAT
       'The book was sent to Piotr.'
    b. *Piotr$_i$     zostal     wyslany  t$_i$    ksiazke.    (IO)
        Piotr.NOM  became    sent        book.ACC
       'The book was sent to Piotr.'

                                   (Citko 2011:157)

Incorporating this idea into the Mandarin V-GEI DOC, the proposed structure for example (70) is shown in (71).

(70) Dongni    xie-gei-le      Kaite      yi-feng    xin.
      Tony      write-give-ASP Kate      one-CL     letter
      'Tony wrote Kate a letter.'

---

[10]Although this light applicative projection is also right above VP, it does not equal to the high applicative of Pylkkänen (2008). As presented in the previous paragraph, for Citko (2011), the high applicative of Pylkkänen (2008) also has its own light applicative projection, which is right above ApplHP.

(71)

```
                    vP
                  /    \
              Tony      v'
                       /  \
                      v   …….
                          applP
                         /    \
              Kate_GOAL      appl'
                            /    \
                  GEI (appl)      VP
                                 /   \
                            write    ApplLP
                                    /    \
                                   t      ApplL'
                                         /    \
                                    ApplL    a letter_THEME
```

In this structure, the IO is Case-valued by the light applicative head and moves to the specifier position of this light *appl*P. After the movement, the immobility of the IO for either A-movement or A'-movement can be explained by Paul and Whitman's reasoning that we have shown in the previous section.

The proposed structure has the following advantages: First of all, it maintains Pylkkänen's (2008) low applicative projection, and therefore explains easily why the Mandarin V-GEI DOC passes the diagnoses for the low applicative. Moreover, one can see that the light applicative comes with the low applicative as a pair in the Mandarin V-GEI DOC. Hence it only affects the existence of the IO in the structure. Without the light applicative and the low applicative, we get an ordinary transitive sentence as in (72). It is also predicted that IO cannot appear without the overt applicative head GEI as in (73).

(72) Dongni    xie-le        yi-feng    xin.
     Tony      write-ASP     one-CL     letter
     'Tony wrote a letter.'

(73) *Dongni  xie-le        Kaite     yi-feng    xin.
     Tony    write-ASP    Kate      one-CL     letter
    'Tony wrote Kate a letter.'

Lastly, the current analysis employs a paired version of the low applicative, which also complements Larson's (2010) concern about the semantic computation deficiency of Pylkkänen's (2008) proposal for the low applicative projection. Larson (2010) points out that if we follow Pylkkänen's (2008) semantic computation for low applicative, we can derive (74c) by having (74a) and (74b), which is not the correct interpretation of the DOC in (74c). In other words, semantically the IO does not relate to the whole VP event in Pylkkänen's (2008) low applicative structure.

(74)  a. Tony baked the cake.
     b. Abby brought Kate the cake.
     c. Tony baked Kate the cake.

The problem does not show up in the Mandarin V-GEI DOC via the paired low applicative projections in (71). After the IO-raising, the IO does form a relation with the VP. Following Chang (2010), I assume that the light *appl* head combines with the VP via Event Identification and introduces a Benefactive since the IO can be interpreted as a receiver and a Benefactive in the double object construction. [11] The semantic computation after the VP formation for the revised Mandarin DOC is shown in (76).[12]

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[11] The light *appl* head can also introduce a Malefactive if what has been sent by *Tony* is a hate letter. What is important here is that both Benefactive and Malefactive are applied NPs which are related to the whole VP event.

[12] The Event Identification given in (75) is a rule which ensures that two event variables refer to the same event. Note that there are two event variables in (76). One event variable comes from the denotation of the VP and the other event variable is introduced by the applicative head GEI, which shows that an individual benefits from the relevant event. The two event variables (e and e' in (76)) are construed as referring to the same event through the rule of Event Identification. Due to space limitations, readers can find more detail in Kratzer (1996) and Lin (2001).
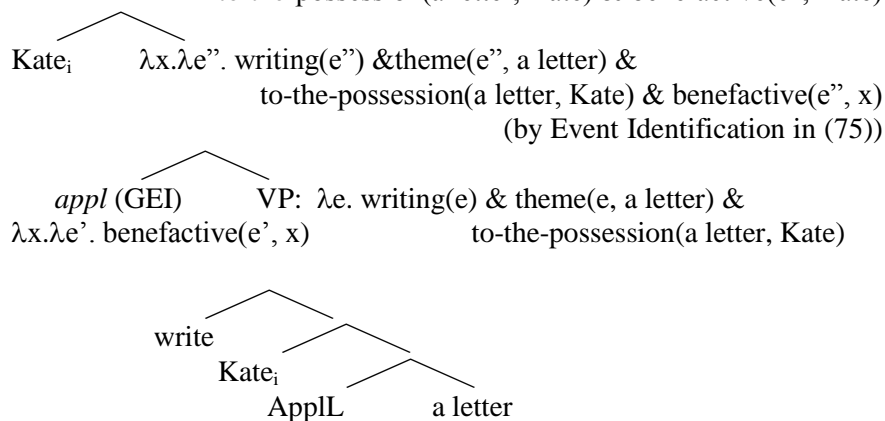
(75) Event Identification:

| f | g | -> | h |
|---|---|---|---|
| $\langle e, \langle s,t \rangle \rangle$ | $\langle s,t \rangle$ | | $\langle e, \langle s,t \rangle \rangle$ |
| | | | $\lambda x_e \lambda e_s [f(x)(e) \ \& \ g(e)]$ |

   (s is a type for events)

(Kratzer 1996)

(76) light *appl*P:  $\lambda e''$. writing(e'') & theme(e'', a letter) &
              to-the-possession(a letter, Kate) & benefactive(e'', Kate)

Kate$_i$      $\lambda x. \lambda e''$. writing(e'') &theme(e'', a letter) &
              to-the-possession(a letter, Kate) & benefactive(e'', x)
                              (by Event Identification in (75))

   *appl* (GEI)      VP: $\lambda e$. writing(e) & theme(e, a letter) &
$\lambda x. \lambda e'$. benefactive(e', x)                to-the-possession(a letter, Kate)

              write
                  Kate$_i$
                      ApplL        a letter

   In (76), after the IO arising, the IO not only forms a possessor/possessee relation with the Theme, but is also a Beneficiary who benefited from the whole letter-giving event. The semantic computation problem raised by Larson (2010) therefore does not emerge in the Mandarin V-GEI DOC.[13]

## 4.2 Some Remaining Issues[14]

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[13] The semantic computation problem still exists for English sentences which adopt the low applicative analysis by Pylkkänen (2008). For the IO to have a connection with the whole VP, a VP-shell structure proposed by Larson (1988) is needed (see also Marantz 1993).

[14] The author would like to thank the two anonymous reviewers for bringing these potential issues regarding the proposed applicative analysis to my attention.

In this section I clarify some potential issues concerning the current analysis. I discuss three theoretical concerns in Section 4.2.1 and two related constructions in Section 4.2.2.

## 4.2.1 Theoretical Concerns

The proposed analysis has a light applicative right above VP, which is reminiscent of several relevant analyses. First of all, one may wonder what the difference is between the current analysis and Larson's original VP-shell analysis since both of them have two syntactic layers. At first, the applicative analysis is proposed and pursued because it has been observed that the event-affecting DOCs and the object-transferring DOCs can be distinguished semantically, morphologically and syntactically in many languages (see Pylkkänen 2002, 2008). That's exactly the main motivation of why high and low applicatives are proposed to accommodate these phenomena. In addition, in some Bantu languages such as Kinyarwanda (i.e. McGinnis and Gerdts 2004), multiple applicatives which introduce non-core arguments such as benefactive, locative, or instrumental can even co-exist in the same structure. Therefore it seems that we do have a good reason to investigate the V-GEI DOCs in Mandarin Chinese to see what such an updated fine-grained analysis may bring to us in the study of Chinese syntax. This is especially true when we compare the current analysis to other constructions which have been proposed to involve applicatives in Chinese. For example, Tsai (2007, 2008, 2009, 2011 and 2015) has discussed the applicative-related constructions in Mandarin Chinese, and proposes three applicative projections in different syntactic domains: the VP domain, the *v*P domain and the CP domain. Therefore a VP-shell analysis seems not explanatory enough to accommodate all these applicative-related constructions even if the higher VP in the VP-shell is applicative-related. From a cross-structural point of view, to investigate the Mandarin V-GEI DOC under the applicative framework indeed reveals and implies several interesting details in a single V-GEI DOC structure in Mandarin Chinese.

Secondly, the "light" applicative is reminiscent of the light verb analysis by Lin (2001), which also introduces arguments and is right

above VP. However, the term "light" applicative employed in this paper is simply to follow the one used by Citko (2011) in her proposal. The light applicative is not intended to refer to the light verb of Lin (2001) even if they both have the label "light" in the name. Moreover, the light applicative is different from the light verb by Lin (2001) essentially. As pointed out by Chung (2013), the arguments introduced by Lin's light verb can be counted as core arguments since they do maintain a certain relation with the main predicate. However, under the current analysis, the light applicative does not introduce any core or non-core arguments. Recall that the IO introduced by the low applicative is an extra/non-core argument and raises to the specifier of the light applicative to check/value its Case. The light applicative simply functions as a landing site and does not introduce any arguments. Hence the light applicative does not have the same function as the light verb of Lin (2001).

Lastly, although the light applicative is right above VP, there is evidence showing that this light applicative is not equal to the high applicative of Pylkkänen (2008). First of all, under Pylkkänen's (2008) system, the high applicative introduces an extra/non-core applied NP argument, which is base-generated at its specifier. [15] But the light applicative under the current analysis mainly serves as a landing site for the raised IO. Secondly, among Tsai's (2007, 2008, 2009, 2011 and 2015) applicative-related discussions, Tsai (2008) in particular proposes an applicative version of the Chinese long passive, in which the high applicative is involved. Moreover, in some Chinese dialects, an optional GEI can be added to the BEI sentences, as shown in (77). Tang (2001) suggests that this additional GEI is a marker of Affectedness in Chinese. Combining these two proposals together, the optional GEI in (77) can be viewed as an overt head realization of the high applicative.

(77) Dongni    bei  Kaite    (gei)      da-le       yi-duan.
     Tony      BEI  Kate     (GEI)      beat-ASP  once
     'Tony was beaten by Kate once.'

---

[15] Although Soh (2005) does not specify the name of the functional projection to which the IO raises, I believe that in her proposal this functional projection is not equal to the high applicative for the same reason presented here.

Interestingly, it is possible to have a passive version of example (7), repeated here as (78). As shown in (79), the optional GEI of the passive and the GEI of the V-GEI DOC can emerge simultaneously. And the optional GEI of the passive is higher than the GEI in the V-GEI DOC.

(78) Dongni    xie-gei-le           Kaite  yi-feng  xin.      = (7)
     Tony      write-give-ASP       Kate   one-CL   letter
     'Tony wrote Kate a letter.'

(79) Zhe-feng xin    bei  Dongni  (gei)  xie-gei-le          Kaite.
     this-CL  letter BEI  Tony    GEI    write-GEI-ASP       Kate
     'This letter was written to Tony by Kate.'

If both the optional GEI of the passive and the GEI in the V-GEI DOC are realization of applicative heads, we do need two different applicative projections. Therefore the light applicative and the high applicative should not be equalized and considered the same.

4.2.2 Related Constructions

In this section I discuss two related issues regarding the Mandarin V-GEI DOC discussed in this paper. First of all, as noted in footnote 1, the focus of the previous discussion mainly deals with examples like (80), where GEI following the verb is in fact obligatory.

(80) Dongni    xie-*(gei)-le        Kaite     yi-feng   xin. = (7)
     Tony      write-give-ASP       Kate      one-CL    letter
     'Tony wrote Kate a letter.'

Not surprisingly, it is quite common that examples like (80) are compared to examples like (81), in which GEI following the verb is optional. With the same V-NP1-NP2 pattern, the only difference between (80) and (81) lies in the emergence of or lack of emergence of GEI.

(81) Dongni song-(gei)-le Kaite yi-jian liwu.
   Tony  give-give-ASP Kate  one-CL gift
   'Tony gave Kate a gift.'

One may wonder if the current analysis for example (80) with an obligatory GEI can be applied to example (81) with an optional GEI. And the answer is YES and NO. Although GEI seems optional in (81), I argue that GEI's emergence is not random. I propose that example (81), in fact, is composed of both (82) and (83). Note that we have a GEI in (82) and no GEI in (83).

(82) Dongni song-gei-le Kaite yi-jian liwu.
   Tony  give-give-ASP Kate  one-CL gift
   'Tony gave Kate a gift.'

(83) Dongni song-le Kaite yi-jian liwu.
   Tony  give-ASP Kate  one-CL gift
   'Tony gave Kate a gift.'

Since there is a GEI in example (82), it is expected that example (82) should behave like example (80) and can be explained by the current analysis, which is proposed for the V-GEI pattern in the DOC structure. And this prediction is indeed borne out. Recall that in Section 4.1, we have observed an A-movement asymmetry as in example (80). Its A-movement pattern of short passivization is repeated here as (84). Recall that only the DO can undergo A-movement in (84).

(84) Short Passivization (A-movement): *IO, $^{OK}$DO    = (57)
   a. *Kaite bei xie-gei-le yi-feng xin.
     Kate BEI write-GEI-ASP one-CL  letter
    'Kate was written a letter.'
   b. Zhe-feng xin  bei xie-gei-le  Kaite.
     this-CL  letter  BEI write-GEI-ASP Kate
    'This letter was written to Kate.'

The result of short passivization of example (82) is shown in (85). Similar to the pattern observed in (84), we can see that it is the DO, but not the IO, that can undergo A-movement.

(85) Short Passivization (A-movement): *IO, <sup>OK</sup>DO
    a. *Kaite bei song-gei-le yi-jian liwu.
       Kate BEI give-GEI-ASP one-CL gift
      'Kate was given a gift.'
    b. Zhe-jian liwu bei song-gei-le Kaite.
      this-CL gift BEI give-GEI-ASP Kate
      'This gift was given to Kate.'

The A-movement asymmetry pattern in (85) of example (82) can be explained easily by the current analysis. There is a GEI in (82) and only the DO can move. Compare to the structure and derivation proposed for example (80), we expect that there is a light *appl*P in the structure and there is IO-raising (see the proposed structure in (71)) as well for (82). The former light applicative projection is to host GEI, while the latter moving mechanism is to explain the immobility of the IO.

On the other hand, example (83), a DOC without GEI, behaves differently in its A-movement pattern. As shown in (86), both the IO and the DO can undergo A-movement in short passivization.

(86) Short Passivization (A-movement): <sup>OK</sup>IO, <sup>OK</sup>DO
    a. Kaite bei song-le yi-jian liwu.
      Kate BEI give-ASP one-CL gift
      'Kate was given a gift.'
    b. Zhe-jian liwu bei song-le Kaite.
      this-CL gift BEI give-ASP Kate
      'This gift was given to Kate.'

Compared to what we have observed for examples (80) and (82), it is a natural inference to say what has been proposed for examples (80) and (82), where GEI is presented in the structure, cannot be applied to example (83) directly. Therefore a different structure other than the

current proposal is expected to be involved in example (83), a DOC without GEI.[16]
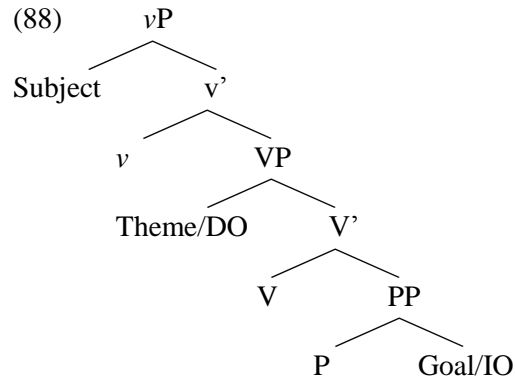
Secondly, it is also quite well-known that example (80) has a possible alternation as shown in (87). In the literature, examples like (87) are usually called dative constructions when compared to the double object construction example in (80).

(87) Dongni    xie-le      yi-feng    xin   gei Kaite.     (V-NP-PP)
     Tony      write-ASP one-CL     letter to   Kate
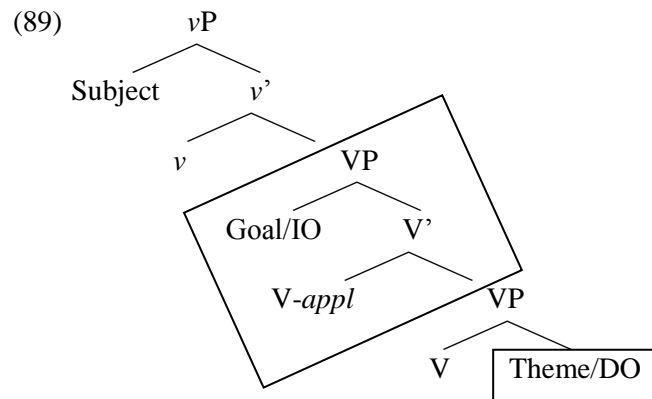     'Tony wrote a letter to Kate.'

One may also wonder if the current applicative analysis for example (80) can be applied to example (87) since there is a possible alternation between these two constructions. However, this proposal seems not workable. This is because cross-linguistically it has been argued that the dative construction is structurally different from the double object constructions (see Marantz 1993; Bruening 2001; Miyagawa and Tsujioka 2004, and others). The structural difference between the Mandarin dative construction and the double object construction has also been proposed by Kung (1993) and Soh (2005) as well. Take Soh (2005) for example, where the applicative framework is not adopted in her analysis, the major difference lies in the number of VP layers involved in the structure. For the dative construction in (87), there is only one VP projection, followed by a PP.

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[16] A quick thought for the structure for example (83) is the proposed structure in (71) but without the light *appl*P. However, such a structure then predicts that only the IO can move, but not the DO (see McGinnis 2001, 2002; Lee 2004, 2005). This movement asymmetry apparently is different from what we have observed for example (83). I leave this issue open here, and further research is needed to clarify the structure for the DOC without GEI.

(88)

```
                    vP
                  /    \
           Subject      v'
                      /    \
                    v       VP
                          /    \
                 Theme/DO       V'
                              /    \
                            V       PP
                                  /    \
                                 P      Goal/IO
```

On the other hand, there are two VP layers in the double object construction, as shown in (89). The lower VP hosts the main verb, while the upper VP hosts an applicative-like verb or affix.

(89)

```
                    vP
                  /    \
           Subject      v'
                      /    \
                    v       VP
                          /    \
                 Goal/IO       V'
                             /    \
                       V-appl     VP
                                /    \
                               V     Theme/DO
```

Under the current applicative analysis proposed, the upper VP layer is updated into a light *appl*P, and the NP complement taken by the verb is updated into a low ApplP, as shown in (90) (see also Soh 2005; Georgala et al. 2008; Paul and Whitman 2010).

(90)

```
              vP
          ┌───┴───┐
       Subject    v'
              ┌────┴────┐
              v    …….
                    applP
                ┌───┴───┐
            Goal/IOᵢ    appl'
                   ┌────┴────┐
              GEI (appl)     VP
                        ┌────┴────┐
                        V      ApplLP
                           ┌─────┴─────┐
                          tᵢ        ApplL'
                              ┌───────┴───────┐
                           ApplL          Theme/DO
```
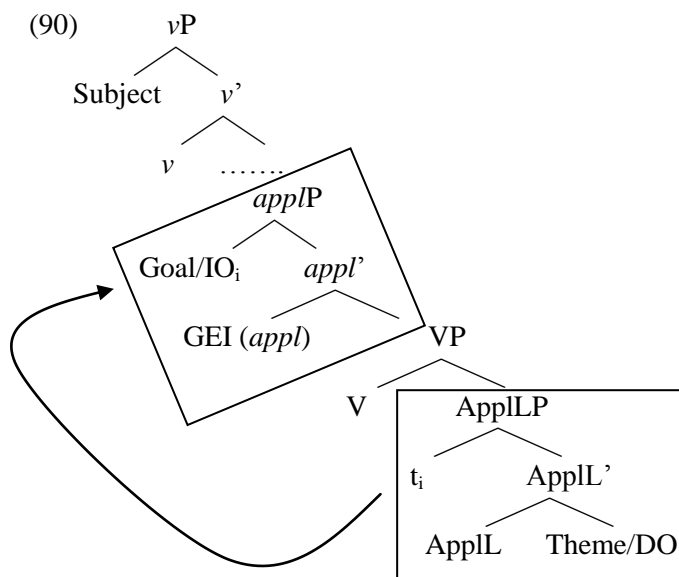
Note that for the dative construction in (87), there is only one VP layer available in (88), which is the main predicate hosting the main verb. In addition, the verbal complement in the dative construction is a PP, not an NP. It is therefore inferred that the applicative framework is not applicable to the dative construction like the one in (87).[17]

## 5. CONCLUSION

In this paper, I have investigated the Mandarin V-GEI double object construction from the perspective of applicative structures. Although

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[17] Although there is no applicative projection available in the dative construction, there may exist an interesting correlation between the double object construction and the dative construction regarding the applicative projection. Recall that in the proposed structure for the V-GEI DOC, the light applicative projection checks/values the Case of the IO. In the dative construction, the Case of the IO is taken care of by the preposition in the PP. From the perspective of Case checking/valuing, the light applicative projection in V-GEI DOC somehow is equal to the PP in the dative construction, which may entail the possible alternation between the two constructions.

Paul and Whitman's single applicative proposal is quite intriguing, I show that the employment of the distributive quantifier *mei-ren/yi-ren* does not support the raising mechanism imposed by the Raising Applicative Hypothesis. However, the IO-raising mechanism seems to be needed to explain the A/A'-movement asymmetry in the Mandarin V-GEI DOC. Therefore, I propose that we may follow the light applicative projection proposal by Citko (2011) to reach a reconciled structure. Resorting to a Case-based account, the proposed structure not only incorporates all the relevant features of the Mandarin V-GEI DOC, but also echoes Soh's (2005) suggestion for a modified Mandarin DOC structure when adopting the applicative framework.

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# 施用投射與漢語雙賓結構

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本文檢視了 Paul and Whitman (2010) 用於漢語動詞-給雙賓結構之提升施用假說。此假說提出了由單一施用投射來處理底部生成和提升之兩種類型的施用名詞組。儘管此假說有其出眾之處,本研究指出其主要論證提升施用投射存在的論點並不完全恰當;然而,在提升施用假說裡所涉及的間接受詞提升機制卻值得採用。因此,承續 Citko (2011),本研究為漢語動詞-給雙賓結構提出一個修正版的低施用投射:也就是除了原有的低施用投射外,再加上一個輕施用投射的分析。此修正版本不但可以解釋本文所探討的漢語動詞-給雙賓結構之相關特色,也回應了 Soh (2005) 對漢語雙賓結構中一個低施用投射和一個功能投射共現的建議。


關鍵字:雙賓結構、提升施用假說、分配量化詞、成份統御、論元/非論元移動對稱/不對稱