

Unifying Two General Licensors of Completive Adverbials in Syntax

Niina Ning Zhang (Feb. 2016)

Institute of Linguistics, National Chung Cheng University,
Min-Hsiung, Chia-Yi 62102, Taiwan. Lngnz@ccu.edu.tw

Abstract

It is well-known that an agent-oriented adverbial is syntactically licensed by a functional projection in which an agent is base-generated. How is a completive adverbial, such as *in three minutes*, licensed? It has been noted that either a resultative or an incremental theme in the form of a nominal that is quantified by a numeral licenses a completive adverbial. Both licensing conditions encode a bounded scale. This paper argues that the nominal in the special form can be analyzed as an element hosted in a ResultP, and thus the two conditions are also unified syntactically. The evidence for the analysis comes from the syntactic similarities and interactions between such a nominal and a VV resultative construction in Mandarin Chinese.

Key words: completive, frequentative, durative, verbal classifier, numeral

1 Introduction

1.1 Goal

Certain types of adverbials have their own licensors in syntax. For instance, an agent-oriented adverbial is syntactically licensed by a functional projection in which an agent is base-generated. This paper is aimed to give a unified syntactic analysis of two general licensors of completive adverbials, claiming that the licensor is a unified functional projection, ResultP.

A completive is an expression that adds a sense of completeness to the event encoded by a predicate. It can be in various forms, e.g., the English adverb *completely*, the particle *up* in sentences such as *Jimmy ate up the watermelon*, the Hungarian prefix *meg-*, as in (1b) (compared with (1a); I thank Huba Bartos for discussing the examples), the suffix *-FINISH* in various sign languages, and the Mandarin Chinese V-*wan* ‘V-finish’ compounds, as in (2).¹

- (1) a. Éppen most nézem a filmet. (Hungarian)
just now watch the movie
‘I am watching the movie right now.’
b. Szombaton meg-nézem a filmet.
Saturday MEG-watch the movie
‘On Saturday, I will watch the whole movie.’
- (2) Dali kan-wan-le na ben shu. (Chinese)
Dali read-finish-PRF that CL book
‘Dali finished reading of that book.’

This paper discusses two types of completive adverbials: completive duratives and completive frequentatives. Their occurrence also signals the completeness of a telic event.

¹ Abbreviations used in this paper: BA: causative marker; CD: completive durative; CF: completive frequentative; CF/D: completive durative or frequentative; CL: classifier; CLv: verbal CL; EXP: experiential aspect; GE: the classifier *ge* that follows TAc; IMA: implicit argument; PRF: perfective aspect; PROG: progressive aspect; PRT: sentence-final particle; TAc: pronominal enclitic *ta*.

1.2 Completive durative (CD)

A process-related durative expresses the time duration of a continuing action.² In (3a), the durative PP *in ten minutes* gives the reading that the apples are all consumed and thus it is a completive durative (CD; also called time-span adverbial in Krifka 1992: 30); but in (3b), the durative PP *for ten minutes* does not express a sense of complete consumption of any specific quantity of the apples that was affected in the eating event, and thus it is not a CD.

- (3) a. Kim ate some apples in ten minutes.
b. Kim ate apples for ten minutes.

In the following Chinese examples, the same *si fenzhong* ‘four minutes’ is a CD in the two examples in (4), but not a CD in (5). One can see that the temporal expression in the CD use occurs preverbally, and that in the non-CD use occurs post-verbally. The durative does not need a preposition in either case.

- (4) a. Dali si fenzhong (jiu) da-si-le laohu.
Dali four minute only beat-die-PRF tiger
‘Dali beat the tiger to death in (only) four minutes.’
b. Dali si fenzhong (jiu) xie-le 300 ge zi.
Dali four minute only write-PRF 300 CL character
‘Dali wrote 300 characters in (only) four minutes.’
(5) Na ben shu, Dali kan-le si fenzhong.
that CL book Dali read-PRF four minute
‘Dali read that book for four minutes.’

1.3 Verbal classifier and completive frequentative (CF)

An adverb such as *twice* is called frequentative. A frequentative encodes the occurring times of an action or state. In Chinese, a frequentative is formed by the combination of a numeral and a verbal classifier (CLv) (precisely speaking, it should be called event CL; but I follow the convention here). The language has a rich system of CLvs (e.g., Zhang 2016). In addition to words like *ci* ‘time’ in (6a), words like *quan* in (6b), which bears the same form as the corresponding noun *quan* ‘fist’, are CLvs, too. Such CLvs are called instrument CLvs.³ In (6a), the instrument of the beating is underspecified, but in (6b), the instrument is specified by the CLv, i.e., a fist.⁴

² A process-related durative is different from a result-related durative, such as (i). See Lin (2008) for the latter.

(i) Ta yjing jie-hun san nian le.
3SG already get-married three year PRT
‘It has been three years since {she/he} got married.’

³ Instrument CLvs are also seen in other languages (e.g., Gerner 2009). See Bisang (2011) for a general survey of studies on CLvs.

⁴ Both a frequentative with an instrument CLv and an instrument adverbial may occur preverbally, but they are different syntactically and semantically. First, the CLv of a frequentative may not follow another CL, as seen in (ia), but that of an instrument adverbial may, as seen in (ib).

(i) a. Dali san (*ba) dao jiu kan-duan-le na tiao shengzi.
Dali three CL CL^{knife} only cut-broken-PRF that CL rope
‘Dali cut the rope (only) three times, and as a result, it became broken.’
b. Dali yong (ba) dao kan-duan-le na tiao shengzi.
Dali with CL knife cut-broken-PRF that CL rope
‘Dali cut the rope broken with a knife.’

Second, a numeral-containing instrument adverbial is used to count instruments, whereas a frequentative is used to count actions. In both the instrument adverbial construction in (iia) and the frequentative construction in (iib), the numeral *san* ‘three’ occurs in the first clause. In (iia), the meaning of the second sentence is

- (6) a. Dali da-le Lili san ci.
 Dali beat-PRF Lili three CL
 ‘Dali beat Lili three times.’
 b. Dali da-le Lili san quan.
 Dali beat-PRF Lili three CL^{fist}
 ‘Dali punched Lili three times.’

In (7a), the frequentative *shi quan* ‘ten CL^{fist}’ is a completive frequentative (CF), because the number of the beating action encoded leads to the resultative event, i.e., the death of the tiger. Similarly, in (7b), the CF *shi bi* ‘ten CL^{pen}’ leads to the completeness of the writing of the three characters. In the two examples in (8), *si ci* ‘four times’ is also a CF. This use contrasts with the use of the frequentatives in (6), where the atelic *da-le Lili* ‘beat Lili’ has no bounded scale and thus no completion of any bounded scale is expressed.

- (7) a. Dali shi quan (jiu) da-si-le laohu.
 Dali ten CL^{fist} only beat-die-PRF tiger
 ‘Dali punched the tiger (only) ten times such that it died.’
 b. Dali shi bi (jiu) xie-le san ge zi.
 Dali ten CL^{pen} only write-PRF three CL character
 ‘Dali wrote three characters in (only) ten strokes.’
 (8) a. Dali si ci jiu he-wan-le na ping jiu.
 Dali four CL only drink-finish-PRF that bottle wine
 ‘Dali drank that bottle of wine in four times.’
 b. Dali si ci jiu mai-le 50 ping jiu.
 Dali four CL only buy-PRF 50 bottle wine
 ‘Dali bought as many as 50 bottles of wine after shopping only four times.’

problematic, since the number of the knives is already expressed in the first one. No such a problem occurs in (iib), because the numeral only specifies the number of the action, not the number of the knives.

- (ii) a. Dali yong san ba dao kan-duan-le na tiao shengzi.
 Dali with three CL knife cut-broken-PRF that CL rope
 *Dan wo bu zhidao ta yong-le ji ba dao.
 but 1SG not know 3SG use-PRF how.many CL knife
 ‘Dali cut that rope broken with three knives. *But I don’t know how many knives he used.’
 b. Dali san dao jiu kan-duan-le na tiao shengzi.
 Dali three CL^{knife} jiu cut-broken-PRF that CL rope
 Dan wo bu zhidao ta yong-le ji ba dao.
 but 1SG not know 3SG use-PRF how.many CL knife
 ‘Dali cut the rope only three times and it got broken. But I don’t know how many knives he used.’

Third, an instrument adverbial must have the preposition *yong* ‘with’, as seen in (iii), but a CF/D does not need a preposition, as seen in (ia) and (iib).

- (iii) Dali *(yong) na ba dao kan-duan-le na tiao shengzi.
 Dali with that CL knife cut-broken-PRF that CL rope
 ‘Dali cut that rope broken with that knives.’

Moreover, no two instrument modifiers may occur in the same sentence, as argued by Svenonius (2014), and shown in (iva). As seen in (ivb), the frequentative *san dao* ‘three CL^{knife}’ and the instrument *yong cai-dao* ‘with a kitchen knife’ may co-occur in the same sentence. Their co-occurrence further shows that they are in different syntactic positions.

- (iv) a. *I fixed the roof with a harmer with nails.
 (Svenonius 2014: 7)
 b. Dali yong cai-dao san dao kan-duan-le na tiao shengzi.
 Dali with vegetable-knife three CL^{knife} cut-broken-PRF that CL rope
 ‘Dali cut the rope (only) three times with that kitchen-knife such that it got broken.’

Thus, in Mandarin Chinese, both CDs and CFs occur to the left of a verb, and they do not need a preposition.

1.4 The TAc-GE construction

In the above two subsections, we have seen that a CD or CF occurs with either a VV resultative compound, as in (4a), (7a), and (8a), or a numeral-initial direct object, as in (4b), (7b), and (8b). In addition, in the language, there is a special construction, which ends with either a secondary predicate such as a resultative or a numeral-initial nominal, as see in (9a) and (9b), respectively.

- (9) a. Dali xiang wan ta ge tongkuai.
 Dali want play TA CL overjoyed
 ‘Dali wants to play until he is overjoyed.’
 b. Dali xiang kan ta ge shi ben manhua.
 Dali want read TA CL shi CL comic
 ‘Dali wants to read ten comic books.’

In this construction, two functional elements may follow the verb: the pronominal enclitic *ta* ‘it’ (TAc henceforth) and the classifier *ge* (or *yi-ge*). I call this construction TAc-GE construction (see Zhang, to appear b for a detailed discussion of other types of secondary predicates of the construction, and the overtiness of the two functional elements). The enclitic status of TAc means that it never initiates a clause. Also, like other clitics (see Klavans 1985), TAc has a categorially specified host: it takes a verb as its host (Lin and Zhang 2006: 819). Thus, it may not follow a preposition, such as *xiang* ‘toward’ in (10a) and *dao* ‘until’ in (10b).

- (10) a. *Zhe ge bing, wo yao xiang ta ge yi wei
 this CL disease 1SG want toward TA CL one CL
 yisheng tanyitan.
 doctor talk
 b. *Chi dao ta ge bao.
 eat until TA CL full

A TAc-GE construction may also host a CD or CF. The CD *shi fenzhong* ‘ten minutes’ occurs in (11); and the CF *san ci* ‘three times’ occurs in (12).⁵

- (11) a. Dali shi fenzhong jiu wan-le ge tongkuai.
 Dali ten minute only play-PRF CL overjoyed
 ‘Dali played to his joyfulness in only ten minutes.’
 b. Dali shi fenzhong jiu kan-le ta ge shi ben
 Dali ten minute only read-PRF TA CL ten CL
 manhua.
 comic
 ‘Dali read ten comic books in only ten minutes.’
 (12) a. Dali san ci jiu wan-le ge jingpilijing.
 Dali three CL only play-PRF CL exhausted
 ‘Dali played to an exhausted state in only three times.’

⁵ In (11a) and (12a), a state-denoting expression follows GE. In such state-denoting GE constructions, if the perfective aspect marker *le* occurs with the matrix verb, TAc does not occur. See Lin and Zhang 2006: 819 and Zhang, to appear b for a discussion of the constraint on the overtiness of TAc.

- b. Dali san ci jiu kan-le ta ge shi ben
 Dali three CL only read-PRF TA CL ten CL
 manhua.
 comic
 ‘Dali read ten comic books in only three times.’

In the language, a secondary predicate may also be introduced by the functional element *de* (得), as seen in (13). It may also be expressed by the second element of a VV compound, such as *ganjing* ‘clean’ in the compound *xi-ganjing* ‘wash-clean’ in (14).

- (13) a. Ni chi de hen tongkuai.
 2SG eat DE very overjoyed
 ‘You ate very overjoyed.’
 b. Ni chi de tong-bu-tongkuai?
 2SG eat DE overjoyed-not-overjoyed
 ‘Did you feel overjoyed in your eating?’
 (14) Na jian chenshan, Dali yijing xi-ganjing-le.
 that CL shirt Dali already wash-clean-PRF
 ‘That shirt, Dali has already washed it clean.’

The post-*de* secondary predicate is represented by a full clause, a CP (Li 1999). In contrast, neither the second element of a VV compound nor the post-TAc-GE string is a full clause. For instance, the second verb of a VV compound may neither have its own degree word, as seen in (15a), nor be in an A-not-A question form, as seen in (15b). Similarly, the secondary predicate to the right of TAc-GE may not have the degree word *hen* ‘very’, as seen in (16a) (see Wu 2004: 24; Shu 2012: 685); and it may not have an A-not-A question form, as seen in (16b) (Wu 2004: 25, 31). The ungrammaticality of the examples in (16) is compared with the grammaticality of the *de* constructions in (13).

- (15) a. *xi-hen-ganjing
 wash-very-clean
 b. *xi-gan-bu-ganjing
 wash-clean-not-clean
 (16) a. *Chi ta (yi)-ge hen tongkuai.
 eat ta one-CL very overjoyed
 b. *Chi ta (yi)-ge tong-bu-tongkuai?
 eat ta one-CL overjoyed-not-overjoyed

Thus, the secondary predicate in a TAc-GE construction and a VV compound is not independent syntactically. The relations between a TAc-GE construction and a VV resultative construction will be important to the argumentation of this paper.

1.5 Research background

This paper aims to find out how a completive adverbial (i.e., CF/D) is syntactically licensed. It has been well-recognized that either a resultative or a quantified direct object of a telic predicate measures out an event (Dowty 1979, 1991; Tenny 1987, 1994; Krifka 1989, 1992, 1998; Wyngaerd 2001). One can see that the resultative *si* ‘die’ licenses the CD in (4a) and the quantified direct object *300 ge zi* ‘300 CL character’ licenses the CD in (4b). Semantically, a resultative expresses a bounded scale (e.g., Wyngaerd 2001), so does the quantified direct object in (4b). Both license a CF/D. Thus, bounded scale is a semantically

unified condition for licensing a CF/D. But how is a resultative related to such a quantified direct object syntactically? Does the semantic unification correlate with any syntactic unification? The goal of this paper is to suggest such a possibility.

A unified syntactic analysis has been proposed in Hoekstra (1991) and Sybesma and Wyngaerd (1997). In their analysis, it is assumed that if a direct object is able to measure out an event, there might be a null resultative. Wyngaerd (2001), however, falsifies the assumption in languages such as Dutch. Different from this null resultative assumption, I will claim that the apparent quantified direct object can be a resultative predicate itself.

The paper is organized as follows. In Section 2, I introduce the two general licensors of a CF/D. In Section 3, I show a correlation between one licensor and the TAc-GE construction in Mandarin Chinese. In Section 4, I propose parallel syntactic structures for a VV resultative construction and a TAc-GE construction in which the right-edge phrase is a numeral expression. In Section 5, I argue that a post-TAc-GE numeral expression is indeed a resultative secondary predicate. In Section 6, I argue that in the construction, the secondary predication is represented by a functional projection, TAc is in the subject position, and *ge* is a realization of the head of the projection. In Section 7, I give a syntactic analysis of a construction in which both licensors occur. Finally, in Section 8, I discuss the preverbal restriction of a CF/D and its nominal category in Mandarin Chinese. Section 9 concludes the paper.

2 Two cross-linguistic licensors of CF/Ds

In this section, I present two general licensors of CF/Ds in both English and Mandarin Chinese: a resultative secondary predicate and a quantified direct object in a telic predicate. Beyond these licensors, other kinds of licensors may be subject to language-specific constraints.

2.1 Resultatives as licensors of CF/Ds

Semantically, a resultative expresses a bounded scale for an event (e.g., Wynaerd 2001). (17a) shows that the resultative *wet* licenses the CD *in one minute*, and (17b) shows that the resultative *flat* licenses the CF *in three strikes*.

- (17) a. Jimmy cried the handkerchief wet in one minute.
b. Jimmy hammered the metal flat in three strikes.

In Mandarin Chinese, a resultative construction can be in the form of a VV compound, in which the first verb is the matrix verb and the second one denotes the result state (1.4). For instance, in the VV compound *da-si* ‘beat-die’ in (18a) (= (4a)), *da* ‘beat’ is the matrix verb and *si* ‘die’ is the resultative. The acceptability contrast between (18a) and (18b) indicates that it is the resultative that licenses the CD *si fenzhong* ‘in four minutes’. Also, the acceptability contrast between (19a) (= (7a)) and (19b) shows that it is the resultative that licenses the CF *shi quan* ‘ten punches’.

- (18) a. Dali si fenzhong (jiu) da-si-le laohu.
Dali four minute only bet-die-PRF tiger
‘Dali beat the tiger to death in (only) four minutes.’
b. *Dali si fenzhong (jiu) da-le laohu.
Dali four minute only bet-PRF tiger
(19) a. Dali shi quan (jiu) da-si-le laohu.
Dali ten CL^{fist} only beat-die-PRF tiger
‘Dali beat the tiger (only) ten times with his fist such that it died.’

- b. *Dali shi quan (jiu) da-le laohu.
 Dali ten CL^{fist} only beat-PRF tiger

2.2 NumeralP direct objects as licensors of CF/Ds

In a telic predicate, a direct object that is quantified by a numeral is a typical incremental theme in the sense of Krifka (1992, 1998) and Dowty (1991), or a theme that is able to measure out an event (Tenny 1987). The direct object *two glasses of wine* in (20b), *three books* in (21a), and *three birds* in (21b) are such themes. In contrast, the object *wine* in (20a) is not able to license the CD *in an hour*.

- (20) a. John drank wine {for an hour/*in an hour}.
 b. John drank two glasses of wine {*for an hour/in an hour}.
 (21) a. Jimmy read three books in two hours.
 b. Jimmy killed three birds in two shots.

Like a resultative, a quantified direct object such as the ones in (20b) and (21) always encodes a clear bounded scale of a telic event. Semantically, for (20b), every part of *two glasses of wine* correlates to a part of the drinking event and vice versa. Thus, the reading of two glasses of wine encodes the ending point of the event. No such correlations are seen between *wine* and the drinking event in (20a). Similarly, no such correlations are seen between parts of John and parts of a drinking event in this example, and thus an agent does not measure out an event. For similar reasons, in (21a), the object *three books* licenses the CD *in two hours*; and in (21b), the object *three birds* licenses the CF *in two shots*.

Similarly, in (22a), the numeral-initial direct object *si zhi mao* ‘four CL cat’ occurs with the CD *san fenzhong* ‘in three minutes’. The acceptability contrast between (22a) and (22b) shows that it is the numeral-initial direct object that licenses the CD. Similarly, in (23a), *si zhi mao* occurs with the CF *san bi* ‘in three strokes’. The acceptability contrast between (23a) and (23b) shows that it is the numeral-initial direct object that licenses the CF.

- (22) a. Dali san fenzhong (jiu) hua-le si zhi mao.
 Dali three minute only write-PRF four CL cat
 ‘Dali drew four cats in (only) three minutes.’
 b. *Dali san fenzhong (jiu) hua-le mao.
 Dali four minute only write-PRF cat
 (23) a. Dali san bi (jiu) hua-le si zhi mao.
 Dali three CL^{pen} only draw-PRF four CL cat
 ‘Dali drew four cats in (only) three strokes.’
 b. *Dali san bi (jiu) hua-le mao.
 Dali three CL^{pen} only draw-PRF cat

Li (1998) argues that a nominal can be represented by NumeralP (NumP in her term), as well as DP and NP. NumeralP is for a nominal that is quantified by a numeral and the quantity meaning of the numeral is salient. For instance, *san ge baomu* ‘three CL babysitter’ in (24) is a NumeralP, rather than DP, because it is the number of the babysitters, rather than their other properties, that is emphasized. Similarly, it is the four number of the cats, rather than their other properties, that is emphasized in (22a) and (23a), and therefore, *si zhi mao* is a NumeralP in the examples. In my opinion, if the meaning of a numeral is not salient in the sentence, the numeral might be a modifier inside an NP or DP, rather than in a NumeralP.

- (24) San ge baomu jiu zhaoguni yi ge xiaohai a?
 three CL babysitter only care you one CL child PRT
 ‘Three babysitters took care of you, just one child?’

A NumeralP may follow a verb, as a theme, as seen in the position of *si zhi mao* in (22a), or occur in the left-edge of a clause, as an agent topic or subject, as seen in the position of *san ge baomu* in (24). As we addressed above, an agent does not measure out an event. Krifka-Dowty-Tenny’s above observation can be restated as a generalization that a NumeralP theme of a telic predicate encodes a bounded scale of an event, and thus it licenses a CF/D.

Moreover, it is possible for a CF/D to occur with both a resultative and a NumeralP in the same sentence. For instance, in (25a), the CD *in ten minutes* seems to be licensed by either the resultative *clean* or the NumeralP *ten tables*; and in (25b), the CF *san dao* ‘three CL^{knife}’ seems to be licensed by either the resultative *duan* ‘broken’ or the NumeralP *shi tiao shengzi* ‘ten CL rope.’ I will discuss the syntax of such multiple-licensor constructions in Section 7.

- (25) a. Bill wiped ten tables clean in five minutes.
 b. Dali yong na ba dao san dao (jiu) qie-duan-le
 Dali with that CL knife three CL^{knife} only cut-broken-prf
 shi tiao shengzi.
 ten CL rope
 ‘Dali cut ten ropes (only) three times with that knife.’

2.3 The inconsistency of other possible licensors of CF/Ds

This subsection shows that in contrast to the two types of elements introduced in 2.1 and 2.2, other types of elements are not consistent in their role as a licensor of a CF/D, either language-internally or cross-linguistically.

We have seen that (26a) (= (3a)) is a good sentence in English, but its counterpart (26b) in Chinese is not acceptable. The contrast might come from certain semantic differences between *some* and *yixie* ‘some’.

- (26) a. Kim ate some apples in ten minutes.
 b. *Dali shi fenzhong chi-le yixie pingguo.
 Dali ten minute eat-PRFsome apple

In Mandarin Chinese, it has long been noted that a non-NumeralP direct object does not always delimit an event. Consider direct objects that start with *yi* ‘one’. *Yi* can be used either as a real numeral or an indefinite marker (Chen 2003, Zhang 2013: 95, among others). (27a) is acceptable, where *yi* is in its indefinite use, whereas (27b), which is an English counterpart of (27a), is not acceptable. Reviewer A mentioned that some speakers do not accept (27a). It is possible that those judge this example unacceptable use *yi* here as a real numeral (see below).

- (27) a. Wo zuotian xie-le yi feng xin, keshi mei
 1SG yesterday write-PRF one CL letter, but not
 xie-wan.
 write-finish
 ‘I wrote a letter yesterday, but I didn’t finish writing it.’
 (Tai 1984)

- b. *I wrote a letter yesterday, but I didn't finish writing it.
(adapted from Smith 1991: 107)

The Chinese-English contrast has been explained in various ways. In Tai (1984), it is assumed that Chinese action verbs, including *sha* 'kill', denote activities, rather than accomplishment or achievement. In Smith (1991, 1994), it is assumed that the perfect aspect marker *-le* expresses the initiation, rather than the completion, of an event. A similar analysis is seen in a certain construction of Squamish, where a functional element specifies the initiation, rather than the completion of an event (see Wiltschko 2014: 290). Xiao and McEnery (2004: 95) claim that for an atelic predicate, *-le* signals termination (the action of writing is terminated), but not completion. For further discussion of the semantic variations of perfective markers cross-linguistically, see Altshuler (2014) and Arregui (2014). Moreover, in Soh and Kuo (2005), it is assumed that the contrast between the two languages seen in (27) comes from certain special semantics of nominals in Chinese. They also discuss the semantic interactions between verbs and their objects with respect to delimiting an event. One thus needs to control the elements in the context, including the aspect marker, the semantic type of both the verb and the object, to investigate the licensing conditions of a CF/D. In the same context, if we either change the object in (27a) into a NumeralP, such as *san feng xin* 'three CL letter' in (28a) (cf. Soh and Kuo 2005: 204), or change the verb in (27a) into a resultative VV compound, such as *xie-hao* 'write-read' as in (28b), the clause must denote the completeness of the event, and thus the second clause, which expresses the incompleteness of the event, may not occur.

- (28) a. Wo zuotian xie-le san feng xin, *keshi mei
1SG yesterday write-PRF three CL letter but not
xie-wan.
write-finish
'I wrote three letters yesterday. *But I did not finished them.'
- b. Wo zuotian xie-hao-le yi feng xin, *keshi mei
1SG yesterday write-ready-PRF one CL letter, but not
xie-wan.
write-finish
'I finished writing of a letter yesterday. *But I did not finished it.'

We now have a look at definite direct objects. The direct object *the book* may occur with the CD in *two minutes* in (29a), but the direct object *the metal* may not occur with the same CD in (29b) (see Wyngaerd 2001: 85; I thank James Myers for discussing the examples). Thus, a definite direct object licenses a CF/D in (29a), but not in (29b) in English (if *the metal* in (29a) is replaced with *three pieces of metal*, the sentence is still incompatible with the CD, because of the atelic nature of the verb *hammer*).

- (29) a. Celia read the book in two minutes.
b. Celia hammered the metal {*in two minutes/for two minutes}.

A definite direct object does not license a CF/D in Chinese generally. Note that in the language, a bare noun may have various readings, such as a definite, specific indefinite, and non-specific indefinite reading. For instance, neither the bare noun object *zi* 'character' in (30a), nor the demonstrative nominal *naxie zi* 'those characters' in (30b), licenses the CF *shi bi* 'ten CL^{pen}'. In (30c), it is the NumeralP *san ge zi* 'three CL character' that licenses the CF; and in (30d), it is the resultative *hao* 'ready' that licenses the CF. The examples in (30a) and

(30c) form a minimal pair, and those in (30b) and (30c) form a minimal pair. All of these examples have the same verb *xie* ‘write’, with the same aspect marker *le*, and the same noun *zi* ‘character’ in the object. If *naxie zi* in (30b) and (30d) is replaced with *na ge zi* ‘that character’ or *laoshi jiang de zi* ‘the character told by the teacher’, the acceptability patterns remain the same. These minimal pairs clearly show the same effect of a resultative and a post-verbal NumeralP.

- (30) a. *Dali shi bi (jiu) xie-le zi.
 Dali ten CL^{pen} only write-PRF character
 b. *Dali shi bi (jiu) xie-le naxie zi.
 Dali ten CL^{pen} only write-PRF those character
 c. Dali shi bi (jiu) xie-le san ge zi.
 Dali ten CL^{pen} only write-PRF three CL character
 ‘Dali wrote three characters in (only) ten strokes.’
 d. Dali shi bi (jiu) xie-hao-le naxie zi.
 Dali ten CL^{pen} only write-ready-PRF those character
 ‘Dali wrote those characters in (only) ten strokes.’

The same contrast is seen in the CF *shi ci* ‘ten times’ constructions in (31). Neither the bare noun object *jiu* ‘wine’ in (31a) nor the demonstrative nominal *naxie jiu* ‘the wine’ in (31b) licenses the CF. In (31c), it is the NumeralP *500 ping jiu* ‘500 bottle wine’ that licenses the CF; and in (31d), it is the resultative *lai* ‘come’ that licenses the CF.

- (31) a. *Dali shi ci (jiu) mai-le jiu.
 Dali ten CL only buy-PRF wine
 b. *Dali shi ci (jiu) mai-le naxie jiu.
 Dali ten CL only buy-PRF the wine
 c. Dali shi ci jiu mai-le 500 ping jiu.
 Dali ten CL only buy-PRF 500 bottle wine
 ‘Dali bought 500 bottles of wine in only 10 trips of shopping.’
 d. Dali shi ci jiu mai-lai-le naxie jiu.
 Dali ten CL only buy-come-PRF the wine
 ‘Dali bought the wine in only 10 trips of shopping.’

The example in (32) further shows that a proper name object, such as *Maotai*, which is a name for a special type of wine, also fails to license a CF.

- (32) *Dali shi ci (jiu) mai-le Maotai.
 Dali ten CL only buy-PRF Maotai

The same pattern of licensing condition is seen in (33) for the CD *shi fenzhong* ‘ten minutes’. The CD occurs with the NumeralP object *san ge bingren* ‘three patients’ in (33a), and the resultative compound *kan-wan* ‘see-finish’ in (33b); but it may not occur with the definite object *na san ge bingren* ‘those three patients’, or the proper name *Dali*, or the third person plural pronoun *tamen* in (33c).

- (33) a. Yisheng shi fenzhong (jiu) kan-le san ge
 doctor ten minute only see-PRF three CL
 bingren.
 patient

- ‘The doctor saw three patients in only ten minutes.’
- b. Yisheng shi fenzhong (jiu) kan-wan-le {na san ge
 doctor ten minute only see-finish-PRF that three CL
 bingren/Dali/tamen}.
 patient/Dali/3PL
 ‘The doctor finished seeing those three patients in only ten minutes.’
- c. *Yisheng shi fenzhong (jiu) kan-le {na san ge
 doctor ten minute only see-PRF that three CL
 bingren/Dali/ta-men}.
 patient/Dali/3SG-PL

Regardless of how the contrasts such as the ones in (26) and (27) are explained, no one denies the general cross-linguistic generalization that either a resultative or a NumeralP direct object of a telic predicate measures out an event, and thus licenses a CF/D consistently. Instead of explaining various cross-linguistic and language-internal contrasts, and explaining certain language-specific strategies that contribute a telic reading, such as the CLv *bian* ‘time’ in Mandarin Chinese and the post-verbal particle *up* in English, in this paper, I am concerned with a more general issue: why both a resultative and a NumeralP direct object license CF/Ds consistently. Is there any link between these two general licensors syntactically? I will argue for a unified syntactic analysis of the two licensors.

3 The occurrence of TAc-GE with a NumeralP licensor of a CF/D

Recall the TAc-GE construction introduced in 1.4. In this section, we report an observation that the NumeralPs that are able to license a CF/D are also the ones that may follow TAc-GE.

Not all NumeralP direct objects may license a CF/D. A NumeralP direct object in an individual-level predicate may not do so. For instance, *liang zhi shou* ‘two hands’ does not license the CD *100 tian* ‘100 days’ in (34a), and *liang zhong shuiguo* ‘two kinds of fruit’ does not license the CF *liang ci* ‘two times’ in (34b). Semantically, in (34a), for instance, it is not true that every part of the object *liang zhi shou* ‘two CL hands’ correlates to a part of the possessing eventuality expressed by the predicate. The object does not encode a bounded scale of an event and thus it is not an incremental theme. As expected, the object does not license the CD *100 tian* ‘100 days’.

- (34) a. Ren (*100 tian) you liang zhi shou.
 person 100 day have two CL hand
 ‘A person has two hands.’
- b. Dali (*san ci) taoyan liang zhong shuiguo.
 Dali three time dislike two kind fruit
 ‘Dali dislikes two kinds of fruit.’

The NumeralP in (22a), which licenses a CD, is able to follow TAc-GE, as seen in (35a); and the NumeralP in (23a), which licenses a CF, is also able to follow TAc-GE, as seen in (35b); but the NumeralPs in (34), which fail to license a CF/D, also fail to follow TAc-GE, as seen in (36).

- (35) a. Dali san fenzhong (jiu) hua-le (ta ge) si zhi
 Dali three minute only write-PRF TA GE four CL
 mao.
 cat
 ‘Dali drew four cats in (only) three minutes.’

- b. Dali san bi (jiu) hua-le (ta ge) si zhi
 Dali three CL^{pen} only draw-PRF TA CL four CL
 mao.
 cat
 ‘Dali drew four cats in (only) three strokes.’
- (36) a. *Ren you ta ge liang zhi shou.
 personhave TA CL two CL hand
 b. *Dali taoyan ta ge liang zhong shuiguoguo.
 Dali dislike TA CL two kind fruit

Descriptively, thus, we can state that from a perspective of Mandarin Chinese, if a NumeralP may follow TAc-GE, it is able to license a CF/D. This means that such a NumeralP may be hosted in a TAc-GE construction, rather than following a transitive verb directly and in a direct object position.

4 Proposal: a CF/D is licensed by a ResultP

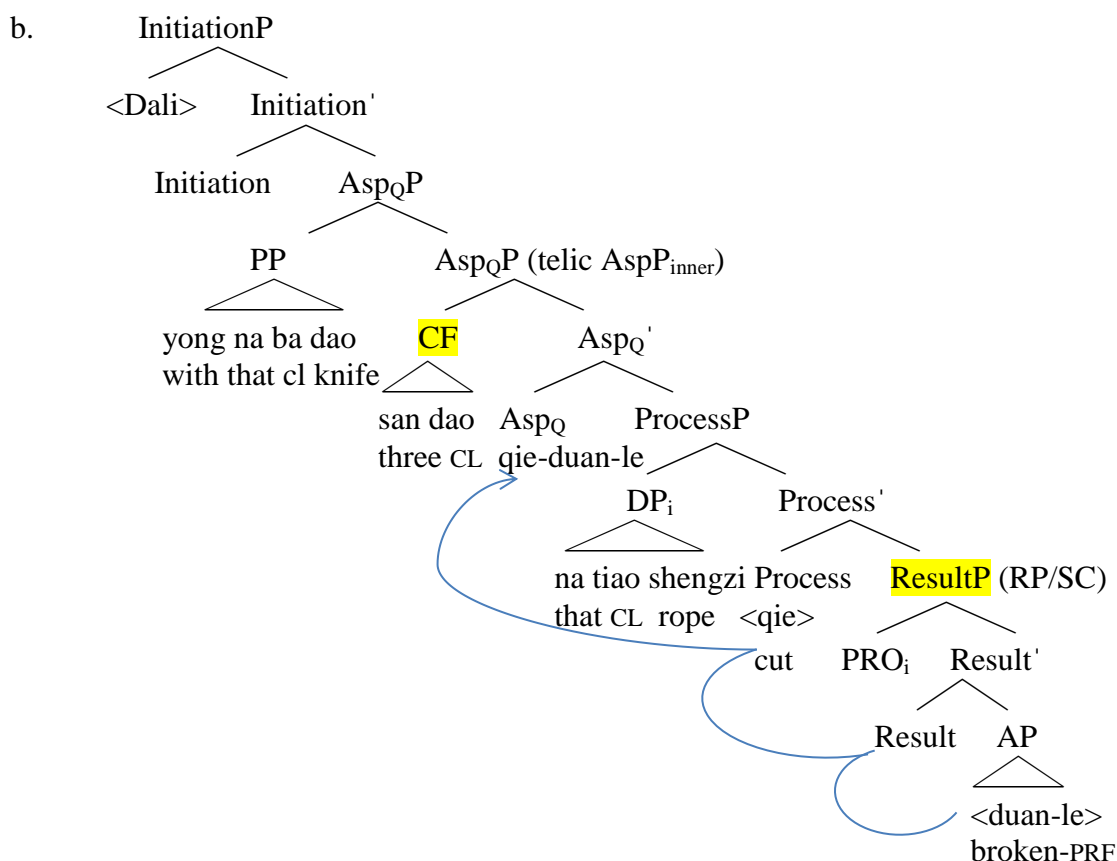
I propose that the licenser of a CF/D is a ResultP in syntax, in both licensing strategies: by a resultative predicate and by an apparent NumeralP direct object. In other words, I will show that if a NumeralP licenses a CF/D, it is a resultative predicate, rather than a direct object. In 4.1, a syntactic structure is proposed for a construction in which a CF/D is licensed by a resultative VV compound, and in 4.2, a syntactic structure is proposed for a construction in which a CF/D is licensed by a NumeralP.

4.1 A CF/D in a resultative construction

In my analysis, I adopt the assumption that event boundedness is represented by a functional projection below the base-position of an external argument, such as Borer’s (2005) Asp_QP or Travis’s (2010) Asp_{P_{inner}}. Since a CF/D occurs in a bounded event only, its occurrence correlates with the occurrence of the functional projection.

I propose that the structure of (37a) is (37b). In this structure, the syntactic position of the adverb *jiu* ‘only’ is ignored, and Specifier of InitiationP is the base-position of the agent *Dali*, which moves to a higher position in a later step of the sentence-formation (see Huang 1993). The labels Initiation, Process, and Result are the labels of the event roles of an event structure (Ramchand 2008). They are semantically parallel to Moens and Steedman’s (1988) Preparatory process, Culmination, and Consequence state, respectively. ResultP can be a small clause (SC), RelatorP (RP, den Dikken 2006) or PredicationP (PredP, Bowers 1993). In all of these possible terms of the structure, the Spec and the complement of the projection are the positions for a subject and predicate, respectively. Moreover, the subject of a resultative can be a PRO (Hornstein and Lightfoot 1987; Larson 1991; Bowers 1993).

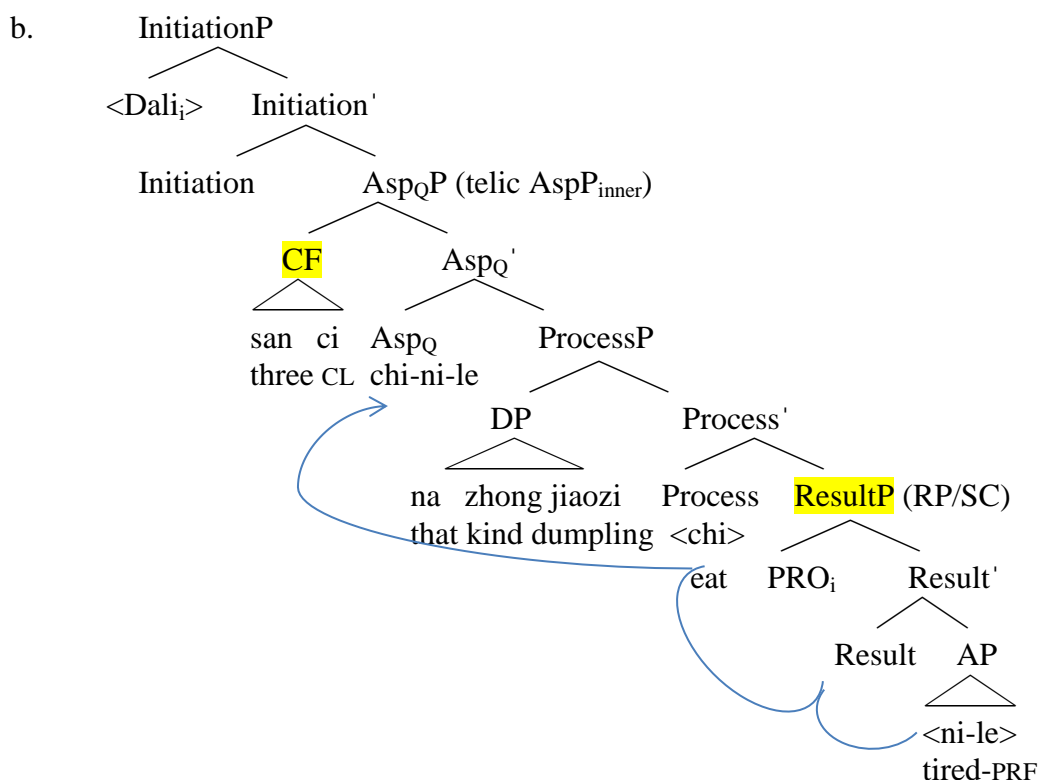
- (37) a. Dali yong na ba dao san dao (jiu) qie-duan-le
 Dali with that CL knife three CL^{knife} only cut-broken-PRF
 na tiao shengzi.
 that CL rope
 ‘Dali cut the rope (only) three times with that knife such that it got broken.’



In (37b), the CF *san dao* ‘three CL^{knife}’ is at Spec of Asp_QP. Moreover, the CF c-commands ResultP, and thus the dependency of the former on the latter is captured (highlighted in the tree). Furthermore, the internal argument of the matrix verb *qie* ‘cut’, i.e., the DP *na tiao shengzi* ‘that CL rope’, controls the PRO subject of the resultative *duan* ‘broken’. The rest part of the syntax of the construction is compatible with any syntactic approaches to a VV resultative compound in the literature. For instance, the head movement from the lower predicate to the higher one is compatible with the analyses in Sybesma (1999) and Zhang (2007), among others. Also, as generally assumed, the perfective aspect marker – *le* surfaces with the V-V compound, but it is licensed by a viewpoint aspect functional projection AspP_{outer}, which is higher than the projection that hosts the base-position of an external argument (see Travis 2010), i.e., above InitiationP.

Example (37b) is an object-oriented (or called locally oriented) resultative construction. The example in (38a) is a subject-oriented (or called non-locally oriented) resultative construction. Its structure is in (38b).

- (38) a. Dali san ci (jiu) chi-ni-le na zhong jiaozi.
 Dali three CL only eat-tired-PRF that kind dumpling
 ‘Dali ate that kind of dumplings (only) three times such that he felt tired of it.’



In (38b), the CF *san ci* ‘three CL’ is at Spec of Asp_QP, c-commanding ResultP, and thus the dependency of the former on the latter is captured. Moreover, the internal argument of the matrix verb *chi* ‘eat’, i.e., the DP *na zhong jiaozi* ‘that kind dumplings’, does not control the PRO subject of the resultative *ni* ‘tired’. Instead, it is the subject of the matrix verb, i.e., *Dali*, that controls the PRO. The head movement originated in the ResultP extends the control domain, and thus the subject-control becomes possible (see Zhang 2007). The structure in (38b) is similar to that in (37b), except the antecedent of the PRO.

4.2 A CF/D in a NumeralP construction

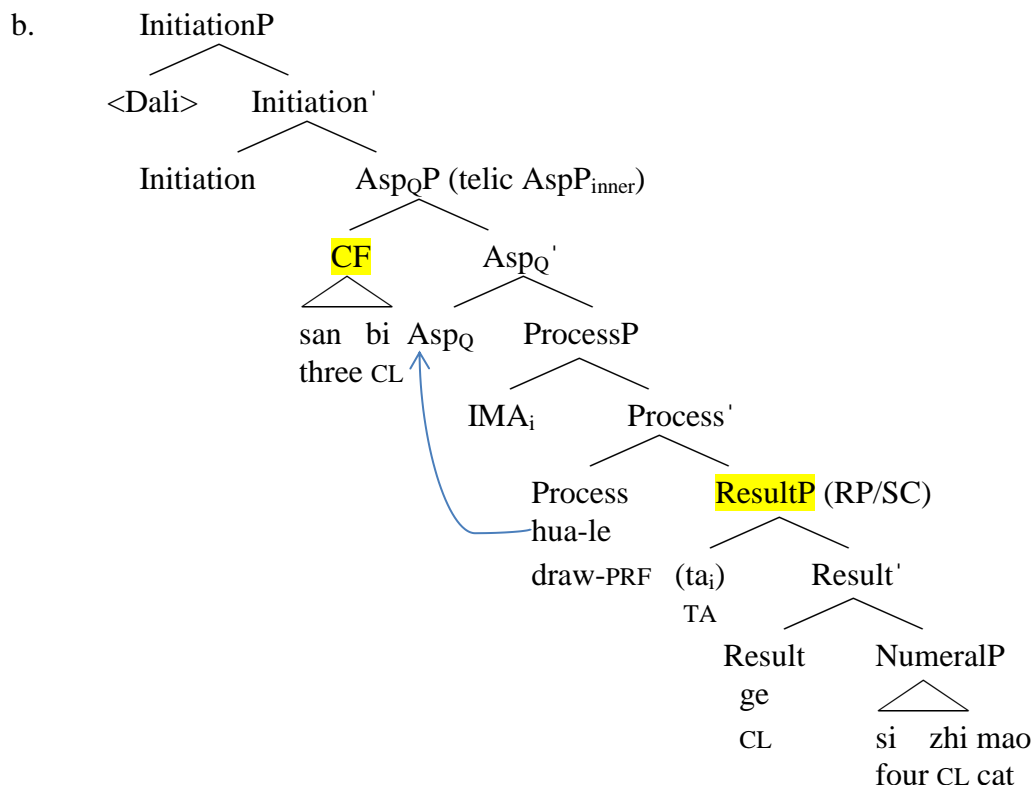
A NumeralP may occur as an argument or topic, as seen in (24) above. It may also occur as a predicate, such as *thirty pounds* in (39a), and *liang ge guojia* ‘two CL country’ in (39b) (see Roy 2013: 96ff).

- (39) a. The gold is at least thirty pounds.
 b. Aodili gen Aodaliya shi liang ge guojia.
 Austriaand Australia be two CL country
 ‘Austria and Australia are two countries.’

I propose that in those sentences where a CF/D is present, and a NumeralP follows a simple verb, the NumeralP is a secondary predicate hosted by a ResultP. In languages such as English, the subject of this NumeralP predicate is not overt. Chinese provides an opportunity to attest the subject of the NumeralP predicate. In Section 3, we reached the generalization that if a NumeralP licenses a CF/D, it may follow TAc-GE. Plausibly, in a TAc-GE construction, the overt *ta* and the NumeralP establish a subject-predicate relation, forming a ResultP. The semantic relation between *ta* and the NumeralP parallels to that between the subject and the predicate in (39). Syntactically, in 1.4, we have introduced certain similarities between a TAc-GE resultative construction and a VV resultative construction. We now

propose a structure for a TAc-GE construction that contains a NumeralP. The structure is parallel to that of a VV resultative construction. For instance, the structure of (40a) is (40b).

- (40) a. Dali san bi (jiu) hua-le (ta ge) si zhi mao.
 Dali three CL^{pen} only draw-PRF TA CL four CL cat
 ‘Dali drew four cats in (only) three strokes.’



As in (37b) and (38b), the CF *san bi* ‘three CL^{pen}’ in (40b) is at Spec of AspQP, c-commanding ResultP, where the NumeralP *si zhi mao* ‘four CL cat’ is hosted. The structure in (40b) is similar to (37b) and (38b), except three aspects. First, in the ResultP, the predicate is a NumeralP, rather than an AP, the head Result is realized by the classifier *ge*, and the subject is an optional *ta*, rather than a PRO.

Second, the internal argument of the verb is an implicit argument, which is labelled as IMA. In this analysis of (40a), the optional *ta*, as the subject of the secondary predicate (i.e., the NumeralP), is associated with the implicit theme of the matrix verb. Thus, ResultP denotes the quantity property of the implicit theme of the matrix verb at the end of the event.

Third, there is no element undergoing a head movement from ResultP to a higher position, and thus the matrix verb and the secondary predicate are not adjacent: they can be separated by TAc and *ge*.

The four maximal projections, InitiationP, AspQP, ProcessP, and ResultP, in the structure of a CF construction can be attested by its four possible readings in the presence of the adverb *you* ‘again’. For instance, (41) has four readings:

- (41) Dali you san bi hua-le (ta ge) si zhi mao.
 Dali again three CL^{pen} draw-PRF TA CL four CL cat
 ‘Dali drew four cats in (only) three strokes again.’

1. There were already four cats (on the wall), which might be projected from a computer, and now Dali drew another four in three strokes. (*you* ‘again’ is associated with ResultP)
2. Someone else had drawn four cats (on the wall) in an unknown manner and unknown instrument, and now Dali drew another four in three strokes. (*you* ‘again’ is associated with ProcessP)
3. Someone else had drawn four cats in three strokes and now Dali did it again. (*you* ‘again’ is associated with Asp_QP)
4. Dali drew four cats in three strokes before and now he did it again. (*you* ‘again’ is associated with InitiationP)

(37b)/(38b) and (40b) are all CF constructions. The derivations of CD constructions are parallel to the CF ones, except that the Spec of Asp_QP is realized by a CD.

4.3 Unifying the two general licensors of CF/Ds in syntax

From the proposed structures in (37b)/(38b) and (40b), one can see that the two general licensors of CF/Ds introduced in Section 2 are unified: Both a resultative and a post-verbal NumeralP are hosted in ResultP, and a CF/D is licensed by the ResultP.

The licensing relation can be implemented by feature valuation. One may assume that a CF/D has an unvalued [*u*: result] feature, and this feature is valued by a c-commanded result-denoting expression (ResultP). A similar situation is observed in a possessive construction, in which the possessor occurs with a possessee-denoting NP. One can assume that the former has an unvalued feature to be valued by the latter. In both cases, there is a dependency of one phrase on the occurrence of a c-commanded phrase that has a certain feature. In syntax, the direction of a dependency can be either upward (i.e., a lower element is valued by a higher element), or downward (i.e., a higher element is valued by a lower element) (See Chomsky 2000, 2001, Wurmbrand 2014, Zeijlstra 2012, and Baker 2008, for further discussion of the direction issue). In the case here, the latter direction applies.

5 The possible resultative predicate status of a NumeralP

What is new in the proposal made in Section 4 is that a post-verbal NumeralP that looks like an object can be a resultative predicate. We present our evidence in this section.

5.1 The incompatibility of a post-TAc-GE NumeralP and a resultative

In 1.4, we have introduced the TAc-GE construction. This construction can end with a NumeralP, such as *wu ge jidan* ‘five CL egg’ in (42a). It can also end with a secondary predicate, such as *tongkuai* ‘overjoyed’ in (42b), which describes the result state of the unique argument of the intransitive verb *wan* ‘play’, i.e., *Dali*, and *pianjia-buliu* ‘nothing-remain’ in (42c), which describes the result state of the implied patient of the transitive verb *da* ‘beat’.

- (42) a. Dali juran zhu-le ta ge wu ge jidan.
 Dali unexpectedly boil-PRF TA GE five CL egg
 ‘Dali boiled five eggs unexpectedly.’
- b. Dali wan-le ge tongkuai.
 Dali play-PRF CL overjoyed
 ‘Dali played until he was overjoyed.’
- c. Da ta yi ge pianjia-buliu.
 beat TA one CL nothing-remain
 ‘Let’s beat {them/him} such that {they/he} will have nothing left.’

In order to show that the right-edge NumeralP in the construction is a resultative predicate, we introduce a co-occurrence test. No resultative may occur with another resultative for the same verb (Simpson 1983; Rothstein 1985). This follows the constraint that one clause allows one ResultP only (see Wiltchko 2014: 55, 281, and the references therein). The following English examples show the constraint:

- (43) a. John kicked the door open.
 b. John kicked the door to pieces.
 c. *John kicked the door open to pieces.

We thus expect that if a TAc-GE construction contains a resultative, such as (42b) and (42c), it may not have a VV resultative compound. This is indeed the case:

- (44) a. *Dali wan-lei-le ge tongkuai. (cf. (42b))
 Dali play-tired-PRF CL overjoyed
 b. *Naxie diren, Dali da-pao-le ge pianjia-buliu. (cf. (42c))
 those enemy Dali beat-away-PRF CL nothing-remain

However, if a TAc-GE construction contains a NumeralP, such as (42a), it also rejects a V-V resultative compound. This is shown in (45) through (47) (see Section 7 for an analysis of the b-forms of these examples).

- (45) a. A-Lin he-le ta ge wu bei jiu.
 A-LIn drink-PRF TA GE five cup wine
 ‘A-Lin drank five cups of wine.’
 b. A-Lin he-guang-le wu bei jiu.
 A-LIn drink-empty-PRF five cup wine
 ‘A-Lin drank five cups of wine.’
 c. *A-Linhe-guang-le ta ge wu bei jiu.
 A-LIn drink-empty-PRF TA GE five cup wine
 (46) a. A-Lin zhu-le ta ge wu ge jidan. (= (42a))
 A-LIn boil-PRF TA GE five CL egg
 ‘A-Lin boiled five eggs.’
 b. A-Lin zhu-shu-le wu ge jidan.
 A-LIn boil-cooked-PRF five CL egg
 ‘A-Lin hard-boiled five eggs.’
 c. *A-Linzhu-shu-le ta ge wu ge jidan.
 A-LInboil-cooked-PRF TA GE five CL egg
 (47) a. A-Lin xiang zhu ta ge wu ge jidan.
 A-LIn want boil TA GE five CL egg
 ‘A-Lin wants to boil five eggs.’
 b. A-Lin xiang zhu-shu wu ge jidan.
 A-LIn want boil-cooked five CL egg
 ‘A-Lin wants to hard-cook five eggs.’
 c. *A-Linxiang zhu-shu ta ge wu ge jidan.
 A-LIn want boil-cooked TA GE five CL egg

If a post-TAc-GE NumeralP is a resultative predicate, its incompatibility with a VV resultative compound is explained. Such a NumeralP is a patient-oriented resultative, just like

pianjia-buliu ‘nothing left’ in (42c). Thus both the NumeralP *wu ping piju* ‘five bottles of beer’ in (42a) and *pianjia-buliu* in (42c) are complement of Result in ResultP, although they differ in their category: NumeralP vs. an idiomatic state-denoting expression (it can be a SC).

The shared properties of a TAc-GE construction with a NumeralP and a resultative construction, to be presented next, further show that the former is a resultative construction.

5.2 The similarities of a post-TAc-GE NumeralP and a resultative

A post-TAc-GE NumeralP and a resultative share certain properties. First, neither is compatible with an individual-level predicate. A resultative, by definition, may not be integrated into an individual-level predicate. As shown in Section 3, a post-TAc-GE NumeralP may not occur with an individual-level predicate, either. We repeat the relevant examples in (48) and (49).

- (48) a. Ren you liang zhi shou.
 person have two CL hand
 ‘A person has two hands.’
 b. *Ren you ta ge liang zhi shou.
 person have TA CL two cl hand
- (49) a. Dali taoyan liang zhong shuiguo.
 Dali dislike two kind fruit
 ‘Dali dislikes two kinds of fruit.’
 b. *Dali taoyan ta ge liang zhong shuiguo.
 Dali dislike TA CL two kind fruit

Second, neither may have the progressive aspect marker *-zhe*. The following examples in (50) show that a V-V compound may not be followed by *-zhe*, as seen in (50a) (also see Yong 1997), although it may be followed by the perfective aspect marker *-le*, as seen in (50b), or remain bare, as seen in (50c). The same constraint is seen in a TAc-GE construction, as shown by (51) (cf. Lin and Zhang 2006: 819).

- (50) a. *Dali zhu-shu-zhe na ge jidan.
 Dali boil-cooked-PROG that CL egg
 b. Dali zhu-shu-le na ge jidan.
 Dali boil-cooked-PRF that CL egg
 ‘Dali boiled that egg.’
 c. Dali xiang zhu-shu na ge jidan.
 Dali want boil-cooked that CL egg
 ‘Dali wants to boil that egg.’
- (51) a. *Dali zhu-zhe ta ge wu ge jidan.
 Dali boil-PROG TA CL five CL egg
 b. Dali (juran) zhu-le ta ge wu ge jidan.
 Dali unexpectedly boil-PRF TA GE five CL egg
 ‘Dali cooked five eggs (unexpectedly).’
 c. Dali xiang zhu ta ge wu ge jidan.
 Dali want boil TA GE five CL egg
 ‘Dali wants to boil five eggs.’

Based on the complementary distribution and shared properties of a resultative and a post-TAc-GE NumeralP, I conclude that such a NumeralP is a resultative predicate.

5.3 A supporting argument

A supporting argument for the predicate status of a post-TAc-GE NumeralP is that the post-TAc-GE position rejects any element that may not be a syntactic predicate, such as a pronoun and a noun quantified by *mei* ‘every’, as shown by (52a) and (52b), respectively (cf. Lin and Zhang 2006: 804, 813).

- (52) a. *Kan ta ge ni-men.
 look TA CL 2SG
 b. *Kan ta ge mei bu dianyi.
 watch TA CL every CL movie

If the post-TAc-GE position is reserved for a predicate, the claim that a post-TAc-GE NumeralP is a predicate is supported.

Summarizing, we have identified the position of a NumeralP that licenses a CF/D as a post-TAc-GE position, and argued that such a NumeralP is a resultative predicate. Consequently, we have shown that when an apparent theme in the form of a NumeralP licenses a CF/D, it is actually a resultative predicate. Therefore, it is still a resultative predicate that licenses the CF/D.

6 The TAc and GE to the left of a NumeralP

For a TAc-GE construction such as (53), I have argued for the predicate status of the right-edge NumeralP. In this section, I discuss the syntactic status of TAc and the classifier *ge* of the construction.

- (53) Dali xiang kan ta ge shi ben manhua. (= (9a))
 Dali want read TA CL shi CL comic
 ‘Dali wants to read ten comic books.’

6.1 GE heads a dependent clause

In Section 4, I have proposed that a post-TAc-GE NumeralP is the complement of Result, and GE heads the ResultP. In a TAc-GE construction, the overt form of *ge* is optional if the right-edge phrase is a NumeralP, but obligatory if the right-edge phrase is of another category (e.g., AP; see Zhang, to appear b). Our head analysis of GE is supported by its ability to block a head movement from the complement of Result to ProcessP. The blocking effect is seen even when GE is in its null form. The effect is compatible with Travis’s (1984) Head Movement Constraint, which prohibits a head movement skipping a head element in the route. In contrast, a VV resultative construction is formed by a head movement (see (37b) and (38b)).

The presence or absence of the head movement has both a morphological and an interpretation consequence. Morphologically, the selecting verb and a result-denoting element are adjacent in the VV construction, because of the head movement; whereas they are not adjacent in a TAc-GE construction, because of the absence of the head movement. In the latter construction, the verb is followed by an aspect marker, TAc, and GE, rather than a result-denoting element immediately.

From an interpretational perspective, if the higher verb is transitive, the secondary predicate of a VV construction can be agent-oriented (i.e., non-locally oriented), because the head movement extends the control domain of the PRO subject of the resultative, and consequently, the PRO may be controlled by either argument of the matrix verb (see (37b) and (38b)); in contrast, the secondary predicate of a TAc-GE construction may not be non-locally oriented, because the association domain of the subject of the resultative is not

extended. For instance, the resultative *pianjia-buliu* ‘nothing-remain’ in (54) describes the result property of the patient *A-Lin*, rather than the agent *Dali*.

- (54) A-Lin gen Dali xia-qi. Jieguo, Dali sha-le ge
 A-Lin and Dali play-chess consequently Dali cut-PRFCL
pianjia-buliu.
 nothing-remain
 ‘A-Lin and Dali played chess. As a result, Dali made A-Lin have nothing left.’
 Not available: ‘... As a result, Dali made himself have nothing left.’

The same restriction is seen in a TAc-GE construction that hosts a NumeralP. In (55), the NumeralP describes a property of the object of the matrix predicate, which is implicit, rather than the matrix subject *naxie yu* ‘those fish’.

- (55) Naxie yu_i shi fenzhong jiu chi-le ta ge 30 tiao
 those fish ten minute only hire-PRF TA CL 30 CL
 yu*/_k.
 fish
 ‘Those fish ate 30 other fish in only ten minutes.’
 Not available: ‘Those fish, who are as many as 30, ate fish in only ten minutes.’

Note that the discussion of the effect of a head movement is restricted to resultative constructions, excluding depictive constructions. A depictive is hosted by a functional projection that is integrated as an adjunct, rather than complement of the matrix verb. An agent-oriented depictive (e.g., *John ate the fish drunk*.) does not need a head movement.

In this analysis, the classifier *ge* is used as a functional element to head a dependent clause, ResultP. Since classifiers in numeral classifier languages may have various uses (Bisang 1999), this use of *ge* is not surprising.

6.2 TAc as the subject of a dependent clause

Various analyses of TAc have been proposed in the literature. For instance, Lin (1994) and Wu and Matthews (2010) claim that TAc is an object expletive (AgrOP expletive in Lin’s term), and Lin and Zhang (2006) claim that it is a D-element. However, TAc occurs even with an unergative, such as *wan* ‘play’ (e.g., (9a)). In such a construction, there is no post-verbal argument position for the assumed DP. Therefore, the occurrence of TAc does not depend on any feature that is related to an object or the definiteness of an argument.

I have proposed a resultative predicate analysis of a NumeralP that may be preceded by TAc-GE. Recall that it is this type of NumeralP that is able to license a CF/D. As argued in Section 5, this analysis explains the impossible occurrence of such a NumeralP with a resultative VV compound in the same clause. In Section 4, I have proposed that the position of TAc is Spec of ResultP. This is the position of the subject of the secondary predicate. For instance, *ta* in (56) (= (40a)) is the subject of *si zhi mao* ‘four cats’, which is a NumeralP predicate.

- (56) Dali san bi (jiu) hua-le ta ge si zhi mao.
 Dali three CL^{pen} only draw-PRF TA CL four CL cat
 ‘Dali drew four cats in (only) three strokes.’

The subject status of TAc is represented as a Spec in a functional projection that encodes a predication relation. I have argued in 6.1 that GE is in the head position of this

functional projection. Thus, the TAc-GE relation is a Spec-head relation. If two elements are in a Spec-head relation, no element may intervene. Indeed, no element may occur between TAc and GE. In (57a), the determinative degree word *name* ‘that degree’ may not intervene TAc and GE, and in (57b), the adverb *chabuduo* ‘roughly’ may not intervene TAc and GE, either.

- (57) a. *Chi ta name ge tongkuai.
eat TA that.degree CL overjoyed
b. *Kan ta chabuduo ge si ben manhua.
read TA roughly CL four CL comic

In my proposed structure, the position of TAc is the same as that of a PRO in a VV construction: the subject of the secondary predicate. It is well-recognized that PRO occurs in the subject position of a dependent clause only. Moreover, for a non-arbitrary PRO, it may take an argument of the matrix clause as its antecedent. For instance, the subject of *clean* in (58) is a PRO, whose antecedent is *the table*, which is the object of *wiped* (Hornstein and Lightfoot 1987; Larson 1991; Bowers 1993). Thus, it is plausible that TAc, as a pronominal subject of a secondary predicate, takes an argument of the matrix clause as its antecedent.

- (58) John wiped the table_i [PRO_i clean].

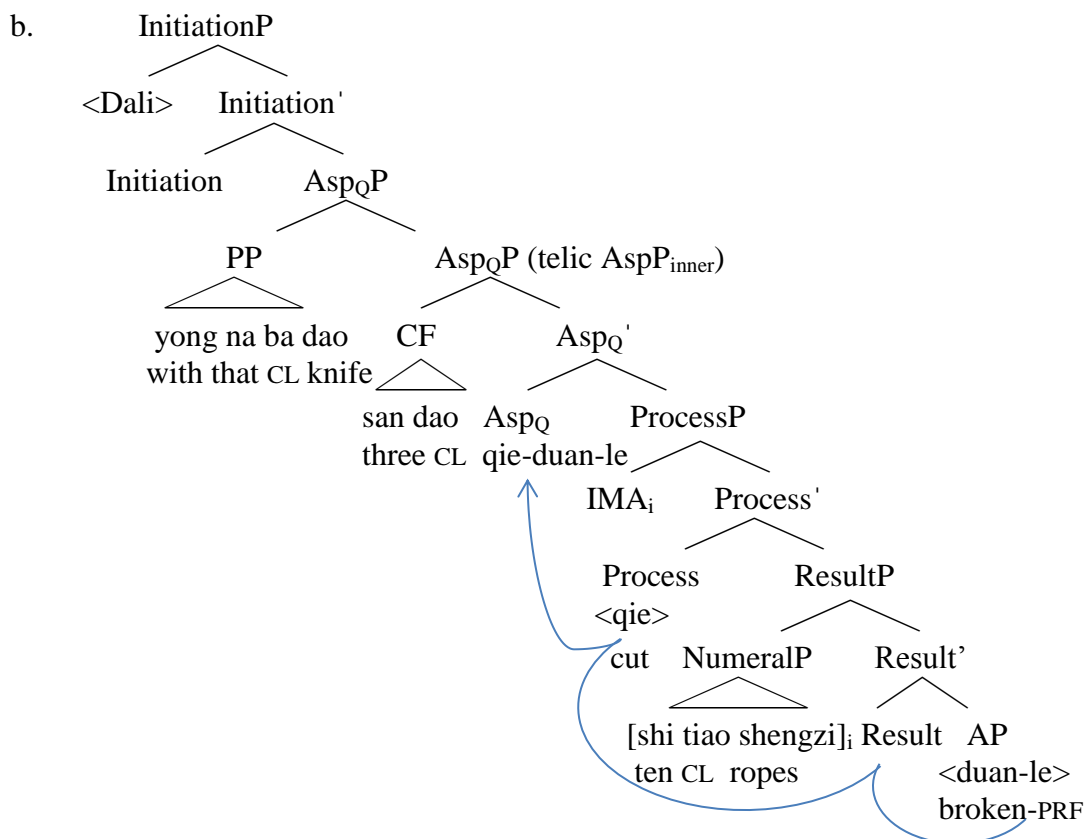
In this analysis, TAc looks like an overt PRO. Cross-linguistically, the position of PRO may indeed be filled by an overt form, such as a special form of a pronoun or an reflexive. See Borer (1989), Szabolcsi (2009), Lee (2009), and Landau (2015: 80).

If TAc is the subject of a secondary predicate, its antecedent should be the closest argument of the main predication of the clause. If the main predication has only one argument, e.g., in the case where the verb is the unergative verb *wan* ‘play’, as in (42b), that argument is the antecedent of TAc. If the main predication has two arguments, an agent and a patient, e.g., (42c), only the patient argument is the antecedent of TAc (we have discussed the syntactic reason for this restriction in 6.1), even when it is implicit. In both cases, the secondary predicate describes a property of the closest argument of the matrix predication.

7 The co-occurrence of a VV compound and a post-verbal NumeralP

We mentioned at the end of 2.2 that a CF/D may occur with both a VV resultative compound and a post-verbal NumeralP, as seen in (59a) (= (25b)). Let us call such a construction VV-Num construction. In (59a), the resultative *duan* ‘broken’ alone is sufficient to license the CF *san dao* ‘three CL^{knife}’. I claim that the structure of (59a) is (59b). In this structure, the CF commands its licenser, the resultative *duan* ‘broken’.

- (59) a. Dali yong na ba dao san dao (jiu) qie-duan-le
Dali with that CL knife three CL^{knife} only cut-broken-prf
shi tiao shengzi.
ten CL rope
‘Dali cut ten ropes (only) three times with that knife.’



In the ResultP in (59b), the NumeralP *shi tiao shengzi* ‘ten ropes’ is the subject, and *duan-le* ‘broken’ is its predicate. Recall that a NumeralP may occur in a subject position, as seen in (24). Thus, the subject status of the NumeralP in the VV-Num construction is not ad hoc. Also, since there is no head element intervening the matrix verb *qie* ‘cut’ and the secondary predicate *duan-le*, the head movement of the latter to the former is similar to the ones in (37b) and (38b). Thus, the forming of the VV resultative compound in the VV-Num construction also follows the general rule.

One difference of (59b) from the structure of a NumeralP construction with a simple verb, as seen in (39b), is that the NumeralP is in the subject position of ResultP, rather than in a predicate position. As a consequence, the subject of the resultative is neither TAc (cf. (39b)), nor PRO (cf. (37b) and (38b)).

This analysis of a VV-Num construction is supported by the following two observations. First, unlike a post-verbal NumeralP in other telic constructions, the NumeralP in the construction rejects TAc-GE, as seen in (60) (cf. (59a)).

- (60) *Dali yong na ba dao san dao (jiu) qie-duan-le ta ge
 Dali with that CL knife three CL^{knife} only cut-broken-PRF TA CL
 shi tiao shengzi.
 ten CL rope

Thus, if the secondary predicate status of a post-verbal NumeralP elsewhere is established by the facts that such a NumeralP may follow TAc-GE and that a post-TAc-GE element exhibits predicate properties (Section 5), the rejection of TAc-GE in a VV-Num construction indicates that there is no reason to analyze the NumeralP in the construction as a predicate. Instead, it is the second V of the VV compound alone, rather than the NumeralP, that is a secondary predicate. In the proposed (59b), the NumeralP is not in a predicate position. This captures the non-predicate status of the NumeralP in the construction.

Moreover, the structural position of the NumeralP is the Spec of ResultP, the same position for TAc. Thus, the impossible occurrence of TAc in the construction is also captured. Thus, this first observation leads us to the analysis that the NumeralP in a VV-Num construction is at Spec of ResultP.

Second, unlike a VV resultative compound elsewhere, the one in a VV-Num construction rejects a non-locally oriented reading. One famous VV resultative example is (61a) (Li 1990), which allows both a locally oriented reading, i.e., Taotao got tired, and a non-locally oriented reading, i.e., Youyou got tired. If the post-verbal nominal is a NumeralP, such as *wu ge xiaohai* ‘five CL kid’ in (61b), we find that a non-locally oriented reading is impossible.

- (61) a. Youyou zhui-lei-le Taotao.
 Youyou chase-tired-PRF Taotao
 ‘Youyou chased Taotao such that the latter got tired.’ (local)
 ‘Youyou chased Taotao such that the former got tired.’ (non-local)
 ‘Youyou caused Taoyao to chase him such that Taotao got tired.’ (local)
- b. Youyou zhui-lei-le wu ge xiaohai.
 Youyou chase-tired-PRF five CL kid
 ‘Youyou chased five kids such that they got tired.’ (local)
 Impossible: ‘Youyou chased five kids such that he got tired.’ (non-local)
 ‘Youyou caused five kids to chase him such that they got tired.’ (local)

The observation is further confirmed by (62) and (63). In (62a), the VV compound is followed by the bare noun *fan* ‘rice’. Since a meal may not feel full, the non-locally oriented reading, i.e., Lili is full, is the only possible reading, and the sentence is fine. In (62b), however, the VV compound is followed by the NumeralP *san wan fan* ‘three bowl rice’, and the sentence is not acceptable. The unacceptability is explained if syntactically the NumeralP *san wan fan* must be the subject of the resultative *bao* ‘full’, but semantically, the former may not be the subject of the latter: it makes no sense for three bowls of rice to feel full. The same analysis applies to the acceptability contrast between (63a) and (63b).

- (62) a. Lili chi-bao-le fan.
 Lili eat-full-PRF rice
 ‘Lili is full.’
- b. *Lili chi-bao-le san wan fan.
 Lili eat-full-PRF three bowl rice
- (63) a. Lili kan-ni-le naxie yingpian.
 Lili watch-tired-PRF those movie
 ‘Lili watched those movies so much that she felt tired of them.’
- b. *Lili kan-ni-le wu bu yingpian.
 Lili watch-tired-PRF five CL movie

This observation leads us to a PRO-less analysis of a VV-Num construction, as in (59b). I have introduced in 4.1 that the head movement of the verb in a VV construction extends the control domain, so that the PRO subject of the resultative may take the subject of the matrix verb as its antecedent, skipping the closer nominal, i.e., the object of the matrix verb (see (38b)). Specifically, for example, the PRO subject of *bao* ‘full’ in (62a) may take *Lili* as its antecedent, skipping *fan* ‘meal’. Why does this domain extension fail in a VV-Num construction, as seen in (61b), (62b), and (63b)? I claim that in such a construction, there is simply no PRO subject. Instead, it is the NumeralP that is the subject of the resultative, as we

concluded from the first observation. Consequently, the resultative must be the predicate of the NumeralP, which is the closest nominal, and thus it is never non-locally oriented. Since the subject of the resultative is not a pro-form, the resultative has no way to be associated with the agent of the matrix verb. For instance, *bao* ‘full’ may not be associated with *Lili* in (62b).

The proposed structure in (59b) rules out the hypothesis that the NumeralP in a VV-Num construction takes the object position of the matrix verb (a hypothesis that Reviewer A asked me to discuss about). If the NumeralP is out of ResultP, we need to explain why the Spec of ResultP may neither be TAc nor a PRO. The TAc form, as seen in (60), is not acceptable; and the occurrence of a PRO would wrongly allow a non-locally oriented reading for the resultative. Thus, the only possible position of the NumeralP in the construction is Spec of ResultP.

Unlike Chinese, English has no VV resultative construction, and accordingly, non-locally oriented reading of a resultative is not allowed. This has been called “Direct Object Restriction” on resultatives (Levin and Rappaport-Hovav 1995: 34; see Zhang 2007). The syntax of Chinese resultative constructions reveals the possibility that if a NumeralP occurs with a resultative and it looks like an object of the matrix verb, it is actually the subject of the resultative. Analyzing the apparent object in a resultative construction as the subject of the resultative is seen in Hoekstra (1988, 1991), among others. This is the so-called Small Clause analysis of resultative constructions. The analysis is different from the control analysis in Hornstein and Lightfoot (1987), Larson (1991), and Bowers (1993). Neither analysis has considered the form of the apparent object. Our observations suggest that if the apparent object is not a NumeralP, the PRO analysis applies, as shown in (64a); and if the apparent object is a NumeralP, the Small Clause analysis applies, as shown in (64b). In other words, both analyses are plausible, depending on the form of the post-verbal nominal.

- (64) a. John wiped the table_i [_{ResultP} PRO_i clean]. (= (58))
 b. John wiped [_{ResultP} five tables clean].

In the previous sections, I have argued that if a NumeralP follows a simple verb, it can be a resultative predicate. In this section, I have further argued that when a NumeralP follows a VV resultative compound in Mandarin Chinese, it can be the subject of the resultative. Putting the two claims together, in a telic context, a post-verbal NumeralP is hosted in ResultP consistently.

8 The position and category of a CF/D in Mandarin Chinese

8.1 CF/Ds must be preverbal

We discuss the position of a CF/D in Mandarin Chinese in this subsection. While the contrast between a CD and a non-completive durative is seen in the contrast between the prepositions *in* and *for* in English (see (3)), it is seen in the contrast between a preverbal and a post-verbal position of a durative in Chinese. The durative *si xiaoshi* ‘four hours’ precedes the verb *kan* ‘read’ in (65a), and it is a CD, since the hosting sentence may not be followed by the sentence meaning ‘but he has not finished the reading of the books yet’. In contrast, the same durative follows the same verb in (65b), and it is a non-completive durative, since the sentence may be followed by the sentence meaning ‘but he has not finished the reading of the books yet’.

- (65) a. Dali si xiaoshi jiu kan-le san ben shu. *Danshi
 Dali four hour only read-PRF three CL book but
 ta hai mei kan-wan.
 3SG still not read-finish

‘Dali read three books in only four hours. #But he has not finished the reading of them yet.’

- b. Na san ben shu, Dali kan-le si xiaoshi.
 that three CL book Dali read-PRF four hour
 Danshi ta hai mei kan-wan.
 but 3SG still not read-finish
 ‘Dali did some reading of those three books for four hours. But he has not finished the reading of them yet.’

A preverbal non-completive durative is licensed only in a contrastive context such as (66a), or a progressive aspect context such as (66b). In the absence of such contexts, a sentence with a preverbal non-completive durative, such as (66c), is not acceptable.

- (66) a. Dali san tian da yu, liang tian shai wang.
 Dali three day do fishing two day dry net
 ‘Dali does fishing for three days and then dries the nets for two days.’
 b. Dali san tian dou zai da yu.
 Dali three day all at do fishing
 ‘Dali has been fishing for all of the three days.’
 c. *Dali san tian da yu.
 Dali three day do fishing

In contrast, a CD never occurs post-verbally. In other words, a post-verbal durative never has a completive reading in the language.

A similar contrast is seen in frequentatives. The CF in (67a) is preverbal (also see (7) and (8)), whereas the non-completive in (67b) is post-verbal (also see (6)).

- (67) a. Dali si ci jiu kan-le san ben shu. *Danshi
 Dali four CL only read-PRF three CL book but
 ta hai mei kan-wan.
 3SG still not read-finish
 ‘Dali read three books in only four times. *But he has not finished them yet.’
 b. Dali kan-le na san ben shu si ci. Danshi
 Dali read-PRF that three CL book four CL but
 ta hai mei kan-wan.
 3SG still not read-finish
 ‘Dali did reading of those three books four times. But he has not finished them yet.’

For the syntax of non-completive frequentatives, see Zhang (to appear a). Since this paper is about CF/Ds, we focus on their exclusive pre-verbal position.

The position of a CF/D is also the position of a preverbal completive adverb discussed in Cinque (1999: 100). For instance, a CF/D may not precede *gangcai* ‘just now’ and a manner adverbial, as seen in (68) and (69). Similarly, in the Italian examples in (70) and (71), the completive adverb *completamente* ‘completely’ may not precede *appena* ‘just’ and the manner adverb *brevemente* ‘briefly’. Thus, the preverbal position of completive adverbials in Mandarin Chinese is not accidental.

- (68) a. Dali gangcai {san dao/san fenzhong} jiu qie-duan-le
 Dali just.now three CL^{knife}/three minute only cut-broken-PRF

- naxie shengzi.
those rope
'Dali cut those rope broken just now {in three cuts/in three minutes}.'
- (69) b. *Dali {san dao/san fenzhong} jiu gangcai qie-duan-le
Dali three CL^{knife}/three minute only just.now cut-broken-PRF
naxie shengzi.
those rope
Dali guoduande {san dao/san fenzhong} jiu qie-duan-le
Dali resolutely three CL^{knife}/three minute only cut-broken-PRF
naxie shengzi.
those rope
'Dali cut those rope broken resolutely {in three cuts/in three minutes}.'
- b. *Dali {san dao/san fenzhong} jiu guoduande qie-duan-le
Dali three CL^{knife}/three minute only resolutely cut-broken-PRF
naxie shengzi.
those rope
- (70) a. Gianni ha appena completamente rovinato l'arrosto.
Gianni has just completely ruined the roast-beef
'Gianni has just completely ruined the roast-beef.'
- b. *Gianni ha completamente appena rovinato l'arrosto.
Gianni has completely just ruined the roast-beef
- (71) a. Lo ha brevemente completamente ridiscusso con
3SG has briefly completely discussed with
Gianni.
Gianni
'He briefly completely discussed it over with G.'
- b. *Lo ha completamente brevemente ridiscusso con
3SG has completely briefly discussed with
Gianni.
Gianni

8.2 CF/Ds are nominals with an optional preposition

We discuss the category of a CF/D in Mandarin Chinese in this subsection. The basic components of a CF/D are a numeral and a unit word. For a CD, the unit word expresses a unit of time, such as minute or hour. There is no doubt that the combination of a numeral and such a time-unit word is a nominal and thus the whole CD, such as *san fenzhong* 'three minutes', is a nominal. As for a CF, it is composed of a numeral and a CLv. It is also a nominal. One supporting fact for the nominal analysis of a CF/D is that it may follow a preposition, as seen in (72). Since only a nominal may follow a preposition, a CF/D must be a nominal.⁶

- (72) a. Dali (yong) san dao jiu kan-duan-le na tiao
Dali with three CL^{knife} only cut-broken-PRF that CL
shengzi.
rope
'Dali cut the rope (only) three times with that knife such that it got broken.'

⁶ Post-verbal frequentatives and duratives may not follow a preposition in Mandarin Chinese. In the language, PPs generally do not occur post-verbally.

- b. Dali (yong) shi fenzhong jiu kan-wan-le na ben
 Dali with ten minute only read-finish-PRF that CL
 shu.
 book
 ‘Dali finished reading of that book in only ten minutes.’
- c. Dali [zai si fenzhong nei] jiu kan-wan-le na
 Dali at ten minute in only read-finish-PRF that
 ben shu.
 CL book.
 ‘Dali finished reading of that book in only ten minutes.’

The optionality of a preposition is also seen in other preverbal nominals in the language.

- (73) a. Dali houtian hui lai.
 Dali day.after.tomorrow will come
 ‘Dali will come the day after tomorrow.’
- b. Dali zui-wan (zai) houtian hui lai.
 Dali most-late at day.after.tomorrow will come
 ‘Dali will come the day after tomorrow the latest.’

If a CF/D is preceded by a preposition, the Spec of Asp_QP will be taken by a PP.

However, in the language, a preposition may not drop in other contexts. In (74), for instance, the preposition is obligatory.

- (74) Dali *(xiang) laoshi wen-le yi ge wenti.
 Dali toward teacher ask-PRF one CL question
 ‘Dali asked the teacher a question.’

Why do completives and temporal expressions such as the one in (73) in Mandarin Chinese not need a preposition? In Barrie and Yoo’s (2015) analysis of prepositionless locative PP arguments and adjuncts (e.g., *The place that John lives (in) is expensive.*), the noun in such constructions has an inherent θ -role, and hence it does not need a preposition to assign one. Correlating with this, such a noun is structurally deficient, and thus it does not need Case. Their theta-role analysis of prepositionless PP arguments and adjuncts (Emonds 1976) is different from the inherent case analysis of Larson (1985) (see McCawley 1988 for comments of Larson’s work). Do frequentatives, duratives, and temporal expressions have inherent θ -roles? Barrie and Yoo (2015) do not consider temporal expressions. I leave this for future research.

In this section, I have shown that a CF/D in Mandarin Chinese is different from its counterpart in English in its preverbal position, and in its possible nominal form, i.e., a nominal without an overt preposition.⁷

⁷ A frequentative or durative itself can also be a predicate. The durative *san nian* ‘three years’ is a predicate in (ia) (Teng 1975, Ernst 1987), and so is the frequentative *san ci* ‘three times’ in (ib). In (iia), *shi fenzhong* ‘ten minutes’ follows TAc-GE, and in (iib), *liang ci* ‘two times’ also follows TAc-GE. Since only a predicative expressive may follow TAc-GE (5.3), these temporal expressions are secondary predicates.

(i) a. Ta lai zheli you san nian le. b. Ta lai zheli you san ci le.
 3SG come here have three year PRT 3SG come here have three CL PRT
 ‘It has been three years since he came here.’ ‘He has been here three times.’

9 Conclusions

I have analyzed two licensors of a CF/D: a resultative and an incremental theme in the form of a NumeralP. I have first shown that in Mandarin Chinese, the NumeralP that can license a CF/D is exactly the one that may occur in a TAc-GE construction. Then I have shown that such a NumeralP has a complementary distribution with a resultative; and it shares properties with a resultative. I have concluded that such a NumeralP is a resultative predicate, rather than an internal argument of a verb. In the language, such a secondary predicate can take TAc, an optional pronominal enclitic, as its subject. The conclusion implies that in languages such as English, when an apparent numeral-initial direct object licenses a CF/D, it might be a resultative predicate, with a null subject, similar to a secondary predicate in other contexts in the languages. I have also analyzed a construction in which both a VV resultative and a post-verbal NumeralP occur, claiming that in this construction, the NumeralP is the subject of the resultative. Again, a NumeralP is hosted in ResultP. This means that in a telic context, a post-verbal NumeralP is never in the position of a direct object. Instead, it is either a resultative predicate directly or the subject of a resultative. Thus, syntactically and semantically, the two licensors are unified: it is a ResultP that licenses a CF/D.

Acknowledgments: My thanks go to Wu Yicheng and other audience members of a classifier workshop in Hangzhou (2013), to Peter Svenonius and other audience members of the Workshop on Aspect and Argument Structure of Adverbs and Prepositions in Tromsø (2014), to Lin Jo-wang, Sze-Wing Tang, Dylan Tsai, and other audience members of the 10th Workshop on Formal Syntax and Semantics in Kinmen (2014), to James Huang, and to Jim Tai and other audience members of the 235th linguistic colloquium of the National Chung Cheng University (2015), for feedbacks on various versions of this paper. Special thanks go to the two anonymous reviewers, whose critical comments helped me improve the argumentation. All remaining errors are mine. This work has partially been supported by the grants from the Ministry of Science and Technology of Taiwan, ROC.

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- (ii) a. Zamen jiu zai zher xiuxi ta ge shi fenzhong ba.
 we right at here rest TA CL ten minute PRT
 ‘We’ll just rest here for a while.’
- b. Beiping-kaoya? Wo yiding yao qu Beijing chi ta ge liang ci.
 Peking-duck 1SG surely want go Beijing eat TA CL two time
 ‘Peking-duck? I surely want to go to Beijing to eat it twice.’

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