

Aspectual Structure and the Syntax of Chinese Durative Phrases

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1. Introduction

This article looks into the aspectual structure through the different interpretations of the durative phrases in Chinese. I propose that aspect should be decomposed into three layers of representations, an approach that I call the **Three-layered Aspectual Structure** (henceforth, TAS). This proposal is similar to the proposal of Tenny's (2000), which also argues for three syntactic positions for aspect. This paper argues that Chinese provides strong evidence for such a claim. First of all, each of the three aspectual layers is morphologically realized in Chinese. Second, the durative phrases in Chinese can be interpreted in three distinct ways, corresponding to the three aspectual layers (Liao 2004). Therefore, a syntax-semantics mapping is at work between the interpretations of the durative phrases and the representations of aspectual structure.

Section 2 reviews the theories of aspect by Reichenbach (1947), Hornstein (1990), Smith (1991), and Klein (1994). I conclude that aspect should be decomposed into three levels of representations. The first (also the lowest) level is the *lexico-compositional level*, the information of which is provided by the inherent properties of verbs and combination of lexical items. The second level is the *viewpoint level*, where the lexical aspect is confined within a given topic time in specific ways, in the sense of Klein (1994). The third (highest) level, being more functional and tense-related, is called the *temporal aspect*, where the temporal structure is punctualized into a point relative to a reference point of time.

Section 3 provides supporting evidence for TAS: the interpretations of the durative phrases in Chinese. Liao (2004) points out that the durative phrases in Chinese can have three kinds of interpretations, corresponding to the three levels of aspectual representation. The three kinds of interpretations are the Target State-related reading (TS-related, measuring the target state), the Process-related reading (P-related, measuring the process), and the Reference Time-related reading (RT-related, measuring the time from a given point to the reference time, see below). The following three examples illustrate these three readings:

- (1) a. Zhangsan da-kai chuanguo san-ge xiaoshi.
ZS hit-open window three-Cl. hour
'ZS opened the window for three hours.' [TS-related]
- b. Zhangsan du-le zhe-ben shu san-ge xiaoshi
ZS read-LE this-Cl. book three-Cl hour
'ZS [kept] reading the book for three hours.' [P-related]
- c. Zhangsan gai-wan zhe-dong fangzi san-tian le.
ZS build-finish this-Cl. house three-day LE
'It has been three days since ZS built the house.' [RT-related]

Notice that the RT-related interpretation, in the case of (1c), measures the time span from the end of an event to a reference point. Such an aspect has rarely been discussed.¹

In section 4, I present a syntax-semantics mapping of the aspectual structure and the durative phrases in Chinese. That is, the positions of the different readings of the durative phrases reflect the three aspectual projections they modify. In the TS-related reading, the durative phrase modifies the target state projections (in the lexico-compositional level). The durative phrase of the P-related reading modifies the aspectual projection in the viewpoint level, which is headed by Chinese verb-*le*. The durative phrase of the RT-related reading modifies the temporal aspect level, which is headed by the sentence-*le*.

Section 5 discusses the theoretical consequences of the proposed analysis. Semantically, the analysis can account for the telicity issue (see 2, 3), and syntactically, it explains why the durative phrases seem to be exceptions of the rightward convention of Chinese adjuncts:

- | | | |
|-----|--|----------------------|
| (2) | ??John ate the hamburger for three hours. | [maginal in English] |
| (3) | Zhansan chi-le zhe-ge hanbao san-ge xiaoshi. | |
| | ZS eat-LE this-Cl. hamburger three-Cl. hour | |
| | ‘ZS ate the hamburger for three hours.’ | [perfect in Chinese] |

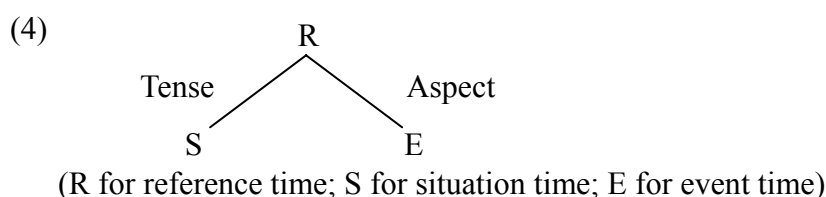
2. The Three-layered Aspectual Structure Hypothesis

In this section I first review the relevant theory of aspect (section 2.1), and then propose the **Three-layered Aspectual System** (TAS) (section 2.2).

2.1 Theories of Aspect

2.1.1 Aspect as Tense: Reichenbach (1947); Hornstein (1990)

Reichenbach (1947) regards aspect as a part of the Basic Tense System, as in (4):



Therefore, three possible combinations can be found, plus three aspect relations, shown as follows:

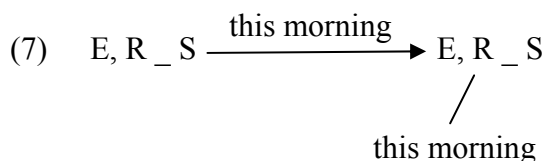
¹ The term Target state is adopted from Parsons (1990), and is meant to be equivalent to ‘result state’ in Piñón’s sense.

(5) the construction of tenses and aspects

| TENSE | | ASPECT | |
|-----------|---------|-----------|-------------|
| R,S / S,R | present | E,R / E,R | simple |
| R_S | past | R_E | prospective |
| S_R | future | E_R | perfect |

One problem of this theory is its weakness in describing the variety of the aspectual patterns. Note especially that the difference between perfect and perfective aspects is obvious, though they both denote closed events (Chung and Timberlake 1985; Binnick 1991; Smith 1991). However, perfect aspect is reference time-related, while the perfective aspect is not necessarily so. The perfective aspect concerns the completion of the event regardless of the tense structure or a given reference time. Take Chinese examples. Different aspectual values in (6), however, fall into the same temporal structure, as in (7):

- (6) a. Ta jintian-zaoshang du-wan na-ben shu.
 he today-morning read-finish that-Cl book
 ‘He finished reading that book this morning.’
 b. Ta jintian-zaoshang du-le na-ben shu.
 he today-morning read-LE that-Cl book
 ‘He read that book this morning (regardless of the completion).’



2.1.2 Two Parameters of Aspect: Smith (1991)

Smith (1991) proposes a two-folded aspectual system. In one respect, it concerns speakers’ viewpoint of the situation. In the other, it is related to the situation types.

Smith (1991) regards aspect in one respect characterizes how speakers view the situation, whose internal structure is observed, which consists of the interval (where it takes place) and the two endpoints, including an initial point (S_I) and a final point (S_F) (S stands for the situation). According to whether S_I or S_F stands, the aspectual viewpoints are divided into three categories:

(8) The Viewpoint Categories in Smith (1991)

| | |
|-----------------------------------|--------------|
| +S _I , +S _F | perfective |
| +S _I , -S _F | neutral |
| -S _I , -S _F | imperfective |

The other ‘parameter’ of aspect is the situation types. The situation types characterize the inherent temporal/aspectual information in the lexicon. Therefore, Smith distinguishes

situations into five prototypes, including State, Activity, Accomplishment, Achievement, and Semelfactive (see Smith 1991 for details).

Smith (1991) combines the two related concepts in one theory. According to her, the situation locates in a time interval with a given viewpoint. The speaker then focuses oneself on the situation within the viewpoint. However, there is a theory-internal contradiction. If, on the one hand, the time intervals in two aspectual systems are split into two parts, a time interval for viewpoint aspect and another time interval for situation aspect, it seems that the time interval of situation aspect disappears when combined with the viewpoint aspect. For example, in the imperfective aspect, neither endpoint obtains at the time interval; therefore, in propositions like [John RUN], or [John SING A SONG], although the initial point obtains, it disappears (or is simply ignored) when it is combined with the imperfective viewpoint. However, it is not clear what the status is of the interval of the situation aspect. If the interval has a nature to be ignored, the ontological basis for such a proposal remains dubious (see Klein 1994 for a detailed critique on the formal notions Smith has adopted).

2.1.3 *Tense-related Analysis of Aspect: Klein (1994)*

Klein (1994) argues for a time-related analysis for tense and aspect. He proposes three primitives for the temporal structure, which are the utterance time (TU), the situation time (TSit) and the Topic time (TT). TT differs from the Reference Point in Reichenbach (1947) in that TT has a complicated internal structure. The theory maintains that aspect characterizes the way how TSit is linked to a certain TT.

Klein also employs a novel way in characterizing the situation types. He regards situation types as different lexical contents, which are of three kinds, called 0-phase, 1-phase, and 2-phase lexical contents, respectively (in terms of Klein et al. 2000).

Klein's approach enriches the lexical content and attunes the inconsistency between situation types and viewpoints. However, his effort to unify the perfect and perfective aspect in the same time axis is not without problem. Consider the following examples (9) which have temporal representations in (10). According to Klein, TT provides the only accessible information for the aspectual marking. Therefore, the durative phrase in (10a) arguably modifies the topic time, which covers TSit in this case.² The durative adverb indicates the duration of TT and the identical TSit. However, in (10b) the durative phrase modifies the duration between TSit and TT, not TT itself, and hence shows a contrast between the two types of sentences. In Klein's approach, it should be possible to modify the duration of the topic time in the perfect aspect, a point contrary to the fact, however. Illustrations in (10) show the temporal representation of (9), respectively. Furthermore, if we assume the durative phrase only measures the TSit, then we cannot account for the fact that RT-related reading measures the post-event time, which I have argued above:

² Klein proposes that TSit is what durative phrases measure. However, I suggest that an adjustment is needed to avoid the above mentioned contradiction. As I show in this work, a fine-grained analysis of the interpretations of the durative phrases argues against Klein's proposal that the durative only measures the TSit.

- (9) a. John swam **for ten minutes.** [perfective]
 b. John has swum **for ten minutes.** [perfect]
- (10) a. [+ + + + + + + + +]
 pretime { TSit } posttime
 10 min.
- b. + + + + + + + + + []
 pretime { TSit } posttime
 10 min.
- b' * + + + + + + + + + []
 pretime { TSit } posttime
 10 min.

2.2 Three-Layered Aspectual Structure

A better way to reconcile the theories of aspect is to propose a dynamic way of building aspect, which I call the Three-layered Aspectual Structure (TAS). The proposal shows that aspect is actually combined with information from three independent levels, and we can therefore solve the internal conflict of the above mentioned proposals. The three levels are discussed as follows.

The first level is the lexico-composition level. This level corresponds to the conventional notion of lexical aspect or *aktionsart*. The aspectual resource in this level is the lexical features. Theoretically speaking, this level provides the prototype of the lexical information, corresponding to the α -phase lexical content in Klein's approach.

The second level is the viewpoint level, corresponding to the conventional notion of grammatical aspect, or aspectual viewpoint. The aspectual information in this level comes from TT, and the internal structure of the situation, including the initial (S_I) and final (S_F) points of the situation.

The third level is the temporal aspect. The aspectual resource comes from the Reference point. Note that the internal structure of the situation becomes inaccessible in this level because the internal structure is 'condensed' to punctual point. This level of aspect is best understood within the Reichenbachian approach. Therefore, it is the relative positions between E and R that counts in this level. The general frame of the hybrid TAS looks as follows:

(11) Three-layered aspectual system (TAS)

| | basis for observation | classifications |
|----------------------|-----------------------|---|
| compositional aspect | lexical feature | [± change]/[ADD TO] ([± telic]) |
| viewpoint aspect | topic time | perfective neutral imperfective (incl. progressive & habitual) |
| temporal aspect | reference point | simple perfect prospective |

The interaction between the three layers is not rigid and is subject to specific language strategies. Consider the perfective aspect in English. English is a language without explicit perfective markers. However, the concept of perfectivity is represented by means of the other two levels (past tense plus accomplishment). On the other hand, the past simple aspect in Chinese does not necessarily represent a perfective viewpoint, which usually occurs with a secondary predicate or a resultative verb compound (Smith 1991; Kang 1999; Klein et al. 2000 among others):

(12) a. John ate a hamburger.

b. *John ate a hamburger, and he is still eating it.

(13) a. Zhangsan chi-wan yi-ge hanbao.

ZS eat-finish one-Cl hamburger

‘ZS ate a hamburger.’

b. Zhangsan jintian zaoshang chi(-le) yi-ge hanbao,

ZS today morning eat-LE one-Cl hamburger

dao xianzai hai zai chi.

until now still Prog. eat

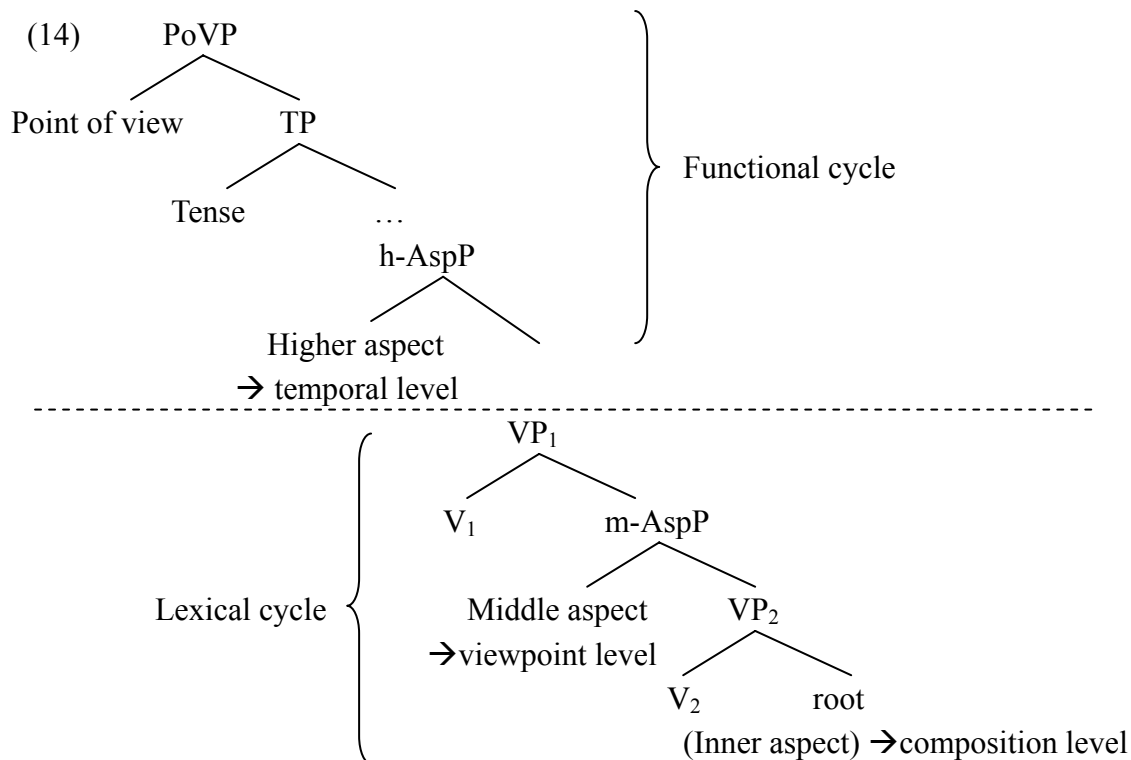
‘(literally) ZS ate a hamburger this morning and is still eating (that hamburger).’

c. Zhangsan ba yi-ge hanbao chi-de ganganjingjing.

ZS BA one-Cl hamburger eat-DE clean

‘ZS ate a hamburger completely.’

Mapping TAS to a syntactic model, we find a similar proposal by Tenny (2000), who, with evidence from adverbial modifications and core events, argues that the functional categories are not projected in syntax in a one-to-one fashion. The ‘big picture’ hence looks like the following (from Tenny 2000: 326 with modification):



Note that in both proposals, aspect is considered to hold several projections; contra the received view, which assumes that aspect is represented by one single projection, say, AspP (Cheng 1991). In addition, aspect is not considered solely as a functional category (i.e. higher aspect in 14), but it also contains information from lexical categories (i.e. inner and middle aspects in 14). The proposal has a consequence that induces the Strict Cycle Condition. In the minimalist spirit, especially in Chomsky (2001), the strict cycles (or phases) are taken to be CP and vP. The status of CP as a phase is to introduce functional projections (e.g. the sentence-level operator). The vP is the projection in which all lexical requirements are saturated. Turning to TAS, we find some striking similarities. That is, while the compositional level and the viewpoint level have close interactions, little interaction is found between the temporal level and the other two levels. In Chinese, the first two level can be combined together in verbal morphology (verb-*le* and RVC can co-exist), but the temporal level is subject to the sentence-final particle *le* (I will return to this point later). The strict cyclicity of the TAS, thus, is derived from the nature of phases. This may suffice as a theory-internal support for the syntax of TAS, though many technical details still need working out. In the next section, however, I provide empirical evidence from Chinese durative phrases.

3 The Interpretations of the Durative Phrases in Chinese

3.1 Three Kinds of Durative Phrases

Contrary to former analyses (Li 1987; Lin 2003a), Liao (2004) suggests that Chinese durative phrases can have three kinds of readings, which are the TS-related reading, the P-related reading, and the RT-related reading (for expository convenience, I assume readers' familiarity with Klein's and Reichenbachian notations):

natural), which is brought about by the aspectual marker verb-*le*, the detail of which is discussed in the next subsection.

In the RT-related reading, the reference time is introduced by the perfect aspect (i.e. sentence-*le*) in the temporal aspect level. There are three possible measured candidates, namely, the ongoing event, the target state, and the resultant state, as in (18)-(20):

- (18) ZS pao-le san-tian le. [ongoing event --> RT]
 ZS run-LE three-day LE.
 ‘ZS has been running for three days (until now).’
- (19) ZS da-kai chuanghu san-tian le. [target state --> RT]
 ZS DO-open window three-day LE
 ‘ZS has opened the window for three days (until now).’
- (20) ZS xie-wan zuoye san-tian le. [resultant state --> RT]
 ZS write-finish homework three-day LE
 ‘It has been three days since ZS finished his homework.’

Owing to the introduction of a reference point, it is therefore possible to measure part of the ongoing state and part of the target state, and the open resultant state, all with respect to the RT.

3.2 Evidence from Chinese Aspectual Markers

Stronger evidence in favor of the TAS comes from the interaction between aspectual markers and the durative phrases. Overt aspectual representations are found in Chinese. In the bottom-up order of TAS, the lexico-compositional aspect level is brought about by the resultative verb compound (RVC) or the secondary predicate, as in (21). The viewpoint aspect level can be represented by the verb-*le*, as in (22), and the temporal aspect level by the sentence-*le*, as in (23):

- (21) a. ZS ba chuanghu da-**kai**. [RVC]
 ZS BA window DO-open
 ‘ZS opened the window.’
- b. ZS tiao **jin-shui-li**. [secondary predicate]
 ZS jump into-water-(in)
 ‘ZS jumped into the water.’
- (22) ZS xie-le zuoye. [verb-*le*]
 ZS write-LE homework
 ‘ZS wrote his homework.’
- (23) ZS xie zuoye le. [sentence-*le*]
 ZS write homework LE
 ‘ZS has written his homework.’

In the compositional aspect level, RVC and the secondary predicate in Chinese, as in (21), are ways to represent target states. The Chinese constructions correspond, respectively, to the ‘open’ type and ‘in the water’ type in Piñón (1999), who claims that the two types of complex predicates are sources of target states (result states in his term) in English as well.

As to the other two levels, I assume that verb-*le* denotes a ‘realization’ aspect (Liu 1988), while the sentence-*le* denotes perfect aspect (since the main function is to introduce a reference time).

In the viewpoint aspect level, I regard that verb-*le* only specifies the initial point of the situation (this is an interpretation of Liu (1988) in terms of Smith’s theory). On the other hand, the final point of the situation, though unspecified, is borne only by implicature (which is cancelable). Therefore, the realization aspect in Chinese differs from the perfective aspect in English in the specification of the final point. This is why the Chinese sentences are perfect, while the English equivalent sentences are awkward in (24):

- (24) a. ZS zuotian du-le yi-ben shu, keshi mei du-wan.
 ZS yesterday read-LE one-Cl. book, but not read-finish
 ‘ZS read a book yesterday, but he did not finish it.’ (awkward in English)
- b. ZS gai-le yi-dong fangzi, keshi meigai-wan.
 ZS buile-LE one-Cl. house, but meibuild-finish
 ‘ZS built a house, but he didn’t finish it.’ (awkward in English)

As to the temporal aspect level, the sentence-*le* as a perfect marker introduces the reference point to the temporal-aspectual structure. The contrast between (25a) and (25b) can well illustrate this point. A given reference point ‘1492’ is introduced in (25b), while in (25a) ‘1492’ is the event time (as well as the reference point):

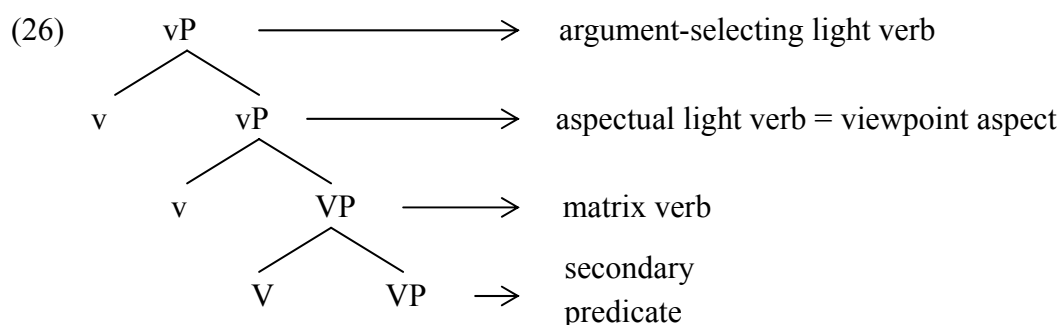
- (25) a. 1492 nian, Gelunbu faxian-le xin-dalu.
 1492 year Columbus discover-LE new-continent
 ‘In 1492, Columbus discovered the new continent.’
- b. #1492 nian, Gelunbu faxian xin-dalu le.
 1492 year Columbus discover new-continent LE
 ‘In 1492, Columbus had discovered the new continent.’ (contrary to the fact)

4 The Syntax of Aspect and the Durative Phrases

This section discusses how Chinese aspect and durative phrases are represented in syntax. Given the appearance of *le* in the surface form, the TS-related reading is possible without either *le*’s, the P-related reading usually accompanies the verb-*le*, and the RT-related reading must accompany the sentence-*le*, as in (15) to (17). It is reasonable that we need an understanding of the syntax of the Chinese aspectual markers, especially the structures of two *le*’s (section 4.1) before the syntax duratives phrases (section 4.2).

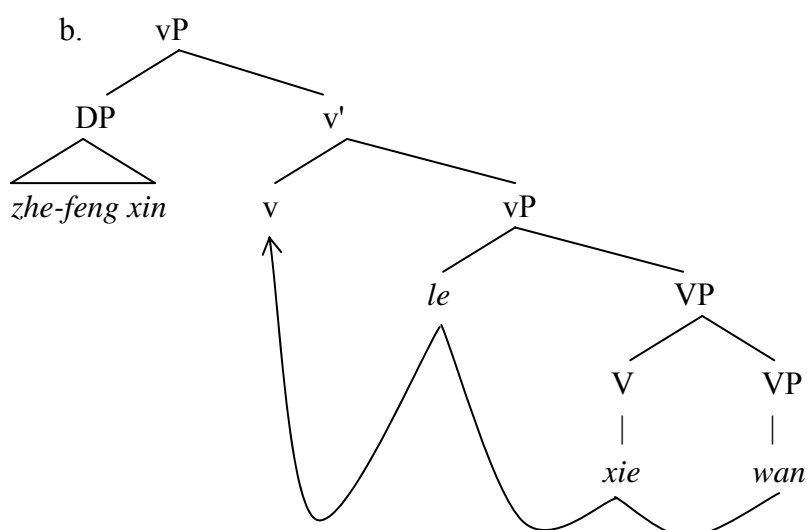
4.1 The Structure of Chinese Aspect

The structure of Chinese *le*'s has raised many controversies (see Cheng 1990, Sybesma 1997, 1999, and Jo-wan Lin 2000, 2003b). For conciseness, I assume the light verb syntax framework in Tzong-hong Lin (2001), who proposes that Chinese light verbs function semantically as eventuality predicates, such as CAUSE, BECOME, etc. The verb-*le*, in this framework, contributes the REALIZE eventuality to the main predicate. The structure given by Lin (2001) is as follows (with simplification):



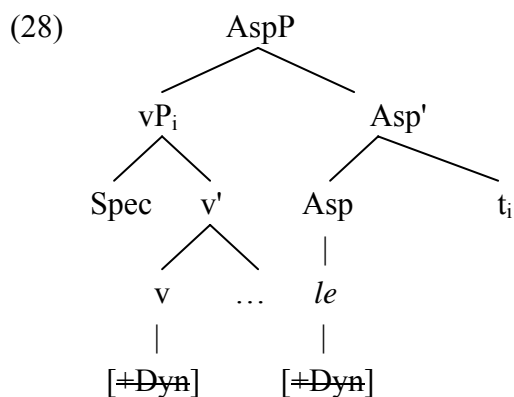
Verb-*le* as well as other aspectual markers, *-zhe* and *-guo*, is treated as the head of the (viewpoint) aspectual light verb. The verb is base-generated in the matrix V, a series of head movements leads to the surface form. The matrix V^0 incorporates (or conflates) with object *v*, aspectual *v*, and subject *v*, cyclically, subject to the Head Movement Constraint (HMC). See (27):

- (27) a. Ta xie-wan-le zhe-feng xin.
 he write-finish-LE this-CL letter
 'He wrote the letter.'



This analysis corresponds to TAS in a uniform way. Notice that Klein (1994) and Klein et al. (2000) propose that the X-phase lexical content (X=0, 1, 2) is linked to a given Topic Time (provided by the aspectual light verb). I suggest that the linking to TT is achieved through the V-to-*v* head movement.

As for the sentence-*le* (or *le2*), Shen (2004) notes that there is a dynamicity [\pm Dyn] agreement between Chinese sentence final particle (SFP) and the eventuality predicates (in the sense of Lin's light verbs). Therefore, the sentence-*le* matches a dynamic light verb, and the sentence-*ne* a static one. Corresponding to the temporal aspect level in TAS, the sentence-*le* heads an AspP in the functional cycle, which is higher than the whole light verb construction. I propose that the dynamic feature in Asp⁰ (a kind of generalized EPP-feature in the sense of Chomsky 2001) drives the movement of the whole complement to the Spec of AspP for checking purpose, as in (28):



As Tzong-hong Lin (p.c.) points out, there is empirical evidence for this claim. Note that CED (Huang 1982) directly prohibits movements from the domain of the moved vP. Assume Tsai's (1994) theory of A'-dependencies.⁴ Adverbial *wh*-phrases in Chinese must move at LF, instead of being unselective bound by an operator at CP-level, as in the case of the nominal *wh*-phrase in Chinese. The proposed analysis observes the proposal in Tasi (1994). The adverbial *wh*-phrase *zenme* 'how' cannot move out of the moved vP (see 29):

- (29) a. Laowang *zenme* zhu niurou (**le*)?
 Laowang how(manner) cook beef LE
 'How does Laowang cook the beef?'
 b. ZS *zenme* chi-wan-le hanbao (**le*)?
 ZS how eat-finish-LE hamburger LE
 'How did ZS eat the hamburger?'

The structure of the TAS is now clear. The compositional aspect shows different lexical content, which is represented in Chinese by the main verb and the composition of secondary predicate or RVC construction. The viewpoint aspect is represented by the verb-*le* (and *guo*, *zhe*) projection, the function of which is to link the lexical content to a given viewpoint, and syntactically, the linking is achieved through head movement. The temporal aspect is headed by the sentence-*le*. Semantically, it condenses the internal structure to a point (and does not

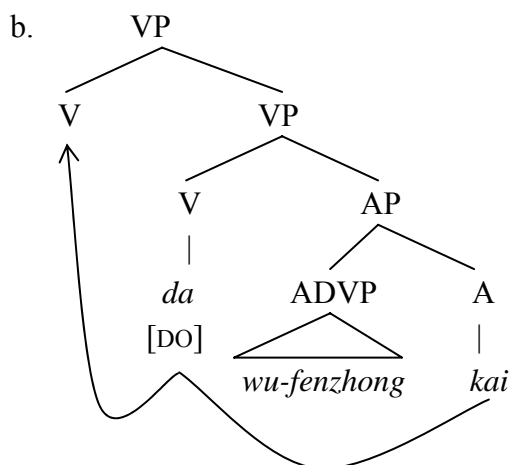
⁴ There is another consequence in Tasi's (1994) proposal. That is, subjacency and CED also applies at LF, contrary to the proposal in Huang (1982).

look back to the internal structure again), and linked it to a given reference time. Syntactically, vP raises to [Spec, AspP] for dynamicity checking. The semantic ‘condensing’ is also deduced from vP as an impenetrable phrase (Chomsky 2001).

4.2 The Structure of the Chinese Durative Phrases

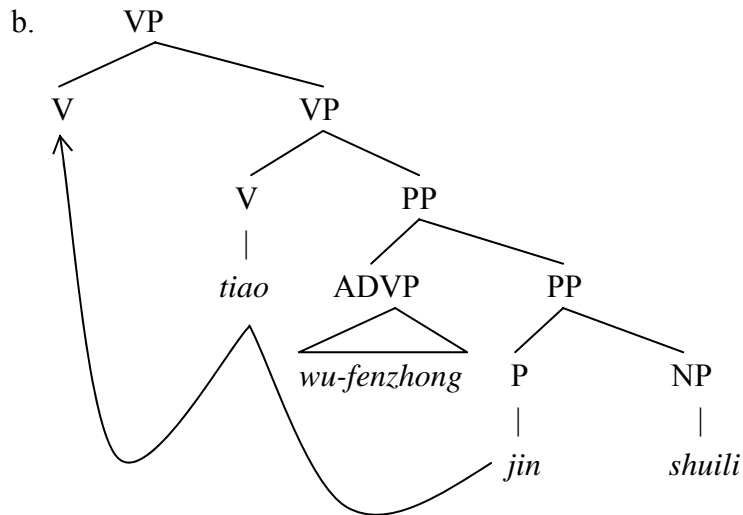
Consider first the TS-related reading. I have argued that the TS-related reading requires a target state generated by the sentence. Syntactically, two sources of the target state are available, corresponding to the [open] and [in the water] types of explicit result states in Piñón (1999). The first source is the lexically denoted target state. This can be illustrated by verbs like *da-kai* ‘open,’ *da-pao* ‘dispell,’ *ju-gao* ‘raise up,’ etc.⁵ Another syntactic source of the target state in Chinese comes from the resultative secondary predicate. For example, (*tiao*) *jin-shuili* ‘(jump) into the water,’ (*duo*) *dao-shanshang* ‘hide in the mountains,’ (*pa*) *dao-shushang* ‘(climb) onto the tree’ (see also Ramchand 2003 for a lexical decomposition approach). Two kinds of structure involved in the TS-related durative phrases are shown in (30) and (31):

- (30) a. ta da-kai chuanguhu wu-fenzhong.
 ta do-open window five-minute
 ‘He opened the window for five minutes.’



- (31) a. ta tiao-jin shui-li wu-fenzhong.
 he jump-into water-in five-minute
 ‘He jumped into the water for five minutes.’

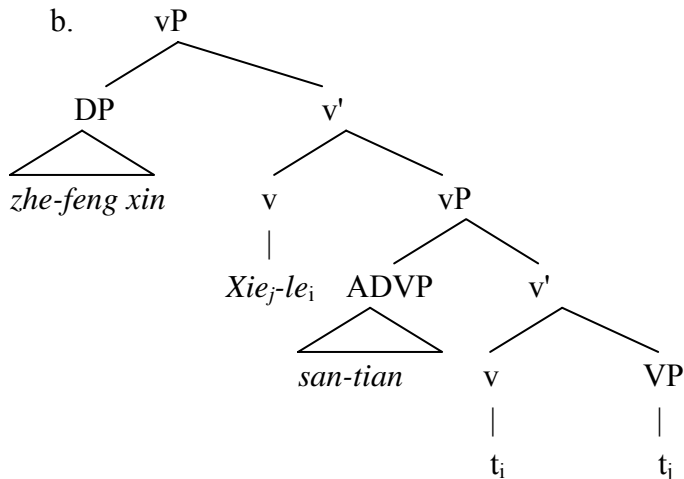
⁵ According to Lin (2001), *da* (literally ‘hit’) is a denominal light verb similar with Japanese light verb *-suru* construction (see Grimshaw and Mester 1988).



Following Hale and Keyser (1993, 1997, 2002), these phrases are base-generated as VP-complement, denoting the result state. If Lin (2001) is on the right track, and conflation applies in Chinese directly in the level of s-syntax, I propose that the durative adverb of TS-related is base-generated in the Spec position of the root phrase or the secondary predicate.⁶

Second, the P-related reading results from the appearance of the verb-*le*, the structure looks like (32):

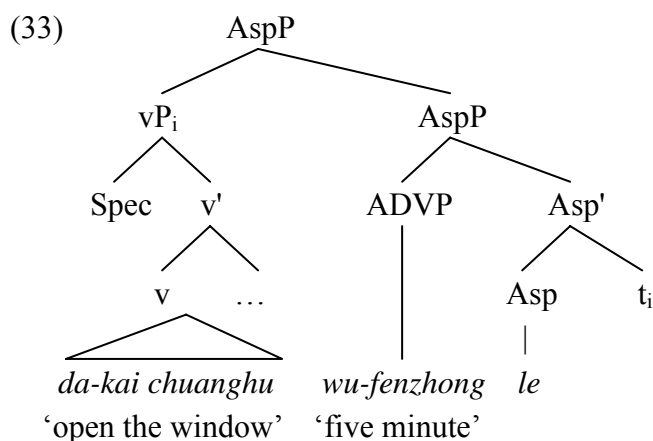
- (32) a. ZS [_{VP} xie-le zhe-feng xin san-tian.]
 ZS write-LE this-Cl letter three-day
 ‘ZS wrote the letter for three days.’



⁶ To make things more straightforward, the subject position of the secondary predicate is omitted in this discussion. Actually, this is an issue that deserves a serious argumentation. For simplicity, I assume the generalized control approach in Huang (1984). In (34b), this leaves a Pro (bound by the object) in the subject position of the secondary predicate, to which the adjectival head attribute its property. Another possibility to consider this structure is that X' (X= P or A) itself undergoes reanalysis, as in Larson (1998), and move as a head, as illustrated in (35b).

The durative phrase of the P-related reading is licensed by the v head. One piece of evidence comes from the homogenous requirement (Moltmann 1991). Notice that the adverb is illicit when the verb chunk is not homogenous. Therefore, *xie-wan-le* ‘write-finish-LE’ would be ruled out in presence of a durative adverb. Syntactically, this is represented by the V-to-v head movement. If the result is not homogenous, then the licensing fails. The verb chunk further raises to subject-selecting light verb, hence the correct S-V-(O)-D ordering in the surface form (D for durative adverb).

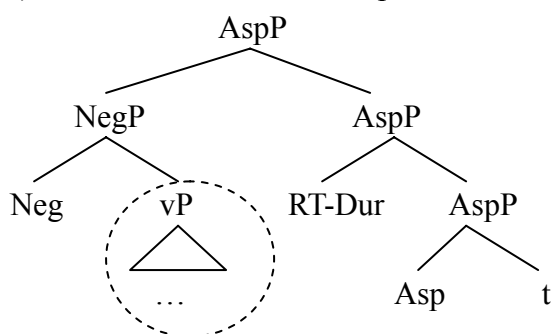
Turning to the RT-related reading, we find that the durative phrase of RT-related reading measures the measured states with a reference point. Candidates of the measured states are the resultant state, process, or the target state (subject to the homogeneous requirement). Since the reference point is provided by the sentence-*le*, it is reasonable to declare that the durative phrase is adjoined to the AspP in the RT-related reading (see 33):



Empirical evidence in favor of the proposed analysis is plentiful. Consider the negative scope first. The negation marker *mei-you* ‘not-have’ negates the main predicate. Since both of the TS-related and the P-related are negated along with the predicate, they are predicate-internal (see 34 a, b). On the other hand, the durative phrase of the RT-related reading, being generated in the adjunct position of AspP, is immune from the negative scope, which negates only the vP, as in (35):

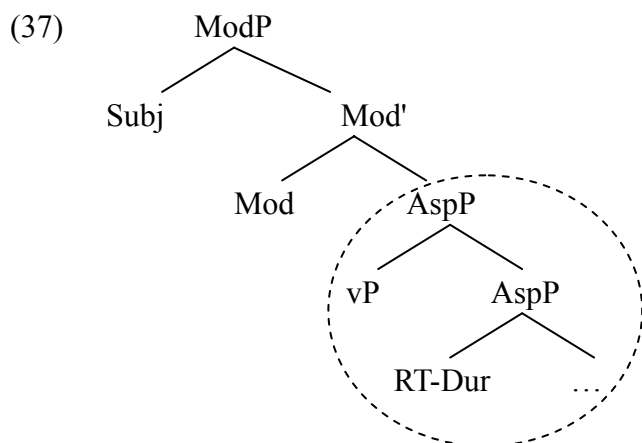
- (34) a. ZS mei-you **da-kai** **chuanghu** **hen-jiu**.
 ZS not-have DO-open window very-long
 ‘ZS did not open the window for a long time.’
- b. ZS mei-you **chi** **hen-jiu**.
 ZS not-have eat very-long
 ‘ZS did not eat for a long time.’
- c. ZS mei-you **zhe-yang** **zuo** hen-jiu le
 ZS not-have this-way do very-long LE
 ‘It has been long since ZS did so last time.’

(35) The RT-related durative phrases: immune from negation



Consider the modal scope next. Assume that modalP (being speaker-oriented) is base-generated above AspP. The fact that modal scope is over the RT-related reading, as in (36), indicate that the durative phrase of RT-related reading is generated lower than modal but higher than NegP, leaving only the AspP as a possible site (see 37):

- (36) a. ZS dagai **du daxue wu-nian-duo le.**
 ZS probably read college five-year-more LE
 ‘ZS probably have studied in college for more than five years.’
 b. ZS keyi **yong zuo-shou xie-zi henjiu le.**
 ZS can use left-hand write-word very-long LE
 ‘It has been long that ZS can use his left hand to write.’



5 Consequences and Remarks

The proposed theory also provides clues for some semantic and syntactic issues in Chinese. First, as is well known, an asymmetry exists between Chinese and English telic expressions: Chinese allows, while English rejects, the existence of the durative phrases with a telic expression:

- (38) a. ??John ate the hamburger for three hours.
 b. Zhansan chi-le zhe-ge hanbao san-ge xiaoshi.
 ZS eat-LE this-Cl. hamburger three-Cl. hour
 ‘ZS ate the hamburger for three hours.’

Under the proposed theory, this asymmetry can be accounted for in a straightforward manner.

The verb-*le* denotes a realization aspect (Liu 1988), and therefore licenses the P-related durative phrases (specify the duration of the realization). To be more general, the verb-*le*, being a realization marker which specifies the initial but not the natural final point, introduces an arbitrary final point of the situation by default (as in the case of English activities). This arbitrary final point allows the events to be activity-like (Smith 1991). The same logic applies to English accomplishments as well, where the arbitrary final point of the situation is introduced by contexts or by other syntactic means (durative preposing, for example). Owing to the arbitrariness, the ‘lexically’ telic event becomes atelic, and accomplishment becomes activity. This is evidenced by the fact that the durative phrases can access to the following sentence, which is lexically telic, but turns out to be atelic due to the durative preposing:

- (39) For three hours, John ate the hamburger.⁷
 a. ‘John brought about the event that the eating of the hamburger lasts for three hours.’
 b. *‘John naturally entered the state that the hamburger was eaten for three hours.’

In (39a) an arbitrary final point is introduced, and the sentence put emphasis on John’s arbitrariness to eat the hamburger intentionally for three hours (Verkuyl calls it ‘forced reading’). (39b) sounds bizarre since the arbitrary final point has replaced the natural final point, and this is why the sentence drops its ‘accomplishment’ flavor.

As for syntax, the most obvious question is why Chinese legitimates the durative phrases as the only rightward adjuncts. Especially, the empirical data seems to violate the conclusion met in Lin and Liao (2003), which argues that Chinese adjuncts observe the uniform leftward directionality. The fact that Chinese does not allow rightward adjunction is obvious in many cases (see Tang 1990 for detailed analysis on Chinese adjuncts). For example, locative, temporal (both deictic and anaphoric), and manner adverbs are instances of left adjuncts. Assume they are IP/vP-level (Bowers 1993; Tang 1990). The structure hence looks like (40a) and (40b). CP-level adjuncts are also labeled as left adjuncts, such as (40c):

- (40) a. ZS [_{vP} zai-jia-li [_{v'} kan dianshi]].
 ZS in-home-in watch TV
 ‘ZS is watching TV at home.’
 b. ZS [_{IP} mingtian [_{I'} zai-jia-li xie baogao.]]
 ZS tomorrow in-home-in write paper
 ‘ZS is going to write his paper tomorrow.’
 c. [cong jintian-qi, [_{C'} ZS shi boshi le.]

⁷ Higginbotham (1994) suggests that sentence such as ‘I had my wallet stolen’ may have three readings:

- a. ‘I came near to suffering the theft of my wallet.’
 b. ‘I was on the point of engineering the theft of my own wallet.’
 c. ‘I was on the point of being in a position where I would be certain of stealing my own wallet.’ (filtered out by context).

I pursue his idea here, and generalize it to any sentence of accomplishment type with the durative phrases.

from today-on ZS BE PhD LE
 ‘From today on, ZS is a Ph.D.’

However, durative phrases generally appear in the rightward position. How can this be? Under the proposed theory, nevertheless, the surface ordering is actually derived from series of movements, leaving the durative phrases ‘stranded’ in the sentence-final position. Thus, the structures shape like the following:

(41) [_{YP}...X⁰/X_{P_i}...RT-Dur...Y [_{ZP}...P-/TS-Dur...t_i ...]]

In TS-related reading, YP=VP, and ZP represents the resultative phrase, which moves up to VP and stranded the durative phrase. In P-related reading, the YP=vP, and X⁰=V⁰, which head-adjoins to the v⁰. In the RT-related reading, the durative phrase appears in the YP, instead of ZP, and the XP=vP, which raises to spec of YP for dynamicity checking. Therefore, the uniform directionality of adjunct still holds in the proposed theory.

Another interesting question is to examine the co-existence of the durative phrases. Consider the following sentences:

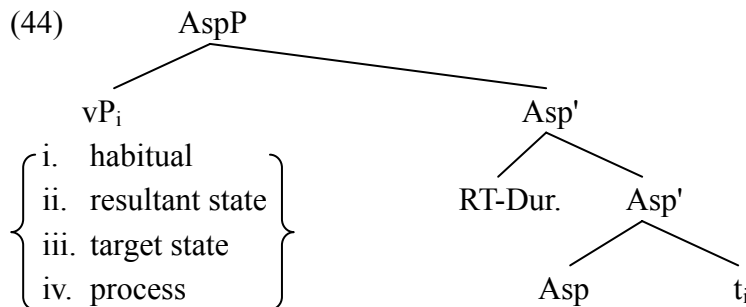
- (42) a. *ZS kai-le chuangu wu-fenzhong wu-tian yi-ge-yue le.
 ZS open-LE window five-minute five-day one-Cl-month LE
 (P-related, TS-related, and RT-related)
- b. *ZS kai-le chuangu wu-tian yi-ge-yue le.
 ZS open-LE window five-day one-Cl-month LE
 (TS-related and RT-related)
- c. *ZS kai-le chuangu wu-fenzhong wu-tian.
 ZS open-LE window five-minute five-day
 (P-related and TS-related)
- d. *ZS kai-le chuangu wu-fenzhong yi-ge-yue le.
 ZS open-LE window five-minute one-Cl-month LE
 (P-related and RT-related)

The combinations of the TS-related, the P-related, and the RT-related above show the coexistence restriction, although we still can find the grammatical sentences like the following:

- (43) a. ZS meitian paopu ban-xiaoshi san-nian le.
 ZS everyday run half-hour three-year LE
 ‘For three years, ZS has been running for half hour every day.’
 (RT-related and P-related)

- b. ZS meitian kai chuangu wu-fenzhong san-nian le.
 ZS everyday open window five-minute three-year LE
 ‘For three years, ZS has opened the window for five minutes every day.’
 (TS-related and RT-related)

Nevertheless, a close scrutiny reveals that the coexistence restriction is actually positive evidence to the proposed analysis. Notice that in the licit cases, the RT-related durative phrase selects a habitual event, which is taken out by the adverbial *meitian* ‘every day.’ How do we explain this fact? The answer lies in the structure. The license of the RT-durative phrase is achieved through the head-spec agreement in the AspP. Habitual events arguably allow the durative phrases to modify the homogenous habitual state. The habit itself is homogenous. The possible combinations are shown in (44):



Another question is about the coexistence restriction of the TS-related and the P-related readings. I argue that this fact is attributed to general linguistic phenomena. Higginbotham (1994) claims that the secondary predicate can, in some cases, function as the main predicate:

- (45) &The boat floated under the bridge.
 a. ‘(atelic reading): Under the bridge, the boat floated.’
 b. ‘(telic reading): The boat went under the bridge in the manner of floating.’

When *under* is telic, meaning ‘go under.’ The PP *under the bridge* functions as the main predicate:

- (46) float (the boat, e_1) & under (the bridge, e_1, e_2) & in an hour (e_1, e_2)

He concludes that it is a language specific property of English that the locative PP can function as the main predicate. However, I suggest that Chinese is the same as English with respect to this property. Therefore, not only in the TS-related, but in the P-related interpretations as well, it is actually the main predicates that receive the aspectual marking, and are able to license the durative phrases. This point again supports the proposed analysis.

6 Conclusion

I have presented the syntax-semantics interface of the aspect and the durative phrases in Chinese. The interaction between the aspect and the durative phrases becomes more transparent. To summarize, the durative adverbs in Chinese can have three kinds of interpretations, namely, the TS-related, P-related, and RT-related readings. The interpretations can be mapped to the decomposed aspectual structure. The durative phrase of the TS-related reading modifies the root projection or the resultative predicate. The durative phrase of the P-related reading modifies the viewpoint aspect projection (*verb-le*). The durative phrase of the RT-related reading modifies the temporal aspect projection (*sentence-le*). The distinction not only solves the semantic issues of telicity, but also characterizes an elaborated architecture of aspect and the durative adverbs.

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