Verb Gapping in Chinese[*]

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0. Introduction

The Verb Gapping Construction, illustrated in (1), is a well-known phenomenon in which a verb is missing under 'identity' with a like verb elsewhere in the context.

(1)   ta chi-le   san wan miantiao, wo ~~chi-le~~   liang wan mifan.
        he eat-ASP three bowl noodle   I   eat-ASP two   bowl rice
        'He ate three bowls of noodle, while I ate two bowls of rice.'

This research investigates the syntactic properties of the Verb Gapping Construction in Mandarin Chinese. Four claims are made. First, object raising occurs in the Verb Gapping Construction. Second, as in English (Johnson 1996), there is an Across-the-Board head movement of the Verb, rather than a PF deletion of the Verb, in the Verb Gapping Construction. Third, the optionality of Verb Gappinng reflects the variations between coordinate conjunctions at vP-level and a higher level. Fourth, the differences in specificity with respect to object raising between Chinese and German are the result of the different interaction patterns between two kinds of economy principles, governing the syntactically motivated movement, which is to check uninterpretable features, and the semantically motivated movement, which ensures a proper LF representation (Diesing 1997).

Section 1 of this paper introduces three background assumptions: Chinese has IP and NegP, and V-t-v movment is covert in Chinese. Sections 2.1 to 2.4 list evidence for object raising, and sections 2.5 to 2.7 presents evidence for the verb movment, in the Verb Gapping Construction. Section 3 argues against PF deletion hypothesis, while section 4 proposes an Across-the-Board movement hypothesis. In section 5, the optionality of Verb Gapping is discussed. In section 6, I explore the issue of specificity with respect to object raising in German and Chinese. The paper is closed in section 7 with reflection on the general implications of proposals made here for syntactic variations across languages.

1. Background Assumptions: Chinese IP, Neg, and Verb Movement

This research relies on a number of background assumptions. First, sentence negation words heads a funcitonal projection NegP rather than adjoining to other projections. Second, V-to-v movement in Chinese is covert. Finally, Chinese has Infl and the sentence-final aspect particle *le* is base-generated in I. These three assumptions will be introduced in this section one by one.

1.1 The Projection of NegP and Its Position

There are two negation markers in Chinese: *bu* and *mei(you)*. When they are used as sentence negation markers, they differ in eventuality type. Unbounded eventualities consist of permanent states and activities such as habitual actions, while bounded eventualities cover various processes and states which have at least one temporal boundary. The latter has a starting and/or endpoint which constitutes the goal or outcome of the event. In contrast, the

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former has arbitrarily a starting and/or endpoint and can start and stop at any time. Bounded eventualities use *mei(you)*, while unbounded eventualities use *bu*.

(2) a. ta **bu** bao-zhe   zhentou shuijiao
         he not hold-ASP pillow   sleep
         'He does not sleep by holding a pillow.'
     b. ta zuotian   **mei** bao-zhe zhentou shuijiao
         he yesterday not hold-ASP pillow   sleep
         'He did not sleep by holding a pillow yesterday.'

That Chinese sentence negation words head an independent functional projection is supported by the fact that they can license VP ellipsis. Postdam (1997) gives the following condition on VP ellipsis:

(3) VP-Ellipsis Licensing Condition
     An elided VP must be the complement of a morphologically realized head.

This condition can be illustrated by the following Chinese data, where an adverb like *ye* 'also' cannot license VP ellipsis, while a control verb *xiang* 'want', a deontic modal like *neng* 'can', and an epistemic model like *yinggai* 'might' can.

(4) a. *Wang Ding chouyan, Li Ying ye.
         Wang Ding smoke   Li Ying also
     b. Wang Ding xiang chouyan, Li Ying ye xiang.
         Wang Ding want smoke   Li Ying also want
         'Wang Ding wants to smoke, so does Li Ying.'
     c. Wang Ding neng shuo Deyu,   Li Ying ye neng
         Wang Ding can   speak German Li Ying also can
         'Wang Ding can speak German, so can Li Ying.'
     d. Chen Xuan yinggai qu-guo Taiwan, Zhang Ning ye yinggai.
         Chen Xuan might   go-ASP Taiwan   Zhang Ning also might
         'Chen Xuan might have been to Taiwan, so might Zhang Ning.'

Unlike adverbs, sentence negation words can license VP ellipsis:

(5) a. Wang Ding bu chouyan, Li Ying ye bu.
         Wang Ding not smoke   Li Ying also not
         'Wang Ding does not smoke, nor does Li Ying.'
     b. Chen Xuan mei dasao bangongshi, Zhang Ning ye mei.
         Chen Xuan not clean office   Zhang Ning also not
         'Chen Xuan has not cleaned his office, nor has Zhang Ning.'

Thus, if Postdam's VP-Ellipsis Licensing Condition is true, Chinese sentence negation words should head a NegP, rather than adjoining to other projections.

Another argument supporting this claim can be found in the fact that a Chinese negation word can block the covert checking of the uninterpretable [Q] in yes-no C, if a question word (an A-not-A word or the word *shi-bu-shi*), which contains the interpretable [Q], is merged lower than the negation word.

(6)　　a.　　*ta bu shi-bu-shi chang jing-ju?　　　　　　　(Neg-[Q])
　　　　　　　he not be-not-be sing Beijing-Opera
　　　　b.　　ta shi-bu-shi bu chang jing-ju?　　　　　　　　([Q]-Neg)
　　　　　　　he be-not-be not sing Beijing-Opera
　　　　　　　'Does he not sing Beijing-Opera?'

In this case, the Minimality Principle plays a role in head movement. This is discussed in detail in Zhang (1997).

　　　　If NegP is projected in Chinese, what is its relative position to other projections such as VP and vP? Let us look at its relation to object shift. A shifted object always occurs to the left of the negation word in a negative sentence.

(7)　　a.　　ta mei kan-guo zheiben shu.
　　　　　　　he not read-ASP this　　book
　　　　　　　'He has not read this book.'
　　　　b.　　ta zheiben shu mei kan-guo.
　　　　　　　he this　　book not read-ASP
　　　　　　　'He has not read THIS BOOK.'
　　　　c.　　*ta mei zheiben shu kan-guo.
　　　　　　　he not this　　book read-ASP

　　　　Similarly, in German, a shifted object must occur to the left of a sentential negation word (Hauptmann 1994, Santelmann 1994):

(8)　　　　　weil　Johann das Buch nicht kaufte
　　　　　　　because Johann the book not bought
　　　　　　　''because Johann did not buy the book.'

　　　　In Romanian, a preverbal focused object must also occur to the left of a negation word. The following example is from Motapanyane (1997: 18).

(9)　　　Nimeni [nimic] **nu** ti-ar　face　fara pile.
　　　　　nobody nothing not to-you would do without connections
　　　　　'There's nothing anyone would do for you if you do not have connections.'

Motapanyane (1997) claims that in this sentence, *nimic* 'nothing' is in a focus position, which is to the left of the negation word *nu* 'not'. In West Flemish, a shifted object also occurs to the left of a negation word (Haegeman 1995).

　　　　Following Santelmann (1994), Hauptmann (1994) and Haegeman (1995), who claim that NegP is situated between AgrOP and VP, I assume that NegP in Chinese is beneath v^{max} and above VP, since in the present version of the Minimalist Program (Chomsky 1995) v^{max} takes all the functions of AgrOP of the previous version of the Minimalist Program, as well as hosts the subject. The above data suggest that the strong feature checking by object shift is carried out in v^{max}, which is to the left of NegP.

1.2 V-to-v Movement in Chinese

　　　　According to Chomsky (1995), V has to adjoin overtly to v to assign a theta role to the subject, which is merged at Spec of v. If NegP is between v^{max} and VP, and if the V-to-v adjunction is overt in Chinese, we predict that either V adjoins to v directly or V adjoins to a

147

negation word first and then [Neg-V] adjoins to $\underline{v}$. In the former case, a negation word is to the right of a verb, as shown in (10a); while in the latter case, a negation word and a verb will be adjacent all the time, as shown in (10b). The data in (11) and (12) prove both of these predictions to be wrong:

(10)
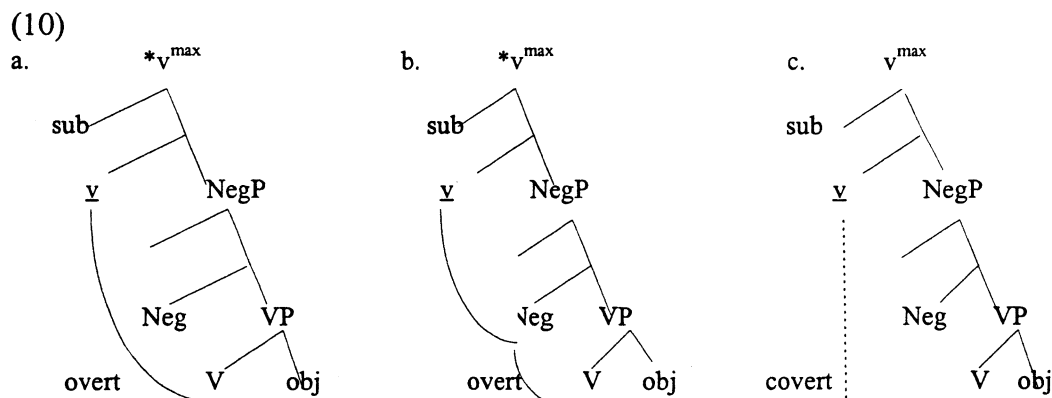
(11) a. ta **mei** zuo wan-fan.
   he not make evening-meal
   'He did not make his supper.'
 b. *ta zuo   **mei** wan-fan.
   he make not evening-meal
(12) a. ta **mei** [PP gei wo] zuo   wan-fan.
   he not   for I   make evening-meal
   'He did not make a supper for me.'
 b. *ta **mei** zuo [PP gei wo] wan-fan.
   he not make   for I evening-meal
 c. *ta [PP gei wo] **mei** zuo   wan-fan.
   he   for I   not make evening-meal

To avoid these wrong predictions, I assume that V-to-$\underline{v}$ movement in Chinese is covert, as shown in (10c). Thus a sentence negation word always occurs to the left of a verb, and it can be separated from the verb by a phrase. Boskovic and Takahashi (1995) claim that theta features are strong in English. Presumably, theta features are weak in Chinese.

1.3 Sentence-final *le* and Chinese Infl

Zhang (1997) presents evidence showing that Chinese has Infl. The head of Chinese IP is not related to a postverbal aspect marker. However, the sentence-final aspect particle *le* is base-generated in I. It can license a subject pro and show the finiteness of a clause. It differs from other aspect markers in that it has the feature [deictic]. It always anchors at the moment of speech, signaling a currently relevant state. Thus Chinese I is not always null, as Ernst (1994) claims. It is also argued that Chinese C has aspect features. When C is specified with [deictic], it attracts the particle *le* from I. Thus I to C raising occurs. Since Chinese is a C-final language, *le* appears at the end of a sentence.

My research on the Verb Gapping Construction is based on these three background assumptions introduced in this section: a negation word heads a NegP, V-to-$\underline{v}$ movement is covert, and IP is projected in Chinese.

148

2. Properties of the Chinese Verb Gapping Construction

In this section, I present seven syntactic properties of the Verb Gapping Construction in Chinese. The first four, i.e., the absence of A-not-A, the absence of SOV order, the impossibility of AP extraposition from NP, and the clause-bound constraint, support my assumption that object raising occurs in the Verb Gapping Construction. The other three properties, i.e., the absolute identity between the Gap and its antecedent, the immediate and adjacent conjunction constraints, and the absence of negation, support my assumption that an Across-the-Board head movement occurs in this construction.

2.1 The Absence of A-not-A

One property of the Verb Gapping Construction is that no A-not-A is allowed. A-not-A is a word formation of yes-no question words. A-not-A questions are formed by reduplication of either the first syllable or the complete form of the questioned element, and the negative *bu* or *mei* is infixed between the reduplicant and the base. A-*bu*-A occurs with unbounded eventualities while A-*mei*-A occurs with bounded eventualities. (13) denotes an unbounded eventuality, while (14) denotes a bounded eventuality. A-not-A forms are shown in (13b) and (14b). Thus *bu* is used in (13b) and *mei* is used in (14b).

(13)   a.   ta xihuan neiben shu **ma?**
                 he like   that   book Q
                 'Does he like that book?'
           b.   ta **xi(huan)-bu-xihuan** neiben shu?
                 'Does he like that book?'

(14)   a.   ta kanjian neiben shu le   **ma?**
                 he see   that   book ASP Q
                 'Did he see that book?'
           b.   ta **kan(jian)-mei-kanjian** neiben shu?
                 'Did he see that book?'

The impossibility of A-not-A in a Verb Gapping sentence is shown below:

(15)   a.   Lao Li mai-le   san bao   binggan,
                 Lao Li buy-ASP three package biscuits
                 Xiao Wang mai-le   si bao   qiaokeli.
                 Xiao Wang buy-ASP four package chocolate
                 'Xiao Li bought 3 packages of biscuits,
                 Xiao Wang bought 4 package of chocolate.'
           b.   Lao Li mai-le   san bao   binggan,
                 Lao Li buy-ASP three package biscuits
                 Xiao Wang ~~mai-le~~ si bao   qiaokeli.
                 Xiao Wang buy-ASP four package chocolate
                 'Xiao Li bought 3 packages of biscuits,
                 Xiao Wang bought 4 package of chocolate.'
           c.   *Lao Li mai-mei-mai san bao   binggan,
                  Lao Li buy-not-buy three package biscuits
                 Xiao Wang si   bao qiaokeli?
                 Xiao Wang four package chocolate

This property is also shared by the object raising sentences:

(16) a. Lao Li mai-le nei ben shu.
          Lao Li buy-ASP that CL book
          'Lao Li has bought that book.'
      b. Lao Li nei ben shu mai-le.
          Lao Li that CL book buy-ASP
          'Lao Li has bought that book.'
      c. *Lao Li nei ben shu mai-mei-mai?
          Lao Li that CL book buy-not-buy

In Zhang (1995) I argue that A-not-A and object raising both express the contrastive focalization. They cannot co-occur, because two operations of contrastive focalizing can never be applied simultaneously. The fact that Verb Gapping does not allow A-not-A suggests that in the computation system, Verb-Gapping is a contrastive focalization operation. In this construciton, the remaining subjects and the objects are both contrastively focused, according to the intuition of a native speaker of Chinese. This is also true of English Gapping, as pointed out by Johnson (1996: 2). In Zhang (1997), I show that object raising can be triggered by a focus feature on the object.[1] Obviously, the object of the Gapping Construction does contain this triggering feature. I thus conclude that the Verb Gapping Construction has the condition for object raising and it is possible that object raising occurs in the construction.

2.2 The Absence of SOV Order

One immediate support for my hypothesis that object raisng occurs in the Verb Gapping Construction is that no SOV order is allowed in this construction. In the following, (a) is in the SVO order, while (b) is in the SOV order, where object raising occurs. (c) is a Gapping sentence, where a clause in the form of (a) is conjoined with another clause. (d) is an unacceptable Verb Gapping sentence with the SOV order. Part of the conjunct in (d) can be an independent sentence, as shown in (b). (c) shows that comparing to (d), the correspondent Gapping form in SVO order is possible.[2]

(17) a. ta kan-guo nei ben xiaoshuo.
          he read-ASP that CL novel
          'He has read that novel.'
      b. ta nei ben xiaoshuo kan-guo.
          he that CL novel   read-ASP
          'He has read that novel.'
      c. zai huoche shang ta kan-guo nei ben xiaoshuo, wo zhei ben zazhi.
          at train   on he read-ASP that CL novel   I   this CL magazine
          'On the train, he read that novel, while I read this magazine.'
      d. *zai huoche shang ta nei ben xiaoshuo kan-guo, wo zhei ben zazhi
          at train   on he that CL novel read-ASP   I   this CL magazine

Why is the SOV order impossible in the Gapping construction? In section 2.1 we observed that the Verb Gapping Construction has the condition for object raising. A plausible

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[1] This is also pointed out by Gasde (1997).
[2] I will not discuss the possibility of SOV order in a non-gapping conjunction, as in (i).
  (i)   ?zai huoche shang ta nei ben xiaoshuo kan-guo, wo zhei ben zazhi kan-guo.
The acceptability of this sentence varies. An analysis of sentences such as (i) will not affect the analysis of the Gapping construction made in this paper.

assumption is that object raising does occur in the Verb Gapping Construction and that is why not only A-not-A is excluded, but also any further object raising becomes unmotivated.

2.3 The Impossibility of AP Extraposition from NP

Another property shared by object raising and Verb Gapping is that neither allows AP extraposition from NP, which can be seen below:

(18) a.   ta he-le   [NP yi wan [AP rerede] cha]].
            he drink-ASP   one bowl   hot   tea
            'He drank a bowl of hot tea.'

       b.   ta [AP rerede] he-le [NP yi   wan cha].
            he   hot   drink-ASP one bowl tea
            'He drank a bowl of hot tea.'

The above are paraphrases. The bracketed AP *rerede* 'hot' is the modifier of the noun *cha* 'tea'. I assume that the base position of the AP is as in (a) and that the AP in (b) has been moved out of the NP and is adjoined to the right of VP or vP.

    Neither object shift nor Verb Gapping allow this kind of AP extraposition from NP:

(19) a.   ta he-le   [NP nei wan [AP rerede] cha]].
            he drink-ASP   that bowl   hot   tea
            'He drank that bowl of hot tea.'

       b.   *ta [AP rerede] [NP nei wan   cha] he-le.
             he   hot   that bowl tea drink-ASP

       c.   *ta [NP nei wan   cha] [AP rerede] he-le.
             he   that bowl tea   hot   drink-ASP

(20) a.   ta [AP rerede] he-le [NP yi wan cha],
            he   hot   drink-ASP one bowl tea
            wo [AP rerede] he-le   [NP yi bei kafei].
            I   hot   drink-ASP   one cup coffee
            'He drank a bowl of hot tea, while I drank a cup of hot coffee.'

       b.   *ta [AP rerede] he-le [NP yi wan cha],
             he   hot   drink-ASP one bowl tea
            wo (rerede) ~~he-le~~   [NP yi bei kafei].
            I   hot   drink-ASP   one cup coffee

    Thus, the Verb Gapping Construction and the object raising construciton have the similar constraint regarding to the possibility of extraposition.

2.4 Clause-Bound Constraint

One more property shared by object raising and Verb Gapping is that both are subject to the clause bound locality condition; however, in both cases Restructuring Effect occurs. The object raising in (21b) and the Gapping in (22b) show the clause-bound constraint, while the object raising in (21c) and the Gapping in (22c) show the Restructuring Effect.

(21) a.   LaoWu renwei [CP LaoLi neiben shu_i hen xihuan t_i]
            LaoWu think   LaoLi that   book very like
            'LaoWu thinks that LaoLi likes that book very much.'

b. *LaoWu <u>neiben shu</u>_i renwei [$_{CP}$ LaoLi hen xihuan t_i]
   LaoWu that   book think   LaoLi very like

c. LaoLi <u>pengtiao de shu</u>_i   dasuan [PRO fanyi t_i]
   LaoLi cook   DE book plan   translate
   'LaoLi plans to translate COOKBOOKS.'

(22) a. Fang Mei zhidao [Chen Xuan mai-le san ping jiu],
   [Li Ying ~~mai-le~~ liang bao huasheng].

b. *Fang Mei zhidao [Chen Xuan mai-le san ping jiu],
   Li Ying ~~zhidao [Chen Xuan mai-le~~ liang bao huasheng].

c. Fang Mei dasuan [PRO mai liang shuang wazi],
   Li Ying ~~dasuan [PRO mai~~ san fu shoutao].

The main feature of the restructuring phenomenon is that processes and dependencies that are normally limited to a single clause can, where the higher predicate is of a particular type, take place across clause boundaries. The predicates that license clause union are of a semantically fairly well defined type, being typically modal or aspectual. An idea that has often been proposed (Mendicoetxea 1992, Manzini 1983, among others) is that restructuring involves incorporation of the lower verb into the higher verb. The formation of a single complex verb naturally entails the formation of a single predicate and thus can plausibly be thought of as deriving the effect of clause union.

This clause-bound constraint does not work on a topicalization sentence:

(23)   <u>neiben shu</u>_i LaoWu renwei [$_{CP}$ LaoLi hen xihuan t_i]
          that   book LaoWu think   LaoLi very like
          'That book, LaoWu thinks that LaoLi likes very much.'

Assuming with Chomsky (1995), Accusative Case features need to be checked by either overt object raising or covert feature attraction between object and v. This checking is obligatory across languages. The choice between overt and covert checkings depends on the strength of the Case feature in the language. Let us return to the Chinese Verb Gapping Construction. If the Accusative Case checking is covert, as in a regular SVO sentence, the above observations cannot be accounted for: A regular SVO sentence may have A-not-A form, allow an SOV alternation, allow AP extraposition from NP, and be constrained by the clause-bound constraint, while a Verb Gapping sentence can have none. Since all of these properties are also found in an overt object raising sentence, my claim is that an overt object raising occurs in the Gapping Construction.

If object raising occurs in the Verb Gapping Construction and no SOV order is allowed in the construction, judging from the SVO and SO orders of the conjuncts in the construction, one simple assumption is that V moves overtly to a position higher than v^{max} in the former, while it is deleted in the latter. Before we try to explain the construction in a different way, let us examine more properties of the Gapping Construction.

2.5 Absolute Identity Between the Gap and Its Antecedent
Unlike VP ellipsis, the Verb Gapping Construciton requires absolute morphological identity between the gapped verb and its antecedent.

(24) a. ta ci-le   zhi, yinwei ta de   nu-pengyou quan-guo   ta [$_{VP}$ □].
   he resign-ASP job, because he MOD girl-friend   advise-ASP he
   'He resigned, because his girl-friend advised him to do so.'

$[_{VP} \square]$ = ci zhi'resign job'   *$[_{VP} \square]$ = ci-le zhi 'resign-ASP job'

b.   ta de nu-pengyou quan-guo   ta ci   (*-le) zhi.
    he MOD girl-friend advise-ASP he resign (-ASP) job
    'He is girl-friend advised him to resign.'

(25) a.   Lao Wang zhu siheyuan,   Lao Li ~~zhu~~ gongyu-dalou.
    Lao Wang live quadrangle-building, Lao Li live apartment
    While Lao Wang lives in a quadrangle-building,
    Lao Li lives in an apartment.'

b.   *Lao Wang zhu-guo siheyuan,   Lao Li ~~zhu~~ gongyu-dalou
    Lao Wang live-ASP quadrangle-building, Lao Li live apartment

In (24a), the verb form in the antecedent of the elided VP has an aspect marker *-le*, while the elided verb must not have this marker, because two postverbal aspect markers cannot co-occur with both a control verb and the infinitive verb in the complement clause, as shown in (24b). Thus VP ellipsis does not require the morphological identity between the elided and its antecedent. (25b) shows that when the gapped verb and its antecedent are different morphologically, Gapping is impossible.

2.6 The Immediate and Adjacent Conjunction Constraints

The Verb Gapping Construction requires that the clause where the gapped verb is and the clause where the antecedent is are not only in a coordinate conjunction relation, but also in an immediate and adjacent conjunction relation. Thus there are three related constraints: coordinate conjunction, immediate conjunction, and adjacent conjunction. These three constraints will be presented in the three subsections below.

2.6.1 Coordinate Conjunction Constraint

Unlike VP ellipsis, the gapped verb and its antecedent must be in two clauses which have a conjunction relation.

(26) a.   ni jiao   san pian lunwen, ruguo ni   neng $[_{VP} \square]$ de-hua.
    you hand-in three CL   paper   if   you can   if
    'You hand in three papers, if you can.'

b.   *ni jiao   san pian lunwen, ruguo ta ~~jiao~~   liang pian.
    you hand-in three CL   paper   if   he hand-in two   CL

(27) a.   ta bu qiang-you-guo, yinwei tade fangdong fandui $[_{VP} \square]$.
    he not fry-oil-pan   because his   landlord   oppose
    'he does not fry, because his landland opposes.'

b.   *keren zhi chi-le yi   pian mianbao,
    guest only eat-ASP one slice bread
    yinwei   ruren ~~zhi chi-le~~   ban wan xizou.
    because host   only eat-asp half bowl porridge

In (26), the second clause is a conditional adverbial clause. VP ellipsis is possible, as in (26a), while Verb Gapping is not, as in (26b). Similarly, in (27), the second clause is a reason adverbial clause; and while VP ellipsis is possible, Verb Gapping is not.

2.6.2 Immediate Conjunct Constraint

Unlike VP ellipsis, the antecedent of the gapped verb in the Verb Gapping Construction must be in the immediate conjunct, not in the embedded clause of the immediate conjunct.

153

(28)   a.   ni   keyi canjia zhei ge hui,   dan wo renwei ni bu bi [vp □].
            you may attend this CL meeting, but I   think you not need
            'You may attend this meeting, but I think you do not have to.'
       b.   *Li Ying canjia-le   liang ge hui,   dan wo renwei
            Li Ying attend-ASP two   CL meeting, but I   think
            Chen Xuan canjia-le san ge hui.
            Chen Xuan attend-ASP three CL meeting
(29)   a.   wo piping-guo   ta, dan wo wang-le   wei shenme [ip □].
            I   criticize-ASP he, but I   forget-ASP for what
            'I criticized him, but I forget why.'
       b.   *zhei xingxi wo ting-le   san ge baogao, dan wo tingshuo
            this week   I   listen-ASP three CL lecture, but I   hear
            Lao Li ting-le   si   chang yinyuehui.
            Lao Li listen-ASP four CL   concert

Although all of the above data contain a conjunction construction at a certain level, the clause where the gapped or elided VP stays is not in a coordinate conjunction relation with the clause where the antecedent stays. In such cases, Verb Gapping, shown in the (b) sentences, are not acceptable, while VP ellipsis, shown in the (a) sentences, are. VP ellipsis and Verb Gapping are illustrated between the first conjunct and the complement clause of the second conjunct in the above data ((29a) might be a Sluicing case, or ellipsis of an LF IP, since Chinese does not have overt WH-movement).

(30) and (31) further show that if the Gapped clause and the antecedent clause are not in an immediate conjunction relation, the sentences are not acceptable.

(30)   a.   Fang Mei zhidao [[Chen Xuan mai-le   san ping pijiu],
            Fang Mei know   Chen Xuan buy-ASP three bottle beer
            [Li Ying mai-le   liang bao   huasheng]].
            Li Ying buy-ASP two   package peanuts
            'Fang Mei knew that Chen Xuan had bought three bottles of beer,
            and Li Ying bought two packages of peanuts.'
       b.   *Fang Mei zhidao [Chen Xuan mai-le san ping pijiu],
            Fang Mei know   Chen Xuan buy-ASP three bottle beer
            ye zhidao [Li Ying mai-le   liang bao huasheng].
            also know Li Ying buy-ASP two   package peanuts
(31)   a.   Wang Xiansheng qing-le   liang ge baomu,
            Wang Mr.   hire-ASP two   CL housekeeper
            Li Taitai qing-le   san ge siji.
            Li Mrs.   hire-ASP three CL driver
            'Mr. Wang has hired two house-keepers, while Mrs. Li hired three
            drivers.'
       b.   *Lao Wang [weile qing liang ge baomu]   deng-le bushao guanggao,
            Lao Wang for   hire two   CL housekeeper post-ASP mnay ads
            Lao Li [weile qing san ge siji]   deng-le bushao guanggao.
            Lao Li for   hire three CL dirver post-ASP mnay ads

In the (a) sentences above, the gapped clause and the antecedent clause are in a conjunction relation, regardless of whether they both are embedded (30a) or matrix (31a), and thus the

sentences are acceptable. In contrast, in the (b) sentences above, the gapped clause and the antecedent clause are not in a conjunction relation, although their dominant clauses are in a conjunction relation, and thus the sentences are not acceptable.

2.6.3 Adjacent Conjunct Constraint

In the Verb Gapping Construction, the gap's antecedent must be in the adjacent conjunct, while in VP ellipsis, the clause where ellipsis occurs and the clause where the antecedent is do not require to be adjacent.

(32)   a.   youxie Zhonguo-ren neng chi nailao,
                some   Chinese-person can eat cheese,
                youxie ren neng he leng niunai,
                some person can drink cold milk
                dan youxie ren   bu   neng [$_{VP}$ □].
                but some   person not can
                'Some Chinese can eat cheese, some can drink cold milk,
                but some can't.'
                □ = chi nailao 'eat cheese'   □ = he leng niunai 'drink cold milk'
                □ = chi nailao huo he leng niunai 'eat cheese or drink cold milk'

       b.   Lao Wang chao-le yi pan xiaren,
                Lao Wang fry-ASP one dish shimp
                Lao Li zheng-le liang tiao huangyu,
                Lao Li steam-asp two CL   yellow-croaker
                Lao Zhao □ san ge jidan.
                Lao Zhao   three CL egg
                'Lao Wang fried a dish of shrimp, Lao Li steamed two yellow croakers,
                while Lao Zhao three eggs.'
                □ = zheng 'steam'   *□ = chao 'fry'

I thus conclude that Gapping is different from XP ellipsis syntactically, and the properties of the Gapping construction needs a syntactic explanation.

2.7 The Absence of Negation

As noticed by Chen (1996), Gapping in Chinese does not have a negative form:

(33)   a.   Li Ying mai-le   liang ben xiaoshuo,
                Li Ying buy-ASP two   CL novel
                Chen Xuan ~~mai-le~~   san ben zazhi.
                Chen Xuan buy-ASP three CL magazine
                'Li Ying bought two novels, and Chen Xuan bought three magazines.'

       b.   *Li Ying mei mai liang ben xiaoshuo,
                 Li Ying not buy two   CL novel
                Chen Xuan (mei) ~~mai~~ san ben zazhi.
                Chen Xuan not buy three CL magazine

This property of the Verb Gapping Construction is in contrast to NP ellipsis, which does allow negation:

(34) a.   Li Ying xihuan zhei ben shu, Chen Xuan bu xihuan ~~zhei ben shu~~.
            Li Ying like   this CL book Chen Xuan not like   this CL book
            'Li Ying likes this book, while Chen Xuan does not.'

      b.   Li Ying bu xihuan zhei ben shu, Chen Xuan xihuan ~~zhei ben shu~~.
            Li Ying not like   this CL book Chen Xuan like   this CL book
   'Li Ying does not like this book, while Chen Xuan does.'

My assumption based on this fact is that a head movement is involved, if negation word heads a projection in Chinese, as argued in section 1.1. I will say more about this assumption in section 4.

3. The Difficulties of PF Deletion Hypothesis

In this section I will argue against a PF deletion hypothesis. Recall that at the end of section 2.4 I mentioned that one might assume that the empty V in the second adjunct of the Verb Gapping Construction is deleted at PF. We can find a PF deleltion hypothesis in Lasnik (1995a, 1997) for the English pseudo-gapping construction and Sluicing. Let us see an example of the pseudo-gapping construction:

(35)   You might not believe me but you will ~~believe~~ Bob.

Assuming with Johnson (1991), Lasnik claims that NP-raising to Spec of Agr_O ('Object Shift') is always overt in English, thus *Bob* in the second conjunct of the above sentence is raised to Agr_OP. After this raising, the VP containing the verb *believe* and the trace of the object is deleted at PF. This is shown below (Lasnik 1997 ex. (20)):

(36)
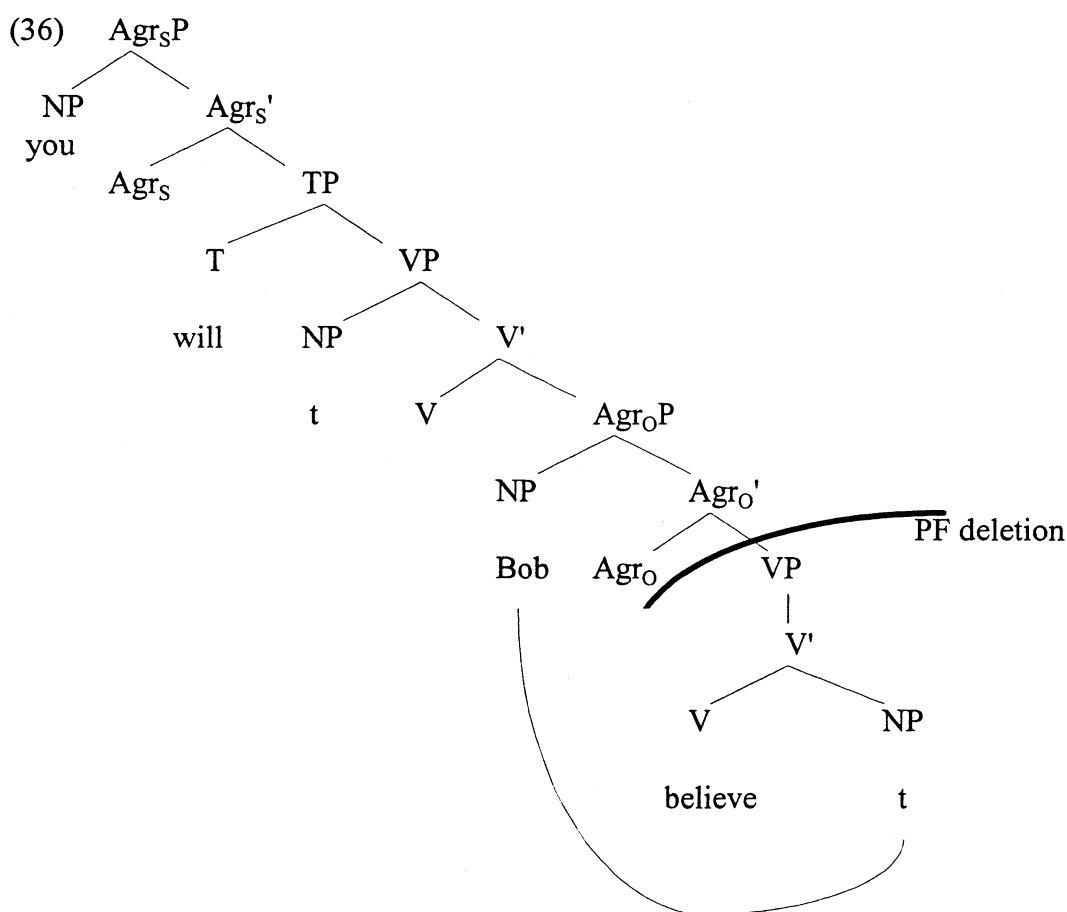
Putting aside the differences between the English pseudo-gapping construction and the Chinese Verb Gapping Construction, if Lasnik's PF deletion hypothesis works well with the former, theoretically, it might also work well with the latter, although no one has made such an extension. Thus the following argumentation does not intend to make any comments on the analysis of the English pseudo-gapping construction. The goal of this discussion is to see whether this kind of PF deletion hypothesis is correct for the Chinese Verb Gapping Construction.

Lasnik asks a theoretical question why pseudo-gapping is possible syntactically? Lasnik's answer is that a strong feature can be either in the moved element or in the deleted element. Thus either overt movement or deletion at PF can eliminate a strong feature and avoid a PF crash. Here the prerequisite is that English V has a strong feature.[3]

Lasnik (1995b) argues that both Greed and Attract are neccesary. Thus the substantive category V can have strong features. This is different from Chomsky (1995: 232), who claims that only nonsubstantive categories (functional categories) can have strong features. However, both Chomsky and Lasnik assume that in English Verb movement to v or to Agr_O is overt. Collins (1997), following Chomsky (1995 lecture notes), claims that this overt Verb movment is universal. However, as I argued in section 1, in Chinese, V-to-v movement is covert. In other words, neither V nor v in Chinese has strong features. Thus the PF deletion of a strong feature cannot be the motivation of Chinese Verb Gapping. This is the theoretical difficulty of the PF deletion assumption in accounting for the Chinese Verb Gapping Construction, if one extends the application of Lasnik's hypothesis to the Chinese facts.

A PF deletion assumption also meets empirical difficulties. If the Verb in the Verb Gapping Construction is simply deleted at PF, we will not be able to explain why negation is impossible, and why there are so many syntactic constraints on the construction as presented in section 2. My conclusion is that a strong feature in V and the deletion of V cannot be responsible for the Verb Gapping Construction in Chinese.

4. Overt Verb Movement Hypothesis

In stead of PF deletion, an Across-the-Board (ATB) movement of Verb will be shown to be adequate to account for the properties of the Verb Gapping Construction in Chinese. Based on English data, Johnson (1996) assumes that there is an ATB movement in English Gapping sentences. Some of the properties of a Chinese Gapping sentence introduced in section 2, such as the absolute identity between the Gap and its antecedent, and the immediate and adjacent conjunction constraints, are also present in English. As pointed out by Johnson (1996: 21), we look for a mechanism from the computation system that is restricted to coordination, respects constituency, and enforces absolute syntactic identity between the Gap and its antecedent. Further, the mechanism is subject to a locality condition that forces the Gap's antecedent to be in the adjacent conjunct. Movement, or copying followed by merging in Collins' (1997: 2)

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[3] A more general question asked by Lasnik (1997) is how to choose among the three Minimalist Approaches to strong features:

    A. A strong feature that is not checked in overt syntax causes a derivation to crash at PF. (Chomsky 1993)

    B. A strong feature that is not checked (and eliminated) in overt syntax causes a derivation to crash at LF. (Chomsky 1994)

    C. A strong feature must be eliminated (almost) immediately upon its introduction into the phrase marker. (Chomsky 1995, ch.4)

His research on English pseudo-gapping aims to prove the availability of the choice A, along with the other choices. Since if PF deletion can eliminate a strong feature, the strong feature can be PF-related.

Both choice A and choice B above are obviously in a global approach, rather than in a local one. For a discussion on the local vs. global approaches, see Collins (1997).

term, is a mechanism that has these features. It is a process of sentence grammar that respects constituency and, like Gapping, the moved term or the copy is understood as absolutely identical to its trace or the original. The species of movement or copying restricted to coordinations is the so-called Across-the-Board (ATB) type, illustrated by cases such as the the following:

(37)   Who$_i$ did you say that Carrie likes t$_i$ and Sarah hates t$_i$?

Johnson claims that there is an ATB movement of the Verb to I involved in the English Gapping Construction. Following the same argumentation, I will assume that ATB movement of Verb to I also occurs in a Chinese Verb Gapping sentence. Thus the derivation of the following (a) is shown in (b):

(38)   a.   ta chi-le   san wan miantiao, wo ~~chi-le~~   liang wan mifan.
              he eat-ASP three bowl noodle   I   eat-ASP two   bowl rice
              'He ate three bowls of noodle, while I ate two bowls of rice.'

b.
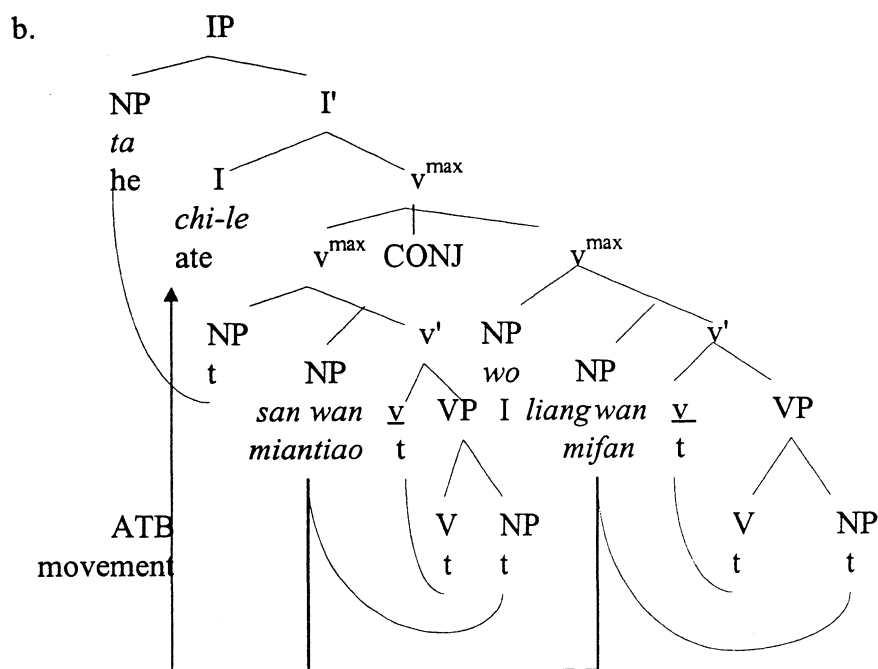
In this tree, there is only one matrix IP. The strong [D] in I responsible for EPP is checked by the movement of the subject in the first conjunct, *ta* 'he'. The subject of the second conjunct, *wo* 'I', has no motivation to move overtly and thus stays in situ. In both conjuncts, object raising lands at the inner Spec of v^{max}, adopting Chomsky (1995: 358). The Verbs in the two conjuncts move from V to $\underline{v}$ separately, and then undergo an ATB movement, landing at I.

This derivation accounts for the properties of Verb Gapping introduced in section 2. In other words, objects are raised and an ATB movement is carried out. The property that no negation is allowed in the Verb Gapping Construction (section 2.7) shows that the head movement of V to $\underline{v}$ obeys the Minimality constraint, or Travis's (1984) Head Movement Constraint. We have seen in section 1.1 that Neg is a head between V and $\underline{v}$. If V moves to $\underline{v}$, in either conjunct, a filled Neg can block this head movement. That is why negation in the Verb Gapping Construction is not allowed. If object raising is the only overt movement and there is no overt head movement from V to $\underline{v}$ involved, Neg is not able to interact due to

Relativized Minimality, and thus a negative object raising sentence should be acceptable. This is borne out:

(39) a. ta zhei ben shu mei mai.
          he this CL book not buy
          'He did not buy this book.'
      b. ta jingju   bu xihuan.
          he Peking-opera not like
          'He does not like Peking Operas.'

Summarizing, I have proposed a double overt movement hypothesis to account for the syntactic properties of the Chinese Verb Gapping Construciton: one is an XP movement of object raising and the other is head movement, where V first moves to v̱ and then an Across-the-Board movement of V-v to I occurs.

5. The Optionality of Verb Gapping
Gapping in natural languages is not an obligatory operation. A gapping sentence can always have a non-gapped counterpart.

(40) a. ta chi-le   san wan miantiao, wo chi-le   liang wan mifan.
          he eat-ASP three bowl noodle   I   eat-ASP two bowl rice
          'He has eaten 3 bowls of noodle, (while) I have eaten 2 bowls of rice.'
      b. ta chi-le   san wan miantiao, wo ~~chi-le~~ liang wan mifan.
          he eat-ASP three bowl noodle   I   eat-ASP two bowl rice
          'He has eaten three bowls of noodle, (while) I two bowls of rice.'

I have argued that Verb Gapping in Chinese involves Across-the-Board Verb raising to I. From the tree (38) we can see that there is only one matrix IP in the Verb Gapping Construction. EPP is checked by the first subject and there is no motivation for the second subject to raise overtly. The Case feature of the second subject, which is weak in Chinese, can be checked covertly after Spell-Out. Thus the Verb Gapping construction differs from the non-gapped construction syntactically in that the coordinate conjunction of the former is at vP level, while that of the latter is at higher level, probably at IP. Both are convergent forms.

Coordinate conjunctions at different categorial levels provide optionality between two expressions with similar semantic interpretation. This can also be found in the pair of word level and phrase level conjunctions:

(41) a. luotuo de mao he yang de mao
          camel MOD hair and sheep MOD hair
          'camel hair and sheep hair'
      b. tuo-mao   he yang-mao
          camel-hair and sheep-hair
          'camel hair and sheep hair'

(a) is a phrase-level conjunction; each of the conjuncts contains a modification word *de*. (b) is a word-level conjunction, the morpheme *tuo* 'camel' is a bound root and *tuo-mao* 'camel-hair' is a compound word. The optionality in these nominal expressions corresponds to that in the Verb Gapping sentences in that conjunctions at different categorial levels can express similar meaning and are licensed syntactically.

6. The Specificity of Object Raising and the Interactions of Two Economy Principles

In this section I will explain the definiteness of the object in the Chinese Verb Gapping Construction from the viewpoint of the interactions between different economy principles.

The typical nominals which can occur as objects in a simple object raising construction (no gapping) are definite nominals (preceded by a demonstrative, as in (42a), or a bare noun, as (42b)), and generic nominals, as in (42c), and no Numeral-CL-N objects are allowed (Tsao 1990, Qu 1994, among others), as in (43).[4]

(42)　a.　ta nei ben shu　kan-le.
　　　　　he that CL　book read-ASP
　　　　　'He has read that book.'
　　　b.　ta baozhi　　kan-le.
　　　　　he newspaper read-ASP
　　　　　'He has read the newspaper.'
　　　c.　ta xiongmao jian-guo.
　　　　　he panda　　　see-ASP
　　　　　'He has seen pandas.'
(43)　a.　ta chi-le　san　wan　fan.
　　　　　he eat-ASP three bowl rice
　　　　　'He ate three bowls of rice.'
　　　b.　*ta san　wan　fan　chi-le.
　　　　　he three bowl rice eat-ASP

Assuming with Cheng & Sybesma (1997: 8), I take Numeral-CL-N nominals to be indefinite nominals. So (43) shows that indefinite nominals cannot undergo pure object raising.

In contrast to the pure object raising construction, the typical nominals which can occur as objects in the Verb Gapping Construction are Numeral-CL-N nominals, including those temporal expressions denoting duration and frequency. According to Ernest (1996), these two kinds of temporal expression have similar Case feature as that of a regular object. The following examples are from Paul (1996):

(44)　a.　ta lai-guo　　wu ci,　wo yi　ci.
　　　　　he come-ASP five time, I　one time
　　　　　'He has been here five times, and I once.'
　　　b.　ta xue-le　　yi nian, wo san　nian.
　　　　　he learn-ASP one year, I　three year
　　　　　'He studies for one yeatr, and I for three years.'
　　　c.　ta deng-le　yi　ge xiaoshi, wo lian ge xiaoshi.
　　　　　he wait-asp one cl　hour,　I　two cl hour
　　　　　'He waited for one hour, I for two hours.'

I argued in section 2 that object raising occurs in the Verb Gapping Construction. If the typical objects involved are indefinite nominals, we have to admit that Chinese allows indefinite object to raise, a fact different from many languages such as Hindi, Persian, Turkish, Korean, Hungarian, and German, as often mentioned in the literature (e.g. Karimi

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[4] Cheng & Sybesma (1997) shows that a bare noun is interpreted as either indefinite or definite in Mandarin Chinese, while indefinite only in Cantonese Chinese.

1995). In fact, not only in the Verb Gapping construction, but in an additive focus sentence, indefinite object can also be raised (Zhang 1997):

(45) a.   *ta **shenzhi** baocun-zhe yixie jiu xinfeng.*
          he even   keep-ASP   some old envelope
          'He even keeps SOME OLD ENVELOPES.'

      b.   *ta **lian**   yixie jiu xin-feng **dou** baocun-zhe.*
          he even some old envelope all keep-ASP
          'He even keeps SOME OLD ENVELOPES.'

In the negative form of an additive focus sentence, another form of indefinite nominals, Cl-N form, can also undergo object raising.[5]

(46) a.   ta shenzhi xie-le   feng xin.
          he even   write-ASP CL letter
          'He even wrote a letter.'

      b.   ta lian   feng xin   dou mei xie.
          he even CL   letter all not write
          'He even did not write a letter.'

Thus it is possible to raise an indefinite object in Chinese. This fact is in contrast to some other languages.

      It is interesting to notice that this contrast is accompanied with another contrast in the specificity of object raising. As pointed out by Diesing (1997: 378), definite objects are quite awkward in VP-internal positions in German. Supported by Weerman's (1989) examples from Dutch and Buring (1993), she claims that German sentences such as the following (a), compared to (b), where the position of the sentential adverb *selten* 'seldom' indicates that the object is raised out of VP, are marked in the sense that some contrastive context is required for felicity. In other words, there is pressure for definite NP objects to raise in neutral (noncontrastive) contexts.

(47) a.   ... weil ich selten **die Katze** streichle.
            since I   seldom the cat   pet

      b.   .. weil   ich **die Katze** selten   streichle.
            since I   the cat   seldom pet
            'since I seldom pet the cat.'

Diesing's explanation is that these definite NPs receive a referential interpretation which is incompatible with existential binding, which is assumed to be within VP. However, in situ definite objects in Chinese have a neutral or noncontrastive reading while raised ones must have a contrastive focus reading. The fact that a raised object requires a contrastive focus reading is also mentioned by Ernst and Wang (1995). In the following data, (b) is marked, compared to (a).

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[5] Cheng & Sybesma's (1997) research shows that a CL-N is interpreted as indefinite in Mandarin Chinese, while either indefinite or definite in Cantonese Chinese.

(48) a.   ta du-guo   zhei ben shu.
            he read-ASP this CL   book
            'He has read this book.'
      b.   ta zhei ben shu   du-guo.
            he this CL   book read-ASP
            'He has read this book.'

To give a unified account for these two contrasts, I firstly adopt Diesing's (1997: 370) assumption that movement can be either syntactically driven by checking of uninterpretable features such as Case (Chomsky 1993, 1995), or semantically driven in the sense that movement is necessary as a result of the interpretive requirements of certain types of noun phrases.[6] Thus, on the one hand, objects of transitive verbs in all languages must be raised universally, either overtly or covertly, to check the Case feature, according to Chomsky (1995). This is the syntactic motivation of object raising. On the other hand, definite objects must be raised out of VP, while indefinite objects need not, since they can be bound by the existential closure by default. To avoid the incompatibility between the existential binding and definite NPs is the semantic motivation of object raising. Like Case checking, semantically driven object raising is also universal by LF and parametric in the overt syntax (Diesing & Jelinek 1995).

Based on this distinction, I then distinguish two kinds of economy requirements. The syntactic economy requires that a movement should be delayed if possible (Procrastinate, Chomsky 1993), while the semantic economy requires that indefinite object need not be raised. Let us assume that Case feature in both German and Chinese is weak, since in situ objects are allowed in both languages.

Furthermore, I assume that the two kinds of economy consideration can interact with each other differently across languages. Generally speaking, raising an object of any type overtly always violates syntactic economy, while raising an indefinite object will violate semantic economy. There are four patterns. First, raising of an indefinite object violates both the syntactic and semantic economy. In German, this raising is impossible, while in Chinese it must be enforced by certain kind of focalization. Specifically, raising of Numeral-CL-N nominals can occur in the Verb Gapping Construction, which contains focus features in both the subject and the object, while raising of CL-N nominals can occur in the addititive type of focusing. Second, raising of a definite object violates the syntactic economy but not the semantic economy. In German, this raising is a default situation, while in Chinese it must be triggered by the focus feature on the object. Third, leaving a definite object in situ satisfies the syntactic economy requirement but violates the general semantic constraint that presses a definite NP to move out of VP. In German, this in situ situation needs an external force of contrastive focusing, while in Chinese, it is the default situation. Finally, leaving an indefinite object in situ meets both the syntactic and semantic economy requirements. In both German and Chinese, this is a default case in the sense that no external force is required. The above are summarized in the following chart ('-syn eco' and '+syn eco' read as violating syntactic economy and satisfying syntactic economy respectively. '-sem eco' and '+sem eco' read as violating semantic economy and satisfying (or not violating) semantic economy respectively. '-sem' reads as violating semantic requirements):

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[6] Barbiers (1995) also proposes that movement can be interpretationally driven. See Costa (1997) for a treatment to sentence-final adverbs in Barbiers' approach.

(49)

	raising indef. obj	raising def. obj	not raising def. obj	not raising indef. obj
	-syn eco, -sem eco	-syn eco, +sem eco	+syn eco, -sem	+syn eco, +sem eco
German	banned	default	triggered by focus	default
Chinese	triggered by focus	triggered by focus	default	default

This section shows that the differences in specificity with respect to object raising between Chinese and German are the result of the different interaction patterns between two kinds of economy principles, governing the syntactically motivated movement, and the semantically motivated movement respectively.

7. Implications

Investigating the Chinese Verb Gapping Construction brings us such theoretical issues as to why argument movement exhibits different specificity effects across languages, to what extend different languages have the same operation for a certain construction such as Gapping, whether there is Verb movement in a language which does not have rich verbal inflections, and how the optionality of a construction such as Gapping is licensed syntactically. The conclusions made in this paper, that the differences in specificity with respect to object raising between Chinese and German are the result of the different interaction patterns between two kinds of economy principles, governing the syntactically motivated movement, and the semantically motivated movement respectively, that as in English (Johnson 1996), there is an Across-the-Board head movement of the Verb, rather than a PF deletion of the Verb, in the Chinese Verb Gapping Construction, and that the optionality of Verb Gapping reflects the variations between conjunctions at vP-level and a higher level, I hope, provide both an empirical contribution and a theoretical step forward in the ongoing investigation of the issues mentioned above.

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