

Chinese Ellipsis Processing

Shu-Yen Lin

National Taiwan Normal University

sylin@ntnu.edu.tw

1. Introduction

So far the literature on Chinese ellipsis has created the impression that every Chinese sentence has elliptical forms in three possible constructions as illustrated in (1-3).

V-stranding clause: The main verb is stranded.

- 1) John xihuan yuyanxue. Bill ye xihuan.
John like linguistics Bill also like
'John likes linguistics. Bill does too.'

Aux-stranding clause: The auxiliary is stranded.

- 2) John hui xihuan yuyanxue. Bill ye hui.
John will like linguistics Bill also will
'John will like linguistics. Bill will too.'

SHI-stranding clause: A dummy SHI is used. The antecedent clause may have an overt auxiliary.

- 3) John (hui) xihuan yuyanxue. Bill ye shi.
John will like linguistics Bill also SHI
'John likes / will like linguistics. Bill does / will too.'

However, (4–5) show that the V-stranding clause is more restricted than the Aux- and SHI-stranding clauses.

- 4) a. Zhe zhong vodka zuido le henduo ge nanren.
this kind vodka drunk-fall Perf many CL men
'This kind of vodka got many men completely drunk.'
b. *Na zhong ye zuido le.
that kind also drunk-fall Perf
Intended meaning: *'That kind (of vodka) did too.'*
c. Na zhong ye hui.
that kind also will
'That kind (of vodka) will too.'
d. Na zhong ye shi.
that kind also SHI
'That kind (of vodka) did too.'
- 5) a. John bei huairan qiang le wuqian kuai.
John BEI bandit rob Perf 5,000 dollar
'John was robbed by bandits of 5,000 dollars.'
b. *Bill ye bei.
Bill also BEI
Intended meaning: *'Bill was too.'*
c. Bill ye hui.
Bill also will
'Bill also will (be robbed).'

- d. Bill ye shi.
 Bill also SHI
 'Bill was too.'

We propose in this study a processing model of Chinese ellipsis, in which one of the conditions of (6-7) must be met for a clause to be parsed as an elliptical clause in Chinese:

- 6) The thematic complex, i.e. vP, is complete but for one last argument which is thematically anchored in the vP.
 7) A phase i.e. a CP or vP, is missing.

2. Some Chinese sentences do not have elliptical forms

Unlike English, in which sentences without overt auxiliaries can form elliptical counterparts with “do-support”, similar Chinese sentences do not have elliptical forms in every case.

2.1. Constructions that do not conform to the thematic hierarchy in their surface forms

2.1.1. Consumption/Accommodation Extent Construction

So far all the examples in the literature on Chinese ellipsis have been monotransitive sentences whose argument realization conforms to the thematic hierarchy. In Chinese some monosyllabic consumption verbs, e.g. *chi* ‘eat’ and *he* ‘drink’, and accommodation verbs, e.g. *zuo* ‘sit’ and *shui* ‘sleep’, allow the linking of <agent-OBJ theme-SUBJ> when the agent also denotes the measure or extent of the consumption or accommodation (Her 2007). In such sentences like (8), one can insert an auxiliary like *keyi* ‘can’ between the first NP and the verb without changing its propositional meaning, indicating that the first NP is indeed the subject. Consider the three elliptical constructions of (8) in (9):

- 8) Yi liang qiche zuo si ge ren
 one CL car sit four CL person
 'One car sits four people.'
- 9) a. Yi liang qiche zuo si ge ren. *Yi liang mache ye zuo.
 one CL car sit four CL person one CL carriage too sit
 Intended meaning: 'One car sits four people. One carriage also does.'
 b. Yi liang qiche keyi zuo si ge ren. Yi liang mache ye keyi.
 one CL car can sit four CL person one CL carriage too can
 'One car can sit four people. One carriage also can.'
 c. Yi liang qiche zuo si ge ren. Yi liang mache ye shi.
 one CL car sit four CL person one CL carriage too SHI
 'One car sits four people. One carriage also does.'

The contrast between the two answers to the question in (10) further illustrates the restriction of such V-stranding clauses.

- 10) Yi jin mi chi san ge ren. Na jiou ge ren ne?
 one kilo rice eat three CL person then nine CL person Particle
 'One kilo rice (lets) three people eat. Then what about nine people?'
- 11) a. *San jin mi chi.
 three kilo rice eat
 'Three kilo rice does.'
 b. Chi san jin mi.
 eat three kilo rice
 '(They) eat three kilo rice.'

2.1.2. Existential Construction

Typical Chinese Existential Construction involves unaccusative verbs. The surface subject of an unaccusative verb like *si* 'die' in *Mao si le* 'The cat died' is base-generated in the object position and moves to the subject position if the subject position is otherwise empty (Burzio 1986). The object in Existential Construction cannot be elided, and (12a) is unacceptable.

- 12) a. Ta jia si le yi zhi mao. *Ta jia ye si le.
s/he house die Asp one CL cat s/he house also die Asp
'There died a cat at her house. There did at his house too.'
- b. Ta jia hui si yi zhi mao. Ta jia ye hui.
s/he house will die one CL cat s/he house also will
'There will die a cat at her house. There will at his house too.'
- c. Ta jia si le yi zhi mao. Ta jia ye shi.
s/he house die Asp one CL cat s/he house also SHI
'There died a cat at her house. There did at his house too.'

2.1.3. Causative Construction

Causative Construction is another construction that is well-known for its not conforming to the thematic hierarchy in its surface form. A typical example is like (13).

- 13) Maidanglao chipang le henduo xiaohai.
McDonald's eat-fat Asp many child
'McDonald's made many children fat.'

Apparently it is the children that gain weight, not the fast food restaurants. Now consider (14), i.e. the three elliptical constructions of (13):

- 14) a. Maidanglao chipang le henduo xiaohai. *Kendeji ye chipang le.
McDonald's eat-fat Asp many child KFC also eat-fat Asp
'McDonald's made many children fat. KFC did too'
- b. Maidanglao hui chipang henduo xiaohai. Kendeji ye hui.
McDonald's will eat-fat many child KFC also will
'McDonald's will make many children fat. KFC will too'
- c. Maidanglao chipang le henduo xiaohai. Kendeji ye shi.
McDonald's eat-fat Asp many child KFC also SHI
'McDonald's made many children fat. KFC did too'

It is clear that the object in Causative Construction cannot be elided either.

2.2. BEI-Construction

It has been shown in (5) that *bei* cannot be stranded. The structure of BEI-Construction has been the subject of a very lively debate from the early days of generative linguistics (Hashimoto 1969, 1987; Wang 1970; Li 1990; Travis 1984; Wei 1994; Ting 1995). In this paper, we adopt the analysis presented in Huang et al. (2004 ms.), who favor a complementation analysis of BEI-Construction. The morpheme *bei* is treated as the main verb, 'a two-place predicate meaning "undergo", "experience", etc, which selects an Experiencer as its subject and an Event as its complement'.

3. Syntactic accounts of the unacceptable V-stranding clauses

3.1. Chinese ellipsis theories

3.1.1. Government Analysis (GA) of Chinese ellipsis

The discussion of Chinese elliptical structure has largely focused on the V-stranding clause like (15) with the antecedent clause containing a possessive pronoun.

- 15) Zhangsān xihuan tāde lǎoshī. Lǐsī yě xihuan.
 Zhāngsān like his teacher Lǐsī also like
 'Zhangsan likes his teacher. Lisi does, too.'

Despite the difference in their surface forms, sentence (15) has the same interpretation as its English counterpart. This is supported by the identity of their interpretation with respect to strict/sloppy readings which are typical of VP-ellipsis¹. Based on the strict/sloppy readings of sentences like (15), Huang (1991c) proposes that although Chinese lacks a process of "do-support", the second occurrence of the verb is in fact an instance of "do-support", and in the process of VP-deletion the verb is moved into an abstract Infl node to lexicalize the Infl, enabling the Infl to properly govern the VP. Accordingly, Huang's hypothesis can be called V-to-I raising analysis.

G. Li (2002) extended the observation of Chinese elliptical constructions to the scope of adjuncts (cf. Hoji 1998). In (16-17) (her chap 2: (87-88)), the behavior of Chinese adjuncts is distinct from their English counterparts: The interpretation of the elliptical clause of (17) does not include the adjunct in the antecedent clause.

- 16) John clearly saw his mother, and Mary did, too.
 'John clearly saw John's mother, and Mary clearly saw John's mother.'
 'John clearly saw John's mother, and Mary clearly saw Mary's mother.'

- 17) John qīngchūde kànjiàn le tāde māmā. Mǎry yě kànjiàn le [e].
 John clearly see Asp his mother Mary also see Asp
 'John clearly saw John's mother, and Mary saw John's mother.'
 'John clearly saw John's mother, and Mary saw Mary's mother.'

G. Li proposes that the V-stranding clause is not equivalent to English VP-ellipsis. Elliptical clauses like (15) and (17), i.e. the V-stranding clause, should be analyzed as a result of VP deletion after the lexical V is raised to the v position. In Chinese, the elided constituent is an empty VP, sister to v; in English, the elided element is an empty vP, sister to Infl.

However, if the V-to-v raising analysis is to account for the observation that adjunct is excluded in the interpretation of the elliptical clause, it amounts to saying that adjuncts must not occur in a position lower than v.

3.1.2. Subcategorization Analysis (SA) of Chinese ellipsis

A. Li (2007) points out that there is independent study showing that at LF the adjunct must be able to occupy a position lower than v in Chinese (Soh 1998a). Also, if an apparently lower-positioned adjunct is raised at LF to a higher position, the movement process leaves a trace, and the elided VP still contains the adjunct's trace, which will be bound by the raised adjunct. It is therefore not expected that the interpretation of an adjunct cannot be included in the elided VP according to G. Li's proposal.

Both V-to-I raising and V-to-v raising analyses are in line with the general account of ellipsis which states that ellipsis is a government relation between a licensing head and the gap (Chao 1988; López 1994; Lobeck 1995). A. Li (2003, 2005, 2007) proposes that the elliptical site of a Chinese elliptical sentence is a True Empty Category, which is present in the syntactic structure to satisfy interpretive requirements. Specifically, it is the subcategorization requirement: A transitive verb requires an NP or DP; an auxiliary, a vP; the dummy SHI, an IP. Accordingly, the adjunct in (17) does not get interpreted in the elliptical clause because adjunct is not lexically selected by a verb.

A. Li argues that the elided constituent is indeed empty syntactically. She supports this argument by providing the contrast between the three relative constructions below.

¹ The object of the stranded verb *xihuan* 'like' has two readings. It can refer to the teacher of Zhangsan (the strict reading) or to the teacher of Lisi (the sloppy reading). For detailed discussion on the strict/sloppy readings of Chinese elliptical constructions, see Huang (1991c), G. Li (2002), L. Goldberg (2005), R. Ai (2006), and A. Li (2007).

- 18) [[ta bu hui xihuan xuixiao de]] liyou] gen [[women bu hui (xihuan xuixiao) de]] liyou] yiyang
 he not will like school DE reason and we not will like school DE reason same
 'The reason why he will not like school is the same as the reason we will not (like school)'
- 19) [[e hui xihuan xuixiao de]] ren] gen [[e bu hui (xihuan xuixiao) de]] ren] shi yiyang de
 will like school DE people and not will like school DE people be same DE
 'The people that will like school are the same as the people that will not (like school)'
- 20) [[ta bu hui xihuan e de]] xuixiao] gen [[women bu hui *(xihuan e) de]] xuixiao] shi yiyang de
 he not will like DE school and we not will like DE school be same DE
 'The school that he will not like is the same as the school we will not (like)'

The adjunct relativization in (18) is a process of operator movement (Aoun & Li 2003), which requires the Head to agree with the operator and the variable bound by the operator. Here the variable occupies a position outside the vP, and allows the verb phrase to be empty. Similarly, in (19) the relativization of a subject argument does not involve a vP, so leaving the verb phrase empty is possible. In (20), an argument from within the relative clause is raised to the Head position directly, leaving a trace in the original position. Its relativization involves an element inside the vP. A. Li argues that the unacceptability of leaving the vP null is accounted for if the elided vP is truly empty syntactically. The emptiness of a missing VP makes a variable inaccessible for raising or agreement in features.

3.1.3. Null-Object analysis (NOA)

Hoji (1998) argues that what is called sloppy reading in a Japanese sentence similar to (15) is not a genuine sloppy reading, but what he terms a sloppy-like reading, which is independent of VP-ellipsis. Xu (2003) provides Chinese data to support Hoji's challenge to the VP-ellipsis analysis. The first type of data is similar to G. Li's like (17) concerning the interpretation of adjuncts in the elliptical clause. The second type of data deal with objects that have only type, but no token, reading. In (21), the underlined position can only be a gap or the third person plural pronoun *tamen*, but not the singular *ta*. Xu argues that if this position is a copy of the lexical-syntactic form of the preceding NP (i.e. *yige jinfa xiaohai*), it should be capable of serving as the antecedent of the singular pronoun. That it cannot shows the gap merely inherits the semantic property of a type reading from the preceding NP.

- 21) John cong lai mei you kan jian guo yige jinfa xiaohai, er
 John ever not see Asp one blond child but
 Bill kan jian guo [e]. Bill shuo Ø/ tamen/ *ta hen piaoling.
 Bill see Asp Bill say Ø/ they/ he very handsome
 'John has never seen a blond child, but Bill has. Bill says he was very handsome.'

However, Xu also notes that Chinese tends to use plural pronouns or null forms (but not third person singular pronoun *ta*) to refer to generic NPs. What Xu does not note is that if *ta* is to be used in the underlined position in (21), this lexical semantic restriction of *ta* has to be neglected. In other words, he seems to argue that *ta* can be deprived of the semantic property and reserves only the syntactic function in a sentence like (21) if it is indeed a VP-ellipsis. This is a very strong argument of Xu that needs independent evidence to be supported.

The third type of argument comes from the fact that a third reading other than the strict/sloppy readings is attested in sentences like (22). In a context in which people know that Mike hit his son first and then Jeanne hit Mike, one can say:

- 22) Mike xian da le tade erzi, Jeanne cai da de.
 Mike first hit Asp his son Jeanne then hit Particle
 'Mike hit his son first, then Jeanne hit (somebody).'

Put in another context, the person hit by Jeanne can still refer to a different person. Xu argues that the reference of the null object is not limited to antecedents syntactically present in the preceding sentence. That the person hit by Jeanne in (22) can be any person pragmatically determined is attributed to the

particular transitivity of Chinese. According to Hu and Fan (1995), of the 12,404 verb entries in *Xiandai Hanyu Cidian (The Dictionary of Modern Chinese)*, only 3% are genuine transitive verbs. The vast majority of Chinese verbs that can take objects can be used intransitively without meaning change, in contrast to the typical English transitive verbs like *see* and *like*.

Xu's theory seems to suggest that only the 3% genuine transitive verbs would restrict the interpretation of the elided object, or that they should at least behave in a different manner from the non-genuine transitive verbs. Applying the distinction between genuine and non-genuine transitive verbs in the analysis of null object interpretation requires more empirical data to verify.

3.2. Syntactic analyses and the (un)acceptability of the V-stranding clauses

GA, as already argued in 3.1, is not expected to account for the contrast illustrated in section 2, and this prediction is borne out. Providing the possibility of reconstructing, instead of blocking, the elliptic site of the unacceptable V-stranding clause, GA apparently cannot account for the unacceptability of (9a). Furthermore, if the stranded verb is in fact an instance of "do-support" as Huang suggests, it is hard to explain why (9a) is unacceptable while its English counterpart with do-support is grammatical.

The unacceptable clauses in 2.1 indicate that the legitimacy of V-stranding clauses is closely linked to the thematic structure of the predicate. Since the thematic structure of Consumption/Accommodation Extent Construction has not been discussed by many linguists, we delimit our discussion of thematic structure to Existential and Causative Constructions.

Our discussion of Chinese thematic structure is based on Huang (2007), who proposes that all Chinese lexical verbs belong either to the unergative series or to the unaccusative series. The two series are distinguished by which argument (internal or external argument) serves as the essential argument as well as by which arguments they select. The essential argument of the unergative verb is its external argument, whose thematic role can be subsumed under Agent. By contrast, the essential argument of the unaccusative verb is its internal argument, whose thematic role is typically the Patient. The unergative verb selects Patient and/or Affectee as the internal/middle argument. The two arguments selected by the unaccusative verb are assigned the thematic roles of Experiencer and/or Causer.

Let us turn now to SA and NOA. Although both analyses make the same prediction with regard to the sentences conforming to the thematic hierarchy, they diverge where the thematic hierarchy is not respected in the surface form. For NOA, which allows the elision of the object, it is the Patient, e.g. the one who died/appeared in (12a), or the one who got drunk/overweight in (4b) and (14a), that is predicted to be omissible. However, the V-stranding clauses with these NPs omitted are obviously not acceptable, and the prediction of NOA is not borne out.

SA makes a different prediction: What can be elided is the NP/DP subcategorized for by the verb. If it is true that the object is not necessarily the selected argument as proposed by Huang 2007, i.e. it depends on the verb type, then the test of the divide between NOA and SA resides on constructions involving unaccusativity. It seems that SA is able to account for the unacceptability of the verb stranding in Causative Construction and Existential Construction. Because the object in these constructions is not the subcategorized element of the verb, what the verb selects and consequently can be elided is the subject, the syntactic category where the argument with the thematic role Experiencer/Causer of the unaccusative series or Patient/Affectee of the unergative series gets realized. SA would predict that since (4b) and (14a) both involve unaccusative predicates and the elided objects are not the subcategorized elements, the subcategorization requirement is violated and these clauses are unacceptable. Our data attest this prediction.

Notice, however, that the whole argument is based on the assumption that the parser actually does the examination of whether the overt NPs in these V-stranding clauses are the subcategorized elements of the verbs. A logical extension of this assumption is that the parser parses these clauses as elliptical clauses in the first place. In other words, the explanatory adequacy of the account made by SA relies on the premise that the parser deems these clauses to be transitive.

3.3. Limitations of the current syntactic theories of Chinese ellipsis

The syntactic theories of Chinese ellipsis we have reviewed would have difficulty explaining the unacceptability of the V-stranding BEI-Construction. GA would have to claim that *bei* is not a proper governor, and SA would have to pinpoint what can be subcategorized for by *bei* or whether they subcategorize for any elements at all. If the complement of *bei* is indeed the IP following *bei* as argued in Huang et al. (2004), the long passive would be predicted by SA to allow the stranding of *bei*. This prediction is, however, not attested by the data.

NOA is irrelevant in this case as it delimits its discussion to sentences that have a missing object. Since what is missing in the BEI-Construction is more than an object, it falls out of the scope of NOA.

4. A model of Chinese ellipsis based on language processing

The premise of our processing model is that parsing is designed economically. The notion of achieving economy has always been the guiding principles in generative grammar. According to Horstein et al. (2005), linguistic theories or models can be evaluated by two types of economy conditions. Everything being equal, two matrices are better than three, five modules are worse than four. This type of economy relates to the theoretical parsimony and simplicity and is dubbed *methodological economy*. The other type of economy principle, *substantive economy*, requires that linguistic computation be organized frugally to maximize resources. Derivations where fewer rules apply take less efforts than those where more do, and for the same reason short steps are preferred to long ones.

Rooted in the least effort notions, our model states that one of the conditions of (6-7) must be met for a clause to be parsed as an elliptical clause in Chinese. In the following sections, we will show why such a processing model conforms to the economy condition.

The processing model of any specific construction should be governed by the general linguistic principles as well as sentence processing mechanism. We stipulate that the most relevant general linguistic principle for our model is the Phase Impenetrability Condition proposed by Chomsky (1999, 2001, 2004). The sentence processing model we adopt is the modular, serial sentence processing model proposed by Frazier (1987), in particular, the Minimal Attachment Strategy.

4.1. Minimal Attachment Strategy and completeness of thematic complex

As a corollary of the modular, serial parsing mechanism, the Minimal Attachment Strategy (Frazier 1987) states that when processing a sentence with more than one logical structure, the parser first builds the simplest syntactic structure possible, i.e. it does not postulate any potentially unnecessary nodes. This strategy predicts that (4b), repeated below, is parsed as unaccusative.

- 4) a. Zhe zhong vodka zuida le henduo ge nanren.
this kind vodka drunk-fall Perf many CL men
'This kind of vodka got many men completely drunk.'
b. *Na zhong ye zuida le.
that kind also drunk-fall Perf
Intended meaning: 'That kind (of vodka) did too.'

The surface subject of an unaccusative verb like *zuida* 'drunk-fall' in (23) is base-generated in the object position and moves to the subject position if it is the only argument. If the subject position is occupied by another argument, the sentence acquires causative meaning like (24).

- 23) John zuida le.
John drunk-fall Perf
'John got completely drunk.'

- 24) Zhe bei vodka zuida le John.
this glass vodka drunk-fall Perf John
'This glass of vodka got John completely drunk.'

In (4b), when the parser encounters the verb, two logical structures, unaccusative or causative, may be generated, but it is the unaccusative parsing that satisfies the Minimal Attachment Strategy. We predict that this clause is parsed as an intransitive clause². Applying the parsing result in our model leads to the non-

² Notice that one of the most important assumptions of the modular, serial sentence processing model is syntactic autonomy. The syntactic structure of a sentence is given priority to semantic information, so the animacy information of the subject does not affect the parser, which constructs (4b) as an intransitive sentence regardless of the inanimacy of the subject.

ellipsis of (4b): No phase is missing and the thematic complex is already complete.

In (5a), the verbal head *bei* c-commands at least one NP and another verbal element.

- 5) a. John bei huairen qiang le wuqian kuai.
John BEI bandit rob Perf 5,000 dollar
'John was robbed by bandits of 5,000 dollars.'
b. *Bill ye bei.
Bill also BEI
Intended meaning: 'Bill was too.'

The first condition of our processing model, i.e. (6), is violated by (5b). To complete the thematic complex in (5b) would overstrain the parser because the parser can only allow one argument of the complex to be missing. This clause is defective (in syntactic terms) or overstraining (in processing terms).

The acceptability of the V-stranding clause in (1), repeated below, can be accounted for by (6) straightforwardly. Since only the subcategorized argument of *xihuan* 'like' is missing, (1) conforms to (6) and is acceptable. Most of the examples in the literature on Chinese ellipsis fall into this category.

- 1) John xihuan yuyanxue. Bill ye xihuan.
John like linguistics Bill also like
'John likes linguistics. Bill does too.'

4.2. Phase impenetrability and the completeness of clausal/thematic complex

The acceptability of the Aux-stranding clauses and the SHI-stranding clauses can be accounted for by (7) in conjunction with Phase Impenetrability Condition. Chomsky (1999, 2001, 2004) proposes that syntactic structures are built up phase by phase. A phase is either a CP or vP. This syntactic object (i.e. a phase) has its counterpart on the meaning side of a 'proposition': A phase is either a verb phrase in which all theta roles are assigned (including an external argument) or a full clause.

Once a phase (CP or vP) is formed, its complement undergoes a transfer operation to PF and LF, and at the end of the overall derivation, all remaining constituents of the phase undergo transfer. When a syntactic object is transferred to the interfaces, it is no longer accessible to narrow syntax. What has been sent to the phonological and semantic interfaces no longer participate in further syntactic computations like feature checking. It is in this sense that the phase becomes impenetrable and this characteristic is dubbed Phase Impenetrability Condition (PIC).

In line with PIC we assume that operations of ellipsis by phases take least efforts for the Language Faculty, which can only hold a limited amount of structure in its active memory. If phase is indeed the basic unit in the building up of syntactic structure, it is natural to stipulate that ellipsis processing should also be constrained by PIC.

Presumably, when the parser finds no input following the Aux of the Aux-stranding clauses, it assumes that the subcategorized vP phase has undergone transfer and is no longer accessible. The thematic complex represented by the vP thus remains intact. We propose in line with A. Li (2007) that the parser finds the full structure of the elliptic site only at the level of LF.

As for SHI, we assume that it subcategorizes for a CP. SHI has been argued (A. Li 2007) to be related to a proposition and at least higher than Aux. We find that it can substitute for anything, except the subject, in the antecedent clause including sentential adverbs like 'politically'. For example,

- 25) Zai zhengzhi shang, John bixu fuqi zeren. Bill ye shi.
On politics top John must take responsibility Bill also SHI
'John must take the political responsibility. Bill must also take the political responsibility.'

The acceptability of the SHI-stranding clause can be explained by the same processing mechanism as the Aux-stranding clause, the only difference being that the phase involved in the SHI-stranding clause is a CP.

Turning to the BEI-stranding clause again, since *bei* is not in the position of T, nor is it a lexical verbal head, it does not subcategorize for a vP or CP, (and indeed Huang et al. (2004) stipulates that its complement is an IP). (5b), repeated below, crashes because the parser goes into the thematic complex, i.e. the vP, of which *bei* is an element, and finds that the thematic complex is far from being complete.

Compared with clauses like (1), of which the missing element is thematically anchored by being the subcategorized element of the verbal head, the missing part of the thematic complex of (5b) is not.

Successful parsing of ellipsis requires the parser to ‘feel’ that something is missing on the one hand. On the other hand, the syntactic structure of the elliptic site must be minimal so that it does not overstrain the parser, which can only hold a limited amount of structure in its active memory. Presumably, the syntactic structure of the elliptic site is aligned in such a way that it is easy to reconstruct – as an NP anchored thematically in the rest of the clause, or as a phase that has undergone transfer to PF and LF. For the latter operation, nothing needs to be done than acknowledging that the phase will be reconstructed in LF. Reconstructing the Aux-stranding clauses and the SHI-stranding clauses are therefore predicted by our model to be less effort-taking than the V-stranding construction. We leave research in this line for subsequent study.

A. Li has argued that the elliptic site of a Chinese elliptical clause contains a True Empty Category by using the contrast shown in (18-20). The unacceptability of (20) can also be explained by our processing model. According to our (7), when the parser finds no vP following the Aux in (20), it assumes that the vP phase has already been transferred to PF and LF. As it is no longer accessible to narrow syntax, feature checking between the gap and the head noun of the relative clause cannot be done because there is no trace in the vP. The relative clause crashes accordingly.

4.3. The logical processing model based on SA of Chinese ellipsis

Since SA is the one that we find most adequately accounts for the restricted use of the V-stranding clause among the syntactic theories of Chinese ellipsis, in this section we will focus only on this analysis. It should be noted, however, that A. Li herself has never proposed any processing models based on SA. Notice also that we stipulate a processing model that is based solely on syntactic theories for the purpose of bringing to the fore the importance of sentence processing perspective in the discussion of ellipsis and hopefully in linguistic studies in general.

In 4.1, we propose that *Na zhong ye zuida le* in (4b) is not parsed as an elliptical clause at all. Our parsing model proposes that the parser rejects (4b) not because the elided NP is not the subcategorized element, but because the clause is parsed as intransitive and consequently the subject *Na zhong (vodka)* is parsed as the internal argument. Since the vodka cannot get drunk itself, it is this semantic incongruity, not syntactic ungrammaticality, that renders (4b) unacceptable. This can be illuminated by the acceptability of the following sentence.

- 26) Zhe zhong jiwèijiú zuida le henduo nánshēng. Henduo nǚ shuǐshēng yě zuida le.
this kind cocktail drunk-fall Asp many male student many female student also drunk-fall Asp
‘This kind of cocktail got many male students drunk. Many female students got drunk too.’

By contrast, analysis of sentences like (4b) and (14a) only from the perspective of syntactic operation would predict that the parser examines whether the NP in these clauses is the subcategorized element based on their thematic structure. The logical extension of such an analysis is to assume that the parser parses these clauses as elliptical clauses in the first place.

So much being said, still nothing of our processing model would outweigh a processing model based on SA, as both are able to explain the relevant unacceptability except for the BEI-construction. However, for the V-stranding clause in (27), different predictions will be made by the two processing models. The model based only on syntactic theories would predict that the clause is parsed as Causative Construction. By contrast, our processing model predicts that only the unaccusative reading will be computed linguistically, and this prediction is borne out as shown by the translation.

- 27) Zhāngsān qī-zōu le Lìsī. Wángwǔ yě qī-zōu le.
John angry-leave Perf Bill Joe also angry-leave Perf
‘Zhangsan upset Lisi and drove him away. Wangwu was also upset and therefore left.’

5. Concluding remarks

This paper aims to provide a processing account of Chinese ellipsis focusing on the restriction of the V-stranding clauses in the face of the non-restriction of the Aux-stranding and SHI-stranding clauses. We first review some syntactic theories of Chinese ellipsis, and discuss how they are predicted to be able or unable

to account for the unacceptability of certain V-stranding clauses. These syntactic theories have difficulty explaining the full range of restriction. Under the analysis from the sentence processing perspective, the peculiar restriction gets explained in a straightforward manner.

Our study of Chinese ellipsis may also offer an account of ellipsis processing in general. In essence, ellipsis processing is a searching procedure, not mapping. When a clause is parsed as elliptical, the parser starts the process of searching for an LF-copy of the missing syntactic object. A mapping account would, we believe, falsely predict the second clause in (27) to be parsed as causative instead of unaccusative. Mapping would also be the underlying procedure taken by a processing model based solely on syntactic theories. As argued in 4.3, the only way to reject a clause like (4b) on the syntactic ground is to allow the transitive reading of the clause at first. It would not be a trivial question to ask how the clause comes, if ever, to the parsed status of being ‘transitive’?

Our discussion of Chinese ellipsis directly supports the proposal that sentential parsing is local in nature and syntax is autonomous. By ‘local’ we mean that sentential parsing or syntactic operation is not affected by the preceding sentence. In (4b), for example, although the word *ye* strongly suggests a parallel structure to the preceding sentence (i.e. (4a)), only the intransitive structure that meets the Minimal Attachment Strategy is parsed. If a reader/listener can also get the intended meaning of another vodka getting people drunk, the computation is not linguistic, but mathematical, in nature, i.e. a pure geometrical mapping of the sentence-initial NP of the objectless clause onto the sentence-initial NP of the preceding sentence. However, the unacceptability of clauses like (4b) obviously overrules the mapping mechanism as the genuine linguistic computation.

Finally, we acknowledge that the notion ‘thematically anchored’ is not defined in this paper except when subcategorization is specified. This is not to say that the two are equivalent and that one of our processing conditions is actually a copy of SA. Our tentative claim is that thematic anchoring should draw on the differentiation between V and v. We leave this for further research.

References

- Ai, Rui-Xi. 2006. Elliptical Predicate Constructions in Mandarin. Doctoral Dissertation, Harvard University.
- Aoun, Joseph, and Y.-H. Audrey Li. 2003. Essays on the Representational and Derivational Nature of Grammar: The Diversity of Wh-Constructions. Cambridge: MIT Press.
- Burzio, L. 1986. Italian Syntax. Reidel, Dordrecht.
- Chao, Wynn. 1987. On Ellipsis. Doctoral Dissertation, University of Massachusetts at Amherst. [Published as On Ellipsis, 1988. In J. Hankamer, ed., Outstanding Dissertations in Linguistics Series. New York: Garland Publishing.]
- Chomsky, Noam. 1999. Derivation by Phase. MIT Occasional Papers in Linguistics 18 [Also published in M. Kenstowicz, ed., 2001 Ken Hale: a Life in Language, Cambridge, Mass: MIT Press, 1-52.]
- 2004. Beyond explanatory adequacy. In A. Belletti, ed., Structures and beyond: the cartography of syntactic structures, Vol. 3, 104-131. New York: Oxford University Press.
- Frazier, Lyn. 1987. Sentence processing. Attention and performance XII. 559-586.
- Goldberg, Lotus M. 2005. Verb-Stranding VP Ellipsis: A Cross-Linguistic Study. Doctoral dissertation, McGill University, Canada.
- Hashimoto, Mantaro. 1969. Observations on the passive construction, Chinese Linguistics 5, 59-71.
- Hanyu Beidongshi de Lishi Quyu Fazhan [The Historical and Geographical Development of Chinese Passive Constructions], Zhongguo Yuwen 196, 36-49.
- Her, One-soon. To appear. Apparent Subject-object inversion in Chinese. Linguistics.
- Hoji, Hajime. 1998a. Null object and sloppy identity in Japanese. Linguistic Inquiry 29: 127-152.
- 1998b. Formal Dependency, Organization of Grammar, and Japanese Demonstratives. Ms., University of Southern California.
- Hu, Yushu, and Fan Xiao. 1995. A study on verbs. Keifeng, China: Henan University Press.
- Huang, C.-T. James. 1990a. On ‘be’ and ‘have’ in Chinese. The Bulletin of the Institute of History and Philology, Vol: LIX, Part I. Taipei: Academia Sinica.
- 1991c. Remarks on the status of the null object. In R. Freidin, ed., Principles and Parameters in Comparative Grammar. Cambridge: MIT Press.

- 2007 漢語動詞的題原結構與其句法表現. [Thematic structures of verbs in Chinese and their syntactic projections]. 語言科學 [Linguistic Sciences] 6 (4): 3-21.
- Huang, C.-T. James, A.-H. Audrey Li, Yafei Li. 2004. The Syntax of Chinese. Manuscript. To be published by Cambridge University Press. Downloaded at http://my.harvard.edu/icb/icb.do?course=fas-ling171&pageid=tk_page.ling171.dir.b7fe4f2f58914cb51ea04ae77dbeb4a2
- Li, H.-J. Grace. 2002. Ellipsis Constructions in Chinese. Doctoral dissertation, University of Southern California.
- Li, Y.-H. Audrey. 1990. Order and Constituency in Mandarin Chinese. Kluwer Academic Publishers, Dordrecht.
- 2003. How empty is an empty noun? The Proceedings of the 15th North American Conference on Chinese Linguistics, Michigan State University.
- 2005a. Ellipsis and missing objects, Linguistic Science 15: 3-19.
- 2007. Syntax of Overt and Covert Pronouns. Ms., University of Southern California.
- Lin, Shu-Yen. 2008a. Some Chinese sentences do not have elliptical forms. Proceedings of the 10th Seoul International Conference on Generative Grammar. July 17-20, Seoul: The Korean Generative Grammar Circle.
- Lobeck, Anne. 1995. Ellipsis: Functional Heads, Licensing, and Identification. Oxford University Press.
- López, Luis. 1994. The syntactic licensing of VP-ellipsis: A comparative study of Spanish and English. In Michael L. Mazzola, ed., Issues and Theory in Romance Linguistics: Selected Papers from the Linguistic Symposium on Romance Languages XXIII, 333-354. Washington D.C: Georgetown University Press.
- Soh, Hooi-Ling. 1998a. Object Scrambling in Chinese. Doctoral dissertation, MIT.
- 2007. Ellipsis, last resort, and the dummy auxiliary SHI 'be' in Mandarin Chinese. Linguistic Inquiry 38 (1): 178-188.
- Ting, Jen. 1995. A Non-Uniform Analysis of the Passive Construction in Mandarin Chinese. Doctoral Dissertation, University of Rochester.
- Travis, Lisa. 1984. Parameters and Effects of Word Order Variation. Doctoral Dissertation, MIT.
- Wang, Peter C.-T. 1970. A Transformational Approach to Chinese ba and bei. Doctoral Dissertation, University of Texas at Austin.
- Wei, Pei-Chuan. 1994. Guhanyu Beidongshi de Fazhan yu Yanbian Jizhi, Chinese Languages and Linguistics 2, 293-319. Institute of History & Philology, Academia Sinica, Taipei.
- Xu, Liejong. 2003. Remarks on VP-ellipsis in disguise. Linguistic Inquiry 34(1): 163-171.
- Zagona, Karen. 1988. Proper government of antecedentless VP in English and Spanish. Natural Language and Linguistic Theory 6: 95-128.