A Unified Approach to Parasitic Gap and Across-the-Board Constructions: Evidence based on Mandarin Chinese

Jen Ting

National Taiwan Normal University

Abstract. In both parasitic gap (PG) and across-the-board (ATB) constructions, there is more than one gap associated with the dislocated element. Whether the two constructions exhibit asymmetries has served as empirical support for a unified or non-unified approach. Contra the lack of judgment consensus on the English facts, I show that Mandarin Chinese provides data exhibiting variable binding reconstruction effects in both constructions and confirming the generalization that PGs are indeed more restrictive than ATB gaps in their licensing categories. I argue that these findings can be captured along the lines of the sideward movement approach (Hornstein & Nunes 2002) with parametric variation taken into consideration, thus in support of a version of the unified approach to deriving the two constructions.

Keywords. parasitic gap construction, across-the-board construction, unified approach, sideward movement, variable binding reconstruction

1. Introduction

In both parasitic gap (PG) (1a) and across-the-board (ATB) (1b) constructions, there is more than one gap associated with the dislocated element. Given this similarity, since Ross 1967 it has received extensive discussion whether the two constructions are derived on a par.

(1) a. [Which paper]$_i$ did you read e_i after Mary recommended e_i? (PG)

    b. [Which paper]$_i$ did you read e_i and Mary recommend e_i?   (ATB)

An influential observation made by Postal 1993 is that the two constructions exhibit asymmetries. In general, the conditions "licensing" English P-gaps are more restrictive than those governing ATB gaps. We shall term it "Postal's generalization" (see also Nissenbaum 2000, Munn 2001, Hornstein 2001, Nunes 2001, Hornstein & Nunes 2002). Other researchers, by contrast, argue that PGs and ATB gaps are entirely parallel or fundamentally connected (Pesetsky 1982, Williams 1990, Bruening & Khalaf 2017). Whether the two constructions exhibit asymmetries has served as empirical support for a unified or non-unified approach to their derivation.

Both PG and ATB constructions obtain in Mandarin Chinese (henceforth Chinese). The licensing of PGs[1] (e.g. in (2)) (Lin 2005, Ting & Huang 2008) and ATB gaps (e.g. in (3)) (Zhang 2009, 2010, Pan 2011) is argued to involve syntactic movement[2] such as topicalization (e.g. (2a), taken from Lin 2005: 300, and (3a), taken from Pan 2011: 238) and relativization (e.g. (2b), taken from Ting and Huang 2008: 28, and (3b), taken from Zhang 2009: 395).[3]

(2) a. Shei$_i$ Laowang [zai huijian pg_i zhiqian]   jiu   kaichu-le t_i ?

    who   Laowang at   meet   before   already   fire-ASP

    'Which person is it who Laowang fired before meeting?'

---

[1] As pointed out by Engdahl 1983/2001a: 72, when it comes to acceptability judgments of PG constructions, "there is a lot of variation among speakers," with some of them being "very restrictive about which positions they accept parasitic gaps in, others [being] more permissive … All example sentences, except when the parasitic gap is explicitly marked as ungrammatical, are acceptable to some speakers." I believe that a similar situation may obtain for PG sentences in Chinese. Judgments of the Chinese examples in this remark have been confirmed by my informants. While leaving open the possibility that some examples may not be readily acceptable to all native speakers, I am positive that all the examples marked as grammatical in this remark are at least acceptable to some speakers, along the lines of Engdahl's comments above. In connection with the judgment issue, an anonymous reviewer claims that "Mandarin speakers from Taiwan accept the author's examples more readily" than those from mainland China. To verify the claim, obviously a relatively large scale of empirical study is called for, which will be left for future research.

[2] Properties of syntactic movement such as island effects are discussed by Ting & Huang 2008 for PG and by Pan 2011 for ATB constructions, among other researchers.

[3] Following the practice of Culicover 2001, I use t and pg to represent the gaps in PG and ATB sentences if the cited authors' intention is clear. Also, glosses of the cited examples are subject to modification for consistency purposes.

b. [jingfang [zai *pg*$_i$ shizong   zhihou] sichu   xunzhao *t*$_i$] de   mingren

   police   at   disappear after   everywhere search.for   DE celebrity

   'the celebrity who the police searched for everywhere after he had disappeared'

(3) a. Na-ben shu$_i$, [jiejie mai-le   *e*$_i$, wo kan-wan-le   *e*$_i$]

   that-CL book sister buy-ASP   I   read-finish-ASP

   'That book, my sister bought (it) and I finished reading (it).'

   b. Zhe jiu   shi [Baoyu   zai shan-shang kanjian *e*$_i$, Daiyu   zai shulin-li pengdao *e*$_i$]

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

   de   liang-ge xiaohair$_i$.

   DE   two-CL child

   'These are exactly the two children that Baoyu saw on the hill and Daiyu met in the bush.'

In this remark, I will show that in contrast to the controversial facts in English (see the discussion in Bruening & Khalaf 2017), Chinese PG and ATB constructions are parallel in showing variable binding reconstruction effects, and that they indeed exhibit asymmetries in the licensing categories of the gaps at issue. I argue that these behaviors of the two constructions in Chinese provide empirical support for a version of the unified approach as proposed by Hornstein & Nunes (henceforth H&N) (2002) (see also Hornstein 2001, Nunes 2001). More specifically, the gaps at issue are occupied by variables as both constructions are derived by sideward movement; the observed asymmetries support their view that the licensing of ATB gaps is more permissive than that of PGs as sideward movement can be licensed by additional conditions (such as the Parallelism Requirement) on coordinate structures in ATB sentences.

This remark is structured as follows. Section 2 discusses the controversial facts in English regarding the two phenomena that have often been claimed to distinguish the two constructions at issue: variable binding reconstruction effects and licensing category asymmetries. Section 3 shows

that PGs and ATB gaps in Chinese both exhibit variable binding reconstruction effects but that there are licensing category asymmetries between them: while the former are licensed by argumental NPs[4] and PPs, the latter can be by any category. Section 4 explores an account for the facts reported in section 3 under the sideward movement approach with parametric variation taken into consideration. Section 5 concludes this remark.

2. Controversial facts in English

The controversy over the (a)symmetry issue regarding PG and ATB constructions in English largely concerns two respects: variable binding reconstruction effects and categories that license the gaps at issue (see the discussion in Bruening & Khalaf 2017: 18-21).

To begin with, variable binding in English is observed to be symmetric in ATB but not in PG constructions (Nissenbaum 2000: 34): In (4a), the pronoun *his* in the fronted *wh* phrase can be bound by a different quantifier, i.e. *every Italian* and *every Frenchman*, respectively in the two conjuncts in ATB constructions, but in (4b) parallel variable binding is not possible in PG constructions.

(4) a. [Which picture of his mother]$_i$ did you give t_i to every Italian and sell t_i to every Frenchman?
      (Possible answer: "I gave to every Italian and sold to every Frenchman the picture of his mother that he likes best.")
   b. # [Which picture of his mother]$_i$ did you give t_i to every Italian after buying pg_i from every Frenchman?
      (Impossible answer: "I gave every Italian the picture of his$_1$ mother that he liked best after buying from every Frenchman the picture of his mother that HE liked best.")

---

[4] I adopt the classical terminology NP (instead of DP) as used in Postal 1993 and Culicover 2001 for accessibility and descriptive purposes.

Based on such facts, Nissenbaum concludes that full reconstruction can apply to ATB gaps but not to PGs. This finding, he argues, supports what he terms the separate-antecedent proposal of deriving PGs; that is, PGs do not have the same A-bar antecedents as the real gaps do. Assuming that ATB gaps share the same A-bar antecedents, the acceptability contrast in (4) indicates that ATB gaps and PGs must be derived in a non-unified fashion.

Disagreeing with Nissenbaum's view, Bruening & Khalaf 2017: 19 argue that PGs in (5),[5] just like ATB gaps (ex. (6), taken from Citko 2005: 492), exhibit variable binding reconstruction effects, indicating that the two kinds of gaps are both derived under the shared-antecedent proposal.[6]

(5) [Which of his holy icons]$_i$ does seeing every Italian kiss pg_i lead every Frenchman to kiss t_i, too?

(6) [Which picture of his mother]$_i$ did every Italian like t_i and every Frenchman dislike t_i?

Another difference that has been claimed to distinguish PGs and ATB gaps in English concerns the licensing categories. It has been observed in the literature (e.g. Cinque 1990, Postal 1993, H&N 2002) that the antecedent of a PG is limited to an argumental NP (e.g. ex. (1a)) and cannot be other categories such as AdvP, AdjP, PP, measure NP, predicate NP, etc. By contrast, the antecedent of an ATB gap can be of any category (see the discussion in Culicover 2001 and references cited therein). Witness the acceptability contrast between the ill-formed PG in (7a) and well-formed ATB gap in (7b), the A-bar antecedents of which are AdvP.

---

[5] According to Bruening & Khalaf 2017: 19, Nissenbaum's PG example in (4b) is odd for pragmatic reasons.

[6] An anonymous reviewer raised a doubt, stating that "reconstruction effects are no longer considered as a viable diagnostic test for movement; A'-dependency derived by Agree also gives rise to reconstructions effects." However, A-bar-dependency that gives rise to reconstructions effects and is analyzed as being derived by Agree concerns resumption and not gapped structure by invoking interpretive rules at LF (for details see Rouveret 2008). I'll thus retain the view that reconstruction is understood as a property of chains created by movement (Chomsky 1993). Thanks for Victor Junnan Pan for discussion of this issue.

(7) a. *How$_i$ did Deborah cook the pork t_i after cooking the chicken pg_i?

b. How$_i$ did Deborah cook the pork t_i and Jane cook the chicken t_i?

However, contra the mainstream judgments of the PG sentences in English as documented by Postal 1993, counterexamples[7] like (8) pointed out by Levine et al. 2001: 185 are often taken as empirical support for the claim that PGs in English can also be licensed by categories other than nominal such as AdvP (ex. (8)), PP, AdjP and CP. These facts lead some proponents for a unified approach (e.g. Bruening & Khalaf 2017: 19) to argue that PGs and ATB gaps do not behave differently with respect to categorial restrictions. Nevertheless, worth noting is that despite not being nominal, these PG licensing categories as observed by Levine et al. 2001 are all selected[8] material in the sentences (H&N 2002).

(8) [How harshly]$_i$ do you think we can treat THEM t_i without in turn being treated pg_i

OURSELVES? (Levine et al. 2001: 185)

To summarize this section, regarding the two phenomena in English that have been presented to argue for or against distinguishing PGs from ATB gaps—variable binding reconstruction and categorial restrictions, there is no consensus on generalizations of the facts. As a result, the English facts do not clearly indicate whether a unified or non-unified approach should be adopted to derive PG and ATB constructions.

---

[7] I assume that the different judgments arise from parametric variation among the grammars of individuals in the same community or the so-called inter-personal variation (Henry 2005). See also the discussion in section 4.2.

[8] I use the term selection as H&N (2002) do. More specifically, by selection, I assume c-selection in this remark without getting into the debate whether it should be derived from s-selection (cf. Pesetsky 1982). For example, a verb like *se comporter* 'to behave' in French obligatorily selects a manner adverbial in (i). In contrast, verbs like *solve* do not select manner or reason adverbials.

(i) Jean se comporte *(bien) avec les amis

'Jean behaves (well) with friends.' (Rizzi 1990: 77)

3. Symmetries or asymmetries between PGs and ATB gaps in Chinese?

Contra the controversial state of affairs in English (cf. the discussion in Bruening & Khalaf 2017), I will show that Chinese PG and ATB constructions are parallel in showing variable binding reconstruction effects, but that they indeed exhibit asymmetries in the licensing categories of the gaps at issue.

3.1 Both constructions showing variable binding reconstruction effects

In Chinese, both PG and ATB constructions exhibit variable binding reconstruction effects. First, consider the fact that Chinese has variable binding reconstruction effects as shown in (9a-b), in which *ziji* 'self' contained in the head noun of a relative clause (9a) or in a topicalized phrase (9b) is interpreted as being bound by the quantifier *mei-ge ren* 'everyone' in the clause (ex. (9a) adapted from Huang et al. 2009: 220).

(9) a. [[Zhangsan quan   mei-ge ren_i kai   *t*   guolai de] $ziji_i$ de   chezi]

      Zhangsan persuade every-CL person   drive   come   DE   self   DE   car

      'self's car that Zhangsan persuaded everyone to drive over'

  b. [$Ziji_i$ de   chezi], Zhangsan   quan   mei-ge ren_i kai   *t*   guolai.

      self   DE car   Zhangsan   persuade every-CL person   drive   come

      'Self's car, Zhangsan persuaded everyone to drive over.'

Now consider the fact that Chinese ATB gaps exhibit variable binding reconstructions effects in (10a) comparable to those in English (4a): The anaphor *ziji* 'self' contained in the topicalized phrase can be bound by a quantifier in both conjuncts. When it comes to PG constructions, Chinese, in sharp contrast with the controversial situation in English, clearly exhibits variable binding reconstructions effects as shown in (10b): the anaphor *ziji* 'self' contained in the topicalized phrase can be bound by

the quantifier *mei-ge Taibei-ren* 'everyone from Taipei' in the main clause and by the quantifier *mei-ge Tainan-ren* 'everyone from Tainan' in the adjunct clause.

(10) a. [Ziji   de   zhaopian]$_i$,   mei-ge   Taibei-ren   kaishi   shoucang t_i, erqie   mei-ge

      self   DE   picture   every-CL Taipei-person begin   collect   and   every-CL

      Tainan-ren   ye   kaishi   zhencang t_i .

      Tainan-person   also begin   precious.collect

      'Self's pictures, everyone from Taipei started to collect and everyone from Tainan started to treasure.

    b. [Ziji   de zhaopian]$_i$, [zai mei-ge   Tainan-ren   kaishi   zhencang pg_i hou],

      self   DE photo   at   every-CL Tainan-person begin   precious.collect   after

      mei-ge   Taibei-ren   ye   kaishi   shoucang t_i .

      every-CL Taipei-person also begin   collect

      'Self's pictures, everyone from Taipei also started to collect after everyone from Tainan started to treasure.'

Given that both ATB gaps and PGs in Chinese show full reconstruction for variable binding, this finding indicates that the gaps are associated with the same A-bar antecedents and should be derived under what Nissenbaum 2000 terms the shared-antecedent proposal (cf. Williams 1990, Bruening and Khalaf 2017) but not the separate-antecedent proposal (see e.g. Chomsky 1986). This conclusion would rule out applying the following approaches that have been proposed for English PGs to deriving Chinese PGs: the null operator approach proposed by Chomsky 1986, followed by Nissenbaum 2000 and Munn 2001, and the *pro* approach advanced by Cinque 1990 and Postal 1993.

3.2 Licensing categories being more limited for Chinese PGs than for ATB gaps

In this section, I will show that in Chinese the licensing categories for PGs and ATB gaps are in line with Postal's observation of English, namely that they are more limited for PGs than for ATB gaps. However, English and Chinese differ in the type of expressions that may license PGs: argumental NPs (e.g. ex. (1a)) for mainstream judgments of English (e.g. Postal 1993) and selected material (e.g. ex. (8)) for non-mainstream judgments of English (e.g. Levine et al. 2001), but argumental NPs (e.g. ex. (2)) and PPs (e.g. ex. (15)) in Chinese.

To begin with, as in English, the licensing categories for the ATB gaps in Chinese can be of any category: argumental NPs (3), lexically selected material such as manner adverbials selected by the verb *duidai* 'treat'[9] (11) as well as non-selected material such as manner/reason adverbials (12) and frequency adverbials (13).[10]

(11) [Xiaoli t_i jingchang duidai hao-you,   erqie Xiaomei   ye t_i zongshi duidai tongxue   de]

    Xiaoli   often   treat good-friend and Xiaomei also   always   treat classmate DE

    fangshi$_i$ (fenbie)   shi …

    way   respectively   be

Verbs like *duidai* 'treat', similar to their English counterparts (cf. Levine et al. 2001), select an adverbial phrase.
(i) Xiaomei   *(feichang xixin   wenrou de/ yong na-zhong   fangshi) duidai   pengyou.
    Xiaomei   very   careful gentle DE with that-CL   way   treat   friend
    'Xiaomei treats her friends very carefully and gently/in that way.'

[10] Some remarks are in order on using relativization instead of topicalization to test whether the adverbial elements at issue can license ATB gaps and PGs in Chinese. First of all, reason adverbials can be base-generated in a sentence-initial position (Tang 1990), so it would be difficult to show their movement by topicalization. Also, frequency expressions independently do not undergo topicalization. In addition, the *respectively* non-identity plural reading available in the examples can ensure that there is a gap site in each of the conjunct clause in ATB constructions and in the adjunct clause in PG constructions (see Zhang 2009 and de Vries 2017 for discussion of the *respectively* reading in ATB constructions and references cited therein). Note that acceptable PG sentences are independently compatible with the adverb *fenbie* 'respectively' in (i) (cf. unacceptable PG sentences in ex. (14)).
(i) [[zai Xiaomei   *pg*$_i$ kaishi zhencang   hou], Xiaoli ye t_i kaishi shoucang de] zhaopian$_i$ (fenbie)   shi …
    at Xiaomei   begin precious.collect after Xiaoli also   begin collect   DE photo   respectively be
    'the photos that Xiaoli also started to collect after Xiaomei started to treasure are (respectively) …'
Finally, following Aoun & Li 2003: 175, the relativized material in adjunct relativization is a PP. In section 4.2, I will argue that what distinguishes the PPs that license PGs in Chinese and those PPs that fail to do so is that the former but not the latter are referentially theta-marked.

'the ways that Xiaoli often treats her good friends and Xiaomei also always treats her classmates are (respectively) …'

(12) [Xiaoli t_i weixiu-le   zhaoxiangji, erqie   Xiaomei   ye t_i baoyang-le   shouji

Xiaoli   maintain-ASP camera   and   Xiaomei   also   service-ASP cellphone

de]   fangfa$_i$/yuanyin$_i$ (fenbie)   shi …

DE   method reason   respectively   be

'the ways/reasons that Xiaoli maintained the camera and Xiaomei also had the cellphone serviced are (respectively) …'

(13) [Xiaoming da   Chuanshuo Duijue t_i , erqie Xiaohua   ye   da   Yingxiong Lianmeng t_i

Xiaoming   hit legend   dual   and   Xiaohua also   hit   hero   alliance

de] cishu$_i$ (fenbie)   shi …

DE time   respectively   be

'the numbers of times that Xiaoming plays the computer game *Legendary Duel* and Xiaohua also plays the game *Leagues of Legends* are (respectively) …'

On the other hand, the PGs in Chinese, are not licensed by the same type of material that can license ATB gaps. Parallel to what we have seen in English with mainstream judgments, PGs in Chinese can be licensed by argumental NPs (2) but not by lexically selected manner adverbials (14a), non-selected manner/reason adverbials (14b) and frequency adverbials (14c).

(14) a. *[[zai Xiaomei pg_i zongshi duidai tongxue   hou], Xiaoli ye t_i jingchang duidai

      at   Xiaomei   always treat   classmate after   Xiaoli also   often   treat

hao-you   de]   fangshi$_i$ (fenbie)   shi …

good-friend DE   way   respectively   be

'the ways that Xiaoli also often treats her good friends after Xiaomei always treats her

classmates are (respectively) …'

b. *[[zai   Xiaomei   *pg*$_i$ baoyang -le   shouji   hou],   Xiaoli   ye   *t*$_i$ weixiu-le

at   Xiaomei   service-ASP   cellphone after   Xiaoli   also   maintain-ASP

zhaoxiangji de]   fangfa$_i$/yuanyin$_i$ (fenbie)   shi …

camera   DE   method reason   respectively   be

'the methods/reasons that Xiaoli maintained the camera after Xiaomei had the cellphone

serviced are (respectively) …'

c. *[[zai Xiaohua da Yingxiong Lianmeng *pg*$_i$ hou], Xiaoming   ye   da   Chuanshuo Duijue

at   Xiaohua hit hero   alliance   after   Xiaoming also hit   legend   dual

t$_i$ de]   cishu$_i$ (fenbie)   shi …

DE   time   respectively   be

'the numbers of times that Xiaoming also plays the computer game *Legendary Duel* after

Xiaohua plays the game *Leagues of Legend*s are (respectively) …'

This confirms that Chinese conforms to Postal's generalization that categories that license PGs

are more limited than those that license ATB gaps. However, worth noting is that PGs in Chinese, at

least for the substantial majority of speakers, can be licensed not only by argumental NPs but also by

PPs such as the goal PPs selected by three-place placement verbs like *bai* or *fang* 'put, place', as

observed by Ting and Huang 2008 in (15)(taken from Ting and Huang 2008: 45-46). Such PPs can

be formally represented on a theta grid (Carnie 2007: 223) and will be referred to as argumental

PPs.[11]

---

[11]   A question raised by an anonymous reviewer concerns whether "the preposition in the types that license PGs are not

(15) [Zai zhuo-shang]$_i$, ta [bai   yi-ping   hua   *pg*$_i$ zhiqian]   xian   pu-le   yi-kuai

    at desk-top   he   place one-vase flower   before   first   spread-ASP one-CL

    zhuojin t_i .

    table.cloth

    'On the desk, he spread a piece of table cloth before placing a vase of flowers on it.'

    The gap[12] inside the adjunct phrase associated with the topicalized goal phrase in (15) is indeed

derived by movement, as evidenced by the variable binding reconstruction effects in the PG sentence

(16): the anaphor contained in the dislocated PP phrase can be interpreted in the gap position both in

the matrix and in the adjunct clause, i.e. being bound by the local QP subject *mei-ge Taibei-ren*

'everyone from Taipei' and *mei-ge Tainan-ren* 'everyone from Tainan'. This is parallel to what is

found with ATB sentences containing the goal PP as the antecedent of the ATB gaps in (17),

---

true prepositions, but inherent Case markers." I argue that the preposition at issue cannot be an inherent Case marker. I will use placement verbs to illustrate the point. In addition to external arguments, such verbs are associated with theme and goal arguments. According to Woolford 2006: 117, one of the reliable tests to distinguish structural from inherent Case involves Case preservation under A-movement. If the goal argument of the verb *fang* 'put' in (ia) is an expression inherently Case-marked by the preposition *zai* 'at', then we expect that the Case-marking is preserved when the expression has undergone A-movement, contrary to fact. As shown in short *bei* sentences derived by A-movement in (ib) (see Ting 1998, Huang et al. 2009 for derivation of *bei* sentences), the goal argument in the grammatical subject position cannot be marked by the preposition *zai* 'at' (cf. discussion of localizer phrases as nominal expressions in Li 1990, Huang et al. 2009). The contrast between (ia) and (ib) follows if the goal argument at issue is realized as a PP in (ia) but cannot be introduced by the preposition *zai* 'at' in the grammatical subject position in (ib), where nominative Case is assigned (possibly due to the Case Resistance Principle in Stowell 1981).
(i) a. Ta fang-le   yi-zhang zhitiao   zai zhuo-shang.
        he put-ASP one-CL   paper.strip at desk-top
        'He put a note on the desk.'
     b. (*Zai) zhuo-shang bei   fang-le   yi-zhang   zhitiao.
         at   desk-top   BEI   put-ASP one-CL   paper.strip
        'On the desk was put a note.'
        https://beanfun.com/articles/detail/1501926360296198144?country=tw&site=1
[12] The dislocated PP in (15) is assumed to move from the post-object position by Ting & Huang 2008. This is a fairly reasonable assumption given Huang et al.'s 2009: 116 observation that such goal PPs are normally movable and thus may appear in three possible positions: sentence-initial, preverbal or postverbal positions.
(i) (Zai zhuozi-shang) wo (zai zhuozi-shang) bai-le   yi-pen   hua zai zhuozi-shang.
       at table-top   I at table-top   put-ASP one-pot flower at table-top
    'I put a pot of flowers on the table.'
Alternatively, if we assume with Her 2008 that certain preverbal PPs in Chinese should be considered selected, the dislocated PP in sentence-initial position (15) can be taken as having moved from a preverbal position. In either derivation, as confirmed by the reconstruction effects in (16), the dislocated goal PP in (15) is derived by A-bar-movement and serves as the licensing category for the PG inside the adjunct phrase. For ease of presentation, the trace of the dislocated argument PP in (15) and similar examples is indicated in the post-object position.

indicating that in both PG and ATB sentences the goal PP can serve as the shared antecedent of the gaps at issue.

(16) [Zai ziji   de   zhuo-shang]$_i$, [zicong[13] mei-ge   Tainan-ren   bai-le   zhaopian *pg*$_i$ hou],

   at self DE   desk-top   since   every-CL Tainan-person place-ASP photo   after

   mei-ge   Taibei-ren   ye fang-le zhuoli t_i .

   every-CL Taipei-person also put-ASP desk.calendar

   'On self's desk, everyone from Taipei also put desk calendars after everyone from Tainan

   placed photos.'

(17) [Zai ziji   de   zhuo-shang]$_i$, mei-ge   Taibei-ren   fang-le zhuoli t_i,   erqie

   at self DE   desk-top   every-CL Taipei-person put-ASP desk.calendar   and

   mei-ge   Tainan-ren   ye bai-le   zhaopian t_i .

   every-CL Tainan-person also place-ASP photo

   'On self's desk, everyone from Taipei also put desk calendars and everyone from Tainan placed

   photos.'

If we consider other types of argumental PPs[14] such as goal PPs introduced by the preposition

dui 'to'[15] (cf. Huang et al. 2009), it is found that they also license PGs in Chinese as evidenced by

---

[13] The use of the preposition *zicong* 'since' instead of *zai* 'at' here is to prevent some sort of 'haplology' effects caused by two *zai*'s nearby on acceptability judgments.

[14] Goal PPs introduced by *gei* in the post-object position (see Ting & Chang 2004 for discussion), however, cannot be shown to license PGs because they independently do not undergo dislocation as pointed out in note 10 by Ting & Huang 2008: 46. Similarly, the string "*he/gen* NP" with a comitative reading as in (I k a) does not license PGs as well since the string cannot be dislocated as in (ib).
(i) a. Akiu zai Riben gen   Baoyu jian-le   mian.
       Akiu   at Japan   and Baoyu meet-ASP face
       'Akiu and Baoyu met in Japan.' (Zhang 2010:116)
    b. *Gen Baoyu,   Akiu zai Riben jian-le   mian.
        and Baoyu   Akiu at Japan   meet-ASP face

[15] As pointed out by Huang et al. 2009: 116, *dui* PPs are normally movable. Other prepositions similar to *dui* introducing a goal argument include *gen/he/tong* 'with', *xiang* 'toward', etc. (Her 2008: 100).

the fact that such PPs in dislocated position (18a) show variable binding reconstruction effects in PG

sentences (18b) on a par with those in ATB sentences (18c).

(18) a. Dui ziji$_i$ de   haizi, mei-ge   Taibei-ren$_i$ jiang-le zanmei de   hua.

    to   self   DE child every-CL Taipei-person say-ASP praise DE   word

    'To his/her own child, everyone from Taipei said words of praise.'

  b. [Dui ziji   de haizi]$_i$, [zai mei-ge   Tainan-ren   *pg*$_i$ shuo-le   guli   de   hua

     to   self DE child   at   every-CL Tainan-person   say-ASP encourage DE word

     hou], mei-ge   Taibei-ren   *t*$_i$ ye jiang-le   zanmei   de hua.

     after every-CL Taipei-person   also say-ASP   praise   DE word

     'To self's child, after everyone from Tainan said encouraging words, everyone from Taipei

      also said words of praise.'

  c. [Dui ziji de haizi]$_i$, mei-ge   Taibei-ren   *t*$_i$ jiang-le   zanmei de hua,   erqie

    to   self DE child   every-CL Taipei-person   say-ASP praise   DE word and

    mei-ge   Tainan-ren   *t*$_i$ ye shuo-le   guli   de   hua.

    every-CL Tainan-person   also say-ASP   encourage DE word

    'To self's child, everyone from Taipei said words of praise and everyone from Tainan also

    said encouraging words.'

    Summarizing the findings in this section, PGs and ATB gaps in Chinese behave identically in

allowing for full reconstruction of variable binding into the gaps, indicating that the gaps at issue are

associated with the same A-bar antecedents but casting doubts on separate-antecedent proposals such

as Chomsky 1986, among others (see section 2). Furthermore, it is found that the licensing categories

---

(i) (Dui Lisi) Zhangsan dui   Lisi hen   keqi.
  to   Lisi   Zhangsan to   Lisi very   polite
  'Zhangsan is very polite to Lisi.'

of Chinese PGs are indeed more restricted than those of ATB gaps, conforming to the general line of Postal's 1993 observation of English. However, contra the mainstream judgments of English, the licensing categories of Chinese PGs are not limited to argumental NPs but include argumental PPs. In section 4.2, I argue that PG licensing in Chinese is sensitive to referential theta-marking in the sense of Rizzi 1990, based on which argumental NPs and PPs in Chinese make up a natural class in licensing PGs, in contrast to the non-referentially theta-marked elements which do not license PGs, including lexically selected adverbial, non-selected manner, reason and frequency adverbial expressions.

Such asymmetries in licensing categories between PG and ATB constructions in Chinese would be unexpected if the two constructions are derived by a mechanism which generates PGs and ATB gaps in an entirely parallel fashion (see e.g. Pesetsky 1982, Williams 1990, Bruening & Khalaf 2017). I will argue that the observed facts of PGs and ATB gaps in Chinese can be captured along the lines of the sideward movement approach put forth by H&N 2002.

4. Exploring a sideward movement analysis

4.1 The sideward movement approach

As argued by H&N 2002, both PGs and ATB gaps are generated involving application of sideward movement. Sideward movement refers to a sequence of derivational steps where a constituent of a syntactic object is copied and the copy then merges with a different, unconnected syntactic object. Sideward movement in PG sentences like (19) applies to satisfy the theta role/feature assignment/checking requirement of the verb *read*, which is assumed to be one of the ways to satisfy Chomsky's 1995 Last Resort condition in properly motivating movement operations. By sideward movement, the computational system copies *which book* from K in (20a) and merges it with *read* in (20b), yielding M in (21b). The numeration is then exhausted and another copy of *which book* is merged to check the strong *wh*-feature of the interrogative complementizer Q. In the resulting

structure (22), neither of the lower copies c-commands the other. The copy of *which book* in [Spec, CP] can form a chain with either of the them, yielding two chains $CH_1 = (copy^3, copy^1)$ and $CH_2 = (copy^3, copy^2)$. The copy in the tail of each *wh*-chain (namely, $copy^1$ and $copy^2$) is deleted at PF for the whole structure to be linearized.

(19) Which book did you read after Mary recommended?

(20) a. K= [Mary recommended [which book]]

   b. L= read

(21) a. K= [Mary recommended [which book] $_i$]

   b. M= [read [which book] $_i$]

(22) [$_{CP}$ [which book]^3 did+Q [$_{TP}$ you [$_{VP}$ [$_{VP}$ read [~~which book~~]^2][$_{PP}$ after Mary

   recommended [~~which book~~] ^{1}]]]]

ATB gaps are derived in a similar way but in order to capture the unexpected asymmetries that categories other than argumental NPs can license ATB constructions but not PG constructions in English (Postal 1993), it is argued that sideward movement can be licensed not only by Last Resort but also by the Parallelism Requirement on coordinate structures, which is not available for PG constructions. Assuming that conjuncts of a coordinate complex are semantically "similar," the Parallelism Requirement, which demands that movement applies to all the conjuncts if it applies to any of them, capturing Ross's 1967 Coordinate Structure Constraint effects, is interpreted as a bare output condition on the interpretation of coordinate structures. To illustrate, in the ATB sentence (23a) the copying of *how* from K to L is not triggered by satisfying the theta requirement of the verb

but is "licensed by the Parallelism Requirement in that the copying renders the two VPs parallel, by providing the VP of [(23c)] with a logical variable playing the same semantic function as the one in [(23b)]." (H&N 2002: 38)

(23) a. How$_i$ did$_k$ Deborah e_k cook the pork e_i and Jane e_k cook the chicken e_i?

    b. K = [and [$_{TP}$ Jane did$_k$ cook the chicken how$_i$]]

    c. L = [$_{TP}$ Deborah did$_k$ cook the pork how$_i$]

Summarizing, the sideward movement approach is inspiring in providing a way to unify PG and ATB constructions despite the observed asymmetries between them. In the next subsection, I suggest that the Chinese facts of PGs and ATB gaps observed in section 3 can be captured along the general line of the sideward movement approach. More specifically, I argue that H&N' 2002 approach to assimilating the two constructions can be extended to Chinese if we assume that languages vary in their sensitivity to the nature of the copied material in applying sideward movement.

4.2 Proposed account under the sideward movement analysis

As discussed in 3.1, PGs and ATB gaps in Chinese behave identically in allowing for full reconstruction of variable binding into the gaps, indicating that the gaps at issue are associated with the same A-bar antecedents. I propose that like English ATB sentences in (6), Chinese PG (ex. (10b)) and ATB (ex. (10a)) sentences exhibiting variable binding reconstruction effects have comparable PF and LF structures.

On the PF side, in the PG and ATB structures in (24a-b) respectively, the NP *ziji de zhaopia*n 'self's picture' is copied from the object position of *zhencang* 'treasure' to the object position of *shoucang* 'collect' in an unconnected constituent which has been independently established in order to satisfy the theta requirement of the verb *shoucang* 'collect'. The rest of the derivation proceeds

until the NP *ziji de zhaopian* 'self's picture' moves to [Spec, TopicP] and form a topic sentence. The lower copy of the two chains $CH_1 = (copy^3, copy^1)$ and $CH_2 = (copy^3, copy^2)$ then gets deleted for the elements of the array to be linearized at PF.[16]

(24) PF structure

a. [$_{TopicP}$ [**Ziji de zhaopian**]^3 [$_{Top'}$ Top [$_{CP}$ zai meige Tainan-ren kaishi

       self DE photo   at every Tainan-person begin

    zhencang   [~~ziji de zhaopian~~]^2 hou] [$_{TP}$ mei-ge Taibei-ren ye kaishi

    precious.collect self DE photo   after   every-CL Taipei-person also begin

    shoucang   [~~ziji de zhaopian~~]^1]]

    collect   self DE photo

    'Self's pictures, everyone from Taipei also started to collect after everyone from Tainan

    started to treasure.'

b. [$_{TopicP}$ [**Ziji de zhaopian**]^3 [$_{Top'}$ Top [$_{andP}$ [$_{TP}$ mei-ge Taibei-ren kaishi shoucang

      self DE picture   every-CL Taipei-person begin collect

  [~~ziji de zhaopian~~]^2] [$_{and'}$ erqie [$_{TP}$ mei-ge Tainan-ren ye kaishi

    self DE picture   and   every-CL Tainan-person also begin

    zhencang   [~~ziji de zhaopian~~]^1]]

    precious.collect   self DE picture

---

[16] An anonymous reviewer points out a possible alternative derivation in which "the initial phrase is base-generated and that it subsequently gets elided in the PG and ATB constructions." There is good reason not to adopt the eliding approach as suggested by the reviewer. I'll leave aside the issue whether this construction at issue has the required E feature on the head triggering the PF deletion (cf. Merchant 2001). In this suggested derivation, there is no movement involved and the copy of the base-generated phrase in the gap position is elided. Thus, there would be no island effects that would arise. If we examine the so-called DP-ellipsis and VP-ellipsis constructions in Chinese, which very likely involve the suggested deletion derivation, we find that the two constructions indeed do not give rise to island effects (Li & Wei 2014: 278, 292) although they can yield sloppy readings (see Huang 1991: 65 for the DP-ellipsis construction and Li & Wei 2014:289 for the VP-ellipsis construction). In contrast, PGs in both English and Chinese observe island conditions, a fact that can be captured by the sideward movement approach under which two chains are involved in PG sentences and the gap positions are occupied by variables (see Chomsky 1986, Cinque 1990 for discussion of the parasitic chain observing island conditions and Ting & Huang 2008: 30-31 for the behavior of PGs in Chinese in this respect).

'Self's pictures, everyone from Taipei started to collect and everyone from Tainan started to

treasure.'

On the LF side, in the PG and ATB structures in (25a-b) respectively, conforming to Copy

Economy and Operator Economy in Chomsky 1995, the higher copy (i.e. *ziji de zhaopia*n 'self's

picture' in spec-TopicP) of the two chains $CH_1 = (copy^3, copy^1)$ and $CH_2 = (copy^3, copy^2)$ is deleted.

Given that such examples receive a functional interpretation, I assume that such readings are

achieved by the mechanism deriving what's called the "quantificational sloppy" readings as

discussed in Fiengo & May 1994: 227ff. Assuming that *ziji* 'self' here is an expression whose

reference depends on its linguistic context (see ex. (9a)), in the LF structure (25a-b), *ziji* 'self',

marked by a superscripted β occurrence, is an expression whose reference depends on its linguistic

context. Contained in copy1 and copy2, *ziji* 'self' is bound by its local antecedent *mei-ge Taibei-ren*

'everyone from Taipei' and *mei-ge Tainan-ren* 'everyone from Tainan' respectively and receives a

functional reading.[17]

(25) LF structure

a. [TopicP **[Ziji de zhaopian]**^{3} [Top' Top [CP zai meige Tainan-ren   kaishi

    self DE photo   at   every   Tainan-person begin

zhencang   **[ziji$^\beta_j$ de   zhaopian]**^{2} hou] [TP mei-ge   Taibei-ren ye kaishi

    precious.collect self DE   photo   after   every-CL Taipei-person also begin

shoucang [**ziji$^\beta_i$ de   zhaopian**]^1]]

---

[17] I do not adopt Nunes's 2018 LF linearization account in explaining the functional reading at issue because if we apply
his theory to English ATB sentences as in (6), Chain Reduction would apply to $CH_1 = (copy^3, copy^1)$ prior to $CH_2 =$
$(copy^3, copy^2)$, yielding the output in (i). The sloppy reading that *his* is bound by *every Frenchman* would then be left
unaccounted for.
(i) ~~[Which picture of his mother]~~^{3} did every Italian$_i$ like [which picture of his$_i$ mother]^2 and every
    Frenchman$_j$ dislike ~~[which picture of his$_j$ mother]~~^{1}?

collect self DE photo

'Self's pictures, everyone from Taipei also started to collect after everyone from Tainan

started to treasure.'

b. [TopicP [**Ziji de zhaopian**]^3 [Top' Top [andP [TP mei-ge Taibei-ren kaishi shoucang

    self DE picture   every-CL Taipei-person begin collect

[**ziji**$^\beta_i$ **de zhaopian**]^2] [and' erqie [TP mei-ge Tainan-ren ye kaishi

 self DE picture   and   every-CL Tainan-person also begin

zhencang   [**ziji**$^\beta_j$ **de zhaopian**]^1]]

precious.collect   self DE picture

'Self's pictures, everyone from Taipei started to collect and everyone from Tainan started to

treasure.'

Having provided a sketch of how to capture the so-called sloppy quantificational readings of the

bound expression *ziji* 'self' in Chinese PG and ATB sentences under the sideward movement

approach, I now turn to derive the licensing category asymmetries in the two constructions.

Specifically, I argue that the sideward movement approach to the licensing category asymmetries in

(mainstream) English can be extended to those in Chinese if we assume that sideward movement in

Chinese PG sentences is sensitive to the referential theta-marking nature of the copied material, and

that as in English, sideward movement in Chinese ATB sentences is licensed by an additional way

available only for the coordinate structure. It then naturally follows that in Chinese, on a par with

(mainstream) English, the ATB construction is more permissive than the PG construction in allowing

for any licensing category of the gaps.

We shall start the discussion with variation among English speakers with respect to PG

licensing. Recall that the licensing categories for English PG sentences are limited to true argument

NPs as reported by Postal 1993 among other researchers (e.g. Cinque 1990, H&N 2002) but that

counterexamples involving non-nominal categories are pointed out by Levine et al. 2001 as in (8). I will refer to the former sentences as mainstream English (i.e. MSE) and the latter non-mainstream English (henceforth NMSE)(see note 7). H&N 2002: 36 suggest that these examples in NMSE can be analyzed as involving selected elements instead of true argument NPs in MSE as the licensing categories for deriving PG sentences by sideward movement. I characterize true argument NPs as being directly theta-marked (cf. Ouhalla 1999: 159).

Now recall that Chinese differs from both MSE and NMSE in possessing argumental NPs and PPs as the licensing categories for PGs (e.g. ex. (2) and (15)). How do we capture the two types of material as a natural class? I propose that PG licensing in Chinese is sensitive to referential theta-marking in the sense of Rizzi 1990 and thus that the licensing categories include not only true argument NPs but also argumental PPs. According to Rizzi 1990: 86, among a list of theta-roles that are mentioned in the theta-grid, distinctions have to be made between "argumental or referential theta roles (agent, theme, patient, experiencer, goal, etc.) and quasi-argumental, nonreferential theta roles (manner, measure, atmorpheric role, idiosyncratic role in idioms, etc.)". To illustrate, Rizzi points out that the direct object of *solve*, the PP complement selected by *talk* and the comitative PP complement of *behave* are referentially theta-marked but the manner AdvP selected by *behave* are not. Under Rizzi's theory, the two internal arguments of placement verbs like *put* and *place*, i.e. the theme NP and goal PP (cf. Carnie 2013: 233), are both referentially theta-marked, although only the former is directly theta-marked and the latter, indirectly theta-marked by the verb (Ouhalla 1999:159). Note that it is the directly theta-marked argument that licenses MSE PG sentences in H&N's theory.

Now consider acceptable PG sentences in Chinese with argumental NPs in (10b) and argumental PPs in (16) as the licensing categories of PGs. In (10b), in order to satisfy the referential theta-role requirement of the verb *shoucang* 'collect', sideward movement is triggered to copy the NP *ziji de zhaopian* 'self's photo' from the object position of *zhencang* 'treasure' in an unconnected, independently assembled constituent to the object position of *shoucang* 'collect'. Similarly, in (16) in

order to satisfy the referential theta role requirement of the verb *fang* 'put', after the verb has merged

with the direct object *zhaopian* 'photo', sideward movement is triggered to copy *zai ziji de zhuo-*

shang 'on self's desk' from an independently assembled constituent. By contrast, sideward

movement of the adverbial material selected by verbs like *duidai* 'treat' in (14a) is not licensed:

although the adverbial material is theta-marked by *duidai* 'treat' in Rizzi's theory, the theta-marking

is not referential and thus does not trigger sideward movement from the independently assembled

constituent to the "matrix" clause. In the same vein, sideward movement of (nonselected)

manner/reason adverbials in (14b) and frequency adverbials in (14c) are not licensed as they are not

assigned any theta role by the verb *weixiu* 'maintain' in (14b) and *da* 'play' in (14c) respectively.[18]

Summarizing the cross-linguistic variation we've considered in the licensing elements for PG

sentences, there are three grammars. (i) The grammar of NMSE requires selected material as the

trigger of sideward movement in generating PG sentences as in (8). (ii) The grammar of MSE

imposes the requirement that the selected material triggering sideward movement in PG sentences be

directly theta-marked, i.e. true argument NPs in (1a). (iii) The grammar of Chinese requires that

sideward movement be triggered by elements with a referential theta-role such as argumental NPs

---

[18] A prediction emerging from this analysis of Chinese PGs is that other types of phrases such as selected CPs should
also be able to license Chinese PGs given that they are assigned referential theta roles. This prediction, however, is not
easy to substantiate. First of all, a complication is that Chinese CPs may be contained in a complex NP structure (Li
2013). Verbs like *zhidao* 'know', which are capable of assigning Case, take such complements with a CP embedded in a
complex NP. Thus, even though PG sentences based on such clauses are acceptable as in (i), they cannot be used to
support the prediction that referentially theta-marked CPs license PGs in Chinese. Another complication of bearing out
the prediction is that the complement clause of verbs like *renwei/cai* 'think/guess' is independently unmovable as shown
in (ii) (Li 2013: 232). This means that such complement CPs, although referentially theta-marked, also cannot be used in
support of the proposed analysis. Given these complications, there is good reason to still assume that referentially theta-
marked CPs can license PGs in Chinese if they are movable.
(i) [Ziji de zhaopian bei daoyong]$_i$, [zai mei-ge   Tainan-ren   heran   faxian *pg*$_i$ hou] mei-ge Taibei-ren   ye
     self DE photo   BEI misuse   at every-CL Tainan-person surprisingly find   after every-CL Taipei-person also
     jianjian   chajue   *t*$_i$.
     gradually detect
     'That self's photo was misused, everyone from Taipei also gradually detected after everyone from Tainan found out
      surprisingly.'
(ii) a. Ta shuo [tamen renwei/cai   ta   hui   lai].
        he say   they think guess he   will   come
        'He said they thought/guessed that he would come.'
     b. *Ta shuo, [ta hui   lai,   tamen renwei/cai].
           he say   he will come they   think guess

(10b) and PPs (16).

The variation patterns above may be described in such a way if we assume the lines of 'parametric variation' as described by Henry 2012 and Holmberg & Roberts 2014. The invariant 'principle' common to the three language varieties at issue is that PG licensing is based on sideward movement under Last Resort. However, what kind of material would be required to satisfy Last Resort and trigger sideward movement depends on individual languages' choice or by 'parametric setting'. Suppose Last Resort is satisfied by formal feature checking or theta-role assignment/checking (H&N 2002 and references cited therein). What we see is that the three language varieties at issue do obey Last Resort in PG licensing:[19] NMSE PGs are licensed by formal feature checking (i.e. checking the formal c-selection features of the lexical verb, cf. Adger 2003), while MSE and Chinese PGs are licensed respectively by theta-role assignment/checking with true arguments and by referential theta-marking.[20]

---

[19] Under this perspective, a welcome result is that sideward movement should not be limited to copying into an A-position, an impression that one may get from MSE PG licensing, which is triggered only by verbs associated with what's called true arguments by H&N 2002. A priori, PG sentences can be licensed as long as Last Resort is satisfied given parametric setting for individual languages.

[20] While the derivation of PGs in Chinese and in MSE under the sideward movement approach are both sensitive to theta-marking (i.e. referential theta-marking in the former and direct theta-marking in the latter), PGs in MSE are subject to a necessary condition that is lacking in PGs in Chinese; i.e. in MSE the relevant potential target for copying under sideward movement must be involved in a structural Case relation (H&N 2002: 48). This explains why sideward movement of inherently Case-marked expressions is not licit in MSE PG sentences in (ia) but it is in Chinese in (iib) as follows. Sideward movement of *who* from the 'adjunct clause' in (ia) does not take place because this expression is inherently Case-marked by being in the postverbal position of *amuse* and fails to serve as a potential target for copying. Swapping of the accusative Case assigning verb *contact* in the main clause and the inherent Case assigning verb *amuse* in the adjunct clause yields an acceptable PG sentence in (ib). By contrast, assuming with Kuo 2010 that the so-called "outer object" in the retained object construction such as *juzi* 'orange' in (iia) receives an affected theta-role and inherent Case, the acceptable example in (iib) indicates that inherently Case-marked expressions in Chinese can be a target for copying in sideward movement, generating a licit PG sentence. As expected, the verbs in the main and adjunct clause can be swapped in Chinese (iic). Thanks to an anonymous reviewer for raising relevant questions.
(i) a. *It was Ida who$_i$ Bob contacted t_i immediately after concluding that it would amuse *pg*$_i$ to tickle alligators.
    (H&N 2002: 47)
  b. It was Ida who$_i$ Bob concluded that it would amuse *pg*$_i$ to tickle alligators before contacting t_i immediately.
(ii) a. Juzi,   wo bo-le t_i pi   le.
      orange I   peel-ASP   skin   LE
      'An orange, I peeled the skin.' (Huang et al. 2009: 184)
  b. [wo [zai bo-le   *pg*$_i$ pi hou] cai qie-kai t_i de]   juzi$_i$
      I   at peel-ASP   skin after then cut-open   DE   orange
      'the orange that I cut in half after peeling its skin'
  c. [wo [zai qie-kai *pg*$_i$ hou] cai bo-le   pi t_i de] juzi$_i$
      I   at cut-open   after then peel-ASP skin   DE   orange
      'the orange that I pelt its skin after cutting it in half'

It is not fully transparent what factor underlies the 'parametric setting' in PG licensing in the language varieties at issue; however, there is evidence showing that this approach is on the right track. As pointed out by H&N 2002, the distinction between direct theta-marking and mere selection in MSE is manifested not only in PG licensing but also in extractability across a weak island. Thus the material that is selected but not directly theta-marked can neither license PG (26a) nor move out of a weak island (26b).

(26) a. *This is a topic [about which]$_i$ you should think t_i before talking pg_i?

b. *This is a topic [about which]$_i$ I wonder whether you want to talk t_i.

Noteworthy is that in Chinese, goal PPs associated with placement verbs like *fang* 'put', which receive a referential theta-role and license PGs, are extractable out of weak islands (27a) on a par with argumental NPs (27b) but contra adverbial PPs which are lexically selected (e.g. by the verb *duidai* 'treat') but non-referentially theta-marked expressions (27c), and non-selected manner/reason (27d) expressions. This finding suggests that the licensing of PGs and extractability across weak islands are indeed regulated by the same condition, but with cross-linguistic variation: MSE is sensitive to direct theta-marking, but Chinese to referential theta-marking.[21]

(27) a. [Zai na-ge   difang]$_i$, ta xiang zhidao [shei fang-le   yi-ben shu t_i]

at   that-CL   place   he want know   who put-ASP one-CL book

'In that place, he wonders who put a book.'

---

[21] This account predicts that speakers of NMSE should allow extraction of any selected element out of weak islands, an empirical investigation that will be left for future research.

b. Na-ge   ren$_i$,   ta xiang zhidao [shei piping-le t_i]

   that-CL person   he want know   who criticize-ASP

   'That person, he wonders who criticized.'

c. *[Yong na-zhong fangshi]$_i$, ta   xiang zhidao [shei t_i duidai jiaren   gen pengyou].

    with that-CL   way   he   want know   who   treat   family and friend

    'In that way, he wonders who treats his/her family and friends.'

d. ?*[Yong na-ge   fangfa/Yinwei   na-ge   yuangu]$_i$, ta xiang zhidao [shei t_i jiejue-le

    with   that-CL method because that-CL   reason   he want know   who   solve-ASP

    nanti].

    problem

    'With that method/For that reason, he wonders who solved the problem.'

In sharp contrast to the required referential theta-marking nature of the licensing categories for PGs in Chinese, no such licensing asymmetries are observed for ATB gaps in Chinese (on a par with English, see section 3.2). It is thus fairly reasonable to extend the sideward movement approach to capturing the lack of licensing category asymmetries in Chinese ATB sentences. I propose that parallel to those in English, ATB sentences in Chinese can be licensed either by Last Resort, i.e. satisfying the referential theta requirement of the "matrix" verbs, or by the Parallelism Requirement manifested in coordinate structures, assuming with Zhang 2010 that Chinese exhibits parallel Coordinate Structure Constraint (or CSC) effects as English illustrated in (28)(taken from Zhang 2010: 137). To illustrate, sideward movement of argumental NPs (10a) and that of goal PPs in Chinese ATB sentences (17) can be licensed by meeting the referential theta role requirement, but sideward movement of lexically selected adverbials (11), that of non-selected manner/reason adverbials (12) and frequency adverbials (13), not involving any referential theta roles, must be licensed by the Parallelism Requirement.

(28) a. Akiu kan-le   na-fen baozhi,   erqie xi-le   zao.

   Akiu read-ASP that-CL newspaper and   wash-ASP bath

   'Akiu read that newspaper and took a bath.'

 b. ∗na-fen [Akiu   kan-le   ___ , erqie xi-le   zao] de   baozhi

   that-CL Akiu read-ASP   and wash-ASP bath DE   newspaper

5. Conclusion

In this remark, I hope to have contributed to the discussion of unifying PG and ATB constructions both empirically and theoretically. First of all, unlike the controversy over the English facts (see Bruening & Khalaf 2007 for discussion), Chinese exhibits variable binding reconstruction effects in both constructions, indicating that PG and ATB constructions in Chinese should be analyzed under a proposal in which multiple gaps at issue are bound by the same antecedents. This finding also casts doubt on applying separate-antecedent proposals to Chinese PGs, such as one making use of a null operator forming a composed chain (as in Chomsky 1986, Munn 2001) or applying the *pro* analyses (as in Postal 1993, Cinque 2000).

It has also been shown that contra the controversial data in English, the Chinese facts confirm the generalization that PGs are indeed more restrictive than ATB gaps in their licensing categories (see e.g. Postal 1993). Therefore, they are not entirely parallel as claimed by some versions of the unified approach (such as Bruening & Khalaf 2017).

In addition, this discussion also adds new patterns to the inventory of PGs cross-linguistically. Contra the common consensus (see Culicover 2001), I have shown that PGs can be licensed by argumental PPs. The PGs thus cannot be analyzed as *pro*-forms (contra Engdahl's 2001b analysis of non-nominal PGs in Swedish) as indicated by the variable binding reconstruction effects (ex. (16) and (18b)). Existence of PGs licensed by argumental PPs also challenges cross-linguistic generality

of Wiland's 2009 analysis, in which sideward movement is accessible only to syntactic objects that have a full set of phi-features and Case to value.

Finally, the findings in this remark have been argued to lend support to the validity of applying the sideward movement approach to unifying derivation of PG and ATB sentences. This version of the unified approach has been challenged in the literature by works such as Wiland 2009 and Niinuma 2010 (cf. Bruening & Khalaf 2017) but supported by Haida & Repp 2012, among others. While the sideward movement approach arguably may not provide a unified account cross-linguistically (see Niinuma 2010), the results of this study indicate that this approach, with parametric variation taken into consideration, quite elegantly captures the distributions of PG and ATB sentences in Chinese with respect to variable binding reconstruction effects and licensing category asymmetries, thus constituting a fairly robust piece of evidence for this approach in general.

Admittedly, there may be other asymmetries between the PG and ATB constructions in Chinese (cf. the other asymmetries between the two constructions observed for English by Postal 1993) that remain to be examined in future research. Nevertheless, it is hoped that the results of this study will serve as a point of departure to revive heated discussions of the issue whether and/or how to assimilate PG and ATB constructions cross-linguistically given that both involve multiple gaps.

References

Adger, David. 2003. *Core syntax: A minimalist approach*. Oxford: Oxford University Press.

Aoun, Joseph, and Y.-H. Audrey Li. 2003. *Essays on the representational and derivational nature of grammar: The diversity of wh-constructions.* Cambridge, MA: MIT Press.

Bruening, Benjamin, and Eman Al Khalaf. 2017. Reconstruction and linear order in ATB movement and parasitic gap constructions. Unpublished paper. **Work conducted at:** University of Delaware and University of Jordan.

Carnie, Andrew. 2013. *Syntax: A generative introduction*. Malden, MA: Wiley-Blackwell.

Chomsky, Noam. 1986. *Barriers*. Cambridge, MA: MIT Press.

Chomsky, Noam. 1995. *The minimalist program*. Cambridge, MA: MIT Press.

Chomsky, Noam. 1993. A minimalist program for linguistic theory. **In:** Ken Hale and Samuel J. Keyser, editors. *The view from Building 20: Essays in linguistics in honor of Sylvain Bromberger*. Cambridge, MA: MIT Press. 1–52.

Cinque, Guglielmo. 1990. *Types of A'-dependencies*. Cambridge, MA: MIT Press.

Citko, Barbara. 2005. On the nature of merge: external merge, internal merge, and parallel merge. *Linguistic Inquiry* 36.475–497.

Culicover, Peter W. 2001. Parasitic gaps: A history. **In:** Peter W. Culicover and Paul M. Postal, editors. *Parasitic gaps*. Cambridge, MA: MIT Press. 3–68.

Engdahl, Elisabet. 1983/2001a. Parasitic gaps. *Linguistics and Philosophy* 6.5-34. Reprinted in Peter Culicover and Paul M. Postal, editors. *Parasitic gaps*. Cambridge, MA: MIT Press. 69-97.

Engdahl, Elisabet. 2001b. Versatile parasitic gaps. **In:** Peter W. Culicover and Paul M. Postal, editors. *Parasitic gaps*. Cambridge, MA: MIT Press. 127-145.

Fiengo, Robert, and Robert May. 1994. *Indices and identity*. Cambridge, MA: MIT Press.

Haida, Andreas, and Sophie Repp. 2012. Locality restrictions on sideward movement: An investigation of parasitic gaps, ATB constructions and question word coordinations. Unpublished paper. **Work conducted at:** Humboldt-Universität zu Berlin. Retrieved Sep. 2022, from https://idsl1.phil-fak.uni-koeln.de/sites/IDSLI/dozentenseiten/Repp/Haida_Repp_MASL_web.pdf

Henry, Alison. 2005. Idiolectal variation and syntactic theory. **In:** Leonie Cornips and Karen Corrigan, editors. *Syntax and variation: Reconciling the biological and the social*. Amsterdam: John Benjamins. 109-122.

Henry, Alison. 2012. Phase edges, quantifier float and the nature of (micro-) variation. *Iberia: An International Journal of Theoretical Linguistics* 4.23-39.

Her, One-Soon. 2008. *Grammatical functions and verb subcategorization in Mandarin Chinese*. Taipei: Crane Publishing.

Holmberg, Anders, and Ian Roberts. 2014. Parameters and the three factors of language design. **In:** M. Carme Picallo, editor. *Linguistic variation in the minimalist framework*. Oxford: Oxford University Press. 61-81.

Hornstein, Norbert, and Jairo Nunes. 2002. On asymmetries between parasitic gap and across-the-board constructions. *Syntax* 5.26–54.

Huang, C.-T. James 1982. *Logical relations in Chinese and the theory of grammar*. Doctoral thesis. Cambridge, MA: MIT.

Huang, C.-T. James. 1991. Remarks on the status of the null object. **In:** Robert Freidin, editor. *Principles and parameters in comparative grammar*. Cambridge, MA: MIT Press. 56–76.

Huang, C.-T. James, Yen.-Hui Audrey Li, and Yafei Li. 2009. *The syntax of Chinese*. Cambridge, MA: Cambridge University Press.

Kuo, Pei-Jung. 2010. Transitivity and the *ba* construction. *Taiwan Journal of Linguistics* 8.95-128.

Levine, Robert D., Thomas E. Hukari, and Michael Calcagno. 2001. Parasitic gaps in English: Some overlooked cases and their theoretical implications. **In:** Peter W. Culicover and Paul M. Postal, editors. *Parasitic gaps*. Cambridge, MA: MIT Press. 181–222.

Li, Y.-H. Audrey. 1990. *Order and constituency*. Dordrecht: Kluwer Academic Publishers.

Li, Y.-H. Audrey. 2013. Case, tense and clauses. **In:** Guangshun Cao, Hilary Chappell, Redouane Djamouri, and Thekla Wiebusch, editors. *Breaking down the barriers*. Taipei: Academia Sinica. 205-235.

Li, Y.-H. Audrey, and Ting-Chi Wei. 2014. Ellipsis. **In:** C,-T. James Huang, Y.-H. Audrey Li, and Andrew Simpson, editors. *The handbook of Chinese linguistics*. West Sussex, UK: John Wiley & Sons. 275-310.

Lin, Tzong-Hong Jonah. 2005. Does *wh-in-situ* license parasitic gaps? *Linguistic Inquiry* 36.298-302.

Merchant, Jason. 2001. *The syntax of silence: sluicing, islands, and the theory of ellipsis*. Oxford: Oxford University Press.

Munn, Alan. 2001. Explaining parasitic gap restrictions. **In:** Peter W. Culicover and Paul M. Postal, editors. *Parasitic gaps*. Cambridge, MA: MIT Press. 369–392.

Niinuma, Fumikazu. 2010. Across-the-board and parasitic gap constructions in Romanian. *Linguistic Inquiry* 41.161–169.

Nissenbaum, Jonathan. 2000. *Investigations of covert phrase movement*. Doctoral thesis. Cambridge, MA: MIT.

Nunes, Jairo. 2001. Sideward movement. *Linguistic Inquiry* 32.303–344.

Nunes, Jairo. 2018. Linearizing chains at LF. **In:** Ángel J. Gallego and Roger Martin*, editors. Language, syntax, and the natural sciences*. New York: Cambridge University Press. 139–163.

Ouhalla, Jamal. 1999. *Introducing transformational grammar: From principles and parameters to minimalism*. Oxford: Oxford University Press.

Pan, Victor Junnan. 2011. ATB-topicalization in Mandarin Chinese: An intersective operator analysis. *Linguistic Analysis* 37.231–272.

Pesetsky, David M. 1982. *Paths and categories*. Doctoral thesis. Cambridge, MA: MIT.

Postal, Paul. 1993. Parasitic gaps and the across-the-board phenomenon. *Linguistic Inquir*y 24.735–754.

Rizzi, Luigi. 1990. *Relativized minimality*. Cambridge, MA: MIT Press.

Ross, John R. 1967. *Constraints on variables in syntax*. Doctoral thesis. Cambridge, MA: MIT.

Rouveret, Alain. 2008. Phasal agreement and reconstruction. **In:** Robert Freidin, Carlos P. Otero, and Maria Luisa Zubizarreta. *Foundational issues in linguistic theory*. Cambridge, Mass: The MIT Press. 167–195.

Stowell, Timothy Angus. 1981. *Origins of phrase structure*. Doctoral thesis. Cambridge, MA: MIT.

Tang, C.-C. Jane. 1990. *Chinese phrase structure and the extended X'-theory*. Doctoral thesis. Ithaca, NY: Cornell University.

Ting, Jen. 1998. Deriving the *bei*-construction in Mandarin Chinese. *Journal of East Asian Linguistics* 7.319-354.

Ting, Jen, and Miller Chang. 2004. The category of *gei* in Mandarin Chinese and grammaticalization. *Taiwan Journal of Linguistics* 2.45–74.

Ting, Jen, and Yu-Chi Huang. 2008. Some remarks on parasitic gaps in Chinese. *Concentric: Studies in Linguistics* 34.27–52.

de Vries, Mark. 2017. Across-the-Board phenomena. **In:** Martin Everaert and Henk van Riemsdijk, editors. *The Wiley Blackwell companion to syntax, Second Edition*. Hoboken, NJ: Wiley-Blackwell. 1-31.

Wiland. Bartosz. 2009. Feature valuation by sideward movement. **In:** Kleanthes K. Grohmann*, editor. Explorations of phase theory: Features and arguments*. Berlin, New York: Mouton de Gruyter. 53–86.

Williams, Edwin. 1990. The ATB theory of parasitic gaps. *The Linguistic Revie*w 6.265-279.

Woolford, Ellen. 2006. Lexical case, inherent case, and argument structure. *Linguistic Inquiry* 37. 111-130.

Zhang, Niina Ning. 2009. The syntax of same and ATB constructions. *The Canadian Journal of Linguistics* 54.367–399.

Zhang, Niina Ning. 2010. *Coordination in syntax*. Cambridge, MA: Cambridge University Press.