

11 Ellipsis

YEN-HUI AUDREY LI AND
TING-CHI WEI

1 Introduction

It is well-known that Chinese seems to allow “deletion” or “ellipsis” prominently – constituents that are inaudible or invisible but are still meaningful. For instance, the following sentence does not have an overt subject or object but they must be included in the interpretation of the sentence (somebody saw something):

- (1) ___ kandao ___ le.
 see LE
 “ ___ saw ___.”

Not only can subjects and objects be missing, so can predicates. The interpretation of the *if* clause in the sentence below must include a VP following the modal “will”:

- (2) ruguo ta hui ___, wo ye jiu yiding hui ba
 if he will I also then certainly will BA
 shu kan-wan.
 book read-finish
 “If he will ___, then I will definitely also finish reading the book.”

Even a clause seems to be able to disappear, such as the missing “he does not study any more” in the complement clause after “why” in (3) below.

- (3) ta bu nian shu le; wo xiang-zhidao (shi) weishenme ____.
 he not read book LE I want-know be why
 “He does not study any more; I want to know why ____.”

The commonly used terms to refer to the types of missing elements in (1)–(3) are argument ellipsis, VP-ellipsis, and sluicing (IP ellipsis) respectively, which

represent the major types of elliptical structures in natural languages.¹ The main questions that have been attracting linguists' attention are:

- (4) a. The licensing condition: what licenses elements to be missing? Are both syntactic and semantic licensing conditions required?
- b. The syntactic structure: how are missing elements represented syntactically? Are they fully represented and then deleted at some point – deletion in syntax or at PF? Or are the missing elements empty from the beginning of derivation – base-generated as empty?
- c. The representation at Logical Form (LF): how are the missing elements properly interpreted?

Numerous proposals have been made to address these issues. Winkler and Schwabe (2003) provided an up-to-date summary and comparison of the main approaches to ellipsis: whether deletion actually applies, when deletion takes place, and how missing elements are interpreted. Since 2003, there have been many more influential works that have brought forward significant empirical generalizations, continued refining the previous analyses, and have broken new ground toward better understandings of the properties of the missing elements (see, among many others, Everaert and van Riemsdijk 2005; Merchant 2005; Johnson 2008; van Craenenbroeck 2009; Baltin 2012). The challenge is that there is still no consensus on a unified approach to all the elliptical structures across languages. A major controversy has been on the “timing” of deletion: is deletion a very late phenomenon in the sense that it is simply a failure to spell out certain constituents – *PF deletion* (represented by Merchant 2001)? Or is it *deletion in syntax*, which can affect syntactic operations and interpretive possibilities in the relevant domain (phase) (Baltin 2012)? Or is it even earlier, the missing element is truly empty syntactically, requiring *LF copying* for interpretation (e.g., the interpretive approach summarized in Winkler and Schwabe 2003; Oku 1998; Saito 2004, 2007; Li 2005, 2007, to appear)?

Chinese has an abundance of elliptical structures, which can help shed light on the debate. Unfortunately, the richness of the relevant data and the required explanations make it impossible to discuss in comprehensible detail within the limited space how the numerous empirical generalizations can or cannot be captured by the various approaches, especially when different analyses may involve contrasting assumptions and theoretical mechanisms.² Accordingly, this chapter simply focuses on the important properties of the more commonly recognized elliptical structures in Chinese and some promising analyses, without comparing alternatives. The constructions discussed will be NP/DP ellipsis (Section 2), VP-ellipsis (Section 3), and sluicing (Section 4).

2 DP/NP ellipsis

This section will include the so-called argument drop structures, conveniently referred to as “DP-ellipsis” in Section 2.1, and, in Section 2.2 “NP-ellipsis”

constructions – sub-parts of an argument being missing (termed as N'-ellipsis if an argument nominal phrase is represented as an NP, instead of a DP).

2.1 DP-ellipsis

Chinese prominently allows arguments to be missing. For instance, the subject of the sentence in (5) and the object of the second clause in (6) can be missing.

- (5) (ta) zou-le ma?
 he leave-LE Q
 "Has (he) left?"

- (6) ta kandao-le yi-ge nanhai; wo ye kandao-le
 he see-LE one-CL boy I also see-LE
 (yi-ge nanhai).
 one-CL boy
 "He saw a boy; I also saw (a boy)."

What are such null arguments? One possibility is a variable analysis, as Huang (1982, 1984) proposed for some empty arguments in Chinese – a language that productively topicalizes arguments and in which the topic phrase can be null. For instance, a sentence like (7) is possible when the intended object of the verb is clear from the discourse. The object is expressed as a variable bound by a topic, which can be empty:

- (7) (tamen), wo hen xihuan ____.
 they I very like
 "(Them), I like ____."

However, the variable option cannot apply to all the missing arguments in Chinese because an object that cannot be topicalized can still appear in the null form. The cases that are not topicalizable are (i) when the relevant nominal is indefinite, because a topic must be definite (e.g., Chao 1968; Li and Thompson 1981, among many others), and (ii) when islands are involved, because topicalization is restricted by island conditions (Huang 1982 and Li 1990 for instance). Notably, missing objects can be indefinite and they can occur within islands co-indexed with their antecedents across island boundaries. These are illustrated below.

Missing objects interpreted as indefinite expressions:

- (8) a. ta song yi-ge nanhai yi-ben shu; wo song
 he give one-CL boy one-CL book I give
 yi-ge nuhai (yi-ben shu).
 one-CL girl one-CL book
 "He gave a boy a book; I gave a girl (a book)."

En

b. ta song yi-ge nanhai yi-ben shu; wo song
 he give one-CL boy one-CL book I give
 (yi-ge nanhai) yi-zhi bi.
 one-CL boy one-CL pen
 "He gave a boy a book; I gave (a boy) a pen."

Missing objects insensitive to island conditions:

- (9) zhe-ge laoshi hen hao_i, wo mei
 this-CL teacher very good I not
 kandao-guo [[e_i bu xihuan e_i de] xuesheng;
 see-EXP not like DE student
 "This teacher₂ is very good. I have not seen students₁ who e₁ do not like (him₂)."

The acceptability of the sentences in (8a–b) is important in another respect – it shows that either of the two objects in double object constructions can be missing. The following examples involving islands illustrate the same point.

- (10) wo [yinwei Zhangsan gei/fa yi-ge xuesheng liang-ben
 I because Zhangsan give/fine one-CL student two-CL
 shu] hen gaoxing;
 book very happy
 keshi [yinwei Lisi zhi gei/fa yi-ben shu] wo
 but because Lisi only give/fine one-CL book I
 bu gaoxing.
 not happy
 "I was happy because Zhangsan gave/fined a student two books; but I was not happy because Lisi only gave/fined (a student) a book."

- (11) wo [yinwei Zhangsan gei/fa yi-ge nan xuesheng yi-ben
 I because Zhangsan give/fine one-CL male student one-CL
 shu] hen gaoxing;
 book very happy
 keshi [yinwei Lisi zhi gei/fa yi-ge nu xuesheng]
 but because Lisi only give/fine one-CL female student
 wo bu gaoxing.
 I not happy
 "I was happy because Zhangsan gave/fined a male student a book, but I was not happy because Lisi only gave/fined a female student (a book)."

The possibility of either of the two objects being empty in double-object constructions suggests that such missing arguments cannot be the result of VP-ellipsis applying to some projection of V – a verb is raised out of its base-generated

position, creating a VP containing the trace of the raised verb and an argument; then deletion applies to this verb phrase, stranding the raised verb [$V_i \dots [_{VP} t_i$ ~~Object~~]] (see, among others, Huang 1991; G. Li 2002; Otani and Whitman 1991; and Goldberg 2005 for stranded V constructions derived by VP-ellipsis). Consider the acceptability of (8b) or (11). As in many other languages, the first object in the double object construction [V Object1 Object2] asymmetrically c-commands the second object in Chinese (Barss and Lasnik 1986; Larson 1988; Aoun and Li 1989, 1993, among others). The asymmetric c-commanding relation can be demonstrated by scope and binding properties:

- (12) The first object necessarily has scope over the second object
- a. wo gei mei-ge ta yao de ren yi-ben shu.
 I give every-CL he want DE person one-CL book
 $-\forall > \exists$
 "I gave everyone he wants a book."
- b. wo gei yi-ge ren mei-ben ta mai de shu. $-\exists > \forall$
 I give one-CL person every-CL he buy DE book
 "I gave a person every book that he bought."
- (13) The first object asymmetrically c-commands the second object regarding Binding
- a. ni yao song na-ge ren_i taziji_i de zhaopian?
 you want give which-CL person himself DE picture
 "Which person(x_i) you want to give x_i pictures of himself_i?"
- b. *wo yao song ta_i Lisi_i de zhaopian.
 I want give him Lisi DE picture
 "*I want to give him_i Lisi_i's pictures."

Accordingly, the first object must be in a higher position than the second object structurally: [V [object1 [. . . object2]]]. Then, it is impossible to have a constituent containing only the verb and the first object, to be deleted by some VP-ellipsis operation, leaving behind the verb and the second object, as in (10).

The patterns above show that the relevant missing arguments cannot be variables bound by empty topics or derived by VP-ellipsis.³ In the following section, we will show that subject and object empty categories should be analyzed differently: an empty subject is a *pro* governed by the identification procedure in Huang's (1982) Generalized Control Rule. In contrast, an empty object cannot be a *pro*, nor any of the other recognizable empty categories. It is a truly empty element syntactically and is interpreted after copying at LF of the materials in the discourse (cf. late insertion as in Oku 1998, or LF copying approach to argument ellipsis in Kim 1999; Saito 2004, 2007; Shinohara 2006, among others).⁴

2.1.1 Subject/object asymmetry Let us begin with a very interesting asymmetry in interpreting empty subjects and empty objects, as discussed in Li (2005, 2007)

En

and Aoun and Li (2008). Specifically, when a null argument is to be anteceded by a nominal across island boundaries, the antecedent for an empty subject must be the closest nominal, but the requirement does not apply to empty objects.

- (14) Zhangsan₁ hen heshan, wo zhao-bu-dao yi-ge [[e bu xihuan
Zhangsan very friendly I seek-not-find one-CL not like
e de] ren₂].
DE person
a. "Zhangsan₁ is very friendly. I cannot find a person₂ that e₂ does not like (him₁)."
b. *"Zhangsan₁ is very friendly; I cannot find a person₂ that (he₁) does not like e₂."

- (15) wo faxian xiaotou₁ [yinwei jingcha zhao-bu-dao
I discover thief because policeman seek-not-find
[e₂ yuanyi kanguan e₁/e₃ de]] ren₂ deyi-di zou le.
willing supervise DE person proud-ly leave LE
"I discovered that the thief₁ left proudly because the policemen were not able to find people who were willing to supervise (him₁)."

- (16) wo₁ yinwei [e_{1/2} bu xihuan Zhangsan] you diar
I because not like Zhangsan have slight
buaoyisi.
embarrassed
"I am somewhat embarrassed because e does not like Zhangsan."

As illustrated, a missing object can be interpreted as referring to a subject or topic in the discourse across an island boundary. In contrast, the interpretation of empty subjects must be sensitive to the Generalized Control Rule (Huang 1982), requiring empty pronouns to be identified by the closest c-commanding nominal.

In addition, there exists a contrast in the availability of indefinite and sloppy readings between missing subjects and objects (Miyagawa 2010; Şener and Takahashi 2010; but cf. Oku 1998 for Japanese). Empty subjects are not acceptable as deleted indefinite nominals; but empty objects are fine. The following example shows that the indefinite subject cannot be deleted, in contrast to the acceptability of indefinite objects deleted in (8).

- (17) ta kandao yi-ge keren dian-le longxia; wo kandao
he see one-CL guest order-LE lobster I see
*(yi-ge keren) dian-le yu.
one-CL guest order-LE fish
"He saw a guest ordered lobster; I saw (a guest) ordered fish."

In addition, missing subjects and objects differ in the possibility of sloppy readings. (18a–b) below show that a sloppy interpretation is available to a missing object, not a missing subject. The empty subject in (18a) can only be interpreted as co-indexed with the matrix subject.⁵

- (18) a. Zhangsan_i [yinwei ziji_i de/ta_ide erzi jiao-guo shuxue]
 Zhangsan because self's/his son teach-ASP math
 hen gaoxing;
 very happy
 Lisi_j [yinwei [e_j] jiao-guo yuyanxue] hen deyi.
 Lisi because teach-ASP linguistics very proud
 "Zhangsan_i is happy because self's_i/his_i son has taught math; Lisi_j is proud because e_j has taught linguistics."
 b. Zhangsan_i [yinwei wo jiao-guo ta_ide erzi] hen gaoxing;
 Zhangsan because I teach-ASP his son very happy
 Lisi_j [yinwei wo mei jiao-guo (ta_ide erzi)] hen bu
 Lisi because I not teach-ASP his son very not
 gaoxing
 happy
 "Zhangsan_i is happy because I have taught his_i son; Lisi_j is not happy because I have not taught [his_j son]."

The sloppy reading again is available to the missing object in (19b) below, containing a reflexive or bound pronoun in the antecedent clause, in contrast to (19a), whose subject cannot be missing.

- (19) a. Zhangsan_i xihuan [ziji_i/ta_i erzi renshi de ren];
 Zhangsan like self/he son know DE people
 Lisi_j xihuan [*(ziji_j/ta_j erzi) bu renshi de ren]
 Lisi like self/he son not know DE people
 "Zhangsan_i likes the people that self's_i/his_i son knows; Lisi_j likes the people that *(self's_j/his_j son) does not know."
 b. Zhangsan_i xihuan [renshi ziji_i/ta_i erzi de ren];
 Zhangsan like know self/he son DE people
 Lisi_j xihuan [bu renshi (ziji_j/ta_j erzi) de ren]
 Lisi like not know self/he son DE people
 "Zhangsan_i likes the people that know self's_i/his_i son; Lisi_j likes the people that do not know (self's_j/his_j son)."

The examples so far show a clear asymmetry in interpreting empty subjects and empty objects. Only missing objects allow indefinite or sloppy interpretations. Missing objects can be interpreted with antecedents across island boundaries in A or A'-positions or an empty discourse topic; whereas missing subjects are quite restricted in interpretive possibilities. Why is there such a subject/object asymmetry? Li (2005) and Aoun and Li (2008) argue that the asymmetry follows from

En

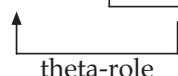
the conflicting requirements on the identification procedure for empty pronouns (*pro*/*PRO*) and the general disjointness requirement on pronouns. According to Huang (1982), empty pronouns must be identified by the first c-commanding nominal – Generalized Control Rule (GCR). They should also obey Binding Principle B because they are pronouns. An empty pronoun is acceptable in the subject position: according to the GCR, it is identified by the subject of a higher clause because the higher subject is the first possible antecedent for the missing subject. At the same time, it is free in the lower clause containing it because the clause contains a subject (Binding Principle B). However, an empty pronoun in the object position has to be bound by the subject of the same clause according to the GCR and be free from it due to Binding Principle B. The conflicting requirements make an empty pronoun (*PRO*/*pro*) impossible in the object position. Accordingly, Huang (1982) suggests that an empty object should be a variable bound by an empty topic. Nonetheless, we saw earlier that empty objects could not be subsumed under a variable analysis. They can be within islands bound by an A or A'-antecedent across island boundaries, unlike topicalization cases, which are subject to island constraints and only involve A'-antecedents. The possibility of empty objects interpreted as indefinite also argues against a variable analysis. In other words, the empty object cannot be variable or a *pro*. Because the empty object cannot be any one of the known empty categories in the generative grammatical theory (Chomsky 1981, 1995), it is a true empty element. The observed subject/object asymmetry follows if a true empty element (TEC) is a last resort, forced by the impossibility of an empty pronoun that is subject to the Generalized Control Rule. A TEC is simply a position in the tree structure, not containing features such as [+pronominal], [+anaphoric] or person, number, gender.⁶ The true emptiness of a TEC is further supported by a variety of patterns whose objects cannot be empty because the contents of the missing objects need to be accessed, some of which are demonstrated in the following sections (see Li, to appear, for more constructions demonstrating the properties of a TEC and the comparison between a TEC approach and other alternatives).

2.1.2 Double-object constructions disallowing direct objects missing In Chinese, a verb and an “inner object” can combine to license an “outer object.” The wide availability of an additional object has been noted frequently in the literature (see, for instance, Thompson 1973 (also the notion of “retained object”)); for some recent works, see Huang 2007; Huang *et al.* 2009: ch. 4). The main pattern illustrating this possibility involves a typical single complement verb taking two objects, as in (20)–(21) below.⁷ These examples are from Lu (2002).⁸

- (20) wo qu-le ta-jia yi-ge guinu.
 I marry-LE he-family one-CL daughter
 “I married a daughter of his family’s.”
- (21) wo chi-le ta yi-ge pingguo.
 I eat-LE he one-CL apple
 “I ate an apple of his.”

In these cases, the second object after the verb is the one normally subcategorized for by the verb, referred to as “inner object” for convenience. The first object, the one right after the verb, is an “outer object,” which alternatively can be referred to as “affected object.” Huang (2007) notes that the additional outer argument is possible (receiving “affected” theta-role) when the verb and the inner object can combine and describe an action that is highly transitive.⁹ The verb and the inner object together form a transitive verb and assign an “affected” theta-role to the outer object:

- (22) [V outer object [V inner object]] (V raised to derive the right word order)



Huang further observes that the inner object (the theme) cannot be missing in these cases. Note that the prohibition against deleting only the inner object is true even when a parallel structure is available – the typical context most favorable to “deletion”:

- (23) wo qu-le ta-jia yi-ge guinu; ta qu-le wo-jia *
 I marry-LE he-family one-CL daughter he marry-LE I-family
 (yi-ge guinu).
 one-CL daughter
 “I married a daughter of his family’s; he married my family.”

- (24) wo chi-le ta yi-ge pingguo; ta chi-le wo *(yi-ge
 I eat-LE him one-CL apple; he eat-LE me one-CL
 pingguo)
 apple
 “I ate an apple of his; he ate me.”

The impossibility of deleting the inner object in such constructions contrasts with the possibility of deleting either of the two objects in typical double-object constructions (also see note 9):

- (25) a. women song/gei-le ta yi-zhang piao; tamen ye
 we give-LE him one-CL ticket; they also
 song/gei-le ta.
 give-LE him
 “We gave him a ticket; they also gave him.”
 b. women song/gei-le ta yi-zhang piao; tamen ye
 we give-LE him one-CL ticket; they also
 song/gei-le yi-zhang piao.
 give-LE one-CL ticket
 “We gave him a ticket; they also gave a ticket.”

En

2.1.3 *Unaccusative verbs* In addition to the construction involving inner and outer objects like those above, Chinese also allows an unaccusative verb and its internal argument to combine and take an additional argument, bearing some relation with the internal argument. The additional argument can surface as the subject of the sentence, interpreted as the experiencer of the event.

- (26) Zhangsan si-le fuqin.
Zhangsan die-LE father
“Zhangsan had (his) father died.”

- (27) tamen zuotian lai-le keren
they yesterday come-LE guest
“They had (their) guests arriving yesterday.”

What is relevant is that when only one argument surfaces, this argument must be interpreted as the theme, rather than the experience, of the event (Lu 1987; Cheng and Huang 1994; Huang 2007).

- (28) Zhangsan si-le fuqin; Lisi ye si-le *(fuqin).
Zhangsan die-LE father Lisi also die-LE father
“Zhangsan had (his) father died; Lisi also died.”

- (29) tamen zuotian lai-le keren; women ye lai-le *(keren)
they yesterday come-LE guest; we also come-LE guest
“They had guests coming yesterday; we also came.”

Note that not all the cases with an experiencer subject and a theme object disallow missing objects. The sentences below, including both psych and non-psych verbs, are quite acceptable with the objects missing:

Experiencer Subject – Theme Object

- (30) Zhangsan diao/wang-le shu; Lisi ye diao/wang-le (shu).
Zhangsan lose/forget-LE book Lisi also lose/forget-LE book
“Zhangsan lost/forgot books; Lisi also lost/forgot (books).”

- (31) wo hen pa/xihuan ta; tamen ye hen pa/xihuan (ta).
I very fear/like him they also very fear/like him
“I am afraid of/like him; they also are afraid (of him)/like (him).”

The two sets of constructions, (26)–(29) vs. (30)–(31), have the same thematic roles for their arguments – experiencer as subject and theme as object. They are only distinguished by how the arguments are generated. In the latter, the verbs are two-argument verbs, whereas those in the former are one-argument verbs. The latter allow missing objects, not the former. This contrast indicates that verbs still play an important role in the thematic assignment to the arguments. A verb may

be subcategorized for an internal argument only, as in (26)–(29), or for two arguments, as in (30)–(31). The argument in the subject position in (30)–(31) is related to the lexical subcategorization properties of the verb; but the subject in (26)–(29) is an addition licensed by the verb and the internal object, just like the licensing of an outer object by a verb and its inner object in the cases discussed in the previous section. In other words, two ways of generating arguments must be recognized: one from the lexical properties of verbs, and the other an addition in the appropriate syntactic structure licensed by the combination of a verb and its object. The outer object in (20)–(24) and the subject in (26)–(29) are not generated according to the lexical subcategorization properties of the relevant verbs, in contrast to the arguments in (25) and (30)–(31). The consequence of such a distinction is that the syntactically added argument licensed by the combination of a verb and its object cannot survive if the object is missing. This is so even in the context of parallel structures most conducive to “deletion.” A missing object is not available to collaborate with a verb to license the occurrence of another argument.¹⁰

There are other constructions disallowing objects to be missing, because the emptiness of missing objects fails to provide contents to license the merger of other elements, such as the structure involving a secondary predicate and the sluicing construction with the “sprouting” of a remnant corresponding to an empty object. Due to the limited space, we will not go into the details of these constructions, nor the exact mechanisms to account for the relevant structures (available in Li to appear; Li and Wei in preparation). Suffice it to state that null objects in Chinese argue for the need to recognize the possibility of truly empty elements in syntactic structures.

Next, we turn to the missing element inside a nominal expression and demonstrate the same point: the existence of truly empty elements.

2.2 NP(N')-ellipsis

A Chinese nominal expression in an argument position, represented as a DP, can contain an N (and NP), other heads (Classifiers, Determiners, for instance), and modifiers (for a recent discussion, see Huang *et al.* 2009: ch. 8). Simply for convenience, let us refer to the N (or NP) as the head of the nominal expression. A nominal head can be preceded by a modifying phrase. An important characteristic of the nominal expressions in Chinese is that the head can be empty when a modifying phrase XP with *de* appears, *de* being a modification marker, schematically represented below:

- (32) [DP/NP XP *de* [NP Ø]]

What is such an empty head? Clearly, it cannot be an NP-trace or a variable because it does not require an A or A'-antecedent and is not derived by movement. Nor can it be an empty pronoun, which should be a DP¹¹ and subject to the identification condition (control). The options left for the empty element are either: (i) it is the null counterpart of *one* in English, or (ii) it is truly empty (the TEC, also

En

see Panagiotidis 2003 for a content-less empty noun). We show below that the latter option should be adopted. The first piece of evidence comes from the constructions involving relativization (Aoun and Li 2003: ch. 6). Briefly, the support is built on the fact that not all the instances of the form in (32) are acceptable. The unacceptable constructions can be attributed to the lack of contents of the missing elements – TEC.

Consider the structures containing relativization of the form $[[_{\text{relative clause}} \text{XP } de] [_{NP} \emptyset]]$. Most important is the fact that a null head is possible only in certain cases. It is acceptable in (33a), where the subject of the relative clause is relativized, and in (33b), where the object is relativized. However, when an adjunct *how/why* is relativized, a null head is not acceptable in (33c, d) (see, among many others, Guo 2000; J. Shen 1999; Y. Shen 2002; Yuan 1995; Zhu 1961; Aoun and Li 2003 for discussions on null-head relative clauses in Chinese):

- (33) a. lai zher de \emptyset
 come here DE
 “(the one) that came here”
 b. ta zuo de \emptyset
 he do DE
 “(the thing) that he did”
 c. *ta xiu che de \emptyset
 he fix car DE
 “(the way) that he fixed the car”
 d. *ta likai de \emptyset
 he leave DE
 “(the reason) that he left”

In addition, when a relative construction contains a pronoun in the relativized position, a null head is not possible:

- (34) [[wo yiwei tamen_i dou hen renzhen de] *(naxie xuesheng)_i]
 I think they all very diligent DE those student
 faner dou mei de jiang.
 contrarily all not get prize
 “(Those students) that I thought they were diligent did not win the prize,
 unexpectedly.”
- (35) wo xiang kan [[ni shuo Zhang hui dai ta_i huilai de]
 I want see you say Zhang will bring him back DE
 *(na-ge xuesheng)_i]
 that-CL student
 “I want to see (the student) that you said that Zhang would bring him
 back.”

The following sentences minimally contrast with (34)–(35), showing that a resumptive pronoun affects the acceptability of a null head:

- (36) [[wo yiwei Ø_i dou hen renzhen de] (naxie xuesheng)_i]
 I think all very diligent DE those student
 faner dou mei de jiang.
 contrarily all not get prize
 “(Those students) that I thought were diligent did not win the prize,
 unexpectedly.”
- (37) wo xiang kan [[ni shuo Zhang hui dai Ø_i huilai de] (na-ge
 I want see you say Zhang will bring back DE that-CL
 xuesheng)_i]
 student
 “I want to see (the student) that you said that Zhang would bring back.”

These cases also demonstrate the challenge in claiming that the missing NP is the equivalent of the English *one*. The sentences above with resumptive pronouns would be acceptable with *one* in the corresponding English sentences, as long as resumptive pronouns are allowed. For instance, there is no contrast between the use of *the student* and *the one* in the following examples.

- (38) a. I want to see the student/the one that you got angry because he would not come.
 b. I want to see the student/the one that you said that John would bring him back.

With respect to the adjunct relativization cases, it is not that expressions of “how/why” cannot be “deleted.” As long as a relative clause does not occur, a phrase followed by *de* can precede an empty head whose interpretation is related to “how/why”:

- (39) a. [[ta xiu che de] fangfa] bi [[wo xiu che de] fangfa] hao.
 he fix car DE method compare I fix car DE method good
 “The way he fixes cars is better than the way I fix cars.”
 b. *[[ta xiu che de] fangfa] bi [[wo xiu che de] Ø] hao.
 he fix car DE method compare I fix care DE good
 “The way he fixes cars is better than (the way) I fix cars.”
 c. [[ta xiu che de] fangfa] bi [[wo de] Ø] hao.
 he fix car DE method compare I DE good
 “The way he fixes cars is better than mine.”

(39a–c) contrast with the cases of argument relativization, which allow the head to be empty, regardless of whether or not the XP in (32) is a relative clause:

- (40) [[ta mai de] chezi] bi [[wo (mai) de] Ø] hao.
 he buy DE car compare I buy DE good
 “The car he bought is better than the one I bought/mine.”

En

Even when there is a “resumptive how/why” in the relativized position, clearly marking what is relativized, a null head is still not possible in such adjunct relativization:

- (41) a. wo ting-shuo-guo ta **ruhe/zenme**_i xiu che de *(fangfa)_i.
 I hear-say-ASP he how fix car DE method
 “I have heard about the (way) (how) he fixed the car.”
 b. wo ting-shuo-guo ta **weishenme**_i bu lai de *(liyou)_i.
 I hear-say-ASP he why not come DE reason
 “I have heard about the (reason) why he would not come.”

These restrictions show that what is relativized, and whether a resumptive pronoun appears, affect the possibility of a null head. According to Aoun and Li (2003: ch. 5–6), the following different types of relativization need to be distinguished according to their behavior with respect to movement and resumption:

- (42) NP relativization with a gap
 $[[_{CP} \ [_{IP} \dots [_{NP} t_i] \dots]] \ [_{Head} \ NP]_i]$
 – direct NP movement to the head nominal phrase
- (43) NP relativization with a resumptive pronoun
 $[[_{CP} \ OP_i \ [_{IP} \dots [_{NP} \text{pronoun}_i] \dots]] \ [_{Head} \ NP]_i]$
 – Head nominal phrase base-generated, an operator (OP) in Spec of Comp co-indexed with a resumptive pronoun (RP)
- (44) Adjunct relativization
 $[[_{CP} \ OP_i \ [_{IP} \dots [_{PP} t_i] \dots]] \ [_{Head} \ NP]]$
 – Head nominal phrase base-generated, OP movement to Spec of Comp

The characteristics of different relative constructions in (42)–(44) are the key to understanding the (im)possibilities of a null head in these patterns. Recall that a null head is impossible in these two cases: argument relativization with a resumptive pronoun and adjunct relativization. In other words, the relative constructions involving an operator, (43) and (44), do not allow a null head, in contrast to those without the relative operator (42). The generalization that emerges is that the possibility of a null relative operator is correlated with the presence of a lexical head (in contrast to a null head). A mechanical way of understanding a null operator being well-formed is that it is licensed by the nominal head of the relative construction and agrees in features with it, or that the range of the null operator needs to be determined by the nominal head (Chomsky 1986).¹² The (im)possibilities of a null head follow if the null head is a true empty element devoid of content that needs to be accessed by a null operator – the TEC.

In addition, relativized process nouns (or noun phrases, when occurring with modifiers) cannot be deleted because they are thematic-role assigners. That is, they must contain thematic features and cannot be truly empty.

- (45) a. tamen pohuai na-ge chengshi.
 they destroy that-CL city
 "They destroyed the city."
 b. *tamen dui na-ge chengshi de [NP (na-ci (de) pohuai)]
 they to that-CL city DE that-time DE destruction
 "the destruction (that time) to that city by them"
- (46) tamen dui shehui de (quan-li) fengxian chixu-le henduo nian;
 they to society DE whole-effort devotion continue-LE many year
 keshi women dui shehui de *((quan-li) fengxian) hen kuai jiu ting le.
 but we to society DE whole-effort devotion very fast then stop LE
 "Their serious devotion to the society continued for many years; but our
 (devotion) to the society stopped fast."

In brief, even though NP and DP ellipsis seem to be productive in Chinese, there exist many interesting constraints, suggesting that these missing elements do behave differently from their overt counterparts. They are truly empty.

Next, we turn to VP-ellipsis, which is indicative of the need of an additional option to derive ellipsis constructions.

3 VP-ellipsis

Modals/auxiliaries in Chinese allow the VP following them to be missing:

- (47) Ming hui xihuan ni gei ta de liwu. Han ye hui.
 Ming will like you give him DE gift Han also will
 "Ming will like the gift you gave to him; Han also will."

VP-ellipsis constructions in Chinese do not require a linguistic antecedent. The following example in Chinese is quite acceptable in the appropriate context without a linguistic antecedent.

- (48) You are throwing darts with friends and having a good time. Another friend drops by, sees the fun; he/she may say:
 a. wo ye hui.
 I also can
 "I can (throw darts), too."
 b. haoxiang wo renshi de ren dou hui.
 apparently I know DE person all can
 "Apparently, all the people I know can."

The construction allows true sloppy interpretations, showing the expected patterns on mixed readings discussed in Fiengo and May (1994) and G. Li (2002) (also see Hoji 1998 for Japanese).

- (49) Zhangsan hui shuo ta xihuan tade laoshi; Lisi ye hui.
 Zhangsan will say he like his teacher Lisi also will
 a. "Zhangsan₁ will say he₁ likes his₁ teacher; Lisi₂ will say (he₁ likes his₁ teacher)."
 b. "Zhangsan₁ will say he₁ likes his₁ teacher; Lisi₂ will say (he₂ likes his₂ teacher)."
 c. "Zhangsan₁ will say he₁ likes his₁ teacher; Lisi₂ will say (he₂ likes his₁ teacher)." (Mix 1)
 d. *"Zhangsan₁ will say he₁ likes his₁ teacher; Lisi₂ will say (he₁ likes his₂ teacher)." (Mix 2)
- (50) Zhangsan hui shuo tade laoshi xihuan ta; Lisi ye hui.
 Zhangsan will say his teacher like him Lisi also will
 a. "Zhangsan₁ will say his₁ teacher likes him₁; Lisi₂ will say (his₁ teacher likes him₁)."
 b. "Zhangsan₁ will say his₁ teacher likes him₁; Lisi₂ will say (his₂ teacher likes him₂)."
 c. "Zhangsan₁ will say his₁ teacher likes him₁; Lisi₂ will say (his₂ teacher likes him₁)." (Mix 1)
 d. "Zhangsan₁ will say his₁ teacher likes him₁; Lisi₂ will say (his₁ teacher likes him₂)." (Mix 2)

The VP-ellipsis construction allows the inclusion of adjuncts in the interpretation of the missing part, in contrast to the cases of the stranded V construction (V followed by missing objects, see G. Li 2002; Xu 2003; Li 2005; Oku 1998 and others for Japanese).

- (51) wo jian-guo ta sanci le; tamen ye yao/ tamen mei-you.
 I see-ASP him three.times LE they also will/ they not-have
 "I have seen him three times; they also will/have not (seen him three times)."
- (52) ta (zhu) na-dao cai zhu de hen haochi; wo ye hui/ wo mei-you.
 he cook that-CL dish cook DE very delicious I also can/ I not-have
 "He cooked that dish deliciously; I also can/haven't cooked (the dish deliciously)."

In addition to the VP-ellipsis structure licensed by modals or auxiliaries, there is another construction with *shi* "be," which has sometimes been taken as a VP-ellipsis construction as well (see, for instance, Ai 2006; G. Li 2002; Soh 2007; Wei 2009b; Wu 2002; Xu 2003).¹³ We show below that the two constructions are not identical. In the following discussions, we will refer to the VP-ellipsis structure licensed by modals or auxiliaries as the Aux construction, and the ellipsis construction licensed by *shi* as the *shi* construction. We will show that the *shi* construction is much more limited in distribution, as compared to the Aux construction. This restriction is due to the unique properties of *shi*.

Shi generally serves as a focus marker and a copular verb, illustrated by (53a) and (53b) respectively.

- (53) a. Ming shi hen xihuan ni gei ta de liwu.
 Ming be very like you give him DE gift
 "Ming indeed likes the gift you gave to him."
 b. Ming shi xuesheng.
 Ming be student
 "Ming is a student."

The entire part following the *shi* of the sentence can be missing – the *shi* construction:

- (54) Ming hen xihuan ni gei ta de liwu. Han ye shi.
 Ming very like you give him DE gift Han also be
 "Ming likes the gift you gave to him; Han also does."

The *shi* construction allows sloppy and strict interpretations, like the Aux construction. In (54) above, Ming likes the gift given to Ming himself and Han may like the gift for Han himself.

Similarly, the (im)possibilities of mixed readings are like those of the Aux construction.

- (55) John hui shuo ta xihuan tade laoshi, Bill ye shi.
 John will say he like his teacher Bill also be
 a. "John₁ will say he₁ liked his₁ teacher; Bill₂ will also say he₁ liked his₁ teacher."
 b. "John₁ will say he₁ liked his₁ teacher; Bill₂ will also say he₂ liked his₂ teacher."
 c. "John₁ will say he₁ liked his₁ teacher; Bill₂ will also say he₂ liked his₁ teacher." (Mix 1)
 d. *"John₁ will say he₁ liked his₁ teacher; Bill₂ will also say he₁ liked his₂ teacher." (Mix 2)
- (56) John hui shuo tade laoshi xihuan ta, Bill ye shi.
 John will say his teacher like him Bill also be
 a. "John₁ will say his₁ teacher liked him₁; Bill₂ will also say his₁ teacher liked him₁."
 b. "John₁ will say his₁ teacher liked him₁; Bill₂ will also say his₂ teacher liked him₂."
 c. "John₁ will say his₁ teacher liked him₁; Bill₂ will also say his₁ teacher liked him₂." (Mix 1)
 d. "John₁ will say his₁ teacher liked him₁; Bill₂ will also say his₂ teacher liked him₁." (Mix 2)

En

However, the *shi* and Aux constructions differ in several respects. For instance, the *shi* construction, not the Aux construction, requires a linguistic antecedent. The scenario described in (48) does not allow the form of [subject + *ye shi*] “subject + also be.” This property is due to the function of *shi* in the *shi* construction, which is to confirm (or deny) the correctness of the previous statement, much like the short answer *shi(de)* “correct” to a *yes/no* question:

- (57) Q: ta bu yinggai mingtian qu ma? Ans: shi (de).
 he not should tomorrow go Q be DE
 “He should not go tomorrow?” “Correct.”

Answering with *shi* means the proposition underlying the question is correct – it is correct that “he should not go tomorrow” in (57). The negative answer in (58) below means that the proposition underlying the question, “he should not go tomorrow,” is not correct – that “he should not go tomorrow” is not correct.¹⁴

- (58) ta bu yinggai mingtian qu ma? bu shi (ta yinggai mingtian qu).
 he not should tomorrow go Q not be (he should tomorrow go)
 “He should not go tomorrow?” “Not correct (he should go tomorrow).”

In these sentences, *shi* “be” expresses the correctness of the proposition underlying the question.

The *shi* construction further contrasts with the Aux construction in regard to locality conditions. For example, the *shi* construction obeys island conditions, in contrast to the Aux construction:

- (59) a. *yinwei (wo zhidao) ta bu shi, (suoyi) wo yiding dei zhaogu
 because I know he not be therefore I definitely should care
 tamen.
 them
 “*Because (I know) he is not, I will definitely take care of them.”
 b. *wo yiding dei zhaogu tamen, yinwei (wo zhidao) ta bu shi,
 I definitely should care them because I know he not be
 “*I will definitely take care of them, because (I know) he is not.”

cf.

- (60) a. yinwei (wo zhidao) ta bu hui, (suoyi) wo
 because I know he not will therefore I
 yiding dei zhaogu tamen.
 definitely should care them
 “Because (I know) he will not (take care of them), I will definitely take
 care of them.”
 b. wo yiding dei zhaogu tamen, yinwei (wo zhidao)
 I definitely should care them because I know
 ta bu hui.
 he not will
 “I will definitely take care of them, because (I know) he will not (take
 care of them).”

One might suggest that the island constraint be accommodated by *shi* undergoing movement, being a focus marker, just like the impossibility of a focus *shi* within islands illustrated below:

- (61) yinwei ta (*shi) bu neng lai, women hen shiwang.
 because he be not can come we very disappointed
 "We were disappointed because he (*FOCUS) cannot come."

However, the focus movement account does not accommodate all the cases that do not accept the *shi* pattern. For instance, the examples in (62a, b) do not contain islands; yet the *shi* construction is much less acceptable than the Aux construction in (63) or the construction without any embedding (62c):

- (62) a. *Zhangsan xiwang Lisi hui xihuan yinyue; wo ye xiwang Lisi (ye) shi.
 Zhangsan hope Lisi will like music I also hope Lisi also be
 "Zhangsan hopes that Lisi will like music; I also hope Lisi is."
 cf. b. *Zhangsan bu xiwang Lisi xihuan yinyue; wo xiwang Lisi shi.
 Zhangsan not hope Lisi like music I hope Lisi be
 "Zhangsan does not hope that Lisi will like music; I hope that Lisi is."
 cf. c. Lisi hui xihuan yinyue; Wangwu ye shi.
 Lisi will like music Wangwu also be
 "Lisi will like music; so is the case with Wangwu (Wangwu also will like music)."
- (63) a. Zhangsan xiwang Lisi hui xihuan yinyue; wo ye xiwang Lisi hui.
 Zhangsan hope Lisi will like music I also hope Lisi will
 "Zhangsan hopes that Lisi will like music; I also hope Lisi will."
 b. Zhangsan bu xiwang Lisi hui xihuan yinyue; wo xiwang Lisi hui.
 Zhangsan not hope Lisi will like music I hope Lisi will
 "Zhangsan does not hope that Lisi will like music; I hope that Lisi will."

This contrast might be related to the function of the *shi* pattern – to express the (in)correctness of the proposition in the previous utterance (i.e., whether the proposition is true or false). In the case of embedding (62a–b), *shi* is not directly used to confirm the previous utterance and is related to only part of the previous utterance, which might be the cause for the degraded acceptability. However, the exact nature of the constraint needs to be more precisely phrased. We leave this issue to a separate work.

What is clear is that *shi* in the *shi* construction is subcategorized for a category larger than what the Aux in the Aux construction is subcategorized for (cf. Paul 1996, 1999; Huang 1988 for instance). That is, *shi* should be at least higher than an Aux. What is missing may be everything following the subject, including auxiliaries, sentential adverbials, and negation:

En

- (64) tamen dagai bu hui lai. women ye shi.
 they probably not will come we also be
 "They probably will not come. So is the case with us = we probably will not come, either."

The following sentences further demonstrate the fact that *shi* selects a constituent larger than those Aux selects.

- (65) ta bu hui lai, wo ye bu hui.
 he not will come I also not will
 "He will not come; I will not, either."
- (66) ta bu hui lai, wo ye shi.
 he not will come I also be
 "He will not come, so is the case with me as well (=I will not come either)."
- (67) *ta bu hui lai, wo ye bu shi.
 he not will come I also not be
 "He will not come; it is not so with me either (neither will I)."

Note that (65) and (67) contrast in the acceptability of a negation preceding an Aux and the unacceptability of a negation preceding *shi*. *Ye shi* "also be" means the statement in the first clause in these examples also applies to the subject of the second clause. Accordingly, it is not surprising that negation is not possible in (67). In this sentence, the use of *ye* "also" indicates that the statement in the first clause should also hold true with the subject of the second clause. The use of *bu shi* "not be" suggests otherwise: the statement in the first clause is not true with the subject of the second clause. A conflict is created.

Because *shi* "be" expresses the correctness of the proposition underlying the question or the statement in the first clause in (66)–(67), we may claim that *shi* is subcategorized for an IP.¹⁵ Therefore, the empty category associated with *shi* ellipsis is an IP.

In brief, the Aux and *shi* constructions differ in the necessity of a linguistic antecedent. The *shi*, not the Aux construction, needs one. The requirement of a linguistic antecedent in the *shi* construction is related to the fact that *shi* is to confirm or deny the correctness of the proposition expressed by the linguistic antecedent applying to the constituent before *shi* in the anaphoric clause (generally subject or/and topic). The *shi* construction has a larger constituent missing than the Aux construction.

Having identified the missing phrase in the Aux and *shi* construction, we turn to the issue of their syntactic representations. Recall that the missing elements discussed in Section 1 are truly empty in syntax, inaccessible to syntactic processes, and unable to license the merger of related constituents. We noted that sentences like (68a) and (69a) below are not acceptable because the argument appearing in the subject position is not licensed: the object that needs to combine

with the verb to license this additional argument is missing. The same reasoning would force us to acknowledge the existence of the missing object and the missing verb at least at some point in the VP-ellipsis (the Aux and *shi*) structure so that the argument appearing in the subject position can come into existence before VP-ellipsis applies.

- (68) a. Zhangsan si-le yi-tiao yu; Lisi ye si-le *(yi-tiao yu).
 Zhangsan die-LE one-CL fish Lisi also die-LE one-CL fish
 "Zhangsan had a fish died; Lisi also died."
 b. Zhangsan hui si yi-tiao yu;
 Zhangsan will die one-CL fish
 Lisi ye hui (si yi-tiao yu)/ ye shi (hui si yi-tiao yu).
 Lisi also will die one-CL fish/also be will die one-CL fish
 "Zhangsan will have a fish died; Lisi also will/the same will also be true with Lisi."
- (69) a. tamen zuotian lai-le yi-ge keren; women
 They yesterday come-LE one-CL guest; we
 ye lai-le *(yi-ge keren)
 also come-LE one-CL guest
 "They had a guest coming yesterday; we also had (a guest) coming."
 b. tamen mingtian hui lai yi-ge keren; women ye
 they tomorrow will come one-CL guest; we also
 hui (lai yi-ge keren)/ye shi
 will come one-CL guest/also be
 "They will have a guest coming tomorrow; we also will (come a guest)/the same will be true with us."

On the other hand, *wh*-movement of the object from a missing VP is not possible.¹⁶

- (70) tamen hui chi de juzi yiding hen tian;
 they will eat DE orange certainly very sweet
 bu hui *(chi) de juzi yiding bu tian.
 not will eat DE orange certainly not sweet
 "The orange they will eat will certainly be sweet; the orange (they) will not *(eat) certainly will not be sweet."

This suggests that VP-ellipsis in Chinese is a very close counterpart of the British English *do* VP-construction as in Baltin (2012) – the object inside the missing VP can undergo some movement, such as raising to subject, but not other processes such as *wh*-movement. In other words, VP-ellipsis constructions in Chinese can be better accommodated by a deletion-in-syntax approach, as proposed by Baltin.¹⁷

Finally, we discuss the so-called sluicing structure in Chinese.

En

4 Sluicing

This section will show that Chinese sluicing is not true sluicing in the sense of ellipsis, but a pseudo-sluicing construction (Merchant 2001) with a simplex structure, [pro + (copula +) predicate]. Therefore, the debate on which approach can better accommodate sluicing constructions cannot find evidence in the corresponding Chinese structure.

4.1 *Sluicing in Chinese is not true sluicing*

Sluicing typically refers to the pattern illustrated by the English sentences below.

- (71) a. Jack bought *something*, but I don't know what.
 b. John saw Mary *somewhere*; but I don't know where.
 c. Jack left, but I don't know why.

The examples in (71) all have a stranded *wh*-phrase in place of a fully spelled out clausal *wh*-question, which is formed by moving the *wh*-phrase to the left periphery of the clause. Because Chinese does not front its *wh*-phrase to form a *wh*-question, the debate has been on whether a construction corresponding to the sluicing construction in (71) exists in this language.

The properties of the sluicing construction have largely been accommodated by a deletion approach in recent years – all but the *wh*-phrase at the clausal periphery is deleted at PF (the PF deletion approach, represented by Merchant 2001).¹⁸ Extending such an analysis to the Chinese counterpart faces the following challenges. First, it is difficult to give an adequate account for why the copula *shi* is required when the remaining phrase cannot be a predicate. As shown in (72a–d), *shi* is optional in front of all the *wh*-phrases except for the two *wh*-words, *shei* “who” and *shenme* “what.”

- (72) a. Zhangsan kandao mouren, danshi wo bu zhidao
 Zhangsan saw someone but I not know
 *(shi) shei/(shi) shenme-ren.
 be who/be what-person
 “Zhangsan saw somebody, but I don't know who/what person.”
 b. Zhangsan mai-le yixie-dongxi, danshi wo bu zhidao
 Zhangsan buy-LE some-thing but I not know
 *(shi) shenme/(shi) shenme-dongxi.
 be what be what-thing
 “Zhangsan bought something, but I don't know what/what thing.”
 c. Zhangsan (zai mouge-difang/mouge-shijian) chu shi le,
 Zhangsan at some-place some-time have accident LE
 danshi wo bu zhidao (shi) zai-nali/(shi) shenmeshihou.
 but I not know be at-where be when
 “Zhangsan had an accident (at certain place/in certain time), but I don't know where/when.”

- d. Zhangsan (*jiyu mou-ge liyou*) *jueding yao xiuxue*,
 Zhangsan base.on certain-CL reason decide want leave.school
danshi wo bu zhidao (shi) weishenme.
 but I not know be why
 "Zhangsan decided to leave school (for certain reason), but I don't know why."

Under a PF-deletion analysis,¹⁹ movement must have taken place so that the remnant can be at the peripheral position of a clause. According to Wang (2002) and Wang and Wu (2006), the movement is a focus movement: the remnant phrase is a focused element raised to the left-periphery. Then, IP-deletion applies to derive sluicing constructions:

- (73) a. *ta zai mou-ge difang kandao ni, dan wo bu zhidao*
 he at some-CL place saw you but I not know
(shi) (zai) shenme-difang. {ta kandao ni}.
 be at what-place he saw you
 "He saw you at some place; but I don't know at what place."
 b. *Zhangsan jueding yao xiuxue, danshi wo bu zhidao*
 Zhangsan decide want leave.school but I not know
(shi) weishenme [Zhangsan jueding yao xiuxue].
 be why Zhangsan decide want leave.school
 "Zhangsan decided to leave school, but I don't know why Zhangsan decided to leave school."

However, such a focus movement approach cannot accommodate all types of *wh*-remnants. For instance, some phrases that are not quite acceptable when fronted unexpectedly can appear as the "remnant of sluicing," such as some *wh*-elements like *xingqi-ji* "which day of the week" (74a), or quantity expressions such as *duoshao-qian* "how much" (74b).

- (74) a. **Biye luxing kuai dao le, danshi wo bu zhidao*
 graduation trip soon reach LE but I not know
(shi) xingqi-ji [biye luxing kuai dao le].
 be weekday-which graduation trip soon reach LE
 "The graduation trip is almost around the corner, but I don't know which day of the week."
 b. **Cai yue lai yue gui le, danshi wo bu qingchu*
 vegetable more come more expensive LE but I not clear
(shi) duoshao-qian [cai yue lai yue gui le].
 be how.much-money vegetable more come more expensive LE
 "Vegetables are getting more expensive, but I am not clear by how much vegetables are getting more expensive."

En

Another difficulty is that the “remnant” *wh*-phrase sometimes is a sequence of words that is not a constituent and could not have undergone any movement. Under a deletion approach, the remnant *bei nayige ren* “by which one” in (75) should have been fronted as a constituent. However, the preposing analysis conflicts with the structure of passives noted in Huang (1999) and Huang *et al.* (2009): *bei* takes a sentential complement and forms a constituent with the entire constituent following it, not just the nominal phrase.

- (75) Ta [bei [mouge ren sha le]], danshi wo bu zhidao
 he Pass some person kill LE but I not know
 (shi) bei nayige ren.
 be Pass which one
 “(Lit.) He was killed by someone, but I don’t know by which one.”

A further issue involves the constraint “MaxElide.” To explain the degradation of (76a), which contains a *wh*-trace within the elided IP, Merchant (2008) formulates a constraint, called the MaxElide – when ellipsis targets an XP containing an A’-trace, XP must not be properly contained in any YP that is a possible target for deletion.

- (76) a. ??Ben knows who she invited, but Charlie doesn’t know who ~~she~~
~~invited *t*~~.
 b. Ben knows who she invited, but Charlie doesn’t know who she invited *t*.

In (76a), the embedded IP of the second conjunct is [*she invited t*], which contains a *wh*-trace and is also properly contained in the matrix VP [*know who she invited t*], a possible target for deletion as in (76b). Accordingly, MaxElide disallows the IP deletion in (76a). Along this line, if Chinese sluicing is derived by IP-deletion after overt *wh*-movement, just like English sluicing, (77a) should sound cumbersome like its English counterpart, because the IP [*ta yao-le t*] in (77a), which contains a *wh*-trace, is properly contained in the possible target for deletion, [*shei [ta yao-le t]*] in (77b). However, (77a) is quite acceptable, just like (77b).

- (77) a. Zhangsan zhidao shei ta yao-le, Lisi ye zhidao shi shei [~~ta yao-le *t*~~]
 Zhangsan know who he invite-LE Lisi also know be who he invite-LE
 “Zhangsan knows who he invited, and Lisi also knows who.”
 b. Zhangsan zhidao shei ta yao-le, Lisi ye zhidao [(~~shi~~)shei [~~ta yao-le *t*~~]]
 Zhangsan know who he invite-LE Lisi also know be who he invite-LE
 “Zhangsan knows who he invited, and Lisi does, too.”

An apparent argument for a PF deletion approach to Chinese sluicing comes from the construction involving *zenmeyang* “how.” Wang and Wu (2006) suggest that the unacceptability of sluicing with a “how” remnant is a natural consequence

of a focus movement analysis under a PF-deletion approach. *Zenmeyang* “how” generally cannot undergo focus preposing, illustrated by the contrast between (78a) and (78b). The unacceptability of “how” as the remnant in Mandarin sluicing (79) and (80) has been claimed to reflect the structure and derivation of a sluiced clause: it should have the same full-fledged structure and the same restrictions as a regular clause like (78).

- (78) a. Laowu zenmeyang xiuru Lisi?
 Laowu how insult Lisi
 “How did Laowu insult Lisi?”
 b. *zenmeyang_i, Laowu *t_i* xiuru Lisi?
 how Laowu insult Lisi
- (79) a. *Zhangsan hui qu meiguo, dan wo bu zhidao (shi) zenmeyang.
 Zhangsan will go America, but I not know be how
 “Zhangsan will go to America, but I don’t know how come/how.”
 b. *Zhangsan kao-wan shi le, dan wo bu zhidao (shi) zenmeyang.
 Zhangsan take-finish exam LE but I not know be how
 “Zhangsan has finished the exam, but I don’t know how.”
- (80) *Laowu xiuru Lisi, keshi wo bu zhidao (shi) zenmeyang;
 Laowu insult Lisi but I not know be how
 [Laowu *t_i* xiuru Lisi]
 Laowu insult Lisi
 “(Lit.) Laowu insulted Lisi, but I don’t know how.”

However, the challenge to such a line of reasoning is that expressions of *zenmeyang* expressing cause, manner, or result can never occur by themselves. They always require the co-occurrence of the predicate they modify, as illustrated below.²⁰

- (81) a. Zhangsan mei you lai, wo bu zhidao (shi) zenme *(*mei you*). (Cause)
 Zhangsan not have come I not know be how not have
 “Zhangsan hasn’t come, and I don’t know why.”
 b. Laowu xiuru Lisi, keshi wo bu zhidao (shi) zenmeyang
 Laowu insult Lisi but I not know be how
 *(*xiuru*). (Manner)
 insult
 “(lit.) Laowu insulted Lisi, but I don’t know how.”
 c. Zhangsan kao-wan shi le, dan wo bu zhidao (shi) *(*kao-de*)
 Zhangsan take-finish exam LE but I not know be take- DE
 zenmeyang. (Result)
 how
 “Zhangsan finished the exam, but I don’t know the result.”

The requirement of a co-occurring modified phrase is not unique to the “how” expressions. The degree expression *duo(me)* “how” has the same property:

En

- (82) Ta hen jiaobao, dan wo bu zhidao (shi) duo(me) *(jiaobao).
 he very proud but I not know be how proud
 “He is very proud, but I don’t know how proud/to what extent.”

The facts discussed so far demonstrate the challenges in extending a PF deletion analysis of the English sluicing construction to the Chinese counterpart. The difficulties include those regarding the non-parallelism in *wh*-remnants, non-constituent *wh*-movement, and the behavior of *zenme(yang)* “how” and *duo(me)* “how” (and the irrelevance of MaxElide, if it is taken as a property of PF deletion structures). The next section will show that the so-called sluicing in Chinese behaves more like “pseudo-sluicing” than sluicing in English, as argued in Wei 2004, 2009a (also see Adams and Tomioka 2012).

4.2 Pseudo-sluicing

The so-called sluicing in Chinese should be analyzed as a clause containing a predicate and a null subject. When the *wh*-remnant itself is a predicate, the copula *shi* can optionally appear as in (83a); when the remnant is not a predicate, the copula *shi* is required as in (83b).

- (83) a. ta kandao yi-ge ren, dan wo bu zhidao (shi) shenme-ren.
 he saw one-CL person but I not know be what-person
 “He saw a person; but I don’t know who.”
 b. ta kandao yi-ge ren, dan wo bu zhidao *(shi) shei.
 he saw one-CL person but I not know be who
 “He saw a person; but I don’t know who.”

Wei (2004, 2011) notes that *shei* “who” and *shenme* “what” cannot function as predicates. The other *wh*-elements can all be predicates and occur without the copula *shi*.²¹ The requirement on the occurrence of *shi* in the relevant patterns is determined by the predicate status of the *wh*-phrase.

Because the so-called “remnant *wh*-phrase in Chinese sluicing” must be a predicate itself, or requires *shi* to make a predicate predicated of an empty subject, “sluicing” in Chinese is a misnomer in the sense that it is not identical to the better-understood sluicing in English. A more appropriate label should be “pseudo-sluicing” of the form [Subject (+ *shi*) + *wh*]. The pseudo-sluicing analysis can be further supported by comparison with the English pseudo-sluicing construction.

Merchant (2001: 120–27) presented several differences that separate sluicing from pseudo-sluicing, which has the form [[subject *it*] [predicate *be* + *wh*]] in English. First, sluicing can have adjunct and argument *wh*-remnants when their correlates are implicit, whereas pseudo-sluicing cannot as in (84) below.

- (84) a. They served the guests, but I don’t know what (*it was). (Argument *wh*-remnant)

- b. He fixed the car, but I don't know how/why/when (*it was). (Adjunct *wh*-remnants)

Without an explicit correlate, Chinese “sluicing” or pseudo-slauicing also prohibits an argument *wh*-remnant as in (85a), just like English pseudo-slauicing (84a). However, Chinese pseudo-slauicing differs from English pseudo-slauicing in the possibility of an adjunct *wh*-remnant as in (85b).

- (85) a. *Zhangsan zhengzai chi, dan wo bu zhidao shi shenme.
 Zhangsan PROG eat but I not know be what
 “Zhangsan is eating, but I don't know what.”
 b. Zhangsan chi-de hen kuai, wo bu zhidao (shi) weishenme.
 Zhangsan eat-DE very fast, I not know be why
 “Zhangsan ate very fast. I don't know why.”

The unacceptability of (85a) is expected under a pseudo-slauicing analysis. The acceptability of (85b) does not necessarily mean that we should return to analyzing the relevant pattern in Chinese as slauicing. Otherwise, the requirement of a predicate in the “sluice clause” would be a mystery. We argue in a separate work that the contrast between (85a) and (85b) is due to the presence or absence of an appropriate antecedent to identify the empty subject. Lack of space prevents us from elaborating on the relevant paradigms to illustrate the identification of the null subject. Suffice it to say that in (85a), there is no object in the first clause to be co-indexed with the null subject in the second clause (cf. the discussion of TEC in Section 2). In (85b), the null subject is identified by the first clause as a whole. That is, the first clause is the antecedent for the null subject.

Another difference between slauicing and pseudo-slauicing observed by Merchant concerns attribute *wh*-remnants. Pseudo-slauicing allows an attributive *wh*-remnant with a covert correlate as in (86), but not slauicing. As expected, Chinese pseudo-slauicing parallels English pseudo-slauicing, illustrated by (87).

- (86) She bought a car, but I don't know how big *(it is).
 (87) Zhangsan mai-le yi-liang che, dan wo bu zhidao (shi) duo-da.
 Zhangsan buy-LE one-CL car but I not know be how-big
 “(lit.) Zhangsan bought a car, but I don't know how big.”

Furthermore, slauicing does not allow an aggressively non-D-linked *wh*-phrase *the hell* (Pesetsky 1987) due to the failure of the *wh*-word to receive emphasis,²² but pseudo-slauicing does as in (88). In Chinese, the counterpart with *daodi* is grammatical as in (89).

- (88) Someone dented my car last night—
 a. I wish I knew who (*the hell)!
 b. I wish I knew who the hell it was!

- (89) Zhangsan *kajian* *mouren*, *dan* *wo* *bu* *zhidao* *daodi* *shi* *shei*.
 Zhangsan see someone but I not know the.hell be who
 “Zhangsan saw someone, but I don’t know who the hell it was.”

In brief, the apparent *wh*-remnant is not the result of IP-deletion leaving behind a *wh*-phrase at the clausal left-periphery sluicing in English. Rather, the *wh*-remnant itself is a predicate or requires the copular verb *shi* to make a predicate predicated of a null subject. The structure corresponds to pseudo-sluicing in English. No deletion has taken place.

One potential challenge facing the pseudo-sluicing analysis is the possibility of sloppy readings, as noted by Wei (2004, 2009a) and Adams and Tomioka (2012). The subject in the sluice is a pronoun and the availability of a sloppy reading in such a construction is not expected. Replacing the empty subject *pro* with an overt demonstrative *na* “that” clearly disallows sloppy readings. Nonetheless, the challenge is not a real problem, as shown by Wei (2011) and Adams and Tomioka (2012). Wei (2011) derives sloppy readings in the contexts of both adjunct and argument *wh*-remnants by analyzing the empty subject as an E-type *pro*, a definite description in the sense of Evans (1980). For instance, the *pro* in (90a) below is a definite expression meaning [the one [who is criticizing *x*]], and in (90b), [the reason [why *x* is scolded]]. The index of the variable *x* is left unspecified and ready to be co-indexed with either the matrix subject of the first conjunct (strict identity) or the matrix subject of the second conjunct (sloppy identity). Adams and Tomioka (2012) observe that sloppy readings are easier to yield with adjunct *wh*-remnants via sentential (event/propositional) anaphora than with argument *wh*-remnants by individual-denoting anaphora. Both Wei (2011) and Adams and Tomioka (2012) concur that when the overt demonstrative *na* “that” serves as overt subject, only strict readings are available due to its strong reference to the antecedent. That is, a *pro* can be an E-type pronoun, but not the demonstrative *na* “that.”

- (90) a. Zhangsan_i *zhidao* [*shei* *zai* *piping* *ta_i*], *dan* *Lisi_j* *bu*
 Zhangsan know who PROG criticize him but Lisi not
zhidao [*pro*^{E-type} *shi* *shei*].
 know be who
 “Zhangsan_i knows who is criticizing him_i, but Lisi_j doesn’t know who the one that is criticizing him_{i/j} is.” (strict/sloppy identity)
- b. [Zhangsan_i *bu* *zhidao* [*ta_i* *weishenme* *bei* *ma*]], *dan* *Lisi_j*
 Zhangsan not know he why PASS scold but Lisi
zhidao [*pro*^{E-type} (*shi*) *weishenme*].
 know shi why
 “(lit.) Zhangsan_i doesn’t know why he_i was scolded, but Lisi_j knows why the event that he_{i/j} was scolded occurred.” (strict/sloppy identity)

5 Conclusion

This chapter discusses the major “ellipsis” constructions in Chinese – argument DP ellipsis, NP ellipsis, VP ellipsis (the Aux construction and the *shi* construction (IP ellipsis)), and so-called sluicing. The apparent sluicing construction should be

more appropriately labeled as pseudo-sluicing. We have shown that these ellipsis constructions do not represent a coherent class of constructions in the sense that they can all be captured by one single analysis, be it PF deletion or deletion in syntax or interpretive approach (LF copying). The null arguments in the so-called argument ellipsis constructions are truly empty elements that do not participate in syntactic processes and do not license merger of other elements that need to access the contents of such null arguments. On the other hand, VP-ellipsis seems to require the presence of elements in the elided phrase accessible to some syntactic processes but not others, which would be better accommodated by a deletion-in-syntax approach incorporating the notion of phase as in Baltin (2012). Finally, pseudo-sluicing does not bear on the issue of deletion approaches because the entire structure is base-generated.

The question arises as to why both a TEC and a deletion-in-syntax approach are needed. As a speculation, we might explore the nature of different projections. If ellipsis is licensed by a functional category and a functional category is an extended projection of a lexical category (see the many works on extended projections by Jane Grimshaw, 1991, 2000), the presence of a licensing functional category would entail the presence of the lexical category. Therefore, the lexical category must be projected in syntax. In contrast, missing arguments are not licensed by functional categories, as they are licensed by verbs thematically, and are not forced to be present syntactically.

Nonetheless, this is a very tentative speculation. An immediate challenge is NP ellipsis because it is licensed by the modification marker *de*, which should probably be analyzed as a functional category. Moreover, not all functional categories license deletion or base-generated empty categories. Is there a non ad hoc way to describe the type(s) of heads that can license empty elements? Answers to these issues will help us better tackle the challenges made explicit in this chapter: there need to be different ways generating the so-called ellipsis structures. How many different ways are there to derive ellipsis structures? What are the fundamental motivations for choosing one derivation over another?

NOTES

- 1 The terms “ellipsis” and “deletion” are not used in any technical sense. They simply mean some elements are not visible or audible but are interpreted (have meanings). There are other types of ellipsis constructions, such as stripping, fragments, gapping, and so on. Because of the limited space, we will focus on the major types of ellipsis mentioned in the text.
- 2 For instance, to compare a deletion-in-syntax approach as proposed by Baltin (2012), and the PF deletion analysis incorporating the notion of phase-by-phase spellout as in Aelbrecht (2009), would require the comparison of the assumptions on where and how the scope of quantificational expressions is determined, what counts as phases, what adjunction structures are possible, and so on.
- 3 Kim (1999) argues against VP-ellipsis for the stranded V construction based on the pattern in Korean and Japanese involving part-whole objects and other constructions. Generally, the same arguments apply in Chinese straightforwardly.

En

- 4 See Li (to appear) for the comparison of these similar but not identical approaches – late insertion, LF copying approach to argument ellipsis structures.
- 5 These examples use more complex patterns involving islands so that the option of variables can be ruled out, because the involved nominals are definite and could be topics in non-island contexts. Variables may allow sloppy interpretations in subject positions, such as in the following context:

- (i) meigeren dou shuo zijide erzi zui hao;
 everyone all say self's son most good
 Zhangsan shuo zijide erzi hui nianshu;
 Zhangsan say self's son can study
 Lisi shuo (zijide erzi) hui zhuan qian.
 Lisi say self's son can earn money

“Everyone said that self’s son was the best; Zhangsan said that self’s son was good at studying; Lisi said that (self’s son) was good at making money.”

If an overt pronoun is used in place of the empty subject or object, sloppy readings would not be possible.

- 6 However, it may contain categorial features. Also note that there have been continuing attempts within the Minimalist Program on eliminating the need to specify features such as pronominal, anaphoric, offering substantially different alternatives to Binding in the tradition of Government and Binding (for instance: Heinat 2008; Kayne 2002; Safir 2008; Hicks 2009; Reuland 2011; Rooryck and Wyngaerd 2011; also see earlier works as in Hornstein 2000). In regard to PRO, it has to be either anaphoric or pronominal but not both at the same time. The operation Move is generally used to derive the relevant locality conditions. However, there have also been many works that argue for the need to recognize the existence of a distinct PRO (see a recent example, Ndayiragije 2012).
- 7 See Zhang (1998), Xu (1999), Guo (2004), Lu (2002), and Huang (2007), among others, for the evidence showing that the postverbal constituents in these instances are indeed two separate complements. Guo (2004) emphasizes the aspect of syntactic dynamism in these cases: grammar allowing properties not specified in lexical items. Also see Zhan (1999).
- 8 The pattern can be labeled as the “malefactive” construction, very much like the applicative construction with a benefactive requiring the direct object to be present (cf. Pytkkanen 2008).
- 9 It is not easy to define what “highly transitive” is. Teng (1972) takes the *ba*-construction as a high transitivity construction. However, the *ba*-construction is not always possible. Lu (2002) notes that such a pattern allows verbs like *faxian* “discover” as in “I discovered the Wang family three secret rooms,” which does not have a *ba* counterpart.

Also note that the type of double object verbs discussed here is only a proper set of the so-called *qiang* “rob,” *tou* “steal” double-object verbs, to be distinguished from the *give* type of double-object verbs (see the previous note and Huang 2007 and the references cited there for the structures for the two different types of double-object structures). Lu (2002), following Zhu (1982), notes that the type of direct object construction in question generally requires the second object to be a quantity expression (number+classifier+N). This contrasts with *qiang* “rob” or *tou* “steal,” which allows bare nominals as their objects.

- (i) Zhangsan qiang/tou-le Lisi xianglian.
 Zhangsan rob/steal-LE Lisi necklace
 “Zhangsan robbed Lisi of (his) necklace/stole (Lisi’s) necklace from him.”

- (ii) *Zhangsan faxian-le Lisi mishi.
Zhangsan discover-LE Lisi secret.room

They also differ in the possibility of the direct object missing:

- (iii) Zhangsan qiang/tou-le Lisi yi-tiao xianglian; wo ye qiang/tou-le Lisi
Zhangsan rob/steal-LE Lisi one-CL necklace; I also rob/steal-LE Lisi
“Zhangsan robbed Lisi of (his) necklace/stole (Lisi’s) necklace from him; I also
robbed/stole Lisi.”
- (iv) Zhangsan chi-le Lisi yi-dun fan; *wo ye chi-le Lisi.
Zhangsan eat-LE Lisi one-CL rice I also eat-LE Lisi

This suggests that verbs like *qiang* “rob” and *tou* “steal” can be lexically specified as double object verbs, and verbs like *chi* “eat” acquire their “outer object” only in the specific context syntactically.

- 10 This distinction suggests that thematic contributions by lexical items should be recognized, unless the two patterns with the same experiencer-theme arguments have different event structures. In an approach that takes event or aspectual structures as basic, and lexical items are simply roots, not having subcategorization properties, lexical information is irrelevant in syntax. (See Huang 1997; Lin 2001; Borer 2005a,b; Ramchand 2008, among many others. Also see the decomposition and hierarchical structures of lexical items in Hale and Keyser 1993.) The fact that lexical information affects deletion possibilities, noted in this work, indicates that the relevant lexical information should be at work in grammar. The constraint cannot be a matter of pragmatics or world knowledge.
- 11 See Postal (1969) for the similarity between pronouns and articles.
- 12 This is just like the fact that the relative operators vary with the head in English relative constructions: *the person_i who_i*, *the place_i where_i*. The agreement in features must take place in the process of tree building (merger) to ensure the proper morphological form. In other words, even though null relative operators do not have an overt form, they behave like their overt counterparts in requiring licensing before the materials from the antecedent can be recovered at LF.
- 13 Ai treats *shi* as involving deep anaphora. G. Li and Xu take *ye-shi* “also-be” and *ye-Aux* to be similar to English VP-ellipsis. Soh and others mentioned in the text have proposed different positions and functions for *shi*.
- 14 This can be more clearly demonstrated by the contrast in answers to *yes/no* questions between English and Chinese in (i–ii). The choice of *yes/no* depends on the real-world facts in English and, in Chinese, the proposition underlying the preceding interrogative.
- (i) a. Didn’t he come?
b. No, he didn’t come. Yes, he did.
- (ii) a. ta mei lai ma?
he not come Q
“Didn’t he come?”
b. shi de, ta mei lai.
be DE he not come
“Yes, he didn’t come.”
bu shi, ta lai-le.
not be he come-LE
“No, he came.”

- 15 It is possible, that instead of IP, the null element is some projection in a split IP structure.
- 16 Not all the tests used in Baltin (2012) are applicable to the VP-ellipsis construction in Chinese. For instance, a passive in Chinese is only distinguished from an active by the expression *bei*, immediately followed either by the logical subject or by the verb phrase. When *bei* appears, a V must also occur, making VP-ellipsis impossible independently.
- 17 However, a challenge remains: the *shi* construction requires a linguistic antecedent, but not the Aux construction. If both the Aux and *shi* construction have full syntactic representations, it is not clear how the distinction in the requirement of a linguistic antecedent can be captured. We leave the issue to further studies.
- 18 Due to lack of space, we do not discuss how the deletion-in-syntax approach by Baltin (2012) works in this case, as it is not significantly distinct from the PF deletion approach in this respect.
- 19 To explain the distribution of *shi* “be,” some PF-deletion analysis such as Wang (2002) allows *shi* to be optionally inserted. However, this optional insertion cannot account for why *shi* is obligatory with *shei* “who” and *shenme* “what” and optional with the others.
- 20 This is like the fact that a PP modifying a VP cannot occur without the modified VP in Chinese (e.g., Li 1990):
 - (i) cong NY *(lai) de ren
from NY come DE person
“person *(that came) from NY”
- 21 Adams (2003) and Wei (2004, 2011, 2012) have independently proposed a similar analysis, according to which a Chinese sluice clause is composed of three essential elements: *pro*, copula, and *wh*-remnant. The main difference between the two analyses lies in the generation of *shi*. Wei (2004) approaches the distribution of *shi* and the interpretation of subject *pro* in sluicing from the perspective of predication. In contrast, Adams (2003) states that the presence of *shi* preceding the *wh*-remnant, *shei* “who” or *shenme* “what,” is to “disambiguate” the indefinite reading of these two *wh*-words. For the *wh*-remnants other than these two *wh*-words, no indefinite reading needs to be disambiguated. The optionality of *shi* is claimed to be captured indirectly. Later, Adams and Tomioka (2012) concur with Wei’s (2004, 2011) predication analysis on the distribution of the copula *shi*.
- 22 Merchant (2001: 122) ascribes the unacceptability to the fact that English tends to emphasize the phrase *who the hell* as in (i).
 - (i) Who the HELL do you think you are?!?

REFERENCES

- | | |
|--|---|
| <p>Adams, P. W. 2003. The structure of sluicing in Mandarin Chinese. <i>Proceedings of Pennsylvania Linguistics Colloquium</i> 27: 1–16.</p> <p>Adams, P. W. and Satoshi T. 2012. Sluicing in Mandarin Chinese: An instance of</p> | <p>pseudo-sluicing. In: <i>Sluicing: Cross-Linguistic Perspectives</i>, J. Merchant and A. Simpson (eds.), 219–247. New York: Oxford University Press.</p> <p>Aelbrecht, L. 2009. You have the right to remain silent: The syntactic licensing of</p> |
|--|---|

- ellipsis. Ph.D. Dissertation. Catholic University of Brussels.
- Ai, R. 2006. Elliptical predicate constructions in Mandarin. Ph.D. Dissertation. Harvard University.
- Aoun, J. and Li, Y. H. A. 1989. Scope and constituency. *Linguistic Inquiry* 20: 141–172.
- Aoun, J. and Li, Y. H. A. 1993. *Syntax of Scope*. Cambridge, MA: MIT Press.
- Aoun, J. and Li, Y. H. A. 2003. *Essays on the Representational and Derivational Nature of Grammar: The Diversity of wh-Constructions*. Cambridge, MA: MIT Press.
- Aoun, J. and Li, Y. H. A. 2008. Ellipsis and missing objects. In: *Foundational Issues in Linguistic Theory: Essays in Honor of Jean-Roger Vergnaud*, R. Freidin, C. P. Otero, and M. L. Zubizarreta, (eds.), 251–274. Cambridge, MA: MIT Press.
- Baltin, M. 2012. Deletion versus pro-forms: an overly simple dichotomy? *Natural Language and Linguist Theory* 30: 381–423.
- Barss, A. and Lasnik, H. 1986. A note on anaphora and double objects. *Linguistic Inquiry* 17: 347–354.
- Borer, H. 2005a. In *Name Only. Structuring Sense Volume I*. Oxford: Oxford University Press.
- Borer, H. 2005b. *The Normal Course of Events. Structuring Sense, Volume II*. Oxford: Oxford University Press.
- Chao, Y.-R. 1968. *A Grammar of Spoken Chinese*. Berkeley and Los Angeles: University of California Press.
- Cheng, L. L.-S. and Huang, C.-T. J. 1994. On the Argument Structure of Resultative Compounds. In: *Honor of William Wang: Interdisciplinary Studies on Language and Language Change*, M. Chen and O. Tzeng (eds.), 187–221. Taipei: Pyramid Press.
- Chomsky, N. 1981. *Lectures on Government and Binding*. Dordrecht: Foris.
- Chomsky, N. 1986. *Knowledge of Language: Its Nature, Origin and Use*. New York: Praeger.
- Chomsky, N. 1995. *The Minimalist Program*. Cambridge, MA: MIT Press.
- van Craenenbroeck, J. 2009. *The Syntax of Ellipsis: Evidence from Dutch Dialects*. Oxford University Press.
- Evans, G. 1980. Pronouns. *Linguistic Inquiry* 11: 337–362.
- Everaert, M. and van Riemsdijk, H. (eds.). 2005. *The Blackwell Companion to Syntax*. Oxford: Blackwell.
- Fiengo, R. and May, R. 1994. *Indices and Identity*. Cambridge, MA: MIT Press.
- Goldberg, L. 2005. Verb-stranding VP ellipsis: A cross-linguistic Study. Ph.D. Dissertation. McGill University.
- Grimshaw, J. 1991. Extended Projection. Unpublished manuscript. Brandeis University.
- Grimshaw, J. 2000. Locality and extended projection. In: *Lexical Specification and Insertion*, P. Coopmans, M. Everaert, and J. Grimshaw, (eds.). Amsterdam: John Benjamins.
- Guo, R. [郭锐] 2000. “De”zide zuoyong [The function of the particle de in Mandarin Chinese]. *Mianlin xinshiji tiaozhan de xiandai hanyu yufa yanju* [In: New challenges on modern linguistic researches in the new century], Lu Jianming, (ed.). Jinan: Shandong Jiaoyu Chubanshe.
- Guo, R. [郭锐] 2004. Yufa de dongtaixing he dongtai yufaguan. [Dynamic grammar]. *Ershiyi shiji de zhongguo yuyanxue* [In: Chinese Linguistics in 21st Century], Vol. I. Beijing: Shangwu Yinshu Guan.
- Hale, K. and Keyser, S. J. 1993. On argument structure and the lexical expression of syntactic relations. In: *The View from Building 20: Essays in Linguistics in Honor of Sylvain Bromberger*, K. Hale and S. J. Keyser (eds.), 51–109. Cambridge, MA: MIT Press.
- Heinat, F. 2008. *Probes, Pronouns and Binding in the Minimalist Program*. Saarbrücken: VDM Verlag.
- Hicks, G. 2009. *The Derivation of Anaphoric Relations*. John Benjamins, Amsterdam.

- Hoji, H. 1998. Null object and sloppy identity in Japanese. *Linguistic Inquiry* 29: 127–152.
- Hornstein, N. 2000. *Move! A Minimalist Theory of Construal*. Malden, MA, and Oxford: Blackwell.
- Huang, C.-T. J. 1982. Logical relations in Chinese and the theory of grammar. Ph.D. Dissertation. MIT, Cambridge, MA.
- Huang, C.-T. J. 1984. On the distribution and reference of empty pronoun. *Linguistic Inquiry* 15: 531–574.
- Huang, C.-T. J. 1988. Shuo “shi” he “you” [On “be” and “have” in Chinese]. *The Bulletin of the Institute of History and Philology, Academia Sinica* 59(1): 43–64.
- Huang, C.-T. J. 1991. Remarks on the status of the null object. In: *Principles and Parameters in Comparative Grammar*, R. Freidin (ed.), 56–76. Cambridge, MA: MIT Press.
- Huang, C.-T. J. 1997. On lexical structure and syntactic projection, *Chinese Languages and Linguistics* 3: 45–89.
- Huang, C.-T. J. 1999. Chinese passives in comparative perspective. *The Tsing Hua Journal of Chinese Studies* 29(4): 423–509.
- Huang, C.-T. J. 2007. “Hanyu dongci de tiyuan jiegou yu qi jufa biao xian” [The thematic structures of verbs in Chinese and their syntactic projection]. *Linguistic Sciences* 6(4): 3–21.
- Huang, C.-T. J., Li, Y.-H. A., and Li, Y. 2009. *The Syntax of Chinese*. Cambridge: Cambridge University Press.
- Johnson, K. (ed). 2008. *Topics in Ellipsis*. Cambridge: Cambridge University Press.
- Kayne, R. S. 2002. Overt vs. covert movements. *Syntax* 1:128–191.
- Kim, S. 1999. Sloppy/Strict identity, empty objects, and NP ellipsis. *Journal of East Asian Linguistics* 8: 255–284.
- Larson, R. K. 1988. On the double object construction. *Linguistic Inquiry* 19: 335–391.
- Li, C. N. and Thompson, S. A. 1981. *Mandarin Chinese: A Functional Reference Grammar*. Berkeley and Los Angeles: University of California Press.
- Li, H.-Ju. G. 2002. Ellipsis constructions in Chinese. Ph.D. Dissertation. University of Southern California, Los Angeles.
- Li, Y.-H. A. 1990. *Order and Constituency in Mandarin Chinese*. Dordrecht: Kluwer.
- Li, Y.-H. A. 2005. VP-ellipsis and null objects. *Linguistic Sciences* 15: 3–19.
- Li, Y.-H. A. 2007. Beyond empty categories. *Bulletin of the Chinese Linguistic Society of Japan* 254: 74–106.
- Li, Y.-H. A. To appear. Born empty. Manuscript. University of Southern California. *Lingua* (submitted).
- Li, Y.-H. A. and Wei, T. In preparation. Missing object in Chinese sluicing. Ms.
- Lin, T.-H. 2001. Light verb syntax and the theory of phrase structure. Doctoral Dissertation. University of California, Irvine.
- Lu, J. [陆俭明] 2002. Zaitan “chile ta sange pingguo” yilei jiegou de xingzhi [Reconsideration on the syntactic properties of “eat him three apples”]. *Zhongguo Yuwen* 89: 317–325.
- Lu, S. [吕叔湘] 1987 shuo “sheng” he “bai” [On “win” and “lose”]. *Zhongguo Yuwen* 1: 1–5.
- Merchant, J. 2001. *The Syntax of Silence*. Oxford: Oxford University Press.
- Merchant, J. 2005. Fragments and ellipsis. *Linguistics and Philosophy* 27: 661–738.
- Merchant, J. 2008. Variable island repair under ellipsis. In: *Topics in Ellipsis*, K. Johnson, (ed.), 154–182. Cambridge: Cambridge University Press.
- Miyagawa, S. 2010. *Why Agree? Why Move? Unifying Agreement-Based and Discourse-Configurational Languages*. Cambridge, MA: MIT Press.
- Ndayiragije, J. 2012. On raising out of control. *Linguistic Inquiry* 43: 275–299.
- Oku, S. 1998. A theory of selection and reconstruction in the minimalist perspective. Ph.D. Dissertation. University of Connecticut, Storrs, Connecticut.

- Otani, K. and Whitman, J. 1991. V-raising and VP-ellipsis, *Linguistic Inquiry* 22(2): 345–358.
- Panagiotidis, P. 2003. Empty nouns. *Natural Language & Linguistic Theory* 21(2) 381–432.
- Paul, W. 1996. Verb gapping and VP ellipsis in Chinese. *Pan-Asiatic Linguistics. Proceedings of the Fourth International Symposium on Language and Linguistics* Vol. 2, 569–578. Bangkok: Mahidol University at Salaya.
- Paul, W. 1999. Verb gapping in Chinese: A case of verb raising. *Lingua* 107: 207–226.
- Pesetsky, D. 1987. *Wh-in-situ: movement and unselective binding*. In: *The Representation of (In)definiteness*, E. Reuland and A. ter Meulen, (eds.), 98–129. Cambridge, MA: MIT Press.
- Postal, P. 1969. On the so-called pronouns in English. In: *Modern Studies in English*, D. Reibel and S. Schane, (eds.), Englewood Cliffs: Prentice-Hall, 201–223.
- Pylkkanen, L. 2008. *Introducing Arguments*. Cambridge, MA: MIT Press.
- Ramchand, G. 2008. *Verb Meaning and the Lexicon*. Cambridge: Cambridge University Press.
- Reuland, E. 2011. *Anaphora and Language Design*. Cambridge, MA: MIT Press.
- Rooryck, J. and van den Wyngaerd, G. 2011. *Dissolving Binding Theory*. Oxford: Oxford University Press.
- Safir, K. J. 2008. Coconstrual and narrow syntax. *Syntax* 11: 330–355.
- Saito, M. 2004. Ellipsis and pronominal reference in Japanese clefts. *Studies in Modern Grammar* 36: 1–44.
- Saito, M. 2007. Notes on East Asian argument ellipsis. *Language Research* 43: 203–227.
- Şener, S. and Takahashi, D. 2010. Ellipsis of arguments in Japanese and Turkish. *Nanzan Linguistics* 6: 79–99.
- Shen, J. [沈家煊] 1999. *zhuanzhi he zhuanyu* [A metonymic model of transferred designation of de-constructions in Mandarin Chinese]. *Contemporary Linguistics* 1: 3–15.
- Shen, Y. [沈阳] 2002. *lunyuan zhipai yu “VP-de” zhuanzhide jufatiaojian* [Theta assignment and syntactic conditions on the reference of “VP-de”]. *A Memorial Proceeding of 50 anniversary of Zhongguo Yuwen*. Nanchang.
- Shinohara, M. 2006. On some differences between the major deletion phenomena and Japanese argument ellipsis. Unpublished manuscript. Nanzan University.
- Soh, H. L. 2007. Ellipsis, Last Resort, and the dummy auxiliary *shi* “be” in Mandarin Chinese. *Linguistic Inquiry* 38: 178–188.
- Teng, S.-H. 1972. A semantic study of transitivity relations in Chinese. Ph.D. Dissertation. University of California, Berkeley.
- Thompson, S. A. 1973. Transitivity and some problems with the *ba* construction in Mandarin Chinese. *Journal of Chinese Linguistics* 1: 208–221.
- Wang, C.-A. 2002. On sluicing in Mandarin Chinese. M.A. Thesis. Tsing Hua University.
- Wang, C.-A. and Wu, H.-H. 2006. Sluicing and focus movement in *wh*-in-situ languages. *Penn Working Papers in Linguistics* 12: 1.
- Wei, T.-C. 2004. Predication and sluicing in Mandarin Chinese. Ph.D. Dissertation. National Kaohsiung Normal University.
- Wei, T.-C. 2009a. Some notes on sloppy identity in Mandarin Chinese. *Concentric: Studies in Linguistics* 35(2): 269–306.
- Wei, T.-C. 2009b. The focal structure in Mandarin VP-ellipsis: A cross-linguistic perspective. *Taiwan Journal of Linguistics* 7(1): 85–120.
- Wei, T.-C. 2011. Island repair effects of the left branch condition in Mandarin Chinese. *Journal of East Asian Linguistics* 20(3): 255–289.
- Wei, T.-C. 2012. Non-reconstruction in Chinese sluicing. Paper presented at the 144th Meeting of Linguistic Society of Japan, Tokyo, Japan.

- Winkler, S. and Schwabe, K. 2003. Exploring the interfaces from the perspective of omitted structures. In: *The Interfaces: Deriving and Interpreting Omitted Structures*, K. Schwabe and S. Winkler, (eds.) 201–223. Amsterdam: John Benjamins.
- Wu, H.-H. I. 2002. On ellipsis and gapping in Mandarin Chinese. Masters Thesis. National Tsing Hua University.
- Xu, J. [徐杰] 1999. Dasuile ta sigе beizi yu yueshu yuanzhe [Break him four cups and binding theory]. *Zhongguo Yuwen* 270(3): 185–191.
- Xu, L. 2003. Remarks on VP-ellipsis in disguise. *Linguistic Inquiry* 34(1): 163–171.
- Yuan, Y. 1995. Weici hanyin ji qi jufa houguo [On the predicate reduction and its syntactic consequences]. *Zhongguo Yuwen* 274: 241–255.
- Zhan, W. [詹卫东] 1999. Yige hanyu yuyi zhishi biaoda kuangjia: guangyi peijia moshi [A framework of Chinese semantic representation: Generalized valence mode.] Tsing Hua University.
- Zhang, N. N. [张宁] 1998. Argument interpretations in the ditransitive construction, *Nordic Journal of Linguistics* 21: 179–209.
- Zhu, D. [朱德熙] 1961. *Shuo de* [On Chinese *de*]. *Zhongguo Yuwen* 110: 1–15.
- Zhu, D. [朱德熙] 1982. *Yufa jiaoyi* [Notes on grammar], Beijing: Shangwu Yinshu Guan.