

**MORE ON THE LICENSING CONDITIONS OF
NP-ELLIPSIS AND THE STRUCTURE OF NOUN
PHRASES IN MANDARIN***

Wei-Cherng Sam Jheng
National Taitung University

ABSTRACT

It has been agreed in previous studies that an ellipsis site has to be licensed by a governing head, thus manifesting formal licensing in the sense of the Empty Category Principle (Chomsky 1981, 1986). In addition to lending weight to Tsai's (2011) view that formal licensing can be recast as a built-in operation of Merge in the Minimalist Program (Chomsky 1995), the goal of this paper is to add refinement to the licensing condition of NP-ellipsis in Mandarin. It is argued that the licensing condition of NP-ellipsis is decomposed into two parts: NP-ellipsis is licensed by a governing head whose phrase is able to denote a numerical reading (both the cardinal and the ordinal reading). The two conditions are not independent, and instead, the numerical reading condition arises from a complex nominal structure involving NumP and CIP, while formal licensing reflects a head-complement relation. This line of thinking is supported by instances of NP-ellipsis licensed by *de*, whose licensing configuration does not contain NumP and CIP, and hence, the numerical reading is not available. Several complications surrounding NP-ellipsis are discussed.

Keywords: NP-ellipsis, formal licensing, Mandarin, classifiers, head-complement, numerical reading

* Special thanks are due to the anonymous reviewers and the editor of the *Taiwan Journal of Linguistics* for their constructive and invaluable comments on earlier drafts of this paper. I would like to thank Hsiao-hung Iris Wu, Wei-wen Roger Liao and Yuyun Iris Wang for their insightful discussions with me on several occasions. All remaining errors are solely my own responsibility.

1. INTRODUCTION¹

It has been acknowledged under the tenets of the Government and Binding Theory (Chomsky 1981, 1986) that traces have to be properly governed in compliance with the *Empty Category Principle* (ECP), which is subsumed within two types of government relations: head/theta government and antecedent government. The two types of government are proposed so as to reflect two respective factors involved in substantiating legitimate syntactic dependencies. Antecedent government encodes identification following Rizzi's (1990) work on Relativized Minimality (RM), and subsequently *Agree* under the Minimalist Program (MP) (Chomsky 1995, 2000). By contrast, head/theta government has received less attention in the post-GB or pre-MP era, however. Drawing on NP-ellipsis data from Mandarin, this paper is set out so as to add weight to Tsai's (2011) line of thinking that head/theta-government can be recast as a built-in requirement of *Merge* to establish head-complement relations. Granted the line of Tsai's discussion, the licensing condition of NP-ellipsis in (1a) is self-evident in the sense that NP-ellipsis (marked in gray) is properly governed by and formally licensed by the classifier head *ben*, due to the configuration whereby the NP merges with the classifier to form a CIP, as schematized in (2). The ungrammaticality in (1b) is explained by the way that the NumP *yi* 'one' is not in a qualified position to license the constituent *ben shu*, because, as can be clearly seen in (3), it does not form a proper head-complement relation with the constituent *ben shu* (see Liao and Wang 2011, Saito, Lin and Keiko 2008). It follows that only the

¹ A few words as a reminder are that the constituency of numeral expressions with classifiers is described differently throughout the paper. This is because the scholars cited in this paper make different assumptions about the internal structure of DP. For example, the constituency between the numeral expression *wu* 'five' and the count classifier *ge* can be described as *wu-ge* or *wu ge*. The former shows that the numeral is part of the classifier phrase, while in the latter case the numeral and the classifier phrase project respectively. While reviewing prior analyses of classifier phrases along with numeral expressions, I will follow the original constituency descriptions of the authors for ease of exposition. To anticipate the conclusion, the view argued in this paper supports the former.

constituent in the complement position, rather than in the adjunct position, can be deleted and hence licensed.²³

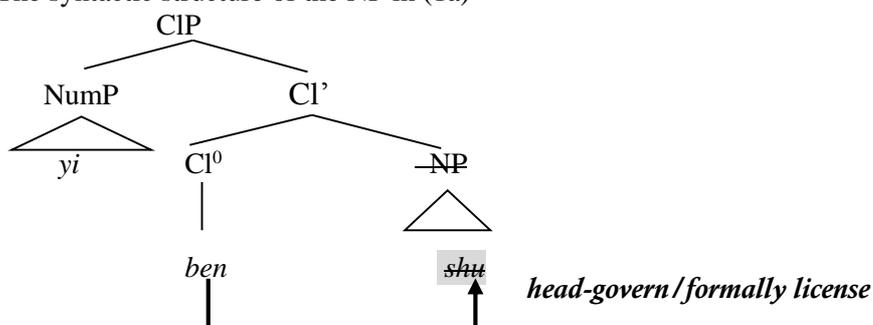
(1) NP-ellipsis in Mandarin

- a. Zhangsan mai-le [DP yi-ben shu],
 Zhangsan buy-ASP one-CL book
 Lisi ye mai-le [DP yi-ben [NP ~~shu~~]].
 Lisi also buy-ASP one-CL book
 ‘Zhangsan bought one book, and Lisi also bought one.’
- b. * Zhangsan mai-le [NP yi-ben shu],
 Zhangsan buy-ASP one-CL book
 Lisi ye mai-le [DP yi-ben [NP ~~shu~~]].
 Lisi also buy-ASP one-CL book

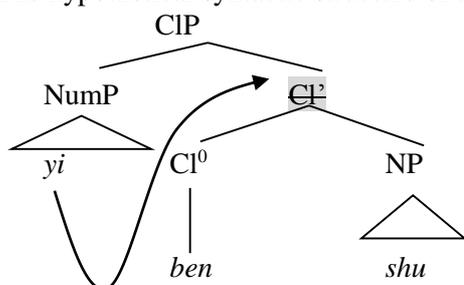
² Abbreviations used in this paper include: ASP: aspect, CL: classifier, EXT: extent, FOC: focus marker, perfective: PRF, PURP: purposive marker, SFP: sentence-final particle.

³ I am grateful to a reviewer for pointing out an alternative analysis of the ungrammatical example in (3) by referring to the *X' Invisibility Hypothesis* (Chomsky 1995:242-243), whose core claim is that X'-level categories are invisible at the interface as well as in the computation, according to the principle of inclusiveness. The example in (3), if explained in line with this hypothesis, says that the elided Cl' is not licensed because the elided Cl' and NumP, as X'-level categories, are not visible at LF, which causes the derivation to crash. However, I would like to suggest that there are two lines of thinking which could be taken to show that the *X' Invisibility Hypothesis* cannot be motivated to account for (3) on theoretical grounds. First, granted the PF approach to deletion, the elided Cl' leaves a trace. According to the ECP, the trace has to be properly governed via lexical/head-government or antecedent government. Apparently, neither the lexical/head government requirement nor the antecedent government requirement is satisfied so as to govern the trace of the elided Cl'. Second, the hypothesis faces one theory-internal problem. Epstein et al. (1998:124-125) claim that intermediate X'-level categories are crucial in establishing the asymmetrical c-command relation between the Spec and the complement in a phrase structure in such a way that X' has to be visible in order to be constructed as the first branching node dominating the complement of X⁰ and preventing the complement from c-commanding the Spec. In this light, granted the necessity of creating an asymmetrical c-command relation, the hypothesis can be questioned. I will leave the discussion of the specific execution of this hypothesis for another occasion.

(2) The syntactic structure of the NP in (1a)



(3) The hypothetical syntactic structure of the NP in (1b)



**head-govern/formally license*

The syntactic configuration in (2) indicates that the formal licensing condition of NP-ellipsis results from a basic head-complement relation created by *Merge*. Nevertheless, the novel observation we take to be central in this paper is that there is another additional licensing condition imposed on NP-ellipsis; that is, a head (X^0) in the head-complement relation with respect to NP-ellipsis must be able to denote a numerical reading, and the licensing head is syntactically incarnated by count/mass classifiers along with numeral expressions in the nominal domain in Mandarin. To put things on equal grounds, it is argued in this paper that the licensing condition of NP-ellipsis in Mandarin can be decomposed into two parts: formal licensing and the numerical reading condition,

respectively. Nonetheless, the two conditions are not independently observed.⁴

This paper is intended to further refine the licensing conditions of NP-ellipsis in Mandarin by investigating the internal makeup of noun phrases in which NP-ellipsis is licensed, and the line of reasoning we pursue toward the end of this paper supports the structure of noun phrases in Mandarin as proposed by Saito et al. (2008). The paper is organized as follows. In Section 2, I discuss prior focused-based analyses of NP-ellipsis (Merchant 2001, 2004, 2006), and recapitulate Alexiadou and Gengel's (2008, 2012) counterevidence undermining the plausibility of such analyses, reaching the conclusion that focus is not a primary licenser. Furthermore, the conclusion leads us to a core licensing condition, *formal licensing*; that is, an ellipsis site can be formally licensed if it is properly governed by X^0 , mirroring a head-complement configuration. Nevertheless, in Section 3, I present evidence showing that formal licensing does not suffice. Specifically, not every type of classifier is able to license the ellipsis site. Rather, only classifiers that are preceded by genuine numeral expressions and denote numerical readings are able to license NP-ellipsis. In addition, it will be shown that the numerical reading has to be defined in a more general sense in order to account for the variants of noun phrases where NP-ellipsis is also licensed, which, in turn, attests to the core role of NumP in the licensing configuration. In Section 4, I provide plausible explanations for the observations made in Section 3, and discuss a variety of instances of NP-ellipsis licensed by *de* in Mandarin. Section 5 concludes this paper with several complications that seem to disfavor, but actually support the view proposed in this paper.

2. THE ISSUE: FOCUS AS A PRIMARY LICENSOR?

Ellipsis has been argued to be associated with concepts ascribed to the domain of information structure, particularly the notion of focus (see Merchant 2001, 2004, 2006 and subsequent work). For concreteness,

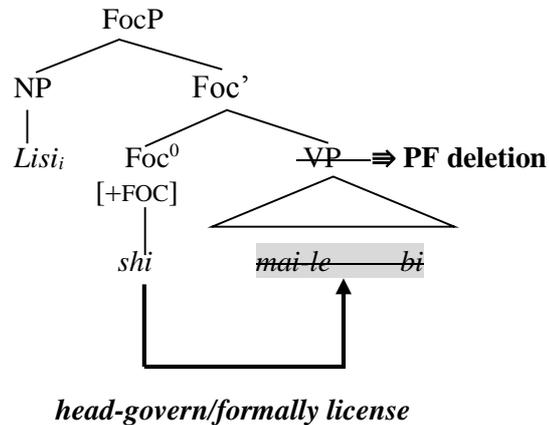
⁴ To anticipate the proposed analysis, I will show that several instances of NP-ellipsis licensed in the cardinal reading and the ordinal reading environment are due to the internal structure of DPs consisting of NumP and CIP.

deletion targets part of a constituent carrying old information and leaves the rest of the constituent to get focused and be endowed with new information. An isomorphic view of ellipsis claims that this information interpretative effect can be captured by the postulation of FocP as articulated in Rizzi (1997). Take VP-ellipsis in Mandarin for example. Under the PF deletion approach, the example of Mandarin VP ellipsis in (4a) has a syntactic configuration (Wu 2002). It is illustrated that the VP identical to the antecedent VP in the preceding clause can be the target of PF deletion, and this focus-based analysis explains why the NP *Lisi* receives a contrastive focus reading, as depicted in (4b), where FocP is merged above VP, and its Spec position is occupied by the moved NP *Lisi* to check off the [+FOC(US)] feature via Spec-Head Agreement. It is worth noting that the elided VP is head-governed by Foc⁰ in the fashion of the ECP, bearing a resemblance to the case of the NP-ellipsis in (2).

(4) VP ellipsis in Mandarin and its derivation

- a. Zhangsan mai-le bi, Lisi ye shi
 Zhangsan buy-ASP pen Lisi also FOC
 [_{VP} ~~mai-le~~ ~~bi~~].
 buy-ASP pen
 ‘Zhangsan bought pencils, so did Lisi.’

b.



As one might conceive, the focus-based analysis of VP ellipsis in (4b) apparently advocates an isomorphic mapping between the interpretation of the focused element and the syntactic position licensing the ellipsis site, which leads to the conclusion that information structure is an integral part of narrow syntax. It is further shown that focalization of a target element is crucially a clausal property. What is noteworthy about (4b) is that FocP merges to VP to form a head-complement relation, and thus the VP trace is formally licensed.

Now, let us examine ellipsis within the nominal domain, NP-ellipsis (or, as it may be called N'-ellipsis). Two major types of NP-ellipsis in Mandarin under our concern are discussed as follows. First, the examples in (5a-c) indicate that the NP can be elided when it is identical to its NP antecedent in the preceding clause, and there is a Numeral Phrase-Classifier Phrase (NumP-CIP) immediately preceding it. A similar phenomenon is found in (6a-c), where the numeral expression in (5a-c) is replaced with a demonstrative *zhe* 'this' and *na* 'that'. The b-c sentences in (5) and (6) show that deletion is not random, and its licensing condition is sanctioned by the overt presence of the numeral and the classifier, showing that the classifier is a determinative licenser. It is further shown that the presence of the classifier entails that of the numeral or the demonstrative (see Liao and Wang 2011), which amounts to explaining the ungrammaticality of (b) and (c) sentences in (5) and (6).

(5) NP-ellipsis is licensed by the overt presence of the classifier and the numeral

- a. Zhangsan mai-le san-zhi [NP bi], er
 Zhangsan buy-ASP three-CL pen and
 Lisi mai-le wu-zhi [~~NP~~ ~~bi~~].
 Lisi buy-ASP five-CL pen
 'Zhangsan bought five pens, and Lisi bought five.'
- b. * Zhangsan mai-le san-zhi [NP bi], er
 Zhangsan buy-ASP three-CL pen and
 Lisi buy-ASP wu-zhi [~~NP~~ ~~bi~~].
 Lisi mai-le five-CL pen

- c. * Zhangsan mai-le san-zhi [_{NP} bi], er
 Zhangsan buy-ASP three-CL pen and
 Lisi mai-le ~~wu~~-zhi [~~NP~~ ~~bi~~].
 Lisi buy-ASP five-CL pen

(6) NP-ellipsis is licensed by the overt presence of the demonstrative and the classifier

- a. Zhangsan kan-le zhe-xie [_{NP} shu], er
 Zhangsan read-ASP this-CL book and
 Lisi kan-le na-xie [~~NP~~ ~~shu~~].
 Lisi read-ASP that-CL book
 ‘Zhangsan read these books, and Lisi read those.’
- b. *Zhangsan kan-le zhe-xie [_{NP} shu], er
 Zhangsan read-ASP this-CL book and
 Lisi kan-le na-xie [~~NP~~ ~~shu~~].
 Lisi read-ASP that-CL book
- c. *Zhangsan kan-le zhe-xie [_{NP} shu], er
 Zhangsan read-ASP this-CL book and
 Lisi kan-le ~~na~~-xie [~~NP~~ ~~shu~~].
 Lisi read-ASP that-CL book

Under the isomorphic view, it is argued that FocP merges to the nominal domain, (a similar view is advocated in Chiu (2011) in support of the focus fronting of NP to [Spec, DP] and Hsu (2014) in support of an articulated left periphery of the nominal domain). Alternatively, as argued by Aboh (2004, 2010), the Topic-Focus articulation also projects within the nominal domain, and thus maintains the parallelism between the clausal and nominal left peripheries, based on a set of morpho-syntactic topic and focus markers overtly spelt out within the noun phrase in Gungbe. This view is further taken by Corver and van Koppen (2006) in analyzing NP-ellipsis in Dutch, as in (7a), where the adjective *zwart* ‘black’ receives a contrastive focus reading. (7b) illustrates the derivation of NP-ellipsis in Dutch. Corver and van Koppen contend that FocP merges to the nominal domain, and the focused constituent moves to [Spec, FocP] to check off the [+Op] feature on the [E]-feature in the sense of Merchant

(2001). The head of FocP is phonologically spelt out by a focus marker – *e*, which attaches to the adjective *zwart* at [Spec, FocP].

(7) NP-ellipsis in Dutch and its derivation

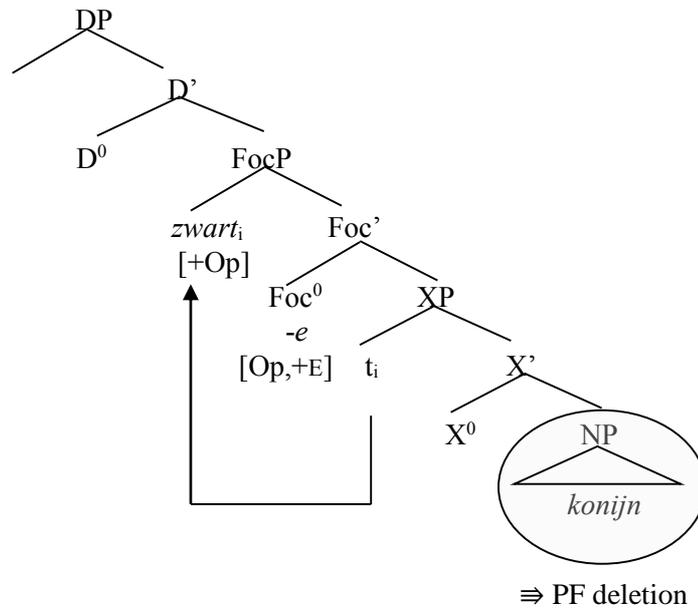
a. Context: *Over konijnen gesproken* (Talking about rabbits...)

Ik	heb	gisteren	een	zwart- e	konijn
I	have	yesterday	a	black-FOC	rabbit
zien	lopen.				
see	walk				

'I saw a black one yesterday.' [Colloquial Dutch]

(Modified from Corver and van Koppen 2006: (44))

b.



(Modified from Corver and van Koppen 2006: (45))

Nevertheless, there is sufficient evidence in the operation of NP-ellipsis to show that focus in the nominal domain is merely a by-product of a genuine NP-ellipsis licensing mechanism, and is not a primary licensing factor. For instance, Alexiadou and Gengel (2008) present

evidence indicating that NP-ellipsis in Dutch can be licensed by either the adjective ending schwa *-e* as in (8a) or by prosodic focus as in (8b). Interpreted along this line of thinking, the fact that NP-ellipsis in (9) is not licensed is explained, because neither of the licensing conditions is met.

(8) NP-ellipsis in Dutch

a. Context: *Over konijnen gesproken...* (Talking about rabbits)

Ik heb gisteren enn zwart-e konijn
I have yesterday a black-FOC rabbit
zien lopen.
ee walk

‘I saw a black one (walk) yesterday.’

b. Jij heb ZWART^{FOC} konijn, maar ik heb
you have black rabbit but I have
een WIT^{FOC} konijn.
a white rabbit

‘You have got a black rabbit, but I have got a white one.’

(Alexiadou and Gengel 2008: 4-5)

(9) The ellipsis site is not licensed

Context: *Over konijnen gesproken...* (Talking about rabbits)

*Ik he laast nog een wit konijn
I have recently a white rabbit
gezin.
recently

‘I saw a white one recently.’

What is noteworthy is that, if focus is treated as a core licensing condition, then the ellipsis site in (10) is not licensed, though the adjective *cypers* ‘tabby’ is prosodically focused, if analyzed on a par with (8b). Alexiadou and Gengel (2008, 2012) therefore argue that, if everything is put equally, (for example, if the morphological licensing head is overt), focus may not be a primary licensing factor of NP-ellipsis, which argument diminishes the role of FocP in the syntactic structure. Namely, there are other factors to be taken into consideration with respect to the licensing of NP-ellipsis.

- (10) NP-ellipsis in Dutch (Δ = ellipsis site)
 Jiji hebt een zwart-e kat en ik heb
 enn *CYPERS Δ .
 ‘You have a black cat, and I have a tabby one.’
 (Alexiadou and Gengel 2008: 5)

Before further exploring this issue, let us examine the second type of NP-ellipsis in Mandarin, as demonstrated in (11), where the functional element (or the modifier) *de* is also able to license the ellipsis site.

- (11) NP-ellipsis licensed by *de* in Mandarin
 Zhangsan xihuan hong-de [NP hua],
 Zhangsan like red-DE flower
 er Lisi xihuan lan-*(de) [NP hua].
 and Lisi like blue-DE flower
 ‘Zhangsan likes red flowers, and Lisi likes blue ones.’

It is obvious that these two types of Mandarin NP-ellipsis demand different licensors for the ellipsis sites, either the overt presence of the classifier preceded by the numeral or the functional element *de* (see Zhang 2012, 2013).⁵ The overt presence of these two types of licensor is not

⁵ It should be noted that there are still other variants of NP-ellipsis in Mandarin, according to the size of constituents that undergo ellipsis. However, to detail structures consisting of the Num-CIP phrase and the *de*-phrase goes beyond the current scope of this paper. One central observation, consistent with the proposed view, is that the ellipsis site has to be licensed by the classifier *duo* in (i.b), *de* in (i.c) or the verb complex *mai-le* in (i.d).

- (i.) Zhangsan mai-le jiu-duo hong-de hua, er
 Zhangsan buy-ASP nine-CL red-DE flower and
 Lisi ye mai-le...
 Lisi also buy-ASP
 ‘Zhangsan bought nine red flowers, and Lisi also bought...’
 a. wu-duo hong-de hua.
 five-CL red-DE flower
 ‘five red ones.’
 b. wu-duo hong-de hua.
 ‘five ones (=red flowers).’
 c. wu-duo hong-de hua.
 ‘five red ones.’

surprising, as has been extensively discussed in previous studies. An ellipsis site has to be properly licensed by an overt element in the sense of head/theta government within the GB framework (Chomsky 1981), or an elided element in the form of the empty category *pro* must be subcategorized according to the identification condition (Lobeck 1993).⁶

As will be shown in Section 0, the licensing condition of the first type of NP-ellipsis can be divided into two parts. However, this does not mean that the second type has to be treated on independent grounds, and instead, the two types of NP-ellipsis only differ in their licensing configurations.

3. EVIDENCE FOR ANOTHER LICENSING CONDITION: NUMERICAL READING

3.1 Two Approaches to NP-Ellipsis

In this section, I present evidence from three constructions in Mandarin to show that the overt presence of heads (X^0) alone does not suffice to guarantee the licensing condition of NP-ellipsis. Rather, an additional condition has to be considered. Before proceeding to the discussion, I take at face value the articulated structure of the nominal domain in Mandarin, as depicted in (12).⁷ In the interest of space, the arguments in support of (12) will not be re-produced here. The interested reader is referred to Saito et al. (2008), Liao and Wang (2011), Zhang (2013) and Her (2017) for various empirical arguments and conclusive discussions. It is clear from the structure that the overt presence of a classifier phrase (CIP) is accompanied by a numeral phrase (NumP), as NumP is base-generated at [Spec, CIP]. What is more, it is shown that NP is immediately dominated by Cl^0 , forming a head-complement relation, which is reinvented as a *Merge* operation (Tsai 2011). Of concern to us is that, given the configuration in (12), it is interesting to question whether

d. ~~wu duo~~ hong de hua.

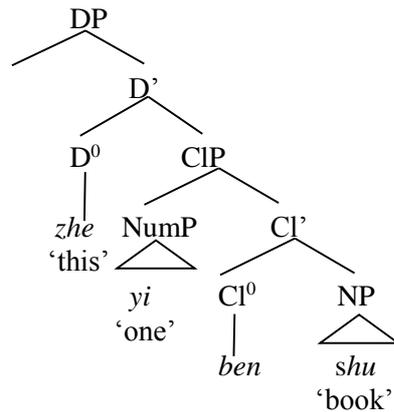
⁶ *Licensing and Identification of Empty Nominals:*

An empty non-arbitrary pronominal must be governed by an X^0 specified for strong agreement.

⁷ I will discuss certain arguments against the structure in (12) in Section 3.5 and 3.6.

every classifier is able to license a trace left by the elided NP in the complement position.⁸

(12) The syntactic structure of the nominal domain in Mandarin

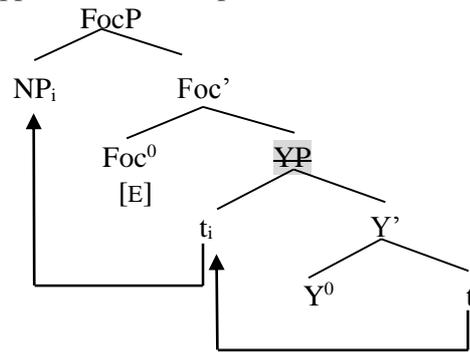


Nevertheless, (12) simply represents the internal structure of DP and does not explain how NP-ellipsis surfaces in the course of derivation. It is worth taking a moment to review the two major approaches to NP-ellipsis, the PF deletion approach and the *pro* approach. As discussed in Section 2, PF deletion is primarily couched in Merchant's theorizing on ellipsis (2001, 2004, 2006 and subsequent work), as visualized in (13), where FocP is postulated to be in the nominal domain and the NP bearing new information undergoes movement to [Spec, FocP] out of the complement (YP), which encodes old information and undergoes PF deletion guided by the [E] feature that requires that PF neither parse its complement nor

⁸ A word of clarification is needed to note that the DP-NP distinction with respect to the licensing of NP ellipsis is not directly relevant to the discussion in this paper. Specifically, as has been widely discussed in previous studies on NP ellipsis in Mandarin (see Saito et al. 2008), a classifier forms a proper head-complement relation with a NP and is a legitimate licenser of NP ellipsis, and whether D⁰ projects DP or not does not affect the lines of the discussion in this paper. However, without committing myself to a discussion of the specific internal makeup of NPs in Mandarin, I take at face value that the DP is always present in the Mandarin syntax of noun phrases and that it consists of several extended functional projections, as sketched in (12). I thank a reviewer for urging me to clarify the distinction.

pronounce it. The PF deletion approach resorts to overt movement and PF deletion.

(13) The PF deletion approach to NP-ellipsis



The PF deletion approach, however, is not without any empirical and theoretical problems. Wang (2014) claims that Merchant's focus-based analysis of NP-ellipsis may face four problems. First, the postulation of an E(llipsis)-feature, which instructs that the complement of FocP may not be pronounced, may violate the Inclusiveness Condition (Chomsky 1995) because the E-feature, as a lexical feature, is questioned, and it is not always the case that the complement has to be deleted. Second, the notion of Givenness (or old information) is easily violated, as shown in (14a-b), where the elided NP, represented by the empty category *e*, does not have to be presupposed in the context and nor does it require an antecedent clause for identification.

- (14) a. Wo baba shi xiu che de *e*.
 I father is fix car DE
 'My father is a car mechanic.'
 (Lit: My father is a car-fixing [e].)
- b. Wo xihuan bai-se de *e*.
 I like white-color DE
 'I like things that are white.'
 (Lit: I like the white.) (Wang 2014: (7a-b))

Third, it is not clear why the duration, frequency phrases, and descriptive and resultative phrases in Mandarin cannot be the target of PF-deletion, as shown respectively in (15a-c), even though they are qualified to be deleted. Wang adds that PF deletion should be permitted in (15a-c) because the PF deletion approach predicts that the element that is lexically governed by a head can be deleted. In other words, the V⁰ *nian* ‘read’ in (15a-c) is predicted to license the elided phrases, which is not borne out.

(15) Frequency phrases, descriptive and resultative phrases cannot be deleted (Wang 2014: (8a-c))

- a. Ta nian shu nian san-ci/tian
 he read books read three-time/day
 le; wo ye nian-le *~~[san-ci/tian]~~.
 SFP I also buy-ASP three-time/day
 ‘He read books three times/days; I also read.’
- b. Ta nian shu nian-de hen kuai;
 he read book read-DE very fast
 wo ye nian *~~[de hen kuai]~~.
 I also read DE very fast
 ‘He read books very fast; I also read.’
- c. Ta nian shu nian-de hen lei;
 he read book read-ASP very tired
 wo mei nian *~~[de hen lei]~~.
 I not read DE every tired
 ‘He read books and became tired; I did not read.’

In light of the problems undermining the plausibility of the PF deletion approach, recent studies in generative grammar have argued that missing parts in an ellipsis site can be regarded as an instance of an empty category (*pro*) or argument ellipsis, which amounts to the empty noun approach. The central idea underlying this approach is that no ellipsis takes place and that an apparent missing object results from an empty category base-generated in the complement position in the course of derivation. Cheng (2011), for instance, argues for argument ellipsis in Mandarin by pointing out that certain instances of ‘missing objects’ in Mandarin do not result from ellipsis. If the missing object in the second clause in (16) is derived

via ellipsis, it is hard to accommodate the fact that (16) has three readings. The ellipsis analysis of the missing object has difficulty accounting for the discourse reading where the empty *e* takes the subject *Zhangsan* in the first clause as its referent.

- (16) Zhangsan da-le [_{NP} ziji-de xiaohai]
Zhangsan hit-ASP self-DE child
zhihou, Lisi haishi bu-gan da [_{NP} *e*].
after Lisi still not-dare hit
- a. Strict reading: Lisi still does not dare to hit Zhangsan's child.
b. Sloppy reading: Lisi still does not dare to hit his own child.
c. Discourse reading: Lisi still does not dare to hit Zhangsan.

Li (2005, 2014) contributes to the idea of True Empty Category (TEC) about argument ellipsis, with the line of reasoning that some 'surface' missing constituent surfaces as a true empty category endowed with categorical features (e.g., [+N], [+V], etc.) that has to come into play as a last resort in order to satisfy the sub-categorization requirement of a head. For example, following Li's theory of True Empty Category, Wang (2014) argues that NP-ellipsis is not derived from PF deletion and that the missing parts represent null elements. For concreteness, as shown in (17), the head element *de* subcategorizes empty categories (e_{TEC}). The interpretative content of the empty categories is obtained from the LF-copying from the antecedent or the discourse. It should be noted that the two empty

via either PF deletion or base-generation as a true empty category has to be subcategorized by a head element. As one might conceive, the two approaches share an identical structural requirement- that is, the necessity of a head-complement relation. Precisely, an elided constituent has to be the complement of Foc^0 under the PF deletion approach, while a true empty category is base-generated and subcategorized by a corresponding head under the TEC approach. What this paper tries to show is that the head-complement relation, recast as formal licensing, does not suffice, and instead, whether the head is able to denote a numerical reading or not is crucial. In this light, following the PF deletion approach (Lobeck 1995; Merchant 2001), I assume that ellipsis can only take place if a head with an overt morphosyntactic feature occurs in a head-complement relation to the ellipsis site, as shown in (12), where CI^0 forms a head-complement relation with NP and the numeral expression has to be overt.

In Sections 0, 0 and 0, I will show that NP-ellipsis is licensed if a numerical reading is obtained from the phrase NumP-CIP.

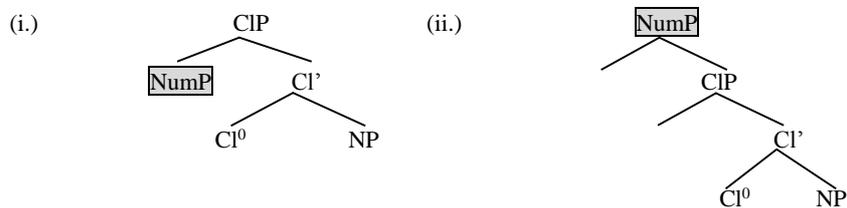
3.2 Amount and Number Classifiers

Tai and Wang (1990) claim that there is a cognitive distinction between two types of classifiers: individual classifiers serve to pick out natural and discrete entities, while non-individual classifiers create unit measures. Cheng and Sybesma (1998) interpret the two types of classifiers as count classifiers and mass classifiers (massifiers), while Liu (2010) labels them as individual classifiers and measure words, respectively. Cheng and Sybesma (1998) maintain that the major difference between the two types is that individual classifiers have a singularizing function that picks out one instance of what is denoted by a noun, while measure words lack this defining function. Despite there being semantic differences between the two types of classifier, they are consistently regarded as the head element in the internal structure of DPs, which

reminds us of the need to question whether every type of classifier is able to license NP-ellipsis in terms of formal licensing.¹⁰

Liu (2015) convincingly argues for the syntactic structure of two types of classifiers in Mandarin, amount classifiers and number classifiers. The former type is a mass nominal, while the latter one is a count nominal. Specifically, amount classifiers are compatible with the determinative quantifier *yi* ‘one’ to generate a structure with a part-related reading, while number classifiers can be combined with genuine numerals to denote count readings. As exemplified in (18a-b), the amount classifier *shen* ‘body’ is only compatible with the determinative quantifier *yi* rather than the numeral *san* ‘three’. In contrast, the count classifier *ben* in (18b) does not exhibit this restriction. (19) illustrates Liu’s proposed syntactic structures of the amount classifier phrase (ACIP) and the numeral

¹⁰ It might be tempting to think as to whether count and mass classifiers have different syntactic structures, and whether their structural differences have a direct bearing on the licensing condition of NP-ellipsis. However, an exhaustive review of available syntactic analyses of count and mass classifiers goes beyond the current scope of this paper. As evident in the discussion at the outset of Section 3.2, the authors use different terms to label the two types of classifier in light of the defining properties that are hard to hold under different theoretical grounds. Despite so, with respect to formal licensing, the two types of classifier are consistently analyzed as a head projecting CIP and as subcategorizing NPs. The major structural portion that receives inconsistent analyses is the designated position of numeral expressions (NumP), as visualized, respectively, in (i) and (ii). In (i), NumP is base-generated at [Spec, CIP] (Liao and Wang 2011, Cheng and Sybesma 1998), while in (ii), NumP merges above CIP (Li 1999, Liu 2015, Wang 2014, Liu 2012). As will become apparent in Section 0.1, the designated position of NumP is less significant because, following Borer’s (2005) proposed structure of noun phrases, the function of NumP is to specify *quantity*, whereas that of CIP has a dividing function, both of which functions contribute to a numerical reading that licenses NP-ellipsis, in addition to formal licensing.



classifier phrase (NCIP), respectively, in the nominal domain. It is apparent that the amount classifier and the numeral classifier receive an X^0 status.

(18) Examples of amount/count classifiers in Mandarin

a. Amount classifier

Yi/*san shen niba
 one/three CL_{body} mud
 ‘an amount of mud spread over the whole body.’
 *‘three amounts of mud spread over on the whole body.’

b. Count/Number classifier

Yi/san ben shu
 one/three CL_{volume} book
 ‘One/three volumes of book’

(19) The proposed structures of the amount/count classifier (Liu 2015)¹¹

- a. [QP yi [Q⁰ Q][ACIP [ACIP⁰ shen] [NP niba]]]]
 one CL_{AMOUNT} mud
- b. [NumP san [Num⁰ Num] [NCIP [NCI⁰ pian] [NP yezi]]]]
 three CL_{COUNT} leaf

Granted the proposed structures, it is predicted that amount classifiers are able to license ellipsis sites, as formal licensing incarnates a head-complement relation. The prediction is not confirmed, however, as is evident in (20a-d).¹²

¹¹ NCI: Number classifier

¹² It is interesting to note that the deletion of a larger NP constituent in (20d) is licit, as shown in (i.). The grammaticality of the NP-ellipsis in (i.) is not surprising in the way that the verb *you* is in a head-complement relation with the elided NP. After the NP is elided, the trace it leaves can be head-governed and formally licensed by the verb *you*, as expected.

- (i.) Xiaomei you-zhe yi-tou [NP heifa], Ahua
 Xiaomei have-ASP one-CL_{hair} black hair Ahua
 ye you [NP yi-tou] [NP heifa]
 also have one-CL_{hair} black hair

(20) Counterexamples to formal licensing

- a. *Zhangsan lou-chu yi-lian
 Zhangsan show-out one-CL_{face}
 [_{NP} kunhuo-de biaoqing],
 confused-DE facial expression
 er Lisi ye lou-chu yi-lian
 and Lisi also show-out one-CL_{face}
 [_{NP} ~~kunhuo-de~~ ~~biaoqing~~].
 confused-DE facial expression
 Intended: ‘Zhangsan has a confusing facial expression, and Lisi also has the same one.’
- b. *Zhangsan shuo-le yi-pai
 Zhangsan say-ASP one-CL_{faction}
 [_{NP} huyan] lai hulong dajia,
 nonsense PURP patronize everyone
 er Lisi ye shuo-le yi-pai
 and Lisi also say-ASP one-CL_{faction}
 [_{NP} ~~huyan~~].
 nonsense
 Intended: ‘Zhangsan talked about one amount of nonsense to patronize everyone, and Lisi also talked about the same amount.’
- c. */#Zhangsan wan-dao yi-shen [_{NP} niba],
 Zhangsan play-EXT one-CL_{body} mud
 Lisi ye wan-dao yi-shen [_{NP} ~~niba~~]
 Lisi also play-EXT one-CL_{body} mud
 Intended: ‘Zhangsan played to the extent that an amount of mud was spread over the whole body, and Lisi also played to the same extent.’

Intended: ‘Xiaomei has black hair, and Ahua also has.’

- d. *Xiaomei you-zhe yi-tou [NP heifa],
 Xiaomei have-ASP one-CL_{hair} black.hair
 Ahua ye you yi-tou
 Ahua also have one-CL_{hair}
 [~~NP heifa~~].¹³
 black.hair
 Intended: ‘Xiaomei has black hair, and Ahua also has.’

The examples in (20a-d) are intended to show that the amount classifiers, when combined with the determinative quantifier *yi* ‘one’, cannot license NP-ellipsis, though they are the heads according to the proposed structure in (19a).

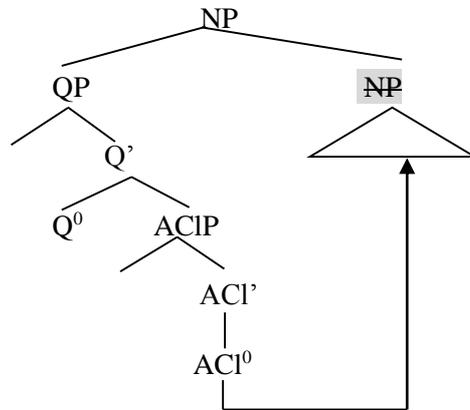
It is tempting to argue that QP-ACIP in (19a) forms a constituent and is base-generated as an adjunct at [Spec, NP], so this constituent fails to license the NP ellipsis site, as visualized in (21), where ACI⁰ does not form a head-complement relation with the NP. Nevertheless, the hypothetical structure of QP-ACIP in (21) fails to accommodate three facts. First, the configuration in (21) fails to readily capture the selectional relation between the amount classifier (ACIP⁰) and NP. Second, if QP is an adjunct,

¹³ One might wonder whether there are two types of *tou*- one that is able to denote a count reading in (i.), while the other denotes a part-whole reading in (ii.). I suggest that there should be two types of *tou*- that one type is an individual classifier or a numeral classifier in (i.) which is closely related to the category of count nouns, while the other type is an amount classifier in (ii.) whose function is to measure the amounts of things. There are two defining traits that can be used to differentiate one type from the other. First, the numeral *tou* can be compatible with genuine numerals to denote a count reading, while the amount *tou* can be preceded by the determinative *yi* to denote a part-whole reading. Second, the reason why the amount *tou* lacks count readings pertains to the cognitive function of *tou* - *tou*, when not used a numeral classifier, refers to the upper part of the human body, and as noted by Liu (2015), if a head (i.e., *tou* ‘head’) is divided into two parts, neither of them can be counted as a head. Given the differences, the lack of a count reading in (20d) is because *tou* is an amount classifier rather than an individual/numeral classifier in (i.).

- (i.) Zhangsan kanjian san-tou niu.
 Zhangsan see three-CL cow
 ‘Zhangsan sees three cows.’
- (ii.) Xiaomei you-zhe yi-tou [NP heifa].
 Xiaomei have-ASP one-CL_{hair} black.hair
 ‘Xiaomei has black hair.’ (every part of her hair is black)

it is predicted that the QP can be displaced. As evident in (22), the prediction is not confirmed. This shows that the QP-ACIP does not form a constituent. Rather, the implausible analysis in (21) can be taken to support Liu's analysis that ACIP⁰ is in a head position (see (19a)).

- (21) A hypothetical analysis of the amount classifier in the nominal domain



**Head-complement relation*

- (22) The QP-ACIP cannot be displaced
 *[Yi-tou]_i, Xiaomei you-zhe t_i
 one-CL_{hair} Xiaomei have-ASP
 [NP heifa].
 black.hair
 Intended: 'Xiaomei has black hair.'

Third, an amount classifier exhibits two syntactic behaviors, according to its preceding phrase. See (23a-b). When the amount classifier co-occurs with the determinative quantifier *yi*, it denotes a part-whole reading in (23b) (that is, every part of the ground), while it denotes a count reading in (23a) when co-occurring with a genuine numeral phrase *yi*. Given the above discussion, it is predicted that the amount classifier cannot license NP-ellipsis, and this prediction is confirmed in (24). This view, however, is immediately challenged by (25), where the amount classifier *pian* is

able to license NP-ellipsis. I suggest that the asymmetry adds weight to the view that the count reading plays a licensing role. First, it is shown in (24) that if the amount classifier co-occurs with a determinative quantifier *yi* ‘one’, it fails to license the ellipsis site. In sharp contrast, the ellipsis site in (25) is licensed by the mass classifier combined with the genuine numeral *yi* ‘one’. What distinguishes between (25) and (24) is that in the former, *yi-pian* ‘one piece’ denotes a count reading, while in the latter, a part-whole reading is obtained. It should be noted that the mass aspect of mass classifiers does not mean that they are restricted from having a count reading. As noted by Cheng and Sybesma (1998), individual classifiers and mass classifiers are syntactic markers of countability, and Liu (2015) adds that countability is closely related to the presence of numeral expressions.¹⁴¹⁵¹⁶

¹⁴ One might argue that the NumP-CIP phrase *yi-pian* can be viewed as an adjunct, base-generated at [Spec, NP], for example, which explains the fact that the ellipsis site is not licensed because it is not head-governed by a head element like *pian* and thus does not satisfy the formal licensing condition. This view is similarly advanced in Hsieh (2008b), but it fails to account for the successful licensing of NP-ellipsis in (25).

¹⁵ It is worth noting that (i.) cannot server as counterevidence for (24). The phrase *zai guo bujiu* ‘not long after’ in (i.) already suggests that there are two strands of sand and stone that have been seen by me on two occasions. The point made here is that part-whole readings alone, while excluding the involvement of count readings at the same time, cannot license ellipsis sites.

(i.) Wo kanjian-le yi-pian shashi, zai
 I see-ASP one-CL sand.stone then
 guo bu jiu, you kan-dao
 pass not long again see-DEG
 lingwai yi pian [~~NP~~ shashi].
 another one CL sand.stone
 ‘I saw a strand of sand and stone, and not for long, and not long after, I saw another strand.’

¹⁶ A reviewer points out that *pian* hardly has a count reading, thus making it unconvincing to claim that (26) has a count reading (that is to say, that there are two strands of sand and stone in total). Still, I suggest two scenarios that can be helpful in eliciting the part-whole reading in (24) and the count reading in (26), respectively. Suppose that you are looking at two photos, in each of which there is a river under a bridge and the river banks are completely covered with sand and stone. You point to each of the photos and utter (i.). When asked to calculate how many strands of sand and stone there are in total, you fail to give a precise number. In sharp contrast, suppose you are looking at two photos, in each

- (23) Two facets of amount classifiers
- a. Zhangsan chi-le yi-pian pisa.
 Zhangsan eat-ASP one-CL_{piece} pizza
 ‘Zhangsan ate one piece of pizza.’
- b. Qiao-xia yi/*san-pian shashi.
 bridge-under one/three-CL_{piece} sand-stone
 ‘Every part of the ground under the bridge is covered by sand and stone.’

- (24) Context: Suppose that you are looking at two photos, in each of which there is a river under a bridge and the riverbanks are entirely covered with sand and stone.
- *Zhe-qiao-xia yi-pian shashi,
 this-bridge-under one-CL_{piece} sand-stone
 na-qiao-xiao ye yi-pian [~~NP~~ shashi].
 that-bridge-under also one-CL_{piece} sand-stone
 Intended: ‘Every part of the ground under this bridge is covered by sand and stone, and every part of the ground under that bridge is spread by the same ones.’

of which there is a park under a bridge and a river running through the park. Specifically, there is a strand of sand and stone on the left side of the park in each photo. In this context, you utter (i.), and when asked how many strands of sand and stone there are in the photos, you are able to answer ‘two’. The contrast is straightforward to the three native speakers of Mandarin I consulted. However, the part-whole reading in the first scenario fails to license NP-ellipsis, as evident in (24), while the count reading in (26) is able to license NP-ellipsis.

- (i.) Zhe-qiao-xia yi-pian shashi,
 this-bridge-under one-CL_{piece} sand-stone
 na-qiao-xiao ye yi-pian [~~NP~~ shashi].
 that-bridge-under also one-CL_{piece} sand-stone

- (25) Zhangsan chi-le yi-pian pisa, er
 Zhangsan eat-ASP one-CL_{piece} pizza and
 Lisi chi-le liang-pian [~~NP~~ pisa].
 Lisi eat-ASP two-CL_{piece} pizza
 ‘Zhangsan ate one piece of pizza, and Lisi ate two pieces.’

It is possible to argue that the constituent *yi pian* in (24) is an adjunct and does not form a head-complement relation with the NP *shashi* ‘sand and stone’. This line of argumentation fails to account for (25), where the ellipsis site can be licensed by the same constituent.

The observation that we made from studying the difference between (25) and (24) is that the count reading plays a role in the licensing of NP-ellipsis, while formal licensing (the head-complement configuration) is respected. Interestingly, it is observed that if *you* ‘have’ is inserted in (24), as shown in (26), the ellipsis site can be licensed. Nonetheless, (26) does not constitute a counterexample; rather, it presents extra supporting evidence for the line of thinking that we pursued above. The guiding intuition of (26) is that there are two strands of sand and stone rather than that every part of the area is covered by sand and stone. This reading itself is a mixture of two readings- One is a count reading (*two strands*), whereas the other is a part-whole reading (*every part of*). Following Liu’s (2015) analysis, *yi* in (26) is a genuine numeral rather than the determinative quantifier *yi*.

- (26) Context: Suppose that you are looking at two photos, in each of which there is a park under a bridge and one a river running through the park. Specifically, there is a strand of sand and stone on the left side of the park.

Zhe-zuo-qiao-xia	you	yi-pian	shashi,
this-CL-bridge-under	have	one-CL	sand-stone
na-zuo-qiao-xia	ye	you	yi-pian
that-CL-bridge-under	also	have	one-CL
[NP — shashi]			
			sand-stone

‘There is a piece of ground under this bridge spread over with sand and stone, and there is another piece of ground under that bridge also spread over with sand and stone.’

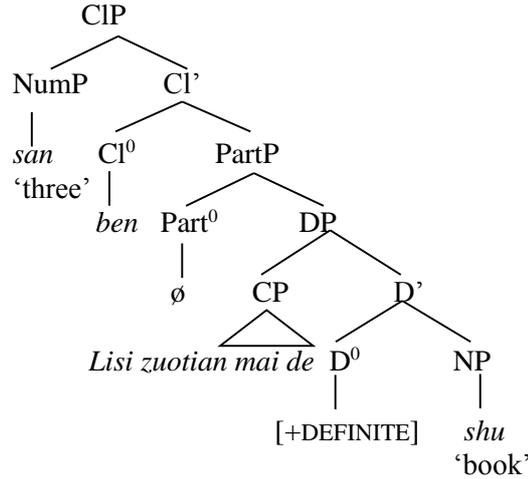
In this section, I have shown that count and amount classifiers are legible heads and form a head-complement relation with NPs. This formal licensing condition does not suffice to account for (24), however. Rather, the count reading plays another role, and it arises in the case of the two types of classifiers accompanied by genuine numerals. In the following subsections, I will provide more evidence in favor of this view.

3.3 Relative Clauses with a Stage-Level Predicate and an Individual Level Predicate

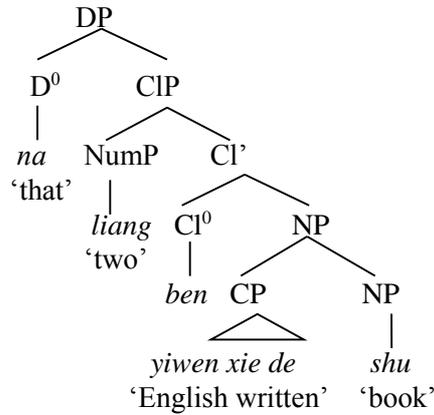
It has been discussed in Liao and Wang (2011) that relative clauses (RCs) with stage-level predicates (S-RC) and individual-level predicates (I-RC) receive different interpretations. (27a) has a partitive reading (in other words, there is a set of books bought by *Lisi* yesterday and *Zhangsan* reads two of them), whereas (27b) is devoid of this partitive reading and denotes a count reading (there are two books in total).

(28) The proposed structure of relative clauses

a. The proposed structure of (27a)



b. The proposed structure of (27b)



Building on the asymmetry, let us examine two instances of NP-ellipsis, with a stage-level predicate and an individual-level predicate, respectively to see whether the two types of readings (the partitive reading and the count reading) have any bearing on the licensing of NP-ellipsis in these two environments, as represented in (29a-b). Intriguingly, the ellipsis sites in (29a-b) are licensed.

(29) NP-ellipsis with relative clauses

- a. NP-ellipsis with a stage-level predicate in the relative clause

Zhangsan du-le [CLP liang-ben [S-RC Wangwu
 Zhangsan read-ASP two-CL Wangwu
 zuotian mai] de shu],
 yesterday buy MOD book
 danshi Lisi zhi
 but Lisi only
 du-le yi-ben [NP[S-RC Wangwu
 read-ASP one-CL Wangwu
 zuotian mai] de shu]
 yesterday buy MOD book

‘Zhangsan read two of the books that Wangwu bought yesterday, and Lisi read only one of the books that Wangwu bought yesterday.’

- b. NP-ellipsis with an individual-level predicate in the relative clause

Zhangsan du-le liang-ben [I-RC yingwen
 Zhangsan read-ASP two-CL English
 xie de] shu er Lisi que
 write MOD book and Lisi however
 du-le yi-ben [NP[S-RC yingwen xie]
 read-ASP one-CL English write
 de shu].
 MOD book

‘Zhangsan read those two books (that are) written in English, but Lisi read the one (that is) written in English.’

It is observed that the interpretative difference between these two types of RCs has no effect on the licensing of NP-ellipsis. I suggest that the successful licensing of NP-ellipsis in these two environments is expected. First, as observed in Section 0, the amount classifier, when combined with a numeral expression, denotes a count reading and licenses the ellipsis site, in sharp contrast to the case when the amount classifier is

combined with a determiner classifier *yi*. This contrast can be taken to show that the count reading is available in (29a-b). In (29a-b), the count classifier *ben* has a dividing [+DIV] function in the sense of Borer (2005), and it is compatible with count nominals. The count reading obtains and licenses the ellipsis site. Second, it is observed that the ellipsis site in (29a-b) is also licensed. This is not surprising, however. Partitivity can be subsumed within the notion of countability. Sleeman (1996) argues that NP-ellipsis in French is licensed by a [+PARTITIVE] element that properly governs the elided nominal. The observations are made as follows. First, non-inflecting adjectives in French, *intelligenta* ‘interesting’ for example, are able to license NP-ellipsis, as in (30a). By contrast, the inflected form of the same adjective *l’intéressante* in (30b) cannot license NP-ellipsis. It is proposed by Sleeman that NP-ellipsis in French is always associated with a partitive interpretation, as formalized in (31).

(30) NP-ellipsis is licensed by partitive readings in French (Δ = the ellipsis site)

a. De ces filles, Marie est la plus
of these girls Marie is the most
intelligenta Δ .
intelligent (one)

(Sleeman 1996: 15)

b. *Melheureusement je n’ai pas
unfortunately I NEG have
entendu l’intéressante
heard the. interesting
‘Unfortunately, I have not heard the interesting one.’

(Sleeman 1996: 15)

(31) Proper government of elided nouns in French
[e] must be canonically governed by a functional head (or its specifier) specified as [+PARTITIVE].

Under Sleeman’s analysis, partitivity can be interpreted as meaning that a NP can be elided if it is included in a contextually available set of entities/individuals, which suggests that the count reading is encoded.

Nonetheless, it is worth pointing out that this partitivity restriction is not as strong as it looks in the case of Mandarin NP-ellipsis. As evident in (32), it is not necessarily the case that there is a basket of apples out of which *Zhangsan* bought six and *Lisi* bought five. Rather, (32) is allowed to take the reading that the six apples *Zhangsan* bought and the five apples *Lisi* bought were from two different stores.

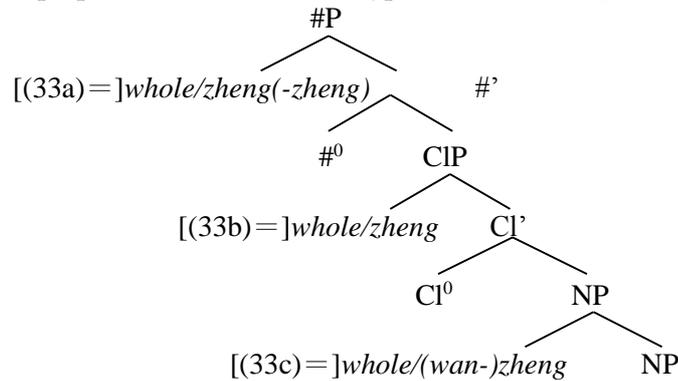
- (32) Zhangsan mai-le liu-ke [NP pingguo],
 Zhangsan buy-ASP six-CL apples
 er Lisi mai-le wu-ke [NP pingguo]
 and Lisi buy-ASP five-CL apples
 ‘Zhangsan bought six apples, and Lisi bought five.’

3.4 Whole/*zheng*

As pointed out in Liao (2015), there are three types of the modifier *whole/zheng* in Mandarin, as exemplified in (33a-c), and they occur in different syntactic positions, as represented in (34). (33b) denotes a part-related reading (that is, every part of the N), whereas (33a) and (33c) have a whole-related reading.

- (33) Three types of *whole/zheng* in Mandarin
- a. Zhangsan chi-le zheng-zheng wu ke
 Zhangsan eat-ASP whole five CL
 pingguo.
 apple
 ‘Zhangsan ate the whole five apples.’ [⇒ a total of five apples]
- b. Yi zheng ke pingguo dou lan le.
 one whole CL apple all rot SFP
 ‘The whole apple is rotten’ [⇒ every part of the apple]
- c. Zhe tai jichi zhi neng xiao
 this CL machine only able slice
 wang-zheng de pingguo.
 whole DE apple
 ‘The machine can only slice whole apples.’ (Liao 2015: 56)

(34) The proposed structure of three types of *whole/zheng*



Liao also indicates that *whole* NPs are mass expressions, as evident in (33), where the distributive/exhaustive quantifier *dou* requires semantic plurality. As discussed in Section 3.2, it is shown that the amount classifier phrase, consisting of a determinative quantifier *yi* and a mass classifier, is unable to license NP-ellipsis. One puzzle appears in (35): why is NP-ellipsis licensed, if the classifier *ke* is a mass classifier? The answer is straightforward, as implied in (34), where CIP is a complement of #⁰ (number). Thus, *yi* ‘one’ in (35) is not a determinative quantifier but a genuine numeral expression. Again, the count reading is obtained in (35), and NP-ellipsis is licensed, as predicted.

(35) NP-ellipsis licensed by the mass classifier

Zhe	yi	zheng	ke	pingguo	dou	lan-le,
this	one	whole	CL _{mass}	apple	all	rot-ASP
er	na	yi	zheng	ke	[NP pingguo]	
and	that	one	whole	CL _{mass}	apple	
ye	lan-le.					
also	rot-ASP					

‘Every part of this apple is rotten, so is every part of that apple.’

Additionally, (36) can be taken to show that the *zheng/whole* [*whole/zheng*] expression already denotes a ‘total’ reading resulting from the constituent #P and CIP (that there are eleven apples in total), which

entails that the count reading is available. The grammaticality of the NP-ellipsis is expected.

- (36) Zhangsan chi-le zheng-zheng wu ke
 Zhangsan eat-ASP whole five CL
 pingguo, er Lisi chi-le zheng-zheng
 apple and Lisi eat-ASP whole
 qi ke [~~NP~~ pingguo].
 seven CL apple
 ‘Zhangsan ate the whole five apples, and Lisi ate the whole seven ones.’

3.5 Defining the Numerical Reading: A View from Multiplication

The discussion from Section 3.2 to 3.4 attempts to show that formal licensing alone, though maintaining a core licensing role, does not suffice to license NP-ellipsis. It is further observed that count/mass classifiers (X^0) can serve as legitimate licensors when preceded by genuine numeral expressions, which contributes to the count reading. Two questions emerge at this point, however: (i.) how is a count reading defined and (ii.) is every type of classifier able to license ellipsis sites, if the so-called count reading is available? To anticipate the conclusion of the discussion of these two questions, I first argue that the expression *count reading* is not a proper term, and, that to capture the semantic categorization between NumP and CIP and the non-distinction between count classifiers and mass classifiers with respect to the licensing of NP-ellipsis, I claim that ‘numerical reading’ is a more precise term and that it has two types: a cardinal and an ordinal reading. In this section, I will discuss how the cardinal reading is computed from the [NumP-CIP] phrase, and in Section 3.6, it will be shown that the ordinal reading is also able to license NP-ellipsis and can be subsumed within the numerical reading.

Her (2012a, 2012b) proposes the multiplicative theory of C(ount)/M(easure) classifiers in the sense that the underlying function between Num and C/M in the [Num C/M] phrase can be regarded as multiplication. Specifically, multiplicative complex numerals and the complex phrase [Num C/M] share the same structural makeup, as

illustrated in (37a-b). Under Her's analysis, (37a-b) indicate that Cs and Ms, which denote the concept of multiplicand, can be differentiated in terms of the value that they encode (all Cs assign x the same numerical value of 1, while Ms assign x a unique value), as readily captured by the formula in (38).

- (37) Her's proposed extension of the constituency of complex numerals to [Num C/M]
- a. [$n \times base$]
 wu shi/bai yuan. ([$5^{Num} \times 10/100$] dollar)
 five ten/hundred dollar
 'fifty/five hundred dollars'
- b. [$multiplier \times multiplicand$]
 wu ke/da jidan ([$5^{Num} \times 1^C/12^M$] egg)
 five C/M-dozen egg
 'five eggs/five dozens of eggs'
- (38) Convergence and Divergence of C and M
 [Num K N] = [[$n \times x$]N], where $K=C$ iff $x=1$, otherwise $K=M$.
 (Her 2012b:1679)

One aspect of Her's proposal related to our discussion is that Cs/Ms are allowed to co-occur with numeral expressions. Granted the extension in (37a-b), it follows that the [Num C/M] phrase encodes a numerical reading- a complex cardinal is composed of a multiplier and a multiplicand (e.g., three hundred [3×100] in English, *san da kele* 'three dozens of coke'). If this line of reasoning is on the right track, it explains three things. First, as in Section 0, a part-whole reading derived from the [*yi* Mass] phrase fails to license ellipsis sites, in contrast with the number reading from the [Num C/M] phrase which is able to license ellipsis sites. The contrast shows that the numeral in the classifier phrase plays a core role in deriving the numerical reading. Second, the above line of thinking

explains that both Cs and Ms are able to license ellipsis sites, when they co-occur with numerals, as evident in (39a-b).¹⁹

- (39)
- a. Ta na-le san-ge xigua, bushi
 he take-ASP three-CL^{count} watermelon NEG
 liang-ge ~~xigua~~.
 two- CL^{count} watermelon
 ‘He took three watermelons rather than two.’
- b. Ta chi-le san-jin xigua,
 he eat-ASP three-CL^{Measure} watermelon
 bushi liang-jin [NP ~~xigua~~].
 NEG two- CL^{Measure} watermelon
 ‘He ate three kilos of watermelon rather than two kilos.’

Third, additional evidence in support of the above discussion comes from Li’s (2011) feature analysis of four types of classifiers with respect to the licensing of NP-ellipsis sites, shown in (40a-d), where only three types of classifier phrases are able to license NP-ellipsis sites. Type I includes the natural count of discrete units and the units found in this type are able to give cardinal/number readings when preceded by numeral expressions, making the ellipsis site licensed in (40a), as predicted. In striking contrast, there are two sub-types of Type II. Sub-type I consists of standard measure words like *kilos*, *meters*, *pounds*, and so on, which measure the quantity of entities by a certain standard. Thus, in (40b.i.), the [Num CI] phrase is able to license the ellipsis site because the numeral expression *wu* ‘five’ is used to measure the quantity (kilos) of tea. However, Sub-type II encompasses temporary classifiers like *shen* ‘body’ and *di* ‘floor’, which convey spreading relations and lack precise measure values. The numeral expression in (40b.ii.) is not a genuine number because it cannot be replaced with other numeral expressions. As predicted, no cardinal reading is available, rendering the ellipsis site

¹⁹ I am grateful to a reviewer for sharing the pairs of sentences with me and urging me to clarify the C/M distinction with respect to the proposed view that the numeral in the [Num C/M] triggers a cardinal reading that licenses ellipsis sites.

unable to be licensed.²⁰ Type III classifiers like *ping* ‘bottle’ can be used to measure a concrete unit or an abstract measure unit, as in (40c). Either reading hinges upon the presence of the classifier *ping* to calculate how the plural entities or mass entities are packed (for the cardinal reading) and to express the quantity of plural entities or mass entities by a certain standard. As predicted, the cardinal reading is available and licenses the ellipsis site in (40c), due to the presence of the numeral expression. Type IV includes classifiers employed to measure sums of atoms or members of a sub-kind which share the same natural properties. Likewise, as shown in (40d), the numeral expression *yi-bai* ‘one hundred’ occurring with this type of classifier measures the sums of the members of a sub-kind (that is, fish), deriving a cardinal reading where the NP-ellipsis site can be licensed.

(40)

- a. Type 1: [+C, -M] classifiers that have a counting reading by default

Zhangsan	mai-le	san- duo	hua,	Lisi
Zhangsan	buy-ASP	three-CL	flower	Lisi
mai-le	liu- duo	[NP—hua].		
buy-ASP	six-CL		flower	

‘Zhangsan bought three flowers, and Lisi bought six.’

- b. Type 2: [-C, +M] classifiers that have a measure reading by default

i. *Standard measures*

Zhangsan	he-le	liu- gongjin	cha,
Zhangsan	drink-ASP	six-CL	tea
er	Lisi	he-le	wu- gongjin
and	Lisi	drink-ASP	five-CL
		[NP—cha].	

tea

‘Zhangsan drank six kilos of tea and Lisi drank five kilos.’

²⁰ This line of reasoning is also shared by Liu (2015), as discussed in Section 3.1.

ii. *Temporary measures*

*Xuesheng-men wan-dao yi-shen xue,
 student- PL play-EXT one-body snow
 laoshi-men yeshi wan-dao yi-shen
 teacher-PL too play- EXT one-body
 [NP—xue].
 snow

Intended: ‘Students played to the extent that snow is spread over their whole bodies, and teachers played to the same extent.’

c. Type 3: [+C, +M]²¹

Wo he-le liu-ping jiu,
 I drink-ASP six- CL wine

Zhangsan liang-ping [NP—jiu].
 Zhangsan two- CL wine

- i. *Counting reading*: ‘I drank six bottles of wine, and Zhangsan drank two bottles.’
- ii. *Measure reading*: ‘The amount of wine I drank was equal to six bottles of wine, and Zhangsan drank the same amount.’

d. Type 4: [-C, -M]

Zhe-jian haiyangguan you yi-bai-zhong
 this- CL aquarium have one-hundred-CL
 yu, na-jian haiyangguan queyou
 fish that- CL aquarium however
 liang-qian-zhong [NP—yu].
 two-thousand- CL fish

‘There are one hundred kinds of fish in this aquarium, but that one has two thousand kinds.’

²¹ I am grateful to a reviewer for pointing out to me that the term ‘count reading’, which was proposed to be a semantic licensing condition of NP-ellipsis in the previous draft of this paper, cannot accommodate the fact that NP-ellipsis can be also licensed by measure classifiers denoting the measure reading. In this light, I replaced the term ‘count reading’ with ‘cardinal reading’, which intends to capture the core observations in Section 3, where only classifiers preceded by genuine numeral expressions are able to license NP-ellipsis.

Summarizing, I argued that the semantic categorization between the numeral and the classifier phrase in the [NumP CIP] phrase can be accounted for by Her's (2012a, 2012b) multiplicative theory, where the numeral is a multiplier and the classifier is a multiplicand. Thus, the [NumP CIP] phrase is a complex cardinal that encodes a number reading. Furthermore, the examples in (40a-d) are intended to show that the four types of classifiers, when preceded by genuine numeral expressions, are able to license the NP-ellipsis site, except in the case of a sub-type of Type II, where temporal measures are not compatible with the numeral expression. The interaction between the numeral and the four types of classifiers, if interpreted along the lines of Her's formula in (38), amounts to a number reading that arises from multiplication. The two questions which emerged at the beginning of this section are answered: the cardinal reading arises from multiplication denoted by the [NumP CIP], and every type of classifier, if preceded by a genuine numeral and denoting the cardinal reading, is able to license NP-ellipsis sites. In the sub-section to come, I will raise the idea that the numerical reading has to be defined in a more general sense in order to accommodate several variants of noun phrases where NP-ellipsis is licensed. Specially, there are two types of the numerical reading: the cardinal reading and the ordinal reading.

3.6 A Sub-Type of the Numerical Reading: The Ordinal Reading

The previous discussion is primarily concerned with NP-ellipsis in the [NumP CIP NP] phrase, and has argued for the licensor role of the numerical reading, in addition to the head-complement configuration. One immediate implication is that the mandatory presence of a numeral expression gives rise to the cardinal reading, which is able to license NP-ellipsis. Admittedly, there are variants of noun phrase in Mandarin where NP-ellipsis is allowed to occur and the numeral expression is obviously absent. Moreover, the preceding section has claimed that the numerical reading can be precisely defined as the cardinal reading derived from the multiplication between the classifier and the numeral expression, but it is further observed that the ordinal reading is also available in the licensing context of NP-ellipsis. In this section, I argue that the numerical reading

should be re-defined in a broad sense in order to accommodate the variants of noun phrases where NP-ellipsis is licensed.

One reviewer provides three inspiring examples, as illustrated in (41), (42) and (43). (41) represents a case of the ordinal reading where the ellipsis site is also licensed, which seems to provide counterevidence to the licensing role of the cardinal reading. On the assumption that the presence of a numeral expression accompanied by the M/C classifier gives rise to the cardinal reading, the absence of the numeral expression in (42) is apparently against the licensing role of the cardinal reading. Likewise, (43) shows that the [DemP CIP] complex is able to license the ellipsis site, despite the absence of a numeral expression. The question is how to accommodate the three examples under the proposed analysis. I suggest that the answer to the question lies in the syntactic manifestation of NumP.

- (41) Wo xihuan di er ben shu, bushi di
 I like DI two CL book not DI
 yi ben [~~NP~~ shu].
 one CL book
 ‘I like the second book rather than the first one.’

- (42) Wo xihuan na ben shu, bushi zhe
 I like that CL book not this
 ben [~~NP~~ shu].
 CL book
 ‘I like that book rather than this one.’

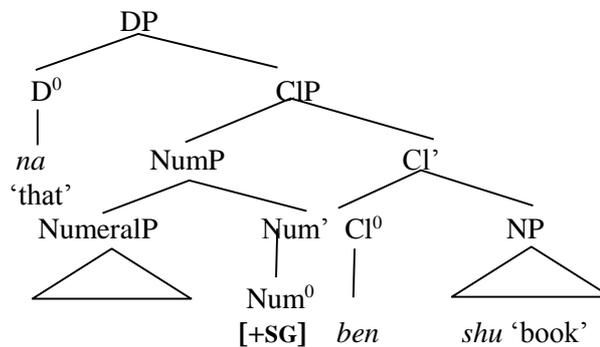
- (43) Qing xian chuli zhuo-shang zhe xie shui,
 please first handle table-up this CL water
 bushi zhuo-xia na xie [~~NP~~ shui].
 not table-down that CL water
 ‘Please first remove the amount of water on the top of this table
 rather than the other amount under the table.’

To begin with, I will spell out two insights that add refinement to the understanding of the DP structure. First, I follow Yang (2005) in assuming that NumP has a fine structure and that it displays a semantic

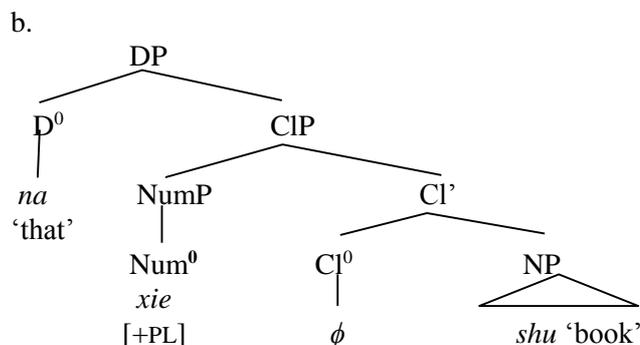
correlation with the presence of the classifier and the numeral expression. Yang (2005) discusses three strategies to convey plurality in Mandarin and proposes that only one number feature can be specified in the DP domain. For concreteness, Yang treats *xie* in (44) as a plural marker, and it is in complementary distribution with the classifier *ben*. Yang argues that, as visualized in (45a-b), when the Num⁰ is marked with [+SG], it cannot be morphologically realized and its Spec position can be occupied by a base-generated NumeralP to produce a numeral expression. In contrast, (45b) shows that plurality is morphologically realized by the Num⁰ *xie* marked with [+PL] and represses the presence of the numeral expression and the classifier.²² (45a-b) can be motivated to explain the feature specification conflict in (44), where the [+PL] *xie* co-occurs with the [+SG] realized by the numeral expression.

- (44) Na (*xie) ben shu
 that xie three book

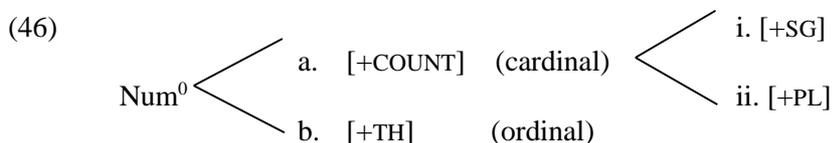
- (45) a.



²² A word of clarification is that in Yang's proposed structures, NumP is independently motivated as an extended functional projection taken by D⁰. To be consistent with the previous discussion, I take at face value that NumP is base-generated at [Spec, CIP].



Second, I will present the compositional view that the ordinal reading results from D^0 that is morphologically realized by the morpheme *di* and the Num^0 specified with the [+TH] feature. I follow Tsai's (2011) analysis of *di* as heading DP and Num^0 as denoting an ordinal reading. Particularly, Tsai argues for two types of *di*- one is a [+STRONG] determiner and triggers a definite reading, whilst the other is a [-STRONG] and gives a quantity reading. Note that Tsai adopts Zabbal's (2006) view that the head of NumP is an operator and responsible for the encoding of interpretation for cardinals and ordinals, which are base-generated at [Spec, NumP]. What matters to us is that in the case of ordinals, the presence of the ordinal operator under Num^0 presupposes an ordering operation picking out a single entity associated with a numerically-valued position in the ordering sequence. Given the above insights, I suggest that the numerical reading can be defined by the way that Num^0 is allowed for either the cardinal specification or the ordinal specification, which trigger different operations, as illustrated in (46). On the one hand, when Num^0 is specified with the [+COUNT] operator, it can be combined with numeral expressions and classifiers to trigger a cardinal reading. On the other hand, an ordinal reading, triggered by Num^0 specified with the [+TH] operator, picks up an entity according to the numerally-valued position in an ordering set.



Given the above discussion, let us return to the examples in (41), (42) and (43). The licensing of NP-ellipsis in (41) can receive a straightforward explanation: the ordinal reading, a subtype of the numerical reading, is available, in addition to the head-complement relation between CL^0 and NP.

In sharp contrast, (42) and (43) both allow for the cardinal reading. Note that though the classifier *yi* is absent in (42), the only available reading is the singular reading (*na ben shu* ‘that one book’) rather than the plural reading. It has been argued that the silence of the number *yi* ‘one’ does not amount to the absence of NumP. Yang (2001) observes that the silent numeral *yi* is allowed only when it is preceded by a verb, a quantifier or a demonstrative, as evident in (47a-c). Yang proposes that bare classifiers are clitics that need to be attached to proper hosts in lieu of the missing numeral *yi* ‘one’. Thus, details aside, when the numeral *yi* is covert, the verb complex *mai-le*, the demonstrative *zhe* ‘this’ and the quantifier *mei* ‘every’ serve as proper hosts. It is interesting to note that (42) is similar to (47b): the demonstrative is present. Leaving aside the precise implementation of Yang’s PF analysis, I suggest that the reading in (47a-c) already suggests itself: the singular reading is available. As the ellipsis site can be structurally licensed by the classifier head *ben*, the silence of the numeral expression does not amount to the absence of the numerical reading. This line of thinking can apply to (43). The only interpretation of *na xie shui* ‘that water’ is *na (yi) xie shui* ‘that amount of water’. Different from Yang’s (2005) analysis, I treat *xie* in point as a non-quantitative collective classifier, and the absence of the numeral *yi* is not tantamount to saying that the cardinal reading is not available.²³

(47) The silent numeral *yi* is allowed when preceded by verbs, quantifiers and demonstratives

- a. Zhangsan mai-le (yi) ben shu.
Zhangsan buy-ASP one CL book
‘Zhangsan bought one book.’

²³ Admittedly, one complication is whether *na xie* should be analyzed as a compound denoting *some* or *those* in English or as two items meaning *that amount of something*.

- b. Zhe (yi) ben shu
this one CL book
'this book.'
- c. Mei (yi) ben shu
every one CL book
'every book.'

In this section, it has been illustrated that NP-ellipsis can occur in various types of noun phrase, and I have argued that the NumP is always present, though covert. The formal licensing is satisfied by the head-complement relation between the classifier and NP, and the numerical reading associated with NumP, as discussed in this section, has been defined in a broader sense in order to subsume the two sub-types of the numerical reading that are proposed to pertain to Num⁰.

4. THE PROPOSED VIEW AND ITS IMPLICATIONS

This section is divided into two parts. I will provide a motivation for the licensing role of the numerical reading in NP-ellipsis, and address several issues surrounding it. In the second part, I will show that another licenser of NP-ellipsis, *de*, is not necessarily required to be analyzed on independent grounds.

4.1 Two Sides of the Same Coin: Formal Licensing and Numerical Reading

It has been pointed out that the head-complement relation is a core structural licensing condition in the sense that an ellipsis site has to be subcategorized by a corresponding head and be properly governed by the head. Section 0 has shown that not every functional head is able to create the same licensing condition, however. This leads us to the observation that the numerical reading plays a role, while the head-complement relation is respected. In Section 3.5, I have argued that the [NumP CIP] can be analyzed as having the internal structure [*n* x *base*] (Her 2012a) / [multiplier x multiplicand] (Her 2017), which derives the cardinal reading.

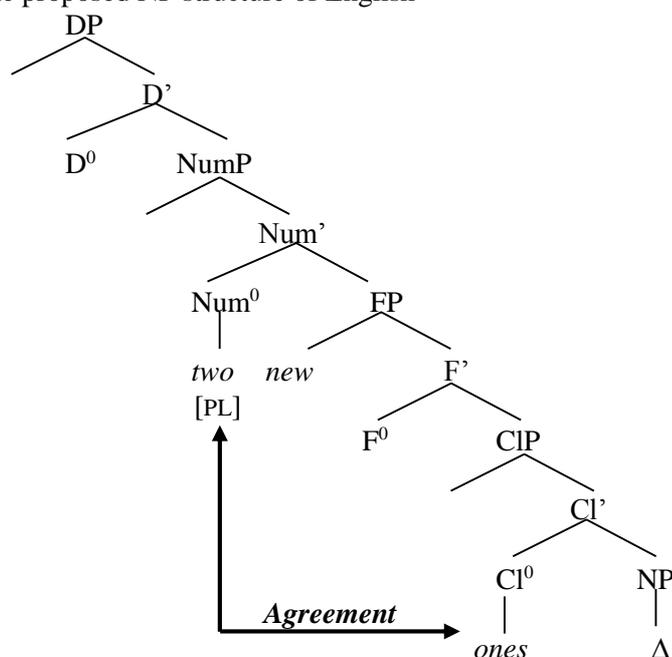
Furthermore, it has been argued in Section 3.6 that the numerical reading has to be defined in a broader sense in order to subsume the ordinal reading and the cardinal reading. Both of them pertain to the semantic specifications of Num⁰. In this section, I will propose the idea that the two conditions result from the licensing configuration of NP-ellipsis.

Consider a set of English NP-ellipsis sentences in (48a-c), where the elided NP demands the insertion of *one*. *Wine* in (48a) is a bare mass noun, and does not require NumP, contributing to a type reading. By contrast, the noun in (48b) *book* is a countable noun and, when elided, requires the presence of the NumP *two* to license the insertion of *ones*. (48c) further shows that the presence of the NumP *two* is obligatory rather than the adjective *new* in order to license the insertion of *ones*, which is arguably a manifestation of CIP (Borer 2005, Wang 2016, among others). Sentences (48b) and (48c) lend support to the licensing status of CIP, as evidenced by the number agreement marked on *one*.

- (48) The insertion of *one* in English NP-ellipsis
- a. Talking about wine, I prefer Australian (*one).
 - b. Talking about new books, I have two *(ones).
 - c. Talking about books, I have two new *(ones).
- (Barbiers 2005: (2b), (2c), (2d))

What is the syntactic status of *one* with respect to NP-ellipsis? In Borer (2005), it is argued that *one* is Cl⁰ of CIP, as depicted in (49), and the analysis proposed in Borer works as follows: (i.) *one* as a classifier presupposes the existence of CIP in the case of NP-ellipsis; (ii.) the existence of CIP allows a mass or type reading to emerge, as in (48b), where CIP has a dividing/individuating function, whereas NumP denotes quantity and (iii.) CIP serves as a precondition for NumP. Borer argues that the insertion of *one* into CIP follows NP-ellipsis, serving as a licenser of the ellipsis site. An immediate consequence of this analysis is that given the structure in (49), NP-ellipsis entails an ‘individuating’ reading; for example, ‘a thick book’ is informally paragraphed as ‘one thick of the type book’, deriving a partitive reading.

(49) The proposed NP structure of English



In lines with Sleeman's (1996) proposal, Alexiadou and Gengel (2008, 2012) argue that focus, if present at all, emerges as a by-product of the ellipsis licensing process and does not serve as one of the major licensing factors. Specifically, the concepts of partitivity and focus both reveal that a target element for [+PARTITIVE] or [+FOC] fulfills a similar role in identifying a target element within a contextually given set. This line of argumentation is tantamount to suggesting that (i.) the legitimate licenser is Cl^0 of CIP rather than Foc^0 , in stark contrast to any focus-based analysis, (ii.) contrastive focus arises from the individuating function of Cl^0 , and (iii.) the postulation of $FocP$ in the nominal domain should be dispensed with.

Nevertheless, I suggest that the correlation between partitivity and NP-ellipsis might not be strong, as discussed in Wang (2016). Rather, the data from Section 3.2 to 3.4 have shown that the numerical reading plays another core role. In Mandarin, count/mass classifiers are heads that

project CIPs, sufficing to license NP-ellipsis in the ECP fashion, but only when they are accompanied by genuine numerals. In a broader sense, the presence of partitive readings relies on the availability of the numerical reading. As argued in Borer's (2005) system, there is a division of labor between CIP and NumP in the nominal domain; the former is responsible for dividing functions, while the latter specifies quantity. Semantically, the composition of NumP and CIP contributes to the availability of the numerical reading, after CI^0 subcategorizes the NP to have a complete nominal meaning. Structurally, the subcategorization entails a head-complement relation. Different from previous studies on NP-ellipsis that have only been concerned with the structural relation between a head and the ellipsis site, I attempt to show that the structural relation can be refined in such a way that its interpretative component plays a role in licensing NP-ellipsis. Granted Borer's (2005) system, the numerical reading arises from NumP and CIP, while formal licensing is sanctioned by a head-complement relation established by CI^0 taking NP as its complement.

This refined view can receive direct support from the absence of numerals in noun phrases. Zhang (2011) observes that all types of counting constructions contain the silent element *yi* 'one', as illustrated in (50a-f). The absence of *yi* is due to PF deletion.

- (50) Counting constructions in Mandarin (Modified from Zhang 2011: (50a-f))
- a. Individual CL
Zhangsan xiang mai (yi) ben shu.
Zhangsan want buy one CL book
'Zhangsan wants to buy a book.'
- b. Individuating CL
Zhangsan gang chi-le (yi) pian niu-rou.
Zhangsan just eat-ASP one slice cow-meat
'Zhangsan just ate a slice of beef.'
- c. Container measure
Zhangsan xiang mai (yi) ping jiu.
Zhangsan want buy one bottle wine
'Zhangsan wants to buy a bottle of wine.'

- d. Standard measure
 Zhangsan gang mai-le (yi) jin yangrou.
 Zhangsan just buy- ASP one jin mutton
 ‘Zhangsan just bought a jin of mutton.’ (1 jin = 500 grams)
- e. Partitive CL
 Zhangsan gang chi-le (yi) pian xigua.
 Zhangsan just eat- ASP one slice watermelon
 ‘Zhangsan just ate a slice of watermelon.’
- f. Collective CL
 Zhangsan gang yujian-le (yi) qun qiandao.
 Zhangsan just meet- ASP one group robber
 ‘Zhangsan just met a group of robbers.’

Interestingly, it is observed that these counting constructions, though having ‘counting’ in the sense of Zhang, fail to license the ellipsis site, as evidenced by the NP-ellipsis versions of (50a-f) in (51a-f). The presence of *yi* is obligatory in both the antecedent clause and the host clause in order to license ellipsis sites.

- (51) The ellipsis site is not licensed in the counting constructions in (50a-f)

- a. Individual CL
 Zhangsan xiang mai *(yi) ben shu, er
 Zhangsan want buy one CL book and
 Lisi ye xiang mai *(yi) ben
 Lisi also want buy one CL
 [~~NP~~ shu].
 book
 ‘Zhangsan wants to buy a book, and Lisi wants to buy one, too.’

b. Individuating CL

Zhangsan gang chi-le *(yi) pian niu-
 Zhangsan just eat- ASP one slice cow-
 rou, er Lisi ye chi-le
 meat and Lisi also eat-PERF
 *(yi) pian [NP—niu rou].
 one slice cow-meat
 ‘Zhangsan just ate a slice of beef, and Lisi ate one slice,
 too.’

c. Container measure

Zhangsan xiang mai *(yi) ping jiu, er
 Zhangsan want buy one bottle wine and
 Lisi ye xiang mai *(yi) ping
 Lisi also want buy one bottle
 [NP—jiu].
 wine

‘Zhangsan wants to buy a bottle of wine, and Lisi wants to
 buy one, too.’

d. Standard measure

Zhangsan gang mai-le *(yi) jin
 Zhangsan just buy- ASP one jin
 yangrou, er Lisi ye gang mai-le
 mutton and Lisi also just buy-PERF
 *(yi) jin [NP—yangrou].
 one jin mutton

‘Zhangsan just bought a jin of mutton, and Lisi just bought
 one jin, too’(1 jin = 500 grams).

e. Partitive CL

Zhangsan gang chi-le *(yi) pian
 Zhangsan just eat- ASP one slice
 xigua, er Lisi ye gang chi-le
 watermelon and Lisi also just eat-ASP
 *(yi) pian [NP—xigua].
 one slice watermelon

‘Zhangsan just ate a slice of watermelon, and Lisi just ate
 one slice, too.’

f. Collective CL

Zhangsan gang yujian-le *(yi) qun
 Zhangsan just meet- ASP one group
 qiangdao, er Lisi gan ye yujian-le
 robber and Lisi just also meet-PERF
 *(yi) qun [~~NP qiangdao~~].
 one group robber
 ‘Zhangsan just met a group of robbers, and Lisi just met one
 group, too.’

I do not have an explanatory account for the observations in (51a-f) but I think that the obligatory presence of the numeral with respect to NP-ellipsis has to do with the general structural restriction. It has been observed in Saito and Murasugi (1990) and Lobeck (1990) that NP-ellipsis is licensed within DP when the Spec position of the DP is filled by a genitive phrase, as evident in (52a-c). This line of thinking can be extended to the example in (53), where the NP *books* can be deleted when the Spec of the QP is occupied by *five*.

(52)

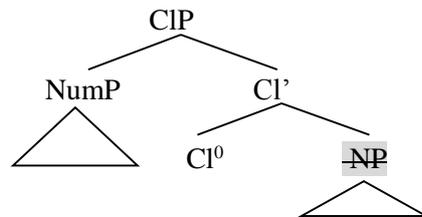
- a. I have read Mary’s book, but I haven’t read [DP Mark’s [~~NP book~~]]
- b. * I have written a book, but I haven’t published [DP a [~~NP book~~]]
- c. * I have seen the book, but I haven’t had a chance to read [DP the [~~NP book~~]]

(53) Sam bought [QP three [NP books]], and Kate bought [QP five [QP ~~books~~]].

Granted the general structural restriction, the obligatory presence of *yi* ‘one’ in (51a-f) is accounted for in the way that NumP has to be overt in the Spec of CIP in order for NP to be deleted, as depicted in (54).²⁴

²⁴ As will be detailed in Section 4.2, this structural restriction is active in the instances of NP-ellipsis licensed by *de*, whose Spec position has to be occupied by an overt modifier.

(54)



If this line of reasoning is plausible, the obligatory presence of *yi* in (51)(51) is explained.

One complication surrounding the structure in (54) with respect to NP-ellipsis is whether the Spec position of CIP also plays a role in licensing NP-ellipsis.²⁵ For concreteness, one reviewer wonders whether there is a feature-checking process between the Spec position and the head that has to occur in order for the NP to be deleted, which amounts to *Generalization on Deletion* in (55).

- (55) *Generalization on Deletion* (Lobeck 1990)
 An XP which is a complement of a functional category can be deleted iff the functional head has a specifier which it agrees with.

This generalization seems to capture three classes of deletion in English, shown in (56a-c): the genitive phrase *Kyle's* at [Spec, DP] agrees with D^0 in (56a), the subject DP *Chris* agrees with T^0 to check Case or the EPP in (56b), and the moved *wh*-phrase at [Spec, CP] agrees with C^0 to check the Q feature (56c), followed by the deletion of the complements.

- (56)
- Sam's criticism of Tony is interesting but [_{DP} Kyle's [_{NP} criticism of Tony]] is not interesting.
 - Sam won't laugh, but [_{TP} Chris will [_{VP} laugh]].
 - John bought something, but I don't know [_{CP} what_i [_{TP} he bought t_i]].

²⁵ I am indebted to a reviewer for urging me to consider this structural complication.

Nevertheless, Lobeck's (1990) generalization does not require an overt XP at [Spec, DP], or even a covert element at [Spec, DP], when agreeing with D⁰.²⁶ By contrast, Saito et al. (2008) argue that the Spec position has to be filled by a base-generated/externally-merged XP at [Spec, DP], contributing to a licit licensing configuration of NP-ellipsis. For example, the elided NP *taido* 'attitude' is licensed by the externally-merged XP *Hanako* at [Spec, DP] in (57a), while the elided NP *hi* 'day' in (57b) is not licensed because the XP *ame* 'rain' is an internally-merged/moved XP.²⁷

- (57) Japanese
- | | | | | | | |
|----|--|--------------------|-----------------------|----------------|--------|-----|
| a. | [Taroo | no | taido]-wa | yoi | ga, | [DP |
| | Taroo | NO | attitude-TOP | good | though | |
| | Hanako | [no | taido]-wa | yo-kunai. | | |
| | Hanako | NO | attitude-TOP | good-not | | |
| | 'Though Taroo's attitude is good, Hanako's isn't.' | | | | | |
| b. | *[Hare | no | hi]-wa | yoi | ga, | [DP |
| | clear | NO | day-TOP | good | though | |
| | ame [no | hi]-wa | otikomu. | | | |
| | rain | NO | day-TOP | feel-depressed | | |
| | 'Clear days are OK, but I feel depressed on rainy days.' | | | | | |

Thus, granted the above discussion, it follows that the Spec position has to be filled by an externally-merged XP in order for the NP to be elided, and whether there is an agreement relation between the Spec and the head (D⁰ for instance) is less relevant. In the case of the licensing configuration of NP-ellipsis in Mandarin in (54), previous studies (Saito. et al. 2008, Liao and Wang 2011) have provided robust evidence showing that [Spec, CIP] is occupied by an externally-merged numeral phrase (NumP) and Cl⁰ subcategorizes for a NP. This configuration, in addition to licensing NP-ellipsis, is able to account for NP constituency in Mandarin.

²⁶ See Ko and Seo (2012) for similar arguments.

²⁷ Another way of looking at the asymmetry is to say that there is an argument-adjunct asymmetry.

In the meantime, one reviewer provides a pair of sentences, as shown in (58a-b),²⁸ illustrating that there can be other factors affecting the licensing of NP-ellipsis, in addition to the numerical reading. The reviewer points out that the presence of the perfective marker *-le* blocks the licensing of NP-ellipsis in (58a), while its absence is able to license NP-ellipsis in (58b). The contrast seemingly suggests that the temporal location plays a role in licensing NP-ellipsis.

(58)

- a. Ta mai-le yi-ben shu, *(wo ye mai-le
he buy-PRFone-CL book I also buy- PRF
ben [~~NP~~—shu]).
CL book
Intended: ‘He bought one book. I also bought one.’
- b. Ta mai-le yi-ben shu. Wo ye mai
he buy-PRF one-CL book I also buy
ben [~~NP~~—shu] ba!
CL book SFP
‘He bought a book. I will buy one as well!’

Nonetheless, I suggest that the temporal location does not have any direct bearing on the licensing condition. As self-evident in (59), a proper context set up for (58a-b) gives rise to a past reading which still licenses NP-ellipsis, and it follows that the licensing condition is separated from the temporal location. Furthermore, the apparent present tense reading in (58b) pertains to the sentence-final particle *ba*, whose function is to lower the degree of certainty of the speaker and to solicit the hearer’s disagreement (Li and Thompson 1982, Li 2006, to name a few) in the immediate context. Thus, its occurrence requires the presence of the speaker in the immediate context, contributing to a present reading.

²⁸ I am grateful to the reviewer for sharing this pair of sentences with me and urging me to consider how to account for these sentences, given the proposed view in this paper.

denotes a numerical reading. Therefore, (58a-b) do not constitute counterexamples.

What is more, one reviewer presents interesting examples in (61a-b), where the presence of the classifier *ge* is optional, and wonders how to elucidate them, given the proposed view that classifiers must be present so as to be qualified licensors of NP-ellipsis.²⁹

(61)

- a. san (ge) ren
 three CL people
 ‘three people’
- b. xia (ge) libai
 down CL week
 ‘next week’

I suggest that there are two lines of thinking that might shed light on the optional presence of the classifier. First, there is an independent reason why the classifiers in (61a-b) can be dropped. From a mathematical perspective, Her (2010, 2012a, 2012b) puts forward a proposal that a C(classifier)/M(measure word) distinction can be interpreted as having a mathematical value, and the function that links Num and the C/M is multiplication. Take (62a-b) for example. The classifier *ge* can be dropped because both the noun *zao* ‘trillion’ and *ren* ‘people’ are mathematically discrete units. Even though *ge* is dropped, the total is the same. In sharp contrast with (62a-b), (62c) shows that the measure word *da* cannot be dropped because M, as the multiplicand, has a value of 12. Her (2010) argues for a formula to capture the C/M distinction in (63).

(62)

- a. Si (ge) zao
 four CL trillion
 ‘four trillions’ [4 x1 trillion]

²⁹ I am grateful to a reviewer for sharing these examples with me.

- b. Si (ge) ren
 four CL people
 ‘four people’ [4 x 1 people]
- c. Si *(da) bi
 four CL pen
 ‘five dozens of pens’ [4 x dozen rose = 4 x 12 rose]

- (63) Her’s (2010) proposed formula
 $[Num\ K\ N] = [Num \times x\ N]$, where $K = C$ iff $x = 1$, otherwise $K = M$

Granted Her’s formula in (63), the optional presence of the classifier *ge* in (61) (61a-b) can be accounted for: *ren* ‘people’ in (61a) is a discrete unit that can be mathematically counted itself, while *libai* ‘week’ in (61b) alone has a well-defined range (seven days).³⁰ Second, viewed from the perspective of NP-ellipsis, (61a) and (61b) serve to create several complications, however. For instance, though the optional presence of the classifier *ge* can be explained from a mathematical perspective, it fails to explain the fact that the presence of *ge* is mandatory in NP-ellipsis, as evident in (64), though the number *liu* ‘six’ is present and denotes countability. It is obvious that the presence of a classifier like *ge* is needed to license the ellipsis site.

- (64)
- | | | | | | |
|-----------|-----------------------|----------|----------|--------|-------|
| Na-dong | fangzi | zhu-le | qi-ge | ren, | bushi |
| that-CL | house | live-ASP | seven-CL | people | not |
| liu-*(ge) | [NP ren]. | | | | |
| six-CL | | people | | | |
- ‘Seven people lived in that house rather than six.’

³⁰ Another example to illustrate this point is *xia (ge) xingqier* ‘next Tuesday’, where the classifier *ge* can optionally be dropped because the NP is able to specify a discrete day. Nevertheless, there are certain counterexamples, such as *xia (*ge) yue* ‘next month’. I will leave discussion of them aside for expository reasons.

Another interesting complication is that NP-ellipsis is not licensed in the sequence [*xia* CL N], though the classifier *ge* is present, as shown in (65a). And, in stark contrast, once a numeral expression like *yi* ‘one’ is inserted, as in (65b), the ellipsis site is licensed.

(65)

- a. *Shang-ge xingqi Zhangsan qu Taipei luxing,
 up-CL week Zhangsan go Taipei trip
 xia-ge [~~NP xingqi~~] ta yao qu Riben.
 down-CL week he will go Japan
 Intended: ‘Zhangsan took a trip to Taipei, and he will go to Japan next week.’
- b. Shang yi-ge xingqi Zhangsan qu Taipei luxing,
 up one-CL week Zhangsan go Taipei trip
 xia-yi-ge [~~NP xingqi~~] ta yao qu Riben
 down-one-CL week he will go Japan

The striking contrast in (65a-b) shows that both the classifier and the numeral expression contribute to a proper licensing condition of the ellipsis site. The line of reasoning pursued above, if tentatively taken to be on the right track, adds refinement to the view proposed throughout this paper: that is, the sequence [NumP CIP] is a proper licensing configuration, evidenced by the insertion of *yi* in (65b) that can repair the licensing condition in (65a). Despite there being variants of noun phrase structures—the numeral expression is dropped in (58a-b) and the classifier can be optionally omitted in (62a-b), the above discussion suffices to show that NP-ellipsis cannot be licensed in these structural environments. Still, viewed with respect to NP-ellipsis, the variants lend support to the syntactic-semantic intricacy of the phrase [NumP CIP] by the way that it is proposed to be a licensing configuration of NP-ellipsis in Mandarin.

4.2 *de* as a Licensor of NP-Ellipsis

In Section 4.1, it is argued that the numerical reading plays a core role in licensing NP-ellipsis, but, if such is the case, how do we account for the fact that *de* can also license NP-ellipsis without a numerical reading?

Different from the instances of NP-ellipsis licensed by the phrase NumP-CIP, the licensing condition on instances of NP-ellipsis licensed by *de* has to observe a head-complement relation. The absence of the numerical reading is readily captured by the fact that neither a numeral expression nor a classifier phrase is involved. Thus, due to its conceptual and empirical complexities, *de* has been resistant to a precise characterization. Nonetheless, I suggest that in the case of NP-ellipsis there are three alternative analyses of *de* with respect to NP-ellipsis, though a more plausible analysis is pending. It will be observed that *de* is consistently analyzed as a head element subcategorizing NPs, contributing to a head-complement relation.

First, Wang (2016) maintains that *de* is a modification marker (Mod⁰) employed to license the empty noun (*pro*) via attributivity.³¹ As shown in (66a), the modifier phrase *luse* ‘green’ modifies the NP *pingguo* ‘apples’ by attributing the property of being green to the NP with the insertion of *de*, and *de* serves the same role in the second conjunct by attributing the property of being red to the empty noun. Similarly, *pro* has to be licensed by a head-complement relation, as illustrated in (66b).

(66)

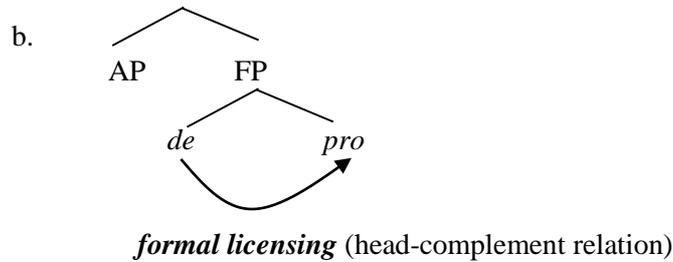
a. NP-ellipsis with *de*

Lisichi-le	luse	de	pingguo, wo	chi-le
Lisieat-ASP	green	MOD	apple I	eat-ASP
hongse	de	<i>pro</i>		
red	MOD			

‘Lisi ate a green apple, and I ate one apple.’

(Wang 2016: 7)

³¹ It should be mentioned that Wang (2016) does not resort to a deletion mechanism that targets NPs, but treat ‘ellipsis sites’ as true empty categories.



The second alternative analysis is that *de* is a kind of classifier. Cheng and Sybesma (1998) argue that *de* is the overt realization of the unit classifier. First, they suggest that the stark difference between modification with and without *de* is that with *de*, the modifier modifies an individual, while without *de*, the modifier modifies the noun before the individual has been selected. Interpreted under their analysis, (67a) says that there is an individual (*flower*) from a set of flowers and it is red, whereas (67b) says that there are red flowers.

- (67) Two types of *de* in Mandarin
- a. hong de hua
 red MOD flower
 ‘the red flower.’ (a red flower from a set of red flowers)
 - b. hong hua
 red flower
 ‘red flowers’

(67a) can be interpreted as denoting a partitive reading (or a set-member reading). In pursuit of a unified analysis, it is rather tempting to analyze *de* as a type of classifier that is able to denote a partitive reading and license NP-ellipsis, consistent with the observation made in Section 3.3, where the ellipsis site can be licensed by the partitive reading. This line of reasoning, when applied to (68), says that a proper context set for (68) is that there is a basket of apples of different colors on the table, and

Zhangsan eats red ones and *Lisi* eats green ones.³² Nevertheless, to many native speakers of Mandarin, this context is not necessary for (68) in a sense that the red apple that *Zhangsan* ate and the green apple that *Lisi* did not necessarily come from the same basket. Specifically, the partitive reading is not necessarily available in (68), which excludes the possibility of analyzing partitivity as a necessary licensing condition.

- (68) NP-ellipsis licensed by *de*
- | | | | | |
|-----------------------------|---------|---------|-------|--------------------|
| Zhangsan | chi-le | hongse | de | [_{NP} |
| Zhangsan | eat-ASP | red | | CL _{unit} |
| pingguo], | Lisi | chi-le | lu:se | de |
| apple | Lisi | eat-ASP | green | CL _{unit} |
| [_{NP} — pingguo]. | | | | |
| | apple | | | |
- ‘Zhangsan ate red apples, and Lisi ate green ones.’

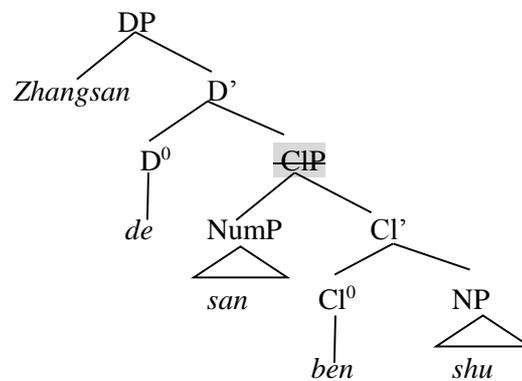
The third analysis, proposed by Saito et al. (2008), is to analyze *de* as the D⁰ projecting DP. This analysis is able to account for two basic facts. On the one hand, the deletion of a sequence NumP-CIP-NP in (69a) is legitimate because the sequence is subcategorized by *de*, as visualized in (69b).

³² Zhang (2012) offers five convincing arguments showing that *de* cannot be analyzed as a genuine classifier: (i.) *de* cannot occur to the left of an indefinite, but a classifier can, (ii.) a classifier is to the immediate right of a demonstrative, but *de* is not, (iii.) a classifier can be reduplicated, but *de* cannot, (iv.) *de* follows an adjective, but a classifier does not, (v.) it is observed that a classifier is adjacent to *de*, and treating *de* as a classifier might lead to a prediction that *de* and the classifier are able to mark count nouns as countable. This prediction is not confirmed.

(69)

- a. Zhangsan de san ben shu bi Lisi
 Zhangsan DE three CL book than Lisi
 de [~~san ben shu~~] gui.
 DE three CL book expensive
 ‘Zhangsan’s three books are more expensive than those of
 Lisi’s.’

b.

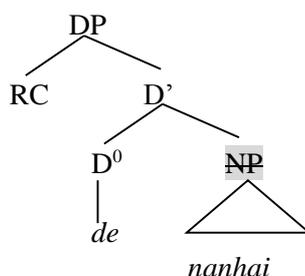


On the other hand, the structure in (70b) can account for NP-ellipsis in Mandarin relative clauses, as evident in (70a), where the head noun *nanhai* ‘boy’ can be deleted, because it is in a head-complement relation with *de*.

(70) NP-ellipsis in Mandarin relative clauses

- a. [[_{RC}Wo zuotian kanjian] de [_{NP}
 I yesterday saw DE
 nanhai]] bi [[_{RC} ta zuotian
 boy than he yesterday
 kanjian] de [_{NP} nanhai]] geng
 saw DE boy more
 youqian
 richer
 ‘The boy we saw yesterday is richer than the one he saw
 yesterday.’

b.



Though several analyses of *de* are available, it is clearly seen that the three analyses above are consistent in treating *de* as a X^0 , a modifier in Wang (2016), a classifier in Cheng and Sybesma (1998), and the D^0 in Saito et al. (2008). Different from the instances of NP-ellipsis licensed by the phrase Num-CIP, *de* does not select this phrase and a lack of numerical readings naturally follows.

Summarizing, I have shown in this section that the numerical reading plays another role in the licensing of NP-ellipsis, in addition to formal licensing. The numerical reading arises from the labor of division between CIP and NumP in noun phrases- the former is responsible for dividing functions, while the latter specifies quantity. By contrast, NP-ellipsis licensed by *de* lacks the numerical reading, which results from the lack of NumP and CIP in the internal makeup of DP. Despite the absence of numerical readings, the head-complement relation remains as a core licensing condition.

5. Conclusion

To recap the discussion so far, it has been shown that formal licensing serves as a primary licensing condition for NP-ellipsis in terms of a head-complement relation, which dictates that an elliptical site has to be properly governed by an X^0 in the fashion of the ECP. I have further argued that not every X^0 serves the licensing role. In the case of Mandarin NP-ellipsis, count/mass classifiers are granted the X^0 status, but they have to denote a numerical reading. This line of reasoning is readily captured by the prevailing view that the numerical reading has to do with the merge of CIP with NumP in the nominal domain in Mandarin and English. It follows that formal licensing and the numerical reading condition are not independently motivated, and that they are instead two sides of the same coin. The numerical reading results from the internal makeup of DP where NumP is base-generated at [Spec, CIP], predicting the obligatory presence of a numeral expression when a classifier appears. Furthermore, I have addressed the issues involved in dealing with NP-ellipsis licensed by *de* and pointed out that *de* behaves differently from NP-ellipsis licensed by the sequence NumP-CIP in Mandarin. Specifically, the instances of NP-ellipsis licensed by *de* are devoid of the numerical reading, which can be ascribed to the lack of numeral expressions and classifiers in the syntactic structure of *de*.

Furthermore, it has been discussed in Section 2 that the postulation of focus is a not necessary condition for NP-ellipsis. In Mandarin, NP-ellipsis can be licensed by overt classifiers without postulating an independently-motivated FocP in the nominal domain. One reviewer raises a question: how strong is focus in licensing ellipsis? The reviewer refers to one VP ellipsis example in (71) and wonders whether *you* ‘have’ can be a focus marker so that it is able to license the elided part. Yet, it should be noted that *you*, analyzed as a perfective marker (Tsai 2002, 2004) or as a focus marker (Su 2008), does not play a core role in determining whether NP-ellipsis can be licensed. As self-evident in (72), *you* is qualified as a target of A-not-A operations, which attests its head status

(X⁰) (Huang 1990).³³ In this light, formal licensing is satisfied, due to the presence of a proper head-complement, (or put differently, *you* takes VP as its complement). Alternatively, analyzed as a focus marker, Su (2008) argues that *ye* ‘too’ is a focus-associated adverb at [Spec, FocP] and that *you* is an aspect head that undergoes head movement at PF to Foc⁰ after VP ellipsis takes place. Crucially, Su’s focus-based analysis of VP ellipsis hinges upon the configuration that AspP headed by *you* has to take VP as its complement. Thus, granted the two alternative analyses of *you*, it is obvious that focus does not act as a core licenser of VP-ellipsis.³⁴

(71)

Zhangsan	mai-le	bi,	Lisi	ye
Zhangsan	buy-ASP	pen	Lisi	also
you	[VP mai bi].			
PRF/FOC	buy	pen		

‘Zhangsan bought pens, so did Lisi.’

(72)

Zhangsan	mai-le	bi,	er	Lisi
Zhangsan	buy-ASP	pen	and	Lisi
you-mei-you	[VP mai bi]		dou	bu
PRF/FOC	-NEG-PRF/ FOC	buy	pen	all
gan	wode	shi.		
concern	my	matter		

‘Zhangsan bought pens, and whether Lisi bought pens or not did not concern me.’

Given the view sustained in this paper, as noted by one reviewer, it is interesting to ask why the licensing condition of VP ellipsis is not subject to the numerical reading condition, and specifically, what makes NP-ellipsis different from VP ellipsis in terms of the licensing of elided parts. I suggest that there are two explanations for the differences between NP-

³³ That is, the A-not-A operator in INFL⁰ targets the closest head and undergoes lowering to derive the surface form of the A-not-A question (Huang 1990).

³⁴ I am especially thankful to the reviewer for reminding me to bring up this issue for discussion.

ellipsis and VP ellipsis. First, though ellipsis operates at PF, the structural size of the elided constituents is different (that is, a VP is elided in VP ellipsis, whilst a NP is elided in NP-ellipsis). It thus follows that the recovered content of their respective elided parts is starkly different: the elided VP is interpreted as an event, while the elided NP is interpreted as an entity.³⁵ Second, granted the interpretative differences, their forms of modification diverge. In NP-ellipsis, the elided NP is modified by the complex NumP-CIP, giving rise to a numerical reading, and the [NumP CIP] is a form of multiplication (Her 2012b). By contrast, as evidenced by the case of VP ellipsis in (73), the elided VP can receive a frequency reading ‘five times of going to America’ resulting from the adverb *wu-ci* ‘five times’, which amounts to the counting of the event.

- (73)
- | | | | | |
|----------|--------|--------|-------------------------------|----------|
| Zhangsan | zhi | qu-guo | Meiguo | yi-ci, |
| Zhangsan | only | go-ASP | America | one-time |
| er | Wangwu | you | [vp qu guo Meiguo] | |
| but | Wangwu | ASP | go-ASP | America |
- wu-ci.
five-time
‘Zhangsan has been to America only once, while Wangwu has been there five times.’

It is worth noting that, for instance, as argued by Liao (2004, 2014), there is a degree of parallelism between the nominal domain and the clausal domain in the sense that elements in a nominalized AspP should behave like the elements in the CIP, as shown in (74), where the aspect adverb *san nian* ‘three years’ behaves like a classifier of the NP *gaozhong* ‘high school’.

- (74) Lisi du-le [san nian de gaozhong].
Lisi study-ASP three year DE high-school
‘Lisi attended high school for three years.’ (Liao 2014:(26a))

³⁵ The interested reader is referred to Chiu (2011) for a discussion about how ellipsis sites are generated with respect to the semantic content of NPs, VPs and IPs.

Wei-Cherng Sam Jheng

Nonetheless, a detailed discussion of the parallel relation with respect to ellipsis goes beyond the scope of this paper. Despite so, while formal licensing must be respected, the numerical reading as a licensing condition of NP ellipsis results from the licensing configuration [NumP-CIP]. This line of thinking can apply to VP ellipsis, where an elided VP, if modified by an aspect-encoding adverb like the frequency adverb *wu-ci* ‘five times’, denotes the counting of the event.

REFERENCES

- Aboh, Enoch Oladé. 2004. Left or right? A view from the Kwa periphery. In *Peripheries: Syntactic Edges and Their Effects*, eds. David Adger, Cécile de Cat, and George Tsoulas, pp.165-189. Dordrecht: Kluwer.
- Aboh, Enoch Oladé. 2010. Information structuring begins with the numeration. *International Journal of Theoretical Linguistics* 2(1):12-42.
- Alexiadou, Artemis and Kristen, Gengel. 2008. NP ellipsis without focus movement/projection: The role of classifiers. Paper presented at the Workshop on Interface-Based Approach to Information Structure, September 13, 2008, University College London, London, UK.
- Alexiadou, Artemis and Kristen, Gengel. 2012. NP ellipsis without focus movement/projections: The role of classifiers. In *Contrasts and Positions in Information Structure*, eds. by Kucerova and A. Neeleman, pp.177-205. Cambridge: Cambridge University Press.
- Barbiers, S. 2005. Variation in the morphosyntax of 'one'. *Journal of Comparative Germanic Linguistics* 8(3):159-183.
- Borer, H. 2005. *In Name Only*. Oxford: Oxford University Press
- Cheng L. L. Lisa and Sybesma R. 1998. Yi-wan tang, yi-ge tang: Classifiers and massifiers. *The Tsing Hua Journal of Chinese Studies, New Series* 28(3):385-412.
- Cheng, Hsu-Te Johnny. 2011. Argument ellipsis in Mandarin Chinese. In *Proceedings of the 23rd North American Conference on Chinese Linguistics (NACCL-23)*, eds. by Zhuo Jing-Schmidt, pp.224-240. Eugene: University of Oregon.
- Chiu, Liching Ivy. 2011. *The Phrasal Empty Categories in Mandarin Chinese*. Hsinchu: National Tsing Hua University dissertation, Taiwan.
- Chomsky, Noam. 1981. *Lectures on Government and Binding*. Dordrecht: Foris.
- Chomsky, Noam. 1986. *Knowledge of Language*. New York: Praeger.
- Chomsky, Noam. 1995. *The Minimalist Program*. Cambridge: MIT Press.
- Chomsky, Noam. 2000. Minimalist inquiries: The framework. In *Step by Step. Essays on Minimalist Syntax in Honor of Howard Lasnik* eds. by R. Martin, D. Michaels, and J. Uriagereka, pp.89-155. Cambridge: MIT Press.
- Chung, Sandra, William Ladusaw, and James McCloskey. 1995. Sluicing and logical form. *Natural Language Semantics* 3:239-282.
- Chung, Sandra, William Ladusaw, and James McCloskey. 2010. Sluicing: Between structure and inference. In *Representing Language: Essays in Honor of Judith Aissen*, eds. by Rodrigo Gutiérrez-Bravo, Line Mikkelsen and Eric Potsdam, pp.31-50. University of California, Santa Cruz: Linguistic Research Center.
- Corver, N. and van Koppen, M. 2006. Let's focus on noun ellipsis. *Glow Newsletter* 57.
- Epstein, Samuel David, Erich M. Groat, Ruriko Kawashima and Hisatsugu Kitahara. 1998. *A Derivational Approach to Syntactic Relations*. Oxford: Oxford University Press.
- Her, O.-S., 2010. Distinguishing classifiers and measure words. Paper presented at the 4th Conference on Language, Discourse and Cognition (CLDC2010), May 1-May 2, 2010, National Taiwan University, Taipei, Taiwan.

- Her, One-Soon and Hui-Chin Tsai. To appear. Left is right, right is not: On the constituency of the classifier phrase in Chinese. *Language and Linguistics* 21(1).
- Her, One-Soon. 2012a. Distinguishing classifiers and measure words: A mathematical perspective and implications. *Lingua* 122(14):1668-1691.
- Her, One-Soon. 2012b. Structure of classifiers and measure words: A lexical functional account. *Language and Linguistics* 13(6):1211-1511.
- Her, One-Soon. 2017. Structure of numerals and numeral classifiers in Chinese: Historical and typological perspectives and cross-linguistic implications. *Language and Linguistics* 18(1):26-71.
- Hsieh, Miao-Ling. 2008. The Internal Structure of Noun Phrases in Chinese. Taipei: Crane.
- Hsu, Y.-Y. 2014. Nominal internal and external topic and focus: Evidence from Mandarin. *University of Pennsylvania Working Papers in Linguistics* 20(1):151-160.
- Huang, C.-T. James (1990) Modularity and Chinese A-not-A questions. In *Interdisciplinary Approaches to Language: Essays in Honor of S.-Y. Kuroda*, eds. by Georgopoulos, C. and R. Ishihara pp.305-332. Dordrecht: Kluwer.
- Ko, Heejeong, and Saetbyol, Se. 2012. NP-ellipsis revisited: The role of D feature. *Studies in Generative Grammar* 22:677-702.
- Li, B. 2006. Chinese Final Particles and the Syntax of the Periphery. Leiden: Leiden University dissertation, Netherlands.
- Li, N. C. and S. A. Thompson. 1981. *Mandarin Chinese: A Functional Reference Grammar*. Berkeley and Los Angeles: University of California Press.
- Li, XuPing. 2011. *On the Semantics of Classifiers in Chinese*. Ramat Gan: Bar-Ilan University dissertation, Israel.
- Li, Yen-hui Audrey. 1999. Plurality in a classifier language. *Journal of East Asian Linguistics* 8:75-99.
- Li, Yen-hui Audrey. 2005. VP-ellipsis and null objects. *Linguistic Sciences* 15:3-19
- Li, Yen-Hui Audrey. 2014a. Born empty. *Lingua* 151:43-68.
- Li, Yen-Hui Audrey. 2014b. Structure of noun phrases: Left or right? *Taiwan Journal of Linguistics* 12(2):1-32.
- Liao, Wei-wen Roger and Yuyun Wang. 2011. Multiple-classifier constructions and nominal expressions in Chinese. *Journal of East Asian Linguistics* 20(2):145-168
- Liao, Wei-wen Roger and Yu-yun Iris, Wang. 2011. Multiple-classifier constructions and nominal expressions in Chinese. *Journal of East Asian Linguistics* 20(2):145-168.
- Liao, Wei-wen Roger. 2004. The Architecture of Aspect and Duration. Hsinchu: National Tsing Hua University MA thesis.
- Liao, Wei-wen Roger. 2014. Process-related Durative Phrases as Numeral-Classifier Phrases in Chinese. *Taiwan Journal of Linguistics (Special Issue on the Grammar of Measurement in Chinese)* 12(2):59-80.
- Liao, Wei-wen Roger. 2015. On modification of whole/zheng in English and Chinese and the uniformity of syntax. *Journal of East Asian Linguistics* 24(1):53-74.
- Liu, Chen-Sheng Luther. 2015. Amount classifiers in Chinese and the mass/count distinction. *International Journal of Chinese Linguistics* 2(1):1-32.

- Liu, Feng-hsi. 2010. Quantification and the count-mass distinction. Paper presented at IACL-18 & NACCL-22, May 20-May 22, 2010, Harvard University, Cambridge, US.
- Liu, Feng-hsi. 2012. The count-mass distinction of abstract nouns in Mandarin Chinese. *UCLA Working Papers in Linguistics, Theories of Everything* 17(6):215-221.
- Lobeck, Anne. 1990. Functional heads as proper governors. In *Proceedings of the 20th Annual Meeting of the North East Linguistic Society*, eds. by Juli Carter, pp.348-362. Amherst, MA: GLSA.
- Lobeck, Anne. 1993. Strong agreement and identification: Evidence from ellipsis in English. *Linguistics* 31:777-811.
- Lobeck, Anne. 1995. *Ellipsis: Functional Heads, Licensing, and Identification*. New York: Oxford University.
- Merchant, Jason. 2001. *The Syntax of Silence: Sluicing, Islands, and Identity in Ellipsis*. Oxford: Oxford University Press.
- Merchant, Jason. 2004. Fragments and ellipsis. *Linguistics and Philosophy* 27(6):661-738.
- Merchant, Jason. 2006. Small structures: A sententialist perspective. In *the Syntax of Nonsententials: Multidisciplinary Perspectives [Linguistik Aktuell/Linguistics Today 93]*, eds. by Ljiljana Progovac, Kate Paesani, Eugenia Casielles and Ellen Barton, pp.77-91. John Benjamin Publishing Company.
- Paul, Waltraud. 1999. Verb gapping in Chinese: A case of verb raising. *Lingua* 107:207-226.
- Rizzi, Luigi. 1990. *Relativized Minimality*. MIT Press, Cambridge.
- Rizzi, Luigi. 1997. The fine structure of the left periphery. In *Elements of Grammar*, ed. by L. Haegeman, pp.281-338. Dordrecht: Kluwer.
- Saito, Mamoru and Keiko Murasugi. 1990. N'-deletion in Japanese: A preliminary study. *Japanese/Korean Linguistics* 1:258-301.
- Saito, Mamoru, Lin, T.-H. Jonah, and Keiko Murasugi. 2008. N'-ellipsis and the structure of noun phrases in Chinese and Japanese. *Journal of East Asian Linguistics* 17:247-271.
- Sleeman, Petra. 1996. *Licensing Empty Nouns in French*. Amsterdam: University of Amsterdam dissertation, Netherlands.
- Su, Cheng-Chieh. 2008. VP ellipsis correlates in Mandarin Chinese. *UST Working Papers in Linguistics (USTWPL)* 4:73-97.
- Tai, James H-Y. and Lianqing Wang. 1990. A semantic study of the classifier tiao. *Journal of the Chinese Language Teachers Association* 25(1):35-56.
- Tsai, Hui-chin Joyce. 2011. *Left Periphery and Reference of DP in Mandarin Chinese*. Hsinchu: National Tsing Hua University dissertation, Taiwan.
- Tsai, Wei-tien Dylan. 2011. Rethinking formal licensing. Paper presented at the 5th International Conference on Formal Linguistics, June 30, 2011, Guangdong University of Foreign Studies, China.
- Tsai, Wei-tien Dylan. 2002. You 'have' in Taiwan Mandarin and dialects: On the social and historical aspects of grammatical theories. *Tsing Hua Journal of Chinese Studies* 32(2):495-528.

Wei-Cherng Sam Jheng

- Tsai, Wei-tien Dylan. 2004. On 'you ren', 'you den ren' and 'you xie ren.' *Hanyu Xuebao [Chinese Linguistics]* 2:16-25.
- Wang, Yuyun Iris. 2014. *The Theory of Empty Noun in Chinese: With Special Reference to the Right Node Raising Construction*. Los Angeles: The University of Southern California dissertation.
- Wang, Yuyun Iris. 2016. The emptiness of One. Paper presented at the 11th Workshop on Formal Syntax and Semantics (FOSS-11), September 1-September 2, 2016, Academia Sinica, Taipei, Taiwan.
- Wu, Hsiao-hung Iris. 2002. *On Ellipsis and Gapping in Mandarin Chinese*. National Tsing Hua University MA thesis, Taiwan.
- Yang, H. S.-F. 2005. *Plurality and Modification in Mandarin Noun Phrases*. Austin: The University of Texas at Austin dissertation.
- Yang, Rong. 2001. *Common Nouns, Classifiers, and Quantification in Chinese*. New Brunswick: Rutgers University dissertation.
- Zabbal, Youri. 2006. *Testing One, Two, Three: The Syntax and Semantics of Numeral Expressions*. Unpublished manuscript, University of Massachusetts at Amherst.
- Zhang, Niina Ning. 2011. The constituency of classifier constructions in Mandarin Chinese. *Taiwan Journal of Linguistics* 9(1):1-50.
- Zhang, Niina Ning. 2012. De and the functional expansion of classifiers. *Language and Linguistics* 13(3):569-582.
- Zhang, Niina Ning. 2013. *Classifier Structures in Mandarin Chinese*. Berlin: Mouton de Gruyter.

[Received 02 December 2018; revised 18 July 2019; accepted 30 August 2019]

Wei-Cherng Sam Jheng
Department of English
National Taitung University
369, Sec. 2, University Rd., Taitung, Taiwan
wcsamjheng@nttu.edu.tw

再探漢語名詞組刪略認可條件以及漢語名詞組結構

鄭偉成
國立臺東大學

過去文獻一致認為刪略處或名詞組刪略後所留下的軌跡必須由管轄中心語來進行形式認可，此形式認可反映出空範疇原則(the Empty Category Principle)的中心語管轄條件。除了提供證據支持 Tsai (2011)的觀點，其主張形式認可在最簡方案的框架下可脫胎換骨為合併(merge)語法運作機制，本文更進一步指出漢語的名詞刪略還受限於另一個認可條件-讀數語意條件。換言之，本文主張漢語名詞組刪略必須於由管轄中心語來進行結構上的形式認可，此中心語詞組必須蘊含讀數語意(基數與序數)。形式認可反映出句法結構性(中心語-補語關係)，而讀數語意認可來自於數量詞組和分類詞組的語意組合性(前者指明數量，後者則是具有劃分功能)。此兩者條件並非獨立的，而是相互依存。本文認為讀數語意是由於名詞組刪略所發生的名詞內部結構，是由數量詞組和分類詞組所組成。另一方面，名詞組刪略如果發生在「的」字名詞組內，讀數語意認可條件則失去作用。這是由於因為「的」字詞組內無數量詞組和分類詞。本文也討論以「的」為管轄中心語來進行形式核可的相關議題。最後也討論漢各類名詞組內的名詞刪略的認可條件，提出原則性的解釋。

關鍵字:名詞組刪除、形式認可、漢語、分類詞、中心語-補語、讀數語意