

THE SYNTAX OF EVENT STRUCTURE IN CHINESE

A DISSERTATION SUBMITTED TO THE GRADUATE DIVISION OF THE
UNIVERSITY OF HAWAI'I IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY

IN

LINGUISTICS

MAY 2001

By

Jung-hsing Chang

Dissertation Committee:

William O'Grady, Chairperson
Byron W. Bender
Yi-Leng Chen
Roderick A. Jacobs
Ying-che Li

We certify that we have read this dissertation and that, in our opinion, it is satisfactory in scope and quality as a dissertation for the degree of Doctor of Philosophy in Linguistics.

DISSERTATION COMMITTEE

Chairperson

ACKNOWLEDGEMENTS

My debts of gratitude and appreciation are deep and many. First of all, I would like to thank my distinguished advisor, William O'Grady, for his insightful comments on the earlier drafts of this dissertation and his constant guidance and encouragement throughout the years. I would also like to thank Ying-che Li for providing me with detailed page-by-page comments on the entire manuscript. I own my gratitude to Roderick A. Jacobs for his kind help at various stages of my study. His scholarly expertise in cognitive linguistics has always been a great inspiration to me. My debt is also to two other committee members for their suggestions, information, and help of other sorts; they are Byron W. Bender and Yi-Leng Chen.

My thanks also go to Hsiu-Chuan Liao, Cheng-chi Chu, and Kazumi Yoshihara, who provided me with many important comments on the entire prefinal manuscript.

I would like to gratefully acknowledge the fellowship provided for this research by Chiang Ching-kuo Foundation.

My dearest thanks, finally, go to my parents for their support over the years of my study in Hawaii, and to my wife, Hui-hua Hwang, and my son, Chao-wei Chang, for a variety of forms of assistance and the happiness they have given to me.

ABSTRACT

Based on the idea that event structure plays an important role in linguistic analysis, this dissertation focuses on three main issues. The first issue is concerned with the intertwined relationships among eventuality types in both English and Chinese, their syntactic distributions, and semantic interpretations associated with *almost*-adverbials, *in*-adverbials, and *for*-adverbials. The contrasts between eventuality types are accounted for in terms of two principles: Event Projection and Event-component Fusion.

The second issue is concerned with the development of Chinese resultative verb constructions and its close relationship with other syntactic constructions such as the *Ba*-construction, the *Bei*-construction, and the Verb-copying construction. It is suggested that the development of resultative verb constructions results from semantic factors rather than word order change from SVO to SOV. In addition, the contrasts of resultative verb constructions, serial verb constructions, and directional verb constructions in terms of whether the two verbs can occur adjacently are conceived of as an iconic reflection of event structure.

The last issue is concerned with the linking of arguments to syntax in Chinese resultative verb constructions. It is demonstrated that the linking principles based on the event roles are able to account for the complementary distribution of the *Ba*-construction and the Verb-copying construction, because '*ba*+NP' is associated only with the Locus of affect role (an entity that is involved in the endpoint), whereas 'a copied verb+NP' is associated only with the Target of activity role (an entity that undergoes the action). It is predicted that a resultative verb construction, which can occur in the *Ba*-construction, can have a corresponding *Bei*-construction, because both constructions involve the displacement of the Locus of affect role.

LIST OF TABLES

<u>Table</u>	<u>Page</u>
2.1 The syntactic properties of the four eventuality classes	44
2.2 The semantic properties of the four eventuality classes	45
3.1 Aspectual properties of stage-level and individual-level states	101
3.2 Linguistic properties of activity eventualities in Chinese	108
3.3 Linguistic properties of state eventualities in Chinese	111
3.4 Syntactic properties of RVCs in English and Chinese	133
3.5 Adverbial interpretations of English and Chinese RVCs	139
4.1 Linguistic properties of RVCs, SVCs, and DVCs	170
5.1 Different types of RVCs and syntactic constructions associated with them	205

TABLE OF CONTENTS

ACKNOWLEDGEMENTS.....	iv
ABSTRACT.....	v
LIST OF TABLES.....	vi
Chapter 1 INTRODUCTION.....	1
1.1 Introduction.....	1
1.2 The background of eventuality	3
1.2.1 Eventuality classes.....	3
1.2.2 Aspectual shift	7
1.2.3 Event structure and argument assignment	10
1.3 The main issues of the dissertation	15
1.3.1 The historical background of RVCs in Chinese	15
1.3.2 RVCs and their relevant syntactic constructions	20
1.3.3 Grammatical contrasts between English and Chinese	24
1.4 Organization of the dissertation	29
Chapter 2 EVENT STRUCTURE IN ENGLISH.....	31
2.1 Introduction.....	31
2.2 Syntactic properties of eventuality classes	33
2.2.1 Activities.....	33
2.2.2 States.....	35
2.2.3 Achievements.....	37
2.2.4 Accomplishments.....	40
2.2.5 Summary.....	44
2.3 Theoretical framework.....	47
2.3.1 Situational complex of eventuality	47
2.3.2 Event-component Fusion and Event Projection.....	51
2.4 An integrated account	59
2.4.1 Syntactic phenomena and Event Projection.....	59
2.4.2 Interpretations of <i>almost</i> -adverbials	60
2.4.3 Interpretations of temporal adverbials	67
2.4.3.1 Frame adverbials.....	67
2.4.3.2 Durative adverbials.....	73
2.4.4 Interpretations associated with "keep V-ing"	76
2.5 Concluding remarks.....	77
Chapter 3 EVENTUALITIES AND GRAMMAR IN CHINESE.....	80
3.1 Introduction.....	80
3.2 Aspect marker <i>le</i> and its aspectual properties.....	81

3.2.1	<i>Le</i> as an aspectual focus marker.....	81
3.2.2	Aspect marker <i>le</i> and state eventualities.....	88
3.2.2.1	Stage-level and individual-level states.....	88
3.2.2.2	<i>Slightly</i> - and <i>almost</i> -adverbial tests.....	92
3.2.2.3	State eventualities and their aspectual properties.....	95
3.2.3	Summary.....	101
3.3	Syntactic properties of different eventualities in Chinese.....	102
3.3.1	Activities.....	102
3.3.2	States.....	108
3.3.3	Accomplishments.....	111
3.3.4	Achievements.....	119
3.3.5	Summary.....	121
3.4	Resultative verb constructions in English and Chinese.....	122
3.4.1	Syntactic properties of resultative verb constructions.....	122
3.4.2	A contrastive account.....	133
3.4.2.1	Event Projection and the syntactic properties associated with it..	133
3.4.2.2	Interpretations of <i>almost</i> - and <i>in</i> -adverbials.....	134
3.4.3	Interpretations associated with different adverbials.....	137
3.4.4	Summary.....	138
3.5	Concluding remarks.....	139
Chapter 4 THE RELATION OF GRAMMAR TO EVENT STRUCTURE.....		142
4.1	Introduction.....	142
4.2	Linguistic properties of RVCs, SVCs, and DVCs in Chinese.....	151
4.2.1	Grammatical phenomena associated with EP and ECF.....	151
4.2.2	Grammatical phenomena associated with temporal structure.....	159
4.2.3	Summary.....	169
4.3	An account for the development of Chinese RVCs.....	171
4.3.1	The relation between form and meaning.....	171
4.3.2	Grammaticalization of RVCs in Chinese.....	178
4.3.3	Summary.....	186
4.4	Concluding remarks.....	187
Chapter 5 EVENT STRUCTURE AND ARGUMENT LINKING.....		190
5.1	Introduction.....	190
5.2	Chinese RVCs and their relevant syntactic constructions.....	191
5.2.1	Both V_1 and V_2 are intransitive verbs.....	193
5.2.2	V_1 is a transitive verb while V_2 is an intransitive verb.....	197
5.2.3	RVCs with ambiguous interpretations.....	203
5.2.4	Summary.....	205
5.3	Linking theoretical framework.....	207
5.3.1	Argument linking and thematic roles.....	207
5.3.2	Representation of event structure.....	213
5.3.3	Event roles.....	217
5.3.4	Argument linking and RVCs in Chinese.....	221

5.3.4.1 Both V_1 and V_2 are intransitives	228
5.3.4.2 V_1 is a transitive whereas V_2 is an intransitive	231
5.3.4.3 Passivization of RVCs in Chinese	237
5.3.4.4 RVCs with ambiguous interpretations	242
5.4 Concluding remarks	247
Chapter 6 CONCLUSION	249
REFERENCES	257

CHAPTER 1

INTRODUCTION

1.1 Introduction

Rosen (1999: 3) states that we can discuss events in two different ways: real world events and linguistic events. Real world events are the things that happen, whereas linguistic events refer to the linguistic representations of the things that happen. Event structure plays an important role in linguistic analysis because a great number of grammatical phenomena make reference to its properties. This dissertation elucidates the interplay between certain syntactic phenomena and event structure, with the aim of finding out what role event structure plays in syntax.

Within the investigations of event structure, the term *aspectuality* has been used to refer to the internal structure of events or situations, e.g., whether an eventuality (aspectual) class denotes an inherent endpoint, rather than the sort of temporal relations involved in tense, e.g., whether an eventuality class designates the perfective or the imperfective, as in the English imperfective construction 'be+V-ing' (see Zhang 1995: 1-3 and Dahl 1999: 30-31 for the distinction between aspectuality and aspect). In the literature, the terms for the internal structure of events vary according to different authors, for example, Aktionsart (from the German *aktion* 'action' and *art* 'sort, type') (Hinrichs 1985; Van Valin 1990; Zaenen 1993), aspect (Verkuyl 1972, 1989; Tenny 1987, 1994), aspectual classes (Dowty 1972, 1979), inherent lexical aspect (Comrie 1976: 41ff; Van

Valin 1990), situation aspect (Smith 1997), and eventuality types (Bach 1981, 1986; Filip 1999; Rosen 1999). The present work uses *eventuality classes* to refer to aspectual classes, though they are commonly referred to as event classes.

In describing eventuality classes in terms of an endpoint, there is also a great variety of terminology (Filip 1999: 53), for example, telic/atelic (Garey 1957; Dowty 1991), bounded/unbounded (Allen 1966), delimited/non-delimited (Tenny 1987, 1994), change of state/activity (Dowty 1979), quantized/cumulative (Krifka 1986), accomplishment/activity (Vendler 1967), terminative/aterminative (Maslov 1959), performance/activity (Kenny 1963), event/process (Mourelatos 1978, 1981), and developments/processes (Mourelatos 1978). In this dissertation, the term *telic/atelic* is used for the eventualities with/without a terminal endpoint.

This chapter involves two major matters: the background of eventuality, as in section 1.2, and the main issues of the dissertation, as in section 1.3. The former covers the classification of eventuality types, as in section 1.2.1, the aspectual shift phenomena, as in section 1.2.2, and the interplay between event structure and the argument assignment, as in section 1.2.3. The latter encompasses some historical background of the resultative verb constructions (hence, RVCs) in Chinese,¹ as in section 1.3.1, the introduction to RVCs and their relevant syntactic constructions in Chinese, as in section 1.3.2, and some grammatical contrasts between English and Chinese, as in section 1.3.3. In addition, the organization of the present work is given in section 1.4.

¹ Throughout this dissertation the term 'Chinese' refers to Mandarin Chinese, unless otherwise noted.

1.2 The background of eventuality

1.2.1 Eventuality classes

Vendler (1967) distinguishes four basic categories of verbs according to their aspectual properties in English: activities (e.g., *walk* and *play*), accomplishments (e.g., *paint a picture* and *learn*), achievements (e.g., *find* and *win*), and states (e.g., *know* and *think*). Achievements and accomplishments are telic because they express eventualities with a set terminal endpoint. Activities and states express eventualities with no set terminal endpoint; therefore, they are atelic. The definition of each category is given in (1), and exemplified in (2)–(5):

(1) The definitions of eventuality classes (Vendler 1967)

- a. Activities: events that go on for a time, but do not necessarily terminate at any given point.
- b. Accomplishments: events that proceed toward a logically necessary terminus.
- c. Achievements: events that occur at a single moment, and therefore lack continuous tenses (e.g., the progressive).
- d. States: non-actions that hold for some period of time but lack continuous tenses.

(2) Activities

- a. John walked for an hour.
- b. John played violin all night.

(3) Accomplishments

- a. Harry painted a picture yesterday.
- b. Harry learned French.

(4) Achievements

- a. Bill found his watch.
- b. Bill won the game.

(5) States

- a. Fred knows the girl.
- b. Fred believes that Terry will come tonight.

Dowty (1979) uses *states* as primitives, representing the end state of an eventuality, and reformulates Vendler's four categories by making explicit the derivational relationship between the categories. In his aspectual calculus, achievements are derived from states (state A *becomes* state B), and accomplishments are derived from achievements (some action *causes* state A to *become* state B). Activities are often part of accomplishments and often involve 'unmediated self-control' by the agent.

Smith (1997) adds a fifth class called *semelfactives* (e.g., *knock* and *cough*) to Vendler's four-way classification. In her definition, achievements are instantaneous culminating eventualities, while semelfactives are instantaneous non-culminating eventualities. Unlike achievements, semelfactives result in no change of state, as exemplified in (6).

(6) Semelfactives

- a. John knocked at the door.
- b. The child coughed.

In addition, Lys (1988: 132) adds another class called *result-state*, which contains an activity being performed and a new state being achieved. The example in (7) is a result-state expression, in which the durative adverbial such as *for a month* refers to the duration of the result state rather than the duration of the activity itself.

(7) Result-states

John left for Japan for a month.

⇒ John stayed in Japan for a month.

However, the categorization is not always clear-cut, since all eventuality classes are related to one another by one property or the other. According to Zhang (1995: 15), the relationships of core situations (states, activities, and achievements) can be diagrammed as three overlapping subdomains.

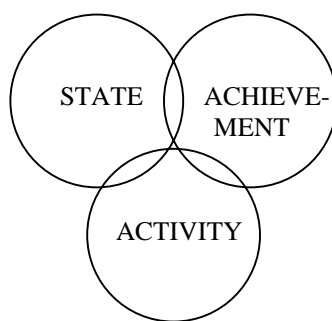


Diagram 1.1

The overlapping areas represent common semantic properties shared by the subdomains. For instance, both states and achievements lack an internal phase (e.g., neither of them usually occurs in the imperfective), whereas both states and activities are

temporally indefinite (e.g., neither of them has an endpoint). An accomplishment shares features with activities in terms of duration as well as with achievements in regard to an endpoint. Zhang (1995: 15) thus suggests that dynamicity and change are properties associated with both achievements and activities, upon which accomplishments are built.

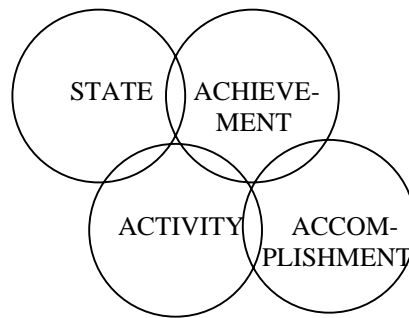


Diagram 1.2

Because a result-state shares the terminative properties with achievements and durative properties with states, Zhang (1995: 17) suggests that it can be developed on the central situations of achievements and states.

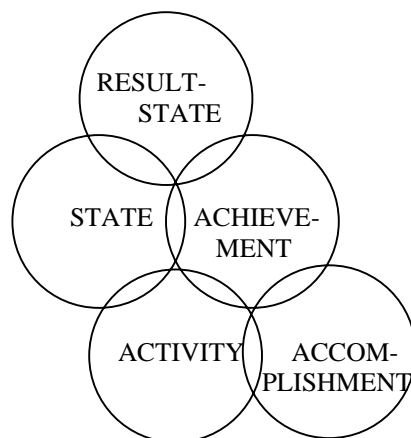


Diagram 1.3

The overlapping areas between the aspectual categories display the intertwined relationships among themselves and can be understood by conceiving of situations as being related to one another in certain contexts yet having their individual prototypical features.

1.2.2 Aspectual shift

It has been noted that some of the verbs in Vendler's classification may shift from one category into another, depending on the context. This phenomenon is called *aspectual shift* or *coercion*, as discussed in Bach (1986), Link (1983), Krifka (1989), Verkuyl (1993), Pustejovsky (1995), Smith (1997), de Swart (1998), and many others. For example, the addition of the object, as in (8), the specificity of the object, as in (9), and countability of the object, as in (10), all contribute to determining the eventuality type of the entire clause.

(8) Addition of object

a. Activity

Ned ran for an hour/*in an hour.

b. Accomplishment

Ned ran an obstacle race *for an hour/in an hour.

(9) Specificity of object

a. Activity

Terry painted pictures for an hour/*in an hour.

b. Accomplishment

Terry painted the picture *for an hour/in an hour.

(10) Mass/count object

a. Activity

Harry drank coffee for an hour/*in an hour.

b. Accomplishment

Harry drank a cup of coffee *for an hour/in an hour.

The expression in (8a) is an activity, but after the addition of the object (e.g., *an obstacle race*), the expression has shifted from an activity to an accomplishment, as in (8b). The expression in (9a) with a non-specific object (e.g., *pictures*) is an activity, but with a specific object (e.g., *the picture*) the expression has again shifted from an activity to an accomplishment, as in (9b). The replacement of a mass object (e.g., *coffee*), as in (10a), by a count object (e.g., *a cup of coffee*), as in (10b), has also caused the eventuality type to change from an activity to an accomplishment.

In addition, the Goal-PP (e.g., *to the park*), as in (11b), the verb particle (e.g., *up*), as in (12b), and the resultative predicate (e.g., *flat*), as in (13b), are all thought of as endpoint-denoting elements, such that the resulting eventuality type of these examples is an accomplishment. There are still other factors involved in the eventuality classification in English such as cognate objects, the *way* construction, fake reflexives, and conatives, for detailed discussion, see Rosen (1999: 4) and Tenny (1994).

(11) PP adjunct

a. Activity

Terry walked for an hour/*in an hour.

b. Accomplishment

Terry walked to the park *for an hour/in an hour.

(12) Verb particle

a. Activity

Bill used the supplies for an hour/*in an hour.

b. Accomplishment

Bill used up the supplies *for an hour/in an hour.

(13) Resultative

a. Activity

Ned hammered the metal for an hour/*in an hour.

b. Accomplishment

Ned hammered the metal flat *for an hour/in an hour.

Since the eventuality type for a sentence need not be the eventuality type of the main verb, and there are several types of syntactic constructions that directly affect the eventuality type of the entire clause, for example, complement types, PP attachment, verb particles, and resultative predicates, Verkuyl (1972), Dowty (1979, 1991), Tenny (1987, 1994), Ritter and Rosen (1996, 1998), and Jackendoff (1996, 1997), thus, all argue that classification must be compositional, not exclusively verb-based, as suggested by Aristotle (1984), Ryle (1949), Vendler (1967), Bach (1986), and Pinon (1995).

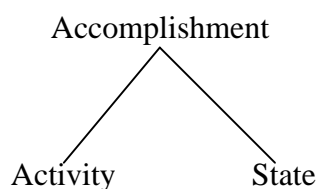
1.2.3 Event structure and argument assignment

Linguistic research has worked on a tight relation between the thematic argument structure of a verb and the syntactic structure that it is used in. For instance, Perlmutter and Postal's (1984) Universal Alignment Hypothesis (UAH) and Baker's (1988) Uniformity of Theta Assignment Hypothesis (UTAH) state that specific thematic (semantic) arguments belong in specific syntactic positions, and that there is a one-to-one linking (also known as *mapping*) between thematic argument and initial syntactic position. Universal alignment predicts identical linkings of arguments into syntax across verbs and languages. However, as pointed out by Rosen (1999), thematic roles do not behave quite predictably, since both *theme* and *experiencer* can appear in subject or object position, as illustrated in (14) and (15), respectively. The fact that no one-to-one correspondence exists between the semantic meaning of a verb and its syntactic behavior is in apparent contradiction to the core assumption of both Perlmutter and Postal's UAH and Baker's UTAH.

- (14)a. The door closed. (Theme → Subject)
 b. John closed the door. (Theme → Object)
- (15)a. The tourists feared the storm. (Experiencer → Subject)
 b. The storm was frightening the tourists. (Experiencer → Object)

Thus, Grimshaw (1990) argues that the arguments linked to syntax are not determined by thematic roles alone. She proposes that arguments are aligned in two dimensions: the thematic dimension and the aspectual dimension. Thematic prominence is determined by universal principles based on the semantic properties of the arguments, whereas aspectual prominence is defined in terms of the event structure of predicates. The basic ranking of arguments in the thematic structure is (agent (experiencer (goal (theme/patient))))), and the ranking of arguments in the aspectual prominence is (cause (other (...))). In addition, it is suggested that an accomplishment contains two aspectual subparts: activity and state. The alignment of the two subevent structures forms a complex event structure for the entire sentence, as in (16).

(16)



In the complex event structure of the predicate, as in (16), the activity part designates the *causing* event whereas the state part is identified as the final result of the

initial activity. Grimshaw (1990) claims that this correlation between *causing* and *result* is to be interpreted as the aspectual prominence of the predicate with respect to its arguments.

Grimshaw (1990) observes that the prominence relations among arguments may or may not coincide in the two hierarchies. For example, the verb *arrest*, as in sentence (17), takes an agent and a theme. Under standard assumptions, the agent role *the policeman* is thematically more prominent than the theme role *the thief*. The agent role is also specified as having maximal prominence in the aspectual dimension. Hence, with *arrest* the prominence relations among arguments coincide in the two hierarchies (i.e., thematic prominence and aspectual prominence); the *agent* is projected as the external argument, with the *theme* projected as the internal argument.

(17) The policeman arrested the thief.
 | |
 Agent Theme

However, if the prominence relations among arguments do not coincide in the two hierarchies, thematic prominence gives way to aspectual prominence. For example, the psychological verbs *frighten* and *fear* belong to different eventuality subclasses according to the Vendler-Dowty classification. That is, the verbs such as *frighten* have a causative meaning not shared by the verbs such as *fear*, i.e., only the subject of the *frighten* class causes a change of psychological state in the object, as shown in (18) and (19).

(18)a. The storm was frightening the tourists.



b. *frighten*: (x (y)) (x = external argument; y = internal argument)
 Experiencer Theme (Thematic Tier)

/ \
 CAUSE STATE (Aspectual Tier)

(19)a. The tourists feared the storm.



b. *fear*: (x (y))
 Experiencer Theme (Thematic Tier)

| |
 STATE STATE (Aspectual Tier)

In sentence (18a), the *frighten* verb has a conflict between two hierarchies: the argument *the tourists* with the experiencer role is more prominent than the argument *the storm* with the theme role in thematic tier, but the argument *the storm* with the causer role is more prominent than the argument *the tourists* with the state role in the aspectual tier. Though the argument *the storm* is not more prominent in the thematic hierarchy, it has been assigned to the subject position because it is more prominent in the aspectual hierarchy. In this case, it is the aspectual hierarchy that determines the assignment of the argument in the subject position.

In sentence (19a), the *fear* verb does not have a conflict between two hierarchies: the argument *the tourists* with the experiencer role is more prominent than the argument *the storm* with the theme role in the thematic hierarchy, while the arguments *the tourists* and *the storm* both involve the state roles, exhibiting the same aspectual hierarchy.

Because both of the arguments have the same aspectual prominence, the argument with the experiencer role (e.g., *the tourists*) is more prominent; therefore, it is assigned to the subject position. In this case, it is the thematic hierarchy that determines the assignment of the argument in the subject position. The above discussion reveals that the syntactic position of an argument is determined by both an event role hierarchy and a thematic role hierarchy in Grimshaw's approach.

However, in Tenny's (1994) analysis, thematic roles play no primary role in determining the syntactic positions of arguments, and the linking of verbal arguments is constrained by the event roles rather than by thematic roles. Tenny (1994: 2) proposes a set of lexicon-to-syntax mapping principles that determine the position of internal arguments, based primarily on the role that each argument plays in delimiting the event, as described in (20).

(20) **Aspectual Interface Hypothesis (AIH)**

The universal principles of mapping between thematic structure and syntactic argument structure are governed by aspectual properties. Constraints on the aspectual properties associated with direct internal arguments, indirect internal arguments, and external arguments in syntactic structure constrain the kinds of event participants that can occupy these positions. Only the aspectual part of thematic structure is visible to the universal linking principles.

In Tenny's approach, delimitation, defined as having an inherent endpoint in time, is crucial in 'measuring out' an event. There are three principles of syntactic mapping: (a) the *measuring out constraint* on direct internal arguments, (b) the *terminus constraint* on

indirect arguments, and (c) the *nonmeasuring out constraint* on external arguments. Take the *measuring out constraint* for example. Because the NP argument *the apple* measures out the event, as in (21), it is defined as a delimiting role, thus, determining that this NP argument should occur in the direct object position.

(21) Ned ate the apple.

Though there are debates about whether event roles alone (e.g., Tenny's AIH), or both event roles and thematic roles together (e.g., Grimshaw's thematic and aspectual prominence) determine the syntactic positions of the arguments, there is no doubt that the study of event structure provides valuable information for the analyses of the human languages, and systematically captures cross-linguistic generalizations.

In the section that follows, I will discuss the historical background and some linguistic properties of RVCs in Chinese, holding that the insight from the study of event structure will provide more satisfactory solution to the significant issues in Chinese linguistics.

1.3 The main issues of the dissertation

1.3.1 The historical background of RVCs in Chinese

A resultative verb complex such as *ku-fan* 'cry-annoyed' and *chi-bao* 'eat-full' in Chinese is composed of two verbs, in which V_1 is the activity verb which designates the *causing* event, whereas V_2 is the state verb which is identified as the *final result* of the

initial activity.² Because V_2 of a verb complex denotes the result of the activity, this type of verb complex is thus called *resultative verb complex*. The RVC in (22a) is composed of the resultative verb complex *ku-fan* 'cry-annoyed', while the RVC in (22b) is composed of the resultative verb complex *chi-bao* 'eat-full'.

- (22)a. Zhangsan ku fan le.
 Zhangsan cry annoyed LE
 'Zhangsan was annoyed from crying.'
- b. Zhangsan chi bao fan le.
 Zhangsan eat full meal LE
 'Zhangsan was full from eating meal.'

Resultative verb complexes in Chinese are called by many other names, including resultative compounds (Cheng and Huang 1994), resultative verb compounds (Li and Thompson 1981; Ross 1990; He 1992), resultative verb complements (Smith 1990), resultative verb-verb compounds (Cheng 1997), V-V compounds (Y. Li 1990; Chang 1990, 1998), verb-complement compounds (Chao 1968; Lin 1989; Lien 1994), and compound causatives (Li and Thompson 1976). These resultative verb complexes have been improperly regarded as compounds, not serial verbs for two main reasons. First, nothing can intervene between the two verbs of a verb complex, except for two morphemes (e.g., *bu* 'not' and *de* 'can'), as given in (23a) and (23b) (for related discussion,

² Chinese has been described as lacking adjectives, as suggested by Hengeveld (1992: 43). The translation equivalents of English adjectives such as *annoyed* and *full* are treated as (adjectival) verbs *fan* and *bao* in Chinese. Because these words exhibit the same syntactic distribution (e.g., they are able to occur with the aspect markers such as *le* and the degree words such as *hen* 'very') as state verbs (e.g., *xihuan* 'like'), they are categorized as adjectival verbs in Li and Thompson (1981).

see Ono 1990 and Y. Y. Huang 1991). Second, the aspect markers such as *le* cannot occur between the two verbs; they can only occur after the second verb, as shown in (24a) and (24b).

(23)a. Chi de bao
eat can full

b. Chi bu bao
eat not full

(24)a. *Zhangsan chi le bao fan.
Zhangsan eat LE full meal
'Zhangsan was full from eating the meal.'

b. Zhangsan yijing chi bao le fan.
Zhangsan already eat full LE meal
'Zhangsan was already full from eating the meal.'

The claim that all Chinese resultative verb complexes are compounds for the above two reasons is questionable, failing to capture the syntactic generalization associated with them. Following Chang (1998) and Hansell (1993), I treat resultative verb complexes as involving two independent verbs with their own argument structures.

It is worth pointing out that in modern Chinese, when a sentence contains two verbs (e.g., V_1 and V_2), these two verbs can be represented in three different ways. First, V_1 and V_2 should be adjacent to each other, as in resultative verb constructions (RVCs), as given in (25). Second, V_1 and V_2 cannot be adjacent to each other, as in serial verb constructions (hence, SVCs), as given in (26). Third, V_1 and V_2 can be optionally adjacent to each other, as in directional verb constructions (hence, DVCs), as given in (27).

(25) RVCs

- a. Ta xue hui Fawen le.
 he study know French LE
 'He learned French'
- b. *Ta xue Fawen hui le.
 he study French know LE

(26) SVCs

- a. Ta dao jiu he.
 he pour wine drink
 'He poured wine to drink.'
- b. *Ta dao he jiu.
 he pour drink wine

(27) DVCs

- a. Ta na le yi ben shu lai.
 he take LE one Cl. book come
 'He brought a book here (The book may or may not be here now).'
- b. Ta na lai le yi ben shu.
 he take come LE one Cl. book
 'He brought a book here (The book is here now).'

In the RVC, as shown in (25a), V_1 *xue* 'study' is an activity verb while V_2 *hui* 'know' is the result of this activity. Because the two verbs should be adjacent to each other, the NP argument *Fawen* 'French' cannot intervene between V_1 and V_2 . (25b) is ungrammatical because it violates this constraint. In the SVC, as shown in (26a), V_2 *he* 'drink' is the purpose of the action coded by V_1 *dao* 'pour', and the two verbs cannot occur adjacently. If they do, the sentence becomes ungrammatical, as in (26b). In the DVCs, as shown in (27), V_1 *na* 'take' implies a displacement of the direct object, and V_2 *lai* 'come' signals that the displacement is toward the speaker of the sentence. In this type of

construction, the displacement verb (e.g., *na* 'take') and the directional verb (e.g., *lai* 'come') allow themselves either to be separated, with the direct object of the verb such as *yi ben shu* (one Cl. book) 'a book' intervening between them, as in (27a), or to occur adjacently, with the direct object displaced after the second verb, as in (27b). Note, however, that the DVC with the two verbs adjacent to each other, as in (27b), implies that the book is here now.

It has been noted that Chinese RVCs with the two verbs adjacent to each other developed from the surface form of SVCs with the two verbs separated from each other. According to Li and Thompson (1976), the RVCs with the two verbs adjacent to each other originated during the Tang dynasty (7th-9th c. A.D.) (see also Ohta 1958; Shimura 1984; Mei 1991, 1994), but it was after the ninth century A.D. that the characteristics of the modern RVCs (e.g., the two verbs must be adjacent to each other) emerged, and the number and the possible types of RVCs increased considerably. Sentences (28) and (29) are examples from late Archaic Chinese and late Medieval Chinese, where the RVCs appeared as the surface form of SVCs, allowing the NP arguments such as *zhi* 'him' or *yi* 'clothes' to intervene between the two verbs.

(28) You she zhi si. (Zuo zhuan, 4th c. B.C.)
 then shoot him dead
 'Then, (he) shot him dead.'

(29) Shi jiao gou yi po. (Tang poem by Du Fu, 8th c. A.D.)
 rock corner hook clothes broken
 'The rock corner hooked the clothes and caused it to be torn.'

The historical fact that the modern Chinese RVCs originated from the surface form of SVCs, allowing NP arguments to appear between the two verbs brings up two interesting questions. First, what motivated the RVCs in modern Chinese, in which the two verbs occur adjacently, to develop from the surface form of SVC, in which the two verbs occur separately? Second, where should the NP arguments between the two verbs go when these two verbs are combined to form an RVC in modern Chinese?

1.3.2 RVCs and their relevant syntactic constructions

In an RVC, each of the two verbs has a full-fledged argument structure. For example, RVCs with the verb complex *ku-fan* 'cry-annoyed', as in (30b) and (31b), are composed of two intransitive verbs, namely, *ku* 'cry' and *fan* 'annoyed'; each of these two intransitive verbs has one NP argument, as illustrated in (30a) and (31a). When these two intransitive verbs are composed together, one of the NP arguments is unexpressed if they are identical, as in (30b). But if the arguments of these two verbs are not identical, both of the arguments must appear in the surface structure, e.g., 'NP₁+V₁V₂+NP₂', in which the argument of V₁ (e.g., NP₁) is represented in the subject position, whereas the argument of V₂ (e.g., NP₂) is represented in the postverbal object position (e.g. after the second verb), as in (31b).

(30)a. *ku* 'cry': <Zhangsan>; *fan* 'annoyed' <Zhangsan>

- b. Zhangsan ku fan le.
 Zhangsan cry annoyed LE
 'Zhangsan was annoyed from crying.'

(31)a. *ku* 'cry': <Zhangsan>; *fan* 'annoyed' <Lisi>

- b. Zhangsan ku fan le Lisi.
 Zhangsan cry annoyed LE Lisi
 'Zhangsan's crying made Lisi feel annoyed.'

Sentences with an NP argument in the position immediately following the second verb, as in (31b), can have corresponding *Ba*- and *Bei*-constructions, as shown in (32) and (33). But they do not have a corresponding Verb-copying construction, as shown in (34).

(32) *Ba*-construction

Zhangsan ba Lisi ku fan le.
 Zhangsan BA Lisi cry annoyed LE
 'Zhangsan's crying made Lisi feel annoyed.'

(33) *Bei*-construction

Lisi bei Zhangsan ku fan le.
 Lisi BEI Zhangsan cry annoyed LE
 'Zhangsan's crying made Lisi feel annoyed.'

(34) Verb-copying construction

*Zhangsan ku Lisi ku fan le.
 Zhangsan cry Lisi cry annoyed LE

On the other hand, the RVC with the verb complex *chi-bao* 'eat-full' in (35) is composed of a transitive verb *chi* 'eat', which has two arguments (e.g., *Zhangsan* and *fan* 'meal'), and an intransitive verb *bao* 'full', which has one argument (e.g., *Zhangsan*). This type of RVC can also have the surface form 'NP₁+V₁V₂+NP₂', but the sentences with this

type of verb complexes can have a corresponding Verb-copying construction, while *Ba*- and *Bei*-constructions are not permitted, as shown in (36)–(38).

- (35) Zhangsan chi bao fan le.
 Zhangsan eat full meal LE
 'Zhangsan was full from eating meal.'

- (36) Verb-copying construction

Zhangsan chi fan chi bao le.
 Zhangsan eat meal eat full LE
 'Zhangsan was full from eating meal.'

- (37) *Ba*-construction

*Zhangsan ba fan chi bao le.
 Zhangsan BA meal eat full LE

- (38) *Bei*-construction

*Fan bei Lisi chi bao le.
 meal BEI Lisi eat full LE

Unlike RVCs with *ku-fan* 'cry-annoyed' or *chi-bao* 'eat-full' that only allow one interpretation, another type of RVC with *qi-lei* 'ride-tired' allows two interpretations when it appears in the surface form 'NP₁+V₁V₂+NP₂', as shown in (39) (Y. Li 1990; Cheng 1997; Chang 1998). The NP argument *ma* 'horse' can occur postverbally (i.e., after V₂), and it can also appear in all the other syntactic constructions discussed so far, namely, the Verb-copying construction, the *Ba*-construction, and the *Bei*-construction, as exemplified in (40)–(42).

- (39) Ta qi lei le ma.
 he ride tired LE horse
 (a)'He was tired from riding horses.'
 (b)'The horse was tired from his riding.'
- (40) Verb-copying construction
- Ta qi ma qi lei le.
 he ride horse ride tired LE
 'He was tired from riding horses.'
- (41) *Ba*-construction
- Ta ba ma qi lei le.
 he BA horse ride tired LE
 'The horse was tired from his riding.'
- (42) *Bei*-construction
- Ma bei ta qi lei le.
 horse BEI him ride tired LE
 'The horse was tired from his riding.'

From examples (40) to (42), we find that only the RVC in (39) has two interpretations, whereas in other constructions there is only one. The Verb-copying construction in (40) allows only the interpretation of (39a), while the *Ba*-construction in (41) and the *Bei*-construction in (42) allow only the interpretation of (39b). Note that though there are two possible interpretations for sentence (39), the interpretation in (39b) is a preferred reading to most native speakers, as Tang (1992b) has pointed out.

There are three questions associated with the discussion. First, why do RVCs with *ku-fan* 'cry-annoyed', as in (31b), occur only in the *Ba*-construction and the *Bei*-construction, but not in the Verb-copying construction, whereas RVCs with *chi-bao* 'eat-

full', as in (35), occur only in the Verb-copying construction, but not in the *Ba*-construction and the *Bei*-construction? Second, why do the RVCs with *qi-lei* 'ride-tired', as in (39), have two possible interpretations, while ambiguous interpretations disappear when these RVCs occur in different syntactic constructions such as the *Ba*-construction, the *Bei*-construction, and the Verb-copying construction? Third, why does the *Ba*-construction share the same interpretation with the *Bei*-construction, but not with the Verb-copying construction?

1.3.3 Grammatical contrasts between English and Chinese

The English examples in (43a) and (43b) are both complex eventualities. (43a) is a lexical accomplishment, whereas the RVC in (43b) is a derived accomplishment. It is noted that both accomplishment expressions can occur in all of the environments such as in the imperfective, as imperatives, as complements of verbs such as *force* and *persuade*, and with agentive adverbials such as *carefully*, as exemplified in (44) to (47).

(43)a. Lexical accomplishment

John wrote a letter.

b. Derived accomplishment (RVC)

John hammered the metal flat.

(44) Imperfective

a. John is writing a letter.

b. John is hammering the metal flat.

- (45) Imperative
- a. Write a letter!
 - b. Hammer the metal flat!
- (46) As a complement of *force*
- a. We forced John to write a letter.
 - b. We forced John to hammer the metal flat.
- (47) With an agentive adverbial
- a. John carefully wrote a letter.
 - b. John carefully hammered the metal flat.

Examples (48a) and (48b) are both Chinese complex eventualities; (48a) is a lexical accomplishment, whereas the RVC in (48b) is a derived accomplishment. However, unlike English, which allows both lexical and derived accomplishments to occur in the imperfective, as imperatives, as complements of *force* and *persuade*, and with agentive adverbials, Chinese permits only lexical accomplishments, but not derived accomplishments (i.e., RVCs), to occur in the same syntactic environments, for example, in the imperfective (Tai 1984: 292; Smith 1990: 317-18; He 1992; Gu 1999), as imperatives, as complements of verbs such as *bi* 'force', and with agentive adverbials such as *zhuanxinde* 'attentively'. The contrast is illustrated in (49)–(52).

(48)a. Lexical accomplishment

Ta	yijing	hua	yi	zhang	hua	le.
He	already	paint	one	Cl.	picture	LE
'He already painted a picture.'						

b. Derived accomplishment (RVC)

Ta chi bao fan le.
 He eat full meal LE
 'He is full from eating meal.'

(49) Imperfective

a. Ta zai hua yi zhang hua.
 He ZAI paint one Cl. picture
 'He is painting a picture.'

b. *Ta zai chi bao fan.
 He ZAI eat full meal

(50) Imperative

a. Qing hua yi zhang hua!
 Please paint one Cl. picture
 'Please paint a picture!'

b. *Chi bao fan!
 Eat full meal

(51) As a complement of *bi* 'force'

a. Women bi ta hua yi zhang hua.
 We force him paint one Cl. picture
 'We forced him to paint a picture.'

b. ?Women bi ta chi bao fan.
 We force him eat full meal

(52) With an agentive adverbial

a. Ta hen zhuanxinde hua le yi zhang hua.
 He very attentively paint LE one Cl. picture
 'He attentively painted a picture.'

b. *Ta hen zhuanxinde chi bao fan.
 He very attentively eat full meal

In addition, as noted by Tai (1984), there are contrastive interpretations associated with scalar adverbials such as *almost* between English and Chinese accomplishments. In English, when accomplishment expressions (both lexical accomplishments and RVCs) occur with *almost*-adverbials, these expressions can have two possible interpretations, as illustrated in (53) and (54). Sentence (53) has two possible interpretations: the first interpretation is that John had the intention of writing a letter, but did not even start writing it (i.e., the intentional reading), while the second interpretation is that John was writing but he did not quite complete the letter (i.e., the culminative reading). Like sentence (53), sentence (54) has two possible interpretations when associated with *almost*-adverbials.

(53) Lexical accomplishment

John almost wrote a letter.

- ⇒ (a) John intended to write a letter.
- ⇒ (b) John was writing a letter, but he did not quite complete it.

(54) Derived accomplishment (RVC)

John almost hammered the metal flat.

- ⇒ (a) John intended to make the metal flat by hammering it.
- ⇒ (b) John was hammering the metal, but the metal did not become flat yet.

Unlike English accomplishment expressions involving two possible interpretations with *almost*-adverbials, Chinese accomplishment expressions with *hua yi zhang hua* 'paint a picture', as in (55), or with the resultative verb complex *chi-bao* 'eat-

full', as in (56), allow only one interpretation when occurring with scalar adverbials such as *chabuduo* or *jihu* 'almost'. For example, in (55), the person was painting a picture, but he did not quite complete it (i.e., the culminative reading), while it cannot mean that the person had the intention of painting a picture, but he did not even start painting it. The intentional interpretation of an English accomplishment expression does not occur in a Chinese accomplishment expression. (56) is on the same line with (55) that allows only a culminative reading, but not an intentional reading, when associated with scalar adverbials.

(55) Lexical accomplishment

Ta	chabuduo/jihu	hua	le	yi	zhang	hua	le.
He	almost	paint	LE	one	Cl.	picture	LE

'He was painting a picture, but he did not quite complete it.'

(56) Derived accomplishment (RVC)

Ta	chabuduo/jihu	chi	bao	fan	le.
He	almost	eat	full	meal	LE

'He was eating meal, but he did become full yet.'

The current discussion raises two important questions. First, why does English allow both lexical and derived (i.e., RVCs) accomplishments to occur in the imperfective, as imperatives, as complements of verbs such as *force* and *persuade*, and with agentive adverbials, whereas Chinese only allows lexical accomplishments, but not derived accomplishments (i.e., RVCs), to occur in the same syntactic environments? Second, why do English accomplishment expressions (both lexical and derived accomplishments) produce ambiguous interpretations (i.e., the intentional reading and the culminative

reading) when occurring with scalar adverbials such as *almost*, while their Chinese counterparts can have only one, i.e., the culminative reading? Though the contrast between English and Chinese seems trivial, it uncovers a great number of hidden syntactic properties associated with it in both languages.

1.4 Organization of the dissertation

The dissertation presents its arguments and ideas to the issues that have been raised in the order as follows:

Following the brief overview of eventuality, and the main issues for discussion in Chapter 1, Chapter 2 attempts to solve the following puzzles in a principled way: (a) why accomplishments and achievements, both of which are complex eventualities, have different properties (e.g., only accomplishments can occur in the imperfective, as imperatives, as complements of verbs such as *force* and *persuade*, and with agentive adverbials such as *carefully*), whereas accomplishments, which are complex eventualities, and activities, which are simplex eventualities, have similar ones, and (b) why both English accomplishments and achievements are complex eventualities, but only accomplishments can produce two ambiguous interpretations (i.e., the intentional reading and the culminative reading), while achievements can have only one (i.e., the culminative reading), when associated with scalar adverbials such as *almost*.

Chapter 3 aims to answer the following questions: (a) why RVCs in Chinese do not occur in the imperfective, as imperatives, as complements of verbs such as *bi* 'force' and *quan* 'persuade', and with agentive adverbials, whereas their English counterparts do, and (b) why Chinese accomplishment expressions (both lexical accomplishments and

RVCs) do not produce ambiguous interpretations (i.e., both the intentional reading and the culminative reading) when occurring with scalar adverbials, while their English counterparts do.

Chapter 4 examines the linguistic properties of three major syntactic constructions in Chinese: RVCs, SVCs, and DVCs, with the goal of accounting for (a) the form-meaning relationship in these constructions, and (b) what motivated the RVCs in modern Chinese, in which the two verbs occur adjacently, to develop from the surface form of SVC, in which the two verbs occur separately.

Based on the assumption that the NP arguments are linked to the syntactic positions according to the event roles rather than the thematic roles, Chapter 5 attempts to illustrate the following questions: (a) why RVCs with *ku-fan* 'cry-annoyed', as in (31b), occur only in the *Ba*-construction and the *Bei*-construction, but not in the Verb-copying construction, whereas RVCs with *chi-bao* 'eat-full', as in (35), occur only in the Verb-copying construction, but not in the *Ba*-construction and the *Bei*-construction, (b) why the RVCs with *qi-lei* 'ride-tired', as in (39), have two possible interpretations, but the ambiguous interpretations disappear when they occur in different syntactic constructions such as the *Ba*-construction, the *Bei*-construction, and the Verb-copying construction, and (c) why the *Ba*-construction shares the same interpretation with the *Bei*-construction, but not with the Verb-copying construction.

The final chapter, Chapter 6, gives a brief conclusion to the dissertation.

CHAPTER 2

EVENT STRUCTURE IN ENGLISH

The picture of how nature operates to produce the subtle and complicated effects we see around us is reflected in the explanations that we give: we explain complex phenomena by reducing them to their more simple components.

— NANCY CARTWRIGHT (1983: 58)

We can adequately describe the solar system in terms of individual planetary motions, but we cannot comprehend a galaxy with billions of stars solely in terms of individual stellar motions. To understand galaxies we need new theoretical apparatus, including galactic notions such as spiral arms.

— SUNNY A. AUYANG (1998: 5)

2.1 Introduction

It has been noted by Pustejovsky (1991, 1995), Smith (1997), Filip (1999), and many others that aspectual verbal classifications that build on the work of Vendler (1967) and Dowty (1979) have played an important role in linguistic analysis because they reveal the compositional nature of language, have grammatical correlates, and enable us to describe grammatical aspect in natural languages and systematically capture linguistic generalization.

As Levin and Rappaport Hovav (1995: 185) have shown, in languages such as Dutch and Italian, the auxiliaries 'have' and 'be' are used for different eventuality classes such as activities and accomplishments. When the verb is used as an activity, the auxiliary 'have' is used, as in (1a) and (2a), whereas when the verb is used as an accomplishment, the auxiliary is 'be', as in (1b) and (2b).

- (1) Dutch (Zaenen 1993: 136)
- a. Hij heeft/*is gelopen.
He has/*is run
'He ran.'
- b. Hij is/?heeft naar huis gelopen.
He is/?has to home run
'He ran home.'
- (2) Italian (Rosen 1984: 66-67)
- a. Ugo ha corso meglio ieri.
Ugo has run better yesterday
'Ugo ran better yesterday.'
- b. Ugo è corso a casa.
Ugo is run to home
'Ugo ran home.'

Based on the assumption that eventuality classifications are indispensable for the description of grammatical aspect in natural languages, this chapter aims to uncover how syntactic and semantic properties are associated with the eventuality classes, holding that an analysis based on event structure is able to account for the grammatical correlates in a systematic way. The rest of the chapter proceeds as follows. In section 2.2, the syntactic properties associated with each eventuality class are examined. In section 2.3, a theoretical framework is proposed. In section 2.4, an account for how the certain syntactic phenomena make reference to the specific aspectual properties consistently is presented. Section 2.5 offers the concluding remarks.

2.2 Syntactic properties of eventuality classes

2.2.1 Activities

Activities refer to processes that include a physical activity such as *run* or a mental activity such as *think about*. They are sometimes called *processes* (Bach 1986; Moens 1987; Pustejovsky 1991, 1995). An activity expression usually contains a verb with a compatible complement (e.g., *push the cart*) or with an indefinite plural NP complement (e.g., *write books*). An activity expression does not contain an inherent endpoint as do achievement and accomplishment expressions, but it allows an arbitrary endpoint that can be imposed on it either implicitly by inflection such as past tense (e.g., *John ran*), or explicitly by the addition of a temporal adverbial (e.g., *John ran for an hour*). However, the arbitrarily imposed endpoint of an activity entails no change of state. Pustejovsky (1995: 242, fn. 9) terms the arbitrary endpoint *temporal culmination*, where an eventuality of whatever sort simply stops, in contrast to *logical culmination*, whereby something is fulfilled or finished as a result of the activity being performed.

According to Vendler (1967: 101), activities "go on in time in a homogeneous way; any part of the process is of the same nature as the whole" (cf. Smith 1997: 20; Krifka 1992). For example, sentence (3a) is an activity expression, in which any part of the process is identified as the same nature. Therefore, when it appears in the imperfective (progressive), it entails the statement *John has run*, and is considered to have taken place when it occurs in *x stopped V-ing*, as in (3b).

(3) a. John is running.

⇒ John has run.

b. John stopped running.

⇒ John has run.

Activities have many syntactic properties. For example, they can occur (a) as imperatives, (b) as complements of verbs such as *persuade* and *force*, (c) with agentive adverbials such as *carefully* and *deliberately*, and (d) in the imperfective, as illustrated in (4a) to (4d).

(4) a. Run!

b. We persuaded John to run.

c. John carefully ran.

d. John is running.

In addition, activities can take durative adverbials such as *for α -amount of time*, also known as *measure adverbials* in Krifka (1998), and their occurrence with durative adverbials can be paraphrased as *spend α -amount of time V-ing*, as exemplified in (5a) and (5b).

(5) a. John ran for an hour.

b. John spent an hour running.

Moreover, activities can take frame adverbials such as *in α -amount of time*, also known as *completive adverbials* in Smith (1997), *time-span adverbials* in Filip (1999), or *interval adverbials* in Krifka (1998), but are restricted in certain contexts, where the

future auxiliary *will* is necessary, as in (6b).¹ However, the time indicated by the frame adverbial does not describe the duration of John's action as (5a) does, but rather refers to the time that has elapsed before John actually begins to run. Because the frame adverbial in (6b) refers to the starting point of the eventuality, sentence (6b) is said to have an inceptive reading. The term *inceptive*, also known as *inchoative* or *ingressive*, is an aspectual form expressing the beginning of a state or activity (Trask 1993: 137).

(6) a. Without the auxiliary *will*

*John ran in an hour.

b. With the auxiliary *will*

John will run in an hour.

2.2.2 States

State expressions such as *know the answer*, *own the farm*, and *resemble his father* consist of an undifferentiated period without internal structure. They are internally uniform, in marked contrast to the other eventuality classes; thus, when a state holds for a certain period of time, the whole schema is true every moment.

Unlike activities, states do not have properties of dynamism. Therefore, they do not appear as imperatives and as complements of *persuade* or *force*, nor do they occur with agentive adverbials, and in the imperfective, as illustrated in (7a) to (7d).

¹ Following Hornstein (1990: 38), and Van Valin and LaPolla (1997: 41), I treat the auxiliary *will* as a future-tense marker, not a modal. For a different view, see Jacobs (1993: 190).

Nevertheless, state classes are able to take durative adverbials such as *for α -amount of time*, indicating the duration of the given eventualities, as in (8).

- (7) a. *Know the answer!
 b. *We persuaded John to know the answer.
 c. *John deliberately knew the answer.
 d. *John is knowing the answer.
- (8) John knew the answer for an hour and then forgot.

Why don't state eventualities occur in the imperfective? According to Frawley (1992: 149), the imperfective is used to stretch the time interval so that another event can be inserted. As the example in (9) shows, the imperfective stretches the time interval of running and permits another event (e.g., *it started raining*) to occur simultaneously. Because states are already extended and continuous by definition, the use of the imperfective with them is superfluous. However, according to Vlach (1981), Borer (1996), Demirdache (to appear) and others, as cited in Rosen (1999: 9), the imperfective is used to express an event as a state; therefore, state verbs generally do not take the imperfective.

- (9) I was running when it started raining.

Like activities, states usually do not occur with the frame adverbials such as *in α -amount of time*, as in (10a), unless they contain the future auxiliary *will*, as in (10b). As previously mentioned, states are usually claimed to involve no initial point and endpoint.

However, when they occur with both a frame adverbial and the auxiliary *will*, they are conceived of as involving an initial point, thus allowing the modification by the frame adverbial. But the time frame describes how long it will take before the eventualities start, rather than how long the eventualities last. Therefore, (10b) can only have an inceptive reading, interpreted as it will take an hour for John to start knowing the answer.²

(10)a. Without the auxiliary *will*

*John knew the answer in an hour.

b. With the auxiliary *will*

John will know the answer in an hour.

2.2.3 Achievements

Achievements such as *notice the stranger* and *find the watch* are instantaneous eventualities that result in a change of state. They are said to have logical culmination, i.e., something is fulfilled as a result of the activity. An achievement is possibly preceded by some activity—for example, spotting something is preceded by looking for it, or finding the watch may be preceded by searching for it, but it refers only to the achievement phase (Binnick 1991: 195). Although an activity may be implied in an achievement, it is conceptually detached from the eventuality (Smith 1997: 31, 47).

² Hollosy (1983) treats states with an inceptive reading as achievements. We do not take this view and restrict achievements to the eventualities such as *notice the stranger*, *find the watch*, *reach the top of the mountain*, and *win the game*.

Achievements generally do not occur as imperatives and as complements of *persuade* or *force*, nor do they appear with agentive adverbials, and in the imperfective, as illustrated in (11a)–(11d).

- (11)a. *Notice the stranger!
- b. *We persuaded John to notice the stranger.
- c. *John carefully noticed the stranger.
- d. *John is noticing the stranger.

Achievements usually do not appear in the imperfective, unless we imagine a special context. For example, in a slow-motion movie, where a single moment is separated by an interval of time, or where a single moment is thought of as occurring iteratively, depending on the resettability of that eventuality (Filip 1999: 18). (12b) is a possible sentence, while (12a) is not, because *flashing* is resettable, while *finding his watch* is not unless we mean to separate the single moment into an interval of time.³

- (12)a. *John is finding his watch.
- b. The light is flashing.

³ According to Talmy (1988a: 184-86), the verb *flash* is categorized as a full-cycle resettable type; it cannot appear in the sentence pattern "... and then ...", as in (i), in contrast to one-way resettable type such as *find his watch*, as in (ii).

- (i) *The beacon flashed and then went off.
- (ii) John found his watch and then lost it.

Achievements can take frame adverbials, as in (13a) and (14a), and their occurrence with an *in*-adverbial can be paraphrased as *take α -amount of time to V*, as in (13b) and (14b). But the time indicated by the frame adverbials describes how long it takes before the change of state occurs, rather than how long it takes before the eventuality starts. Note that when occurring with frame adverbials, the atelic eventualities (e.g., activities and states) need an auxiliary *will* to produce grammatical sentences, and can only denote the time interval before the eventualities begin (i.e., the inceptive reading), whereas the achievement expressions designate the time frame before the change of state takes place with or without an auxiliary *will* (i.e., the conclusive reading), as (13a) and (14a) depict. Because the achievement expressions in both (13a) and (14a) express the notion that the state has been changed, they are said to have a *conclusive* reading. The term *conclusive*, also known as *egressive*, is used to express the notion 'to finish doing' (Trask 1993: 54).

(13) Without the auxiliary *will*

- a. John noticed the stranger in a few minutes.
- b. It took John a few minutes to notice the stranger.

(14) With the auxiliary *will*

- a. John will notice the stranger in a few minutes.
- b. It will take John a few minutes to notice the stranger.

In addition to frame adverbials, achievements are also compatible with durative adverbials, as in (15a), but the time indicated by the durative adverbial designates the

duration of the result state, rather than the actual act of event itself. Therefore, (15a) can be paraphrased as (15b) (Alsina 1999: 82-83).

(15)a. John lost his watch for two hours, and then he found it.

b. John lost his watch and did not have the watch for two hours.

2.2.4 Accomplishments

Accomplishments such as *write a letter* and *walk to school* consist of an activity and a state/change of state (Grimshaw 1990), an activity and a state (Pustejovsky 1991, 1995; Alsina 1999), an activity and an achievement/a goal (cf. Foley and Van Valin 1984: 38; Brinton 1988: 55), or a process and an outcome (Smith 1990, 1997). Accomplishments are intrinsically bounded, because they have successive stages in which the activity advances to its inherent endpoint. The relation between the activity and the outcome (e.g., the inherent endpoint) in an accomplishment is known as *non-detachability*, which states that conceptually the preceding activity cannot be detached from the eventuality (Dowty 1977; Vlach 1981; Smith 1997).

As pointed out by Vendler (1967: 101), accomplishments are not homogeneous in nature: "... in case I wrote a letter in an hour, I did not write it, say, in the first quarter of that hour" (see also Krifka 1992; Smith 1997: 20). Because any part of an accomplishment does not count as an instance of the whole, e.g., no subpart of writing a letter can actually be termed 'writing a letter', the imperfective form of an accomplishment, as in (16a), does not have the entailment *A letter has been written by*

John. When the accomplishment expression occurs in *x stopped V-ing*, it does not entail that *x V-ed*, as in (16b).

(16)a. John is writing a letter.

⇒ does not entail that a letter has been written.

b. John stopped writing a letter.

⇒ does not entail that John did write a letter.

Like activities, accomplishments are able to occur as imperatives and as complements of verbs such as *persuade* and *force*, as illustrated in (17a) and (17b). They can also occur with agentive adverbials such as *carefully* and in the imperfective, as exemplified in (17c) and (17d).

(17)a. Write a letter!

b. We persuaded John to write a letter.

c. John carefully wrote a letter.

d. John is writing a letter.

In addition, accomplishments can occur with frame adverbials, denoting a conclusive reading, and as complements of *take α -amount of time to V*, as the examples in (18a) and (18b) illustrate.

(18)a. John wrote a letter in an hour.

b. It took John an hour to write a letter.

Moreover, when an accomplishment expression with the frame adverbial occurs with the auxiliary *will*, it has two possible readings: an inceptive reading and a conclusive reading, as paraphrased in (19a) and (19b).

- (19) John will write a letter in an hour.
- ⇒ (a) John will start to write a letter within the hour.
 - ⇒ (b) John will write a letter and complete it in the hour.

Like achievements, accomplishments can also take durative adverbials, indicating the duration of the result state, as in (20a). Therefore, (20a) entails the statement of (20b) (Alsina 1999: 82-83).

- (20)a. John closed the door for two hours, while he was out.
- b. John closed the door and it stayed closed for two hours.

As noted by Morgan (1969), Dowty (1979), Pustejovsky (1991, 1995), Binnick (1991), Smith (1997), and Alsina (1999), there is an important distinction between accomplishments and non-accomplishments such as activities, states, and achievements, based on their interaction with scalar adverbials such as *almost*, also known as *decomposition-adverbs* (Rapp and von Stechow 1999). For non-accomplishments, there is only one interpretation, whereas for accomplishments, there are two interpretations, when modified by the *almost*-adverbial. The examples are given in (21a) to (21d).

(21)a. Activity

John almost ran.

⇒ John did not run.

b. State

John almost knew the answer.

⇒ John did not know the answer.

c. Achievement

John almost noticed the stranger.

⇒ John did not notice the stranger.

d. Accomplishment

John almost wrote a letter.

⇒ (a) John did not write a letter.

⇒ (b) John was writing a letter, but he did not quite complete it.

The activity expression in (21a) implies that John perhaps had the intention of performing the activity of running, but he did not even begin. The state expression in (21b) implies that John did not know the answer. (21a) and (21b) are said to have an intentional reading because the *almost*-adverbial prevents the eventualities from being started. The achievement expression in (21c), which implies that John did not notice the stranger, is said to have a culminative reading because the *almost*-adverbial prevents the change of state from being implemented (i.e., the activity does not advance to the inherent endpoint). The accomplishment expression in (21d), on the other hand, allows two interpretations: one is similar to (21a)–(21c), where John had the intention of writing

a letter, but did not even start writing it (i.e., the intentional reading); the other is that John was writing but did not complete the letter (i.e., the culminative reading). Because non-accomplishment expressions never yield ambiguous readings with adverbials such as *almost*, Dowty (1979) claims that ambiguity arises with the *almost*-adverbial just in case the predicate is an accomplishment. If this ambiguity does not arise, the predicate is not an accomplishment.

2.2.5 Summary

In sections 2.2.1 through 2.2.4, I have examined the syntactic and semantic properties associated with different eventuality classes, which can be summarized in tables 2.1 and 2.2.

	Activity	State	Achievement	Accomplishment
Imperative	Yes	No	No	Yes
As complements of <i>persuade</i> or <i>force</i>	Yes	No	No	Yes
With agentive adverbials (e.g., <i>carefully</i>)	Yes	No	No	Yes
With imperfective	Yes	No	No	Yes
With <i>for</i> -adverbials	Yes	Yes	Yes	Yes
With <i>in</i> -adverbials	Yes (with <i>will</i>)	Yes (with <i>will</i>)	Yes	Yes

Table 2.1: The syntactic properties of the four eventuality classes

	Activity	State	Achievement	Accomplishment
With <i>for</i> -adverbials	Duration of activity	Duration of state	Duration of result state	Duration of result state
With <i>in</i> -adverbials but without <i>will</i>	--	--	Conclusive reading	Conclusive reading
With <i>in</i> -adverbials and <i>will</i>	Inceptive reading	Inceptive reading	Conclusive reading	Inceptive or conclusive reading
With <i>almost</i>	Intentional reading	Intentional reading	Culminative reading	Intentional or culminative reading

Table 2.2: The semantic properties of the four eventuality classes

Table 2.1 shows that neither states nor achievements can occur as imperatives and as complements of *persuade* or *force*, nor do they occur with agentive adverbials and in the imperfective. On the other hand, both activities and accomplishments can occur as imperatives, as complements of *persuade* or *force*, with agentive adverbials, and in the imperfective. The fact that activities, which are atelic, share striking similarities with accomplishments, which are telic, whereas states, which are atelic, share striking similarities with achievements, which are telic, displays the interwoven relationships between different eventuality types (e.g., telic or atelic).

In addition, as tables 2.1 and 2.2 show, *for*-adverbials are not restricted to atelic eventuality classes such as activities and states (Pustejovsky 1991; Zhang 1995; Alsina 1999), and *in*-adverbials are not restricted to telic eventuality classes such as achievements and accomplishments (Filip 1999: 22-23; Van Valin and LaPolla 1997: 96), in contrast with the claim made by Dowty (1979), and Foley and Van Valin (1984: 36ff) that *in*-adverbials are said to occur only with telic eventuality classes, while *for*-adverbials are said to occur only with atelic ones. When *for*-adverbials appear with atelic

eventuality classes, they indicate the duration of the eventualities themselves, but when they occur with telic eventuality classes, they describe the duration of the result state.

On the other hand, when *in*-adverbials appear with atelic eventuality classes, they need the auxiliary *will* to produce grammatical sentences, and can only denote the time interval before the eventualities begin. When they occur with achievements, they designate the time frame before the change of state has occurred with or without the auxiliary *will*. But when they occur with accomplishments with the auxiliary *will*, they can indicate the time interval either before the eventualities start or before the change of state takes place. However, when they occur with accomplishments without the auxiliary *will*, they can only indicate the time interval before the change of state occurs. The different eventuality classes can be summarized as exhibiting three different results associated with the *will* auxiliary, when they appear with *in*-adverbials: (a) the activity and state expressions require the auxiliary to yield grammatical sentences, (b) the achievement expressions are grammatical with or without the auxiliary, and (c) the accomplishment expressions are grammatical with or without the auxiliary, but with the auxiliary, there are two ambiguous interpretations, whereas without the auxiliary, no ambiguity arises.

Last, though both achievements and accomplishments are complex eventualities, achievements, like simple eventualities such as activities and states, do not produce an ambiguity when occurring with *almost*-adverbials.

How do we account for these seemingly inconsistent phenomena in a systematic way, at the same time disclosing the intertwined relations between these four eventuality

classes? This question constitutes the main focus of this chapter. To reach the goal, I first discuss the theoretical framework in section 2.3, and then elucidate how the grammatical phenomena can be systematically captured within the framework proposed in section 2.4.

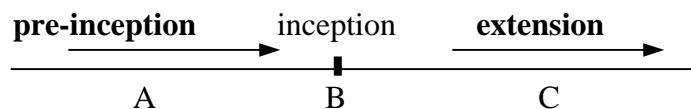
2.3 Theoretical framework

2.3.1 Situational complex of eventuality

The most common features of atelic eventualities such as activities and states are extension over time and the lack of an inherent endpoint. States are often claimed to have no explicit initial point, because their initial point is not as obvious as that of activities. But in certain contexts, for example, when a state occurs with both a frame adverbial (e.g., *in an hour*) and the future-tense auxiliary *will* (e.g., *John will know the answer in an hour*), it is likely to involve an initial point, yielding an inceptive reading (e.g., *It will take an hour for John to start knowing the answer*), as previously discussed in section 2.2.2.

Though an atelic eventuality does not entail an inherent endpoint, its initial point can be conceptually conceived of as the endpoint of the pre-inceptive situation. The diagram given in (22) illustrates this point.

(22)

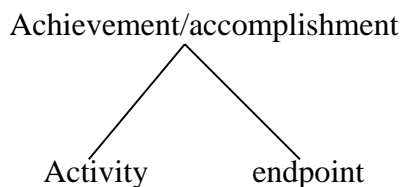


The diagram in (22), which represents an atelic eventuality, presupposes a schematic axis that is structured and directed in a particular way. The two different situations, i.e., the pre-inceptive situation (A) and the extensional situation (C), label different portions of that axis, and are separated by the point marked by B. The pre-inceptive situation, called *state of rest* in Smith (1997), represents the situation in which no eventuality takes place, whereas the extensional situation designates the on-going or continuation of an eventuality. Because point B is the boundary of two situations, it can be understood as (a) the endpoint of the pre-inceptive situation, or (b) the initial point of the extensional situation. This explains why the initial point of an atelic eventuality can also be conceived of as the endpoint.

As for telic eventualities such as achievements or accomplishments, they are generally analyzed as comprising two subevents; therefore, they are also known as complex eventualities. But the terms for the subevents differ enormously, depending on the authors—for example, an activity and a state/change of state (Grimshaw 1990; Rapoport 1999), an activity and a state (Pustejovsky 1991, 1995; Alsina 1999), an activity and an achievement/a goal (cf. Foley and Van Valin 1984: 38; Brinton 1988: 55; Binnick 1991: 195), and a process and an outcome (Smith 1990, 1997). Though the terms for the second component vary greatly, they all entail that a telic eventuality involves an inherent endpoint, and a (result) state or change of state takes place when the activity has successfully led to that endpoint.

In my analysis, a complex eventuality comprises an activity component and an endpoint component (cf. Rapoport 1999), which can be represented, as in (23).

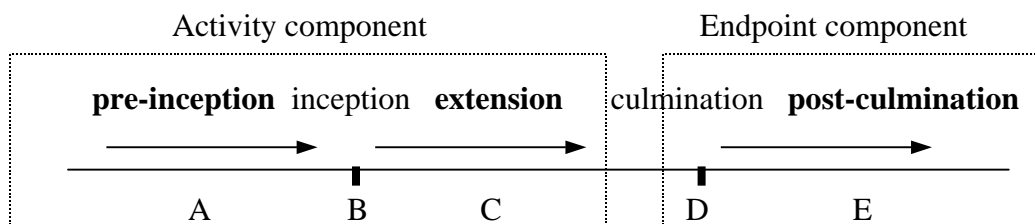
(23)



Analyzing a complex eventuality as comprising an activity and an endpoint complies with Vendler's (1967) definition that accomplishments are "events that proceed toward a logically necessary terminus." The term *endpoint* is similar to the goal as suggested in Foley and Van Valin (1984), Brinton (1988), and Binnick (1991). In what follows, the term *endpoint* is used to refer to the second component of a complex eventuality.

I suggest that a complex eventuality composed of the activity component and the endpoint component involves different situations, as represented in the following schematic axis.

(24)



The diagram in (24) represents the structure of a complex eventuality, which is composed of an activity followed by an endpoint, as the dotted-line squares show. The schematic axis representing the activity component and the situations associated with it (e.g., from A to C) is exactly the same as the diagram in (22). But the schematic axis

representing the endpoint component needs elaboration. The letter D stands for the endpoint of the eventuality. The letter E can be interpreted as the mirror situation of the pre-inceptive situation, denoting the post-culminative situation (holding when the eventuality is over), also known as *result state*. Like point B, point D is the boundary of the extensional situation (C) and the post-culminative situation (E); it can be therefore understood as either the endpoint of the extensional situation, or the initial point of the post-culminative situation. The diagram in (24) can therefore be understood in terms of 'source—path—goal' in a spatial domain and in terms of 'beginning—middle phase—end' in a temporal domain (Zhang 1995: 30). A given path of moving from A to C or from C to E construes a real change from one situation to the other, indicated by B or D.

Analyzing the endpoint as the second component of a complex eventuality enables us to capture and display the compositional properties of a complex eventuality, because this component can be expressed by a variety of independent grammatical categories such as a Goal-PP (e.g., *John walked to the store*), a verb particle (e.g., *John used up the supplies*), a count NP (e.g., *John ate an apple*), an adjective (e.g., *John hammered the metal flat*), and the like. In these examples, the Goal-PP, the verb particle, and the count NP are the elements which directly denote an endpoint, whereas the adjective (the resultative predicate), which can be categorized as a stative verb in Vendler's classification, does not directly refer to an endpoint in a general sense. So how can this resultative predicate fit the second component of a complex eventuality?

Recall that a point where a situation is initiated is also the point where its previous situation terminates. Using an adjective in resultative constructions to represent the

coming about of a state performed by an activity is an indirect way to express the endpoint of that activity, that is, employing the emergence of the following situation to indirectly show the completion of the previous situation. Therefore, the resultative predicate, like the other grammatical categories such as the Goal-PP, the verb particle, and the count NP, can also be conceived of as an endpoint-denoting element. Analyzing resultative predicates as endpoint-denoting elements corresponds with Tenny's (1994: 152) statement that "Resultatives, like verb particles, serve the semantic function of introducing a temporal endpoint and measuring-out to the event. Particles do this by indicating the event 'travels through' the object completely (e.g., *eat the apple up*) and resultatives by indicating the endpoint is achieved when the object is in a certain state (e.g., *paint the barn red*)."

Like accomplishments, an achievement also involves an activity and an endpoint. The sub-component structure for an achievement enables us to systematically capture the generalization of the particles such as *up*, *down*, and *out* in the achievement complexes such as *show up*, *shut down*, *come out*, etc. (see Brinton 1988 for detailed discussion of these particles). These particles are endpoint-denoting elements, converting an activity to an achievement.

2.3.2 Event-component Fusion and Event Projection

Though both an achievement and an accomplishment involve an activity and an endpoint, an achievement is distinguished from an accomplishment (a) by its inability to occur in the syntactic environments that require the activity reading, e.g., in the imperative, in the imperfective, as a complement of the verb *persuade* or *force*, and with

agentive adverbials, (b) by its inability to yield an additional intentional reading with *almost*-adverbials, and (c) by its inability to produce an extra inceptive reading with *in*-adverbials.

To account for the contrast between achievements and accomplishments, different suggestions have been made: (a) an achievement makes no explicit reference to the activity being performed (Pustejovsky 1991: 59; Binnick 1991), (b) the activity part of an achievement can be detached from the eventuality (Dowty 1977, 1979; Vlach 1981; Smith 1997), (c) the activity component of an achievement is completely unspecified (Alsina 1999: 85), and (d) Aspectual structure (AS) focus on the activity part of an achievement is impossible (Rapoport 1999: 660).⁴ These analyses all claim that an achievement has the same sub-structure as an accomplishment, i.e., involving two sub-components, but that the activity part of an achievement is not exactly the same as that of an accomplishment, which is why there are differences between these two eventuality classes.

Basically, both an achievement and an accomplishment have structure in common; in particular, their result or their coming to an end is included. Both of these complex eventualities take a change of state as their central feature. Note, however, that a change of state takes place with a complex eventuality only when the activity component has successfully led to an endpoint. Without the performance of the activity, the endpoint

⁴ According to Rapoport (1999: 659), Aspectual structure (AS) focus is the foregrounding, or emphasis, of a particular structure or part of a structure, with the consequent backgrounding, or deemphasis, of other parts of that structure. It is not the same as sentential focus (as expressed intonationally).

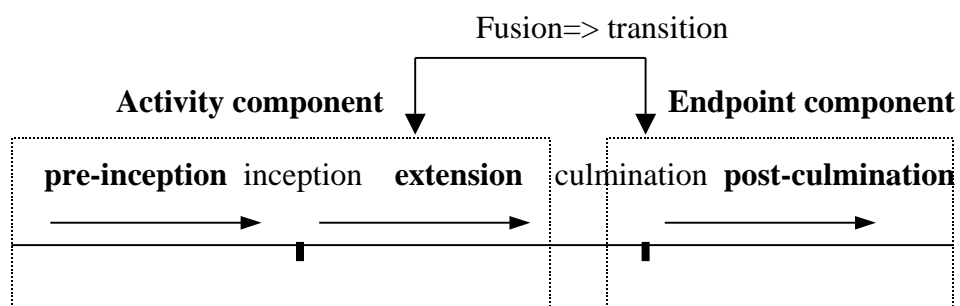
will not be achieved and the change of state cannot possibly occur. In other words, only through a concurrence of the activity and the endpoint components can a change of state of a complex eventuality take place. I therefore propose the Event-component Fusion (henceforth ECF), as defined in (25), to account for how a change of state occurs with a complex eventuality. Because the term *change of state* is often used to refer to the second component of a complex eventuality (e.g., Grimshaw 1990; Rapoport 1999), I use the term *transition* to refer to the complex eventuality in which the activity component has successfully advanced to the endpoint, the second component, and a change of state takes place as the result of the activity being performed (cf. Pustejovsky 1991).

(25) **Event-component Fusion (ECF):**

An operation in which the activity component and the endpoint component of a complex eventuality are concurrent and are then fused, resulting in a transition.

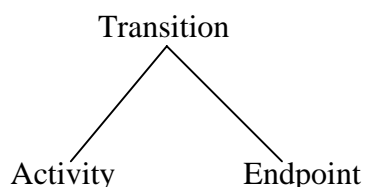
According to ECF, the two components of a complex eventuality are fused into a transition, which is the aspectual category determining the properties of that combined set. The fusion of the two sub-components, as represented by the dotted-line squares, into a complex eventuality is schematized in (26); it can be structurally represented as in (27).

(26)



A B C D E

(27) Structural representation for ECF



The schematic axis in (26) shows that the activity component and the endpoint component of a complex eventuality have been fused into a combined union, resulting in a transition. Note, however, that the transition that results from the fusion of the two sub-components is the semantic object resulting from ECF. Roughly speaking, the inception of the activity, represented by B, and the extensional situation, represented by C, are incorporated into the point in D, indicated as (logical) culmination in the schematic axis. The post-culminative situation marked by E immediately follows when the transition occurs.

According to Pustejovsky (1991), accomplishments and achievements are both treated as *transitions* from a state $Q(y)$ to $\text{NOT-}Q(y)$, e.g., *closed* vs. *not closed*. These two eventuality classes differ from each other in that accomplishments in addition have an intrinsic agent performing an activity that brings about the transition. In my analysis, the contrast between accomplishments and achievements is accounted for by Event Projection (henceforth EP), which is defined as in (28).

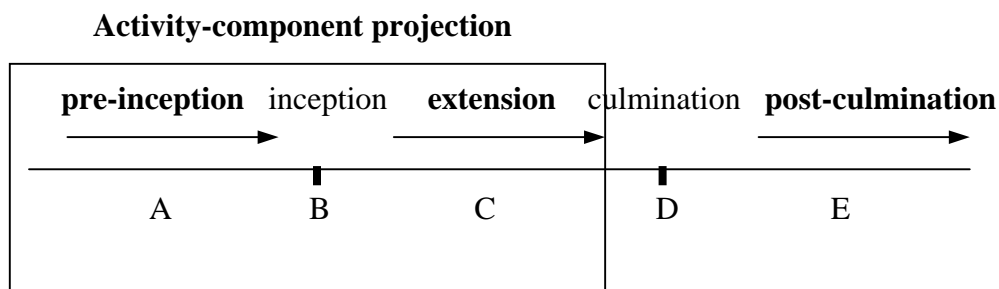
(28) **Event Projection (EP):**

An operation in which the activity component of a complex eventuality projects as the aspectual head so that each complex eventuality has an aspectual head that determines the properties of that complex eventuality.

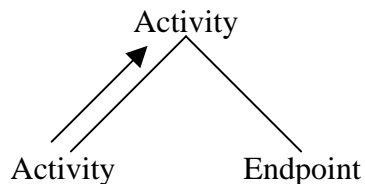
According to EP in (28), a complex eventuality may allow its activity component to project as the aspectual head, determining the linguistic properties of that combined unit. It is suggested that two complex eventualities may differ from each other in that one is compatible with EP while the other is not. That is, the contrast between accomplishments and achievements is assumed to result from the compatibility with EP. The compatibility of an accomplishment, but not an achievement, with EP will explain why only an accomplishment, but not an achievement, is able to share striking similarities with an activity.

When EP operates in a complex eventuality such as accomplishment, the eventuality can be schematized as in (29a), in which the activity, represented by a solid-line square, stands out as the aspectual category that determines the properties of that set. The schema in (29) can be structurally represented as in (30).

(29)



(30)



But why can't the second component (i.e., the endpoint) project as the aspectual head? Because the endpoint component, if achieved, always involves the activity; it can never exclude the activity component and stand out alone, it does not project as the aspectual head. In other words, the endpoint component can be reached if and only if the activity component happens. Contrarily, the activity component always takes place. If the activity component reaches an endpoint, it is ECF, but if the activity component does not reach an endpoint, it is EP. In either case, the activity component is indispensable. This complies with the observation made by Dowty (1977), Vlach (1981), and Smith (1997) that conceptually the preceding activity cannot be detached from the accomplishment eventuality.

In addition, both activities and states are simple eventualities, which do not have a sub-component structure (i.e., the activity component and the endpoint component); therefore, they are not compatible with ECF. Because they do not undergo ECF, they do not lead to a transition, in the sense that something is fulfilled or finished as a result of the activity.

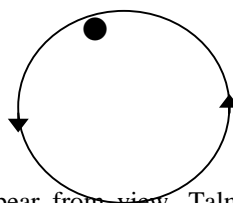
Cognitively speaking, the EP provides a perspective point established from which the existence of an endpoint component falls outside of view and attention. It is understood here that the unmentioned portions related to the endpoint component in the

schematic axis are backgrounded relative to the foregrounded portions related to the activity component. The EP in my analysis can be understood as the cognitive operation of "magnification", or "adoption of a close-up perspective" in Talmy's (1988a: 183-184) analysis, or the operation of "zooming in" in Jackendoff's (1997: 51-52) analysis, in which the endpoint disappears from view and attention.⁵

From a cognitive point of view, the ECF provides a perspective point established from which both the initial point and the endpoint of a complex eventuality fall inside of view and attention, thus presenting the eventuality conceptually as a unitary entity. The ECF is thought to present the eventuality conceptually as involving an instantaneous transition, because the initial point and the endpoint of a complex eventuality are conceived of as conceptually constituting a circuit, thus coinciding at the same location of temporal space, as the diagram in (31) shows.

(31) Schematizing the category *transition*

Initial point/Endpoint



⁵ To illustrate how an endpoint can disappear from view, Talmy (1988a) states that by the effect of grammatical forms like "keep -ing", "-er and -er", and "as + S", the bounded (or telic) expression with an endpoint, as given in (i), can be conceptually schematized as an unbounded (or atelic) extent, localizing the endpoint outside of view and attention, as (ii) shows. Talmy terms this cognitive operation as "magnification" or "adoption of a close-up perspective".

(i) She climbed up the fire-ladder in five minutes.

(ii) She kept climbing higher and higher up the fire-ladder as we watched.

When an eventuality is said to comply with both ECF and EP, it implies that the eventuality permits two different perspective viewpoints. Namely, we can view the eventuality as a single whole, without distinction of the various separate situations that make up that eventuality, or we can view the eventuality as involving different portions and pay essential attention only to certain portions of the eventuality. However, if an eventuality is said to comply only with ECF, but not EP, it indicates that the given eventuality can only be viewed as a unitary entity.

It is suggested that different cognitive operations are associated with different syntactic properties. For example, accomplishments are compatible with both ECF and EP; thus, they may have the syntactic properties associated either with ECF or with EP. With ECF, the transition becomes the aspectual category determining the properties of that combined unit, while with EP, the activity component projects as the aspectual head, determining the properties of that combined unit. Achievements are compatible with ECF, but not with EP; therefore, they do not involve the syntactic properties associated with an activity. The results seem to be consistent with Rapoport's (1999) claim that there are two possible Aspectual structure foci, i.e., the activity and the change of state (e.g., the transition in my analysis), with accomplishments, whereas with achievements, only the Aspectual structure focus on the change of state (e.g., transition) is possible.

2.4 An integrated account

2.4.1 Syntactic phenomena and Event Projection

In section 2.2, we observed that a predicate signifying an activity can occur (a) as an imperative, (b) as a complement of the verb *persuade* or *force*, (c) with an agentive adverbial, and (d) in the imperfective, whereas a predicate signifying a state cannot. We also observed that an accomplishment, but not an achievement, shares these syntactic properties with an activity. The observations have brought up an important question: an accomplishment and an achievement are presumed to form a natural eventuality class (i.e., the telic eventuality class) because they both denote an endpoint, but why does an accomplishment, which is telic, have the same syntactic properties as an activity, but not an achievement, which is also telic?

According to EP, the answer to this question is straightforward. Recall that in English an accomplishment is compatible with EP, whereas an achievement is not. The ability of an activity component to project as the aspectual head in an accomplishment provides grounds for establishing that an accomplishment can occur in the same syntactic environments such as occurring as an imperative, as a complement of *persuade* or *force*, with an agentive adverbial, and in the imperfective, which presuppose an activity reading, while the inability of an activity component alone to project as the aspectual head in an achievement provides grounds for claiming that an achievement is unable to occur in the syntactic environments, where an activity reading is required.

Adverbials such as *slowly*, known as *manner adverbials*, modify a semantic expression associated with an activity, but not with a state, as shown in (32a) and (32b).

(32)a. Activity

John slowly walked.

b. State

*John slowly knew the answer.

The ability of the manner adverbial *slowly* to occur with an accomplishment, but not with an achievement, as in (33a) and (33b), provides further evidence that an accomplishment is compatible with EP, but an achievement is not.

(33)a. Accomplishment

John slowly walked to the store.

b. Achievement

*John slowly found the watch.

2.4.2 Interpretations of *almost*-adverbials

As previously discussed, there is an important distinction between accomplishments and non-accomplishments (e.g., activities, achievements, and states), based on their interaction with scalar adverbials such as *almost*. For non-accomplishment expressions with the *almost*-adverbial, there is only one interpretation, but for accomplishment expressions, there are two. The examples are repeated in (34a) to (34d)

(34)a. Activity

John almost ran.

⇒ John did not run.

b. State

John almost knew the answer.

⇒ John did not know the answer.

c. Achievement

John almost noticed the stranger.

⇒ John did not notice the stranger.

d. Accomplishment

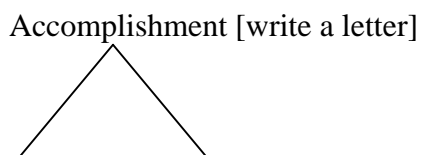
John almost wrote a letter.

⇒ John did not write a letter or John was writing but did not complete the letter.

All of the sentences in (34a)–(34d) have an interpretation where the act is intended but never carried out, while (34d) carries an additional reading that the action is started but not fully completed. Why do accomplishment expressions allow two interpretations while non-accomplishment expressions allow only one, when occurring with the scalar adverbial such as *almost*?

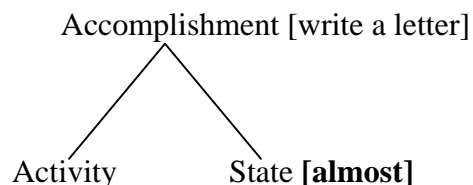
According to Pustejovsky (1991: 71-73), a sentence is expected to have as many interpretations for an adverbial as there are distinct predicates in the event structure. In his analysis, a complex eventuality such as accomplishment and achievement is composed of an activity and a state. Because there are two distinct predicates involved in the accomplishment *write a letter*, one within the initial event, and the other in the culminative event, there are two readings for the example in (34d), which are structurally represented as in (35a) and (35b).

(35)a. The *almost*-adverbial modifies the activity subevent



[almost] Activity State

- b. The *almost*-adverbial modifies the state subevent



To account for why achievements do not yield an ambiguity even though they share the same subeventual structure with accomplishments, Pustejovsky (1991: 59-61) states that achievements and accomplishments can be distinguished solely in terms of an agentive/nonagentive distinction, i.e., accomplishments contain agency, achievements do not. He then equates the agentivity with the activity subevent, arguing that an achievement in fact involves only a single predicate (i.e., state), since it makes no reference to the activity being performed. Why doesn't an achievement make reference to the activity being performed? Pustejovsky (1991) mentions that an accomplishment such as *John closed the door* makes reference both to a predicate opposition (e.g., *not closed* vs. *closed*) and the activity (e.g., the actor) bringing about this change, whereas an achievement such as *The door closed* makes reference to only the predicate opposition, but not the activity being performed, yet the transition from *not-closed* to *closed* is still entailed. Pustejovsky (1991: 73) explains that the activity subevent of an achievement is a dependent predicate or a private term, i.e., it involves a predicate opposition but not an actor; therefore, it does not allow modification by the *almost*-adverbial.

Alsina (1999: 85) also maintains that both an accomplishment and an achievement involve a subeventual structure, i.e., an activity and a state. In his analysis, accomplishments are complex eventualities in which an activity brings about a state. Achievements are complex eventualities in which a state comes to be. The difference between these two eventuality types is that achievements do not entail (explicit) causation of the state, that is, the activity subevent of an achievement is completely unspecified. With an unspecified activity subevent, an achievement does not yield an ambiguity with the modification by the *almost*-adverbial.

What Pustejovsky's (1991) and Alsina's (1999) analyses are in common is that they both first propose (a) that the *almost*-adverbial can make reference to either subevent of a complex eventuality, producing two possible interpretations, and (b) that accomplishments and achievements both involve two subevents, and in turn argue that the activity subevent of an achievement is in fact a private term, as suggested in Pustejovsky (1991), or an unspecified subevent, as suggested in Alsina (1999), thus, unable to be modified by the *almost*-adverbial. Using two different activity-subevent types, i.e., private vs. not private, or specified vs. not specified, to explain the contrast of accomplishments and achievements with the *almost*-adverbial lacks independent evidence, a shortcoming of both analyses.

In addition, Chinese RVCs with the resultative verb complexes such as *chi-bao* 'eat-full', as in (36a), are generally regarded as accomplishment expressions. These expressions do not produce two possible interpretations, when modified by the adverbial *chabuduo/jihu* 'almost' (i.e., only the culminative reading, but not the intentional reading,

is available), as (36b) shows. This fact would presumably lead Pustejovsky (1991) and Alsina (1999) to conclude that Chinese RVCs only have a private or an unspecified activity, or that they are in fact achievements, but not accomplishments, an unexpected result of both analyses.

- (36)a. Ta chi bao fan le.
 He eat full meal LE
 'He is full from eating the meal.'
- b. Ta chabuduo/jihu chi bao fan le.
 He almost eat full meal LE
 'He is almost full from eating the meal.'

Smith (1997: 28) explicitly proposes that an English accomplishment is ambiguous with the *almost*-adverbial, as in (37), because *almost* pertains to either the initial point or the final endpoint. When *almost* refers to the initial point, the expression has the intentional reading, as paraphrased in (37a), whereas when it refers to the final endpoint, the expression has the culminative reading, as paraphrased in (37b).

- (37) John almost opened the door.
- ⇒ (a) John did not quite get to the door. Intentional reading
- ⇒ (b) John did not quite get the door open. Culminative reading

As mentioned in section 2.2.1, an atelic eventuality such as *walk*, as in (38a), does not contain an inherent endpoint as do achievement and accomplishment expressions, but an arbitrary endpoint (e.g., temporal culmination) can be imposed on it by the addition of a temporal adverbial such as *for three hours*, as in (38b). With the imposed endpoint, the

activity expression is able to yield two possible interpretations, when modified by the *almost*-adverbial. If *almost* pertains to the initial point of the activity, it yields the interpretation in (39a), but if it refers to the imposed endpoint, it produces the interpretation in (39b). The fact that an atelic eventuality with durative adverbials can yield discrete interpretations when modified by *almost* supports Smith's (1997) suggestion that the *almost*-adverbial makes reference to endpoints (e.g., the initial endpoint and the final endpoint), while it challenges Pustejovsky's (1991) and Alsina's (1999) claim that only a structure with two subevents can produce an ambiguity with *almost*.

(38)a. John walked.

b. John walked for three hours.

(39) John almost walked for three hours.

⇒ (a)...but he decided not to because he had too much work to do.

⇒ (b)...but he stopped after only 2 ½ hours.

My analysis of the contrast between accomplishments and non-accomplishments with the *almost*-adverbial is based on the interaction of EP and ECF. By EP, the activity component of an accomplishment does not advance to an endpoint, leaving itself projected as the aspectual head so that the *almost*-adverbial can make reference to the initial point of the activity, i.e., the initiation of the action, preventing the performance of the action, thus, the intentional reading, whereas by ECF, the activity of an accomplishment has successfully led to an endpoint, bringing about a transition so that

the *almost*-adverbial can make reference to the transition (e.g., the culmination point marked by D), preventing the assertability of the expression associated with the logical culmination of the eventuality, thus, the culminative reading.⁶ The compatibility of both EP and ECF with accomplishments accounts for why there are two possible interpretations associated with accomplishments when modified by the *almost*-adverbial.

However, an achievement is also a complex eventuality. So why doesn't it yield two ambiguous interpretations when occurring with the *almost*-adverbial? It is not because an achievement has a different kind of activity component, but because an achievement does not comply with EP. In my analysis, the ambiguous interpretations arise only when a complex eventuality is compatible with both principles such that the *almost*-adverbial can make reference either to the initiation of the activity when EP operates, or to the transition when ECF operates. The incompatibility of an achievement with EP prevents the *almost*-adverbial from pertaining to initiation of the action; thus, an achievement lacks the intentional reading associated with the *almost*-adverbial. The assertability of the transition by ECF in an achievement provides the culmination point to which the *almost*-adverbial can refer; thus, an achievement can yield the culminative reading when it occurs with the *almost*-adverbial.

⁶ As previously mentioned, the term *transition* is used to refer to the situation where an activity component has successfully led to an endpoint. In other words, the situations from A to C in diagram (26) are incorporated into the culmination point marked by D. Therefore, when a transition takes place, the *almost*-adverbial can be thought of as making reference to point D, designating a culminative reading.

Simplex eventualities such as activities and states do not have sub-components; they do not comply with ECF. As expected, they do not have the culminative reading associated with the *almost*-adverbial. Because the *almost*-adverbial can only make reference to the initial point of the eventualities, the expressions with simplex eventualities can only yield the intentional reading with the modification by *almost*, as the examples in (34a) and (34c) have shown, respectively.

2.4.3 Interpretations of temporal adverbials

2.4.3.1 Frame adverbials

As discussed in section 2.2, different eventuality classes exhibit different results associated with the auxiliary *will* when they take *in*-adverbials. Without the auxiliary *will*, the atelic eventuality classes such as activities and states result in ungrammaticality, whereas the telic ones such as achievements and accomplishments do not, when occurring with *in*-adverbials. With the auxiliary *will*, both atelic and telic eventuality classes are grammatical when they occur with *in*-adverbials. However, their interpretations are different: both activities and states have an inceptive interpretation; achievements have a conclusive interpretation, while accomplishments have two possible interpretations: one is the inceptive interpretation and the other is the conclusive interpretation. The examples are shown in (40) to (43).

(40) Activity

a. *John ran in an hour.

b. John will run in an hour.

Inceptive reading

(41) State

- a. *John knew the answer in an hour.
- b. John will know the answer in an hour. Inceptive reading

(42) Achievement

- a. John noticed the stranger in a few minutes. Conclusive reading
- b. John will notice the stranger in a few minutes. Conclusive reading

(43) Accomplishment

- a. John wrote a letter in an hour. Conclusive reading
- b. John will write a letter in an hour. Inceptive or conclusive reading

Before accounting for the above puzzles, we need to discuss how a frame adverbial is defined. A frame adverbial has been defined in three different ways: (a) it requires the verb to have been true at a final (i.e., unique) sub-interval of the indicated interval (Dowty 1979: 334-36), (b) it denotes the period of time within which the event it has scope over reaches its endpoint (Alsina 1999: 96), and (c) it requires that the verb or verb phrase make reference to an explicit change of state (Pustejovsky 1995: 14). Based on these three definitions, the definition of a frame adverbial is modified as follows:

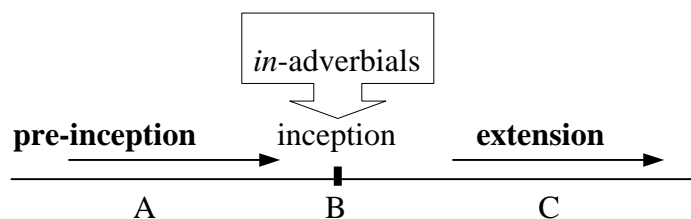
(44) **Frame adverbial:**

An element requiring that the eventualities make reference to an endpoint at the final sub-interval of the measured interval.

But why are atelic expressions with frame adverbials ungrammatical without the auxiliary *will*, but grammatical once the auxiliary *will* is involved? Under the definition,

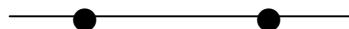
grammatical sentences should involve an endpoint when they occur with frame adverbials. The grammaticality of an atelic eventuality with the *will* auxiliary seems to imply that the presence of the *will* auxiliary is able to impose an endpoint on the eventuality in question. That is, the presence of the *will* auxiliary entails that the eventuality in question has not started yet, setting the current situation at the pre-inceptive stage (situation A) so that the frame adverbial can be licensed by that expression, because there is an endpoint (B) that the frame adverbial can make reference to, as the diagram in (45) shows.

(45)



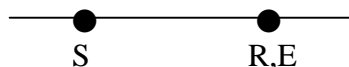
This brings us to Reichenbach's (1947) famous and popular account of the difference between the simple past and the simple future, which lies in the distinction between *speech time*, *event time*, and *reference time*. Reichenbach's theory was (roughly) that the simple past has the reference time (R) at the same time as event time (E), with both earlier than speech time (S), while the simple future has its reference time at the same time as the event time, with speech time earlier than these, as in the familiar diagrams below:

(46) Simple past:



R,E S

(47) Simple future:



If the speech time is assumed to be located in the pre-inceptive situation, while the event time and the reference time in the initial point (B), then we can account for why the frame adverbials require the auxiliary *will* to yield grammatical sentences when occurring with atelic eventualities. Because by so doing, the *in*-adverbial has an endpoint to refer to at the final sub-interval of the measured interval.

The above analysis illustrates the following three facts. First, the atelic expressions in (40b) and (41b) are grammatical with the frame adverbial only when an *will* auxiliary is involved, because the *will* auxiliary, setting the speech time temporally earlier than the event time and reference time, provides an endpoint that the frame adverbial can refer to at the final sub-interval of the measured interval.

Second, atelic expressions involving the auxiliary *will* can only have an inceptive interpretation, because the frame adverbial makes reference to the endpoint of the pre-inceptive situation, which is also the point where the eventuality begins. Therefore, we can only interpret *John will run in an hour* as asserting that John begins to run within an hour, not asserting that he is running during that hour.⁷ Likewise, we can only interpret

⁷ It has been pointed out that when occurring with *in*-adverbials, an activity expression with the auxiliary *will* can only produce an inceptive reading. Note, however, that the activity expression with the auxiliary *will* does not produce an inceptive reading with *in*-adverbials if it has a perfective form, as given in (i),

John will know the answer in an hour as asserting that John begins to know the answer within an hour, not asserting that he knows the answer, which lasts for an hour.

Third, the activity and state expressions without the *will* auxiliary, as in (40a) and (41a), are not compatible with the frame adverbial, because the inflection of the past tense *-ed*, specifying the notion that the event occurred at a time before that of the present communication (Talmy 1988a: 172), implies that the eventualities have already begun and they are now in the extensional situation (e.g., situation C), which does not involve an endpoint (of the pre-inceptive situation) that the frame adverbial can refer to at the final sub-interval of the measured interval.

Unlike atelic expressions such as activities and states, telic expressions such as accomplishments and achievements are able to take frame adverbials with or without the auxiliary *will*. Without the auxiliary, the accomplishments and the achievements both have only the conclusive interpretation, but with the auxiliary, the accomplishments yield two possible interpretations: the inceptive interpretation and the conclusive interpretation, whereas the achievements still have only the conclusive interpretation, as shown in examples (42) and (43).

With the *will* auxiliary, the accomplishment expression, as in (43b), has two possible interpretations associated with the frame adverbial, because the *will* auxiliary suggests that the current eventuality is in the pre-inceptive situation, allowing the frame adverbial to make reference to point B when EP operates, or to point D when ECF

because perfectivity indicates that all parts of the situation are presented as a single whole, i.e., a complete situation.

operates. When the frame adverbial makes reference to point B (i.e., the initiation of the activity), it yields the inceptive interpretation that John will start to write the letter within the hour, but when it makes reference to point D, it produces the conclusive interpretation that the letter is completed within the hour.

However, when the accomplishment expression is with the past tense, it indicates that the action has already begun, preventing the frame adverbial from making reference to the initial point of the activity, even though EP operates. Because the frame adverbial can only refer to point D when ECF operates, it accounts for why the accomplishment expression in the past tense, as in (43a), yields only the conclusive reading.

But why don't achievements, which are the counterparts of accomplishments (both are telic complex eventualities), yield an ambiguity when occurring with frame adverbials? Recall that in my analysis, an achievement does not comply with EP, which implies that the initial point of the activity is not evoked. Because the initiation of the activity is missing in the achievement, an achievement does not yield the inceptive interpretation with or without the auxiliary *will*. Consequently, the frame adverbial can only refer to point D, yielding a conclusive interpretation, when ECF operates.

2.4.3.2 Durative adverbials

According to Dowty (1979: 332-36), durative adverbials such as *for an hour* are defined as denoting the same set of intervals at all times, which means that the eventuality described by the durative adverbial must be true for any sub-interval of the period. Dowty's definition of the durative adverbial implies that the duration of the

(i) John will have run in an hour from now.

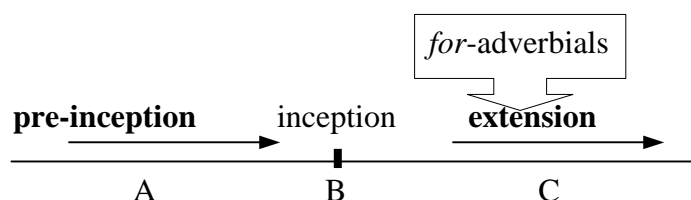
period expressed by the durative adverbial does not involve an endpoint. In my analysis, a durative adverbial is defined as in (48), which is in complementary distribution with a frame adverbial:

(48) **Durative adverbial:**

An element requiring that the eventualities cannot make reference to an endpoint at the final sub-interval of the measured interval.

As the schematic axis in (22), repeated in (49), shows, activities and states involve both pre-inceptive and extensional situations that denote duration. However, the durative adverbial cannot modify the pre-inceptive situation (A), because it contains an endpoint marked by B, violating the definition of durative adverbial. The extensional situation (C) does not involve an endpoint at the final sub-interval; therefore, the durative adverbial can modify that portion in the schematic axis, measuring the time during which the eventualities last.

(49)



Though an achievement involves an activity as one of the sub-components, its activity component cannot project as the aspectual head, determining the properties of that eventuality, because it does not comply with EP. But it does comply with ECF; therefore, when occurring with an achievement, the durative adverbial can only refer to

the post-culminative situation (e.g., the situation immediately follows the culmination point), measuring the duration of the result state, because only this situation does not involve an endpoint at the final sub-interval of the measured interval. The example in (50) illustrates the fact that the durative adverbial is able to modify the post-culminative situation of an achievement expression.

(50) Achievement

John lost his watch for two hours, and then he found it.

As mentioned before, different interpretations arise when an eventuality is compatible with different principles, i.e., EP and ECF. An accomplishment in English complies with both principles; theoretically speaking, it can yield two possible interpretations when occurring with durative adverbials. When ECF operates, an accomplishment results in a transition, which a post-culminative situation immediately follows. Because the post-culminative situation does not involve an endpoint at the final interval, the durative adverbial can modify this situation, denoting the duration of the result state, as illustrated in (51).

(51) Accomplishment

John closed the door for two hours, while he was out.

However, when EP operates, the activity component of an accomplishment expression can project as the aspectual head, placing the inherent endpoint outside of view or attention, the durative adverbial can modify the extensional situation, as it does in

the activity expression. The examples in (52a) and (52b), taken from Rapoport (1999: 660-61), show the possibility that the *for*-adverbial can be used to designate the duration that the activity has extended in an accomplishment expression.

(52) Accomplishments

- a. Jones painted the picture for an hour and then just sketched it in.
- b. Jones ran to the store for three minutes (and walked the rest of the way).

Examples (52a) and (52b), in which the *for*-adverbial is compatible with an accomplishment, show that the activity component is the aspectual head of that structure. Note that the possibility of the *for*-adverbial to occur with the accomplishment as in (52) does not necessarily tell us that the expressions in (52) are shifted into activity eventualities, rather, it demonstrates that the endpoint of the eventuality does not fall inside of view and attention.

2.4.4 Interpretations associated with "keep V-ing"

The claim that an ambiguity arises only when an expression can undergo two possible cognitive operations (i.e., EP and ECF) is further supported by the contrast of the examples in (53a) and (53b).

(53)a. Achievement

Bill kept finding a watch.

b. Accomplishment

Bill kept crossing the street.

Sentence (53a) carries an iterative sense; it can only mean that Bill found a watch repeatedly, while it cannot mean that Bill found a watch once on a certain occasion. However, sentence (53b) is ambiguous with respect to whether Bill crossed the street repeatedly or continued in his effort to cross once. As pointed out by Jackendoff (1997: 51), it is odd to localize the ambiguity of (53b) in *keep* or *-ing*, because the sentence with an activity eventuality, as in (54), is not ambiguous.

(54) Activity

Bill kept sleeping.

It is suggested that because the achievement eventuality *find a watch*, as in (53a), can undergo ECF, but not EP, the sentence is interpreted so as to involve a *sequence* of finding a watch rather than an ongoing process. However, in (53b), the accomplishment eventuality *cross the street* can undergo either ECF or EP; therefore, there are two ways for it to be interpreted: the operation of ECF construes it as repeated action, interpreting the sentence as Bill crossed the street repeatedly, while the operation of EP conceptually zooms in on the activity component, so that the endpoint disappears from view and attention, thus producing the second reading for the given sentence, i.e., one sees only the ongoing process of Bill moving in the direction of the other side of the street. An activity expression, as in (54), does not have an alternative operation; therefore, it does not have ambiguous interpretations.

The choice between repetition and partial completion occurs with any gerundive complement to the verbs such as *keep*, *stop*, or *continue* that expresses an

accomplishment such as *cross the street*, but not an achievement such as *find a watch*, or an activity such as *sleep*, because only an accomplishment is compatible with both EP and ECF.

2.5. Concluding remarks

This chapter has been devoted to examining how certain syntactic phenomena make reference to the specific aspectual properties in English, agreeing that "grammatical phenomena do in fact make reference to the internal structure of events" (Pustejovsky 1991: 48) and that a sub-component analysis for complex eventualities is able to systematically capture these effects, and supporting the claim that there is a distinct level of representation indicating the event structures, as argued in Talmy (1972, 1985, 1991), Dowty (1979), Jackendoff (1972, 1983, 1987, 1990), Pinker (1989), Van Valin (1990), Pustejovsky (1991), Rappaport and Levin (1988), T. Mohanan (1990, 1994), T. Mohanan and K. P. Mohanan (1999), Wong (1999), and Alsina (1999).

It has been demonstrated in this chapter that the intertwined syntactic properties and the interrelationships of the different eventuality classes can be generalized in terms of EP and ECF. With these two principles, we can explicate the following phenomena associated with different eventuality classes:

First, because only accomplishments but not achievements are compatible with EP, it is not surprising that accomplishments share the syntactic properties with activities. For example, they can occur in imperatives, as complements of *persuade* or *force*, with agentive adverbials, with manner adverbials, and in the imperfective, which presuppose an activity reading. Achievements do not comply with EP. Therefore, they do not share

the syntactic properties of activities. With the principle, we are able to explain why accomplishments and achievements form an aspectual nature class, i.e., both are telic complex eventualities, but they behave so differently in this aspect.

Second, because only accomplishments, but not achievements, comply with EP, the accomplishments are able to yield one more interpretation than the achievements when modified by adverbials such as *almost*-adverbials, *in*-adverbials, and *for*-adverbials, or when occurring with the grammatical form "keep V-ing". Because only accomplishments, but not activities and states, comply with ECF, the accomplishments are able: (a) to yield an additional culminative reading with the *almost*-adverbial, whereas the activities and states yield only the intentional reading, (b) to yield an additional conclusive reading with the *in*-adverbial, whereas the activities and states yield only the inceptive reading, and (c) to denote the result-state reading with the *for*-adverbial, whereas the activities and states denote only the extension of the eventualities, and (d) to produce one more repetitive reading than the activities with the grammatical form "keep V-ing".

Last, in terms of EP and ECF, we need not propose that the activity component of an achievement is the private term, which is considered to be a dependent predicate and it does not allow modification by the *almost*-adverbial, as suggested in Pustejovsky (1991: 73), nor do we need to claim that the activity component of an achievement is unspecified (or not part of the representation) and has no predicate or argument; therefore, it is not associated with any conceptual information, as proposed in Alsina (1999: 85).

CHAPTER 3

EVENTUALITIES AND GRAMMAR IN CHINESE

A scientist constructs a model by envisaging various parts, which can be partially described (sometimes as a consequence of experimental probes, sometimes by appealing to analogies with other more familiar mechanisms), and conceptualizing how such parts will interact with each other. The explanatory power of a model stems from its ability to show how some phenomenon or range of phenomena would be the consequence of the proposed mechanism.

— WILLIAM BECHTEL & ROBERT RICHARDSON (1993:232-33)

3.1 Introduction

In recent work such as Chen (1988), Cheng (1988), Gu (1999), He (1992), Smith (1997), Szeto (1988), Tai (1984), Wong (1999), Yong (1993), Zhang (1995), among others, event structure has become indispensable in analyzing and describing grammatical phenomena in Chinese. The study of event structure has been extended from the Slavic to the non-Slavic languages and from describing a single language to comparing and contrasting many languages, because aspectual semantics is thought of as existing in all languages, and is able to systematically account for the grammatical phenomena in languages.

Based on eventuality theory, this chapter aims to uncover how grammatical forms interact with aspectual meanings, how aspectual properties are used to capture linguistic generalizations in Chinese, and how the contrast is accounted for in languages such as English and Chinese. It proceeds in the following order. Section 3.2, following the introduction in section 3.1, discusses the aspect marker *le* and its aspectual properties.

Section 3.3 surveys linguistic properties and semantic interpretations of the four eventualities (i.e., activities, states, achievements, and accomplishments), when they occur with adverbials, e.g., frame adverbials, durative adverbials, and scalar adverbials. Section 3.4 discusses resultative verb constructions (hence, RVCs) in English and Chinese and the aspectual properties associated with them. Section 3.5 offers the concluding remarks.

3.2 Aspect marker *le* and its aspectual properties

3.2.1 *Le* as an aspectual focus marker

In modern Chinese, the following aspect markers are distinguished: the perfective aspect marker *le*, the experiential aspect marker *guo*, and the imperfective aspect markers *zai* and *zhe*. *Zai* precedes a verb, whereas *zhe*, *le*, and *guo* follow it. Though both *zai* and *zhe* are imperfective markers, they behave differently: *zai* is used to indicate the ongoing activity, but *zhe* is employed to emphasize a resultant state which is in contrast to an ongoing activity signaled by *zai* (Huang 1987: 273-302). The sentence with *zai* in (1a) asserts an ongoing activity of putting on the coat, whereas the sentence with *zhe* in (1b) indicates that the state of wearing the coat has been reached after the action (e.g., take the coat and put it on) is completed (Cheng 1988).

- (1) a. Lisi zai chuan dayi.
 Lisi ZAI put on coat
 'Lisi is putting on the coat.'
- b. Lisi chuan zhe dayi.
 Lisi put on ZHE coat
 'Lisi wears the coat.'

The experiential aspect marker *guo*, as given in (2a), differs from the perfective aspect marker *le* in the postverbal position (henceforth, verbal *le*, because it immediately follows the verb), as given in (2b), by expressing the perfective meaning of a situation as an experience in an indefinite time which is usually the indefinite past (Chao 1968: 251; Zhang 1995: 129). In other words, *guo* presents a prior closed situation and its final state no longer obtains (Smith 1997: 263-270). Because *guo* requires a discontinuity with the present, whereas verbal *le* does not, sentence (2a) with the experiential aspect marker *guo* can be said only if Lisi is no longer in France, but sentence (2b) with verbal *le* is felicitous whether or not he is still there, because verbal *le* does not have a requirement of discontinuity with the present.

- (2) a. Lisi qu guo Faguo.
 Lisi go GUO France
 'Lisi went to France before (and he is not there now).'
- b. Lisi shang ge yue qu le Faguo.
 Lisi last Cl. month go LE France
 'Lisi went to France last month (and he may still be there now).'

In addition to the postverbal position, the perfective aspect marker *le* can also occur at the end of a sentence, as seen in (3a). Because it appears in the postsentential position, it is thus called sentential *le*, in contrast to verbal *le*, when the same marker occurs immediately after the verb. It is noted that verbal *le* and sentential *le* are not

mutually excluded; their co-occurrence in the same clause is possible, as the example in (3b) shows.¹

- (3) a. Lisi qu Faguo le.
 Lisi go France LE
 'Lisi went to France (and he is still there).'
- b. Lisi qu le Faguo le.
 Lisi go LE France LE
 'Lisi went to France (and he is still there).'

According to Li and Thompson (1981), sentential *le* designates a "currently relevant state", which is also known as "completed action as of the present" (Chao 1968: 799). The "currently relevant state" claims that a state of affairs has special current relevance with respect to some particular situation. That is, when no other situation is mentioned, then it is always assumed that the statement signaled by the sentence with sentential *le* is relevant to the present. Therefore, sentence (3a), with a sentential *le*, is not talking about the action of Lisi's going to France. It concerns, rather, the state of Lisi's having gone to France and its relevance to the present situation. Because no

¹ Opinions vary among scholars as to whether verbal *le* and sentential *le* are two different morphemes, or whether they are variants of the same morpheme. For example, Rohsenow (1978), Spanos (1979), Huang (1987), Huang and Davis (1989), Shi (1990), and Zhang (1995), among others, favor the one-morpheme approach, whereas Wang (1954), Chao (1968), Li and Thompson (1981), Li, Thompson, and Thompson (1982), Chu (1983), Chu and Chang (1987), Zhu (1984), L♦ (1991), and Mei (1994), among others, prefer the two-morpheme approach. According to Huang (1987: 182-189), verbal *le* and sentential *le* are both unified boundary markers, but according to Li and Thompson (1981), verbal *le* and sentential *le* are two different markers: verbal *le* is a perfective aspect marker, whereas sentential *le* is a sentence-final particle.

situation is explicitly mentioned, it is assumed that Lisi is in France as of the present situation in which the conversation is taking place.

However, when both verbal *le* and sentential *le* cooccur, as shown in (3b), the verbal *le* designates that the event of going to France has taken place, whereas the sentential *le* denotes the state that holds constantly throughout all the time points after it obtains. Thus, the sentence with both *le*'s in (3b) explicitly expresses not only that Lisi has gone to France (i.e., the action), but also that he is still there (i.e., the result state) when the conversation is taking place. Note that (3a) shares with (3b) in that they can be said only when Lisi is still in France.

The telic eventualities in both (4) and (5) contain an activity and an endpoint, and there is a transition (i.e., a change of state) as a result of the activity being performed. For example, the eventuality culminates when the book was found, as in (4), or when the letter was completed, as in (5).

(4) Achievement

Lisi zao-dao le nei ben shu.
 Lisi find LE that Cl. book
 'Lisi found that book.'

(5) Accomplishment

Lisi xie le yi feng xin.
 Lisi write LE one Cl. letter
 'Lisi wrote a letter.'

However, it should be noted that the endpoint of these eventualities is inherently denoted, rather than designated by the occurrence of the perfective aspect marker *le*. The

evidence that the perfective aspect marker *le* is not an endpoint-denoting element comes from the examples in (6) and (7). The expression (e.g. *chi dongxi* 'eat something'), as in (6), is an activity eventuality, which is atelic; the occurrence of the perfective aspect marker *le* does not produce a transition in the sense that something is fulfilled as a result of the activity being performed, whereas the expression (e.g. *chi-bao* 'eat-full'), as in (7), is a derived accomplishment eventuality, which is telic; there is a transition, even though the aspect marker *le* does not appear. It is thus suggested that the aspect marker *le* does not impose an endpoint on an eventuality; rather, the endpoint is designated by the eventuality itself.

(6) Activity

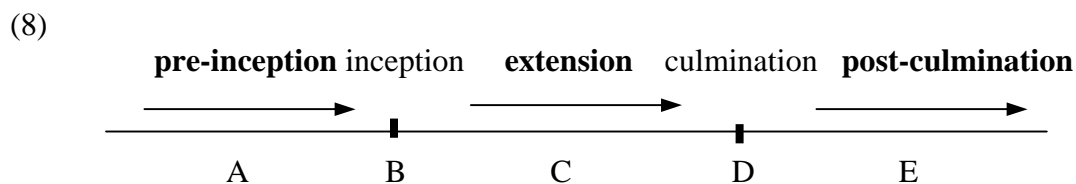
Lisi yijing chi le dongxi.
 Lisi already eat LE something
 'Lisi has already eaten something.'

(7) Accomplishment

Lisi jintian zaoshang chi bao fan, cai qu shang xue.
 Lisi today morning eat full meal then go attend school
 'Lisi went to school after he was full from eating the meal this morning.'

I have pointed out that sentential *le* differs from verbal *le* in that only the former has a special requirement that the current situation be relevant to the present, and that both sentential *le* and verbal *le* are not endpoint-denoting elements. Before discussing the functions of sentential *le* and verbal *le*, let me briefly restate the internal situations of a complex eventuality (see section 2.3.1 of Chapter 2 for more detailed discussion). It has been proposed that a complex eventuality composed of an activity component and an

endpoint component involves three situations: the pre-inceptive situation (A), the extensional situation (C), and the post-culminative situation (E). These three situations are separated by the boundaries marked by B and D. The former is the boundary of the pre-inceptive situation and the extensional situation, whereas the latter is the boundary of the extensional situation and the post-culminative situation. Point B is where the extensional situation starts; therefore, it is called the inception point. Point D is where the extensional situation stops; therefore, it is called the culmination point. The diagram representing a complex eventuality is given in (8).



In the present work, I propose that verbal *le* and sentential *le* are in association with different aspectual foci. That is, if the situation prior to the culmination point D is focused, *le* is associated with the postverbal position, but if the situation after the culmination point D is focused, *le* is associated with the postsentential position. Note that the culmination point is also known as *transition*, because it indicates that a state has been changed when the activity component of a complex eventuality has successfully led to the endpoint.

Because sentence (9a) involves a verbal *le*, it indicates that the situation prior to point D is focused, i.e., the action that has brought about the letter is the aspectual focus. Because sentence (9b) occurs with sentential *le*, it suggests that the situation after point D

is focused, i.e., the resultant state of the letter being brought about is the current aspectual focus.² When an expression contains both verbal *le* and sentential *le*, as in (9c), it implies that both the action that has brought about the letter (i.e., the situation prior to point D) and the resultant state of the letter being brought about (i.e., the situation after point D) are focused. The diagrams in (10a)–(10c) represent different foci associated with the marker *le*, as illustrated in (9a)–(9c).

(9) a. Verbal *le*

Lisi yijing xie le yi feng xin.
 Lisi already write LE one Cl. letter
 'Lisi already wrote a letter.'

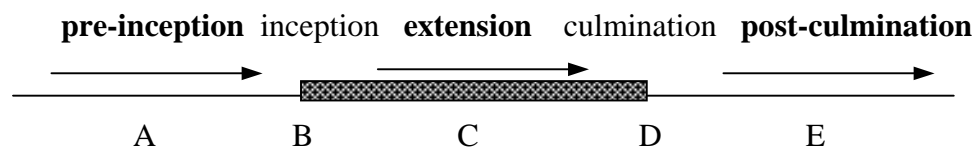
b. Sentential *le*

Lisi yijing xie yi feng xin le.
 Lisi already write one Cl. letter LE
 'Lisi has already written a letter.'

c. Verbal *le* and sentential *le*

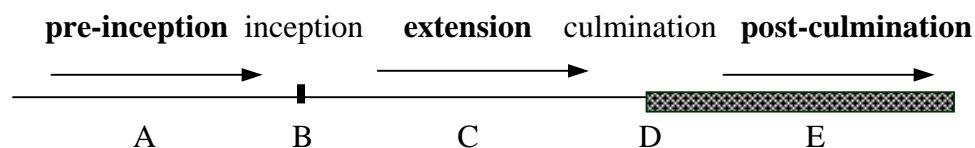
Lisi yijing xie le yi feng xin le.
 Lisi already write LE one Cl. letter LE
 'Lisi has already written a letter.'

(10)a. Verbal *le* and its aspectual focus

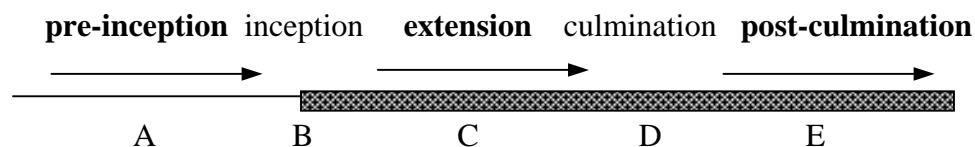


² There is an ambiguity with intransitive verbs, because when intransitive verbs occur with *le*, *le* can be verbal *le* or sentential *le*.

b. Sentential *le* and its aspectual focus



c. Verbal *le* and sentential *le*, and their aspectual foci



In summary, it is suggested that sentential *le* places the aspectual focus on the post-culminative situation (i.e., the situation after point D), whereas verbal *le* places the aspectual focus on the extensional situation (i.e., the situation prior to point D). The aspectual scope facts can also be accounted for in terms of a simple principle of morpho-syntactic iconicity. That is, when the marker *le* is placed closer to the verb, it takes the action scope (i.e., the aspectual focus is on the extensional situation), but when it is placed farther away from the verb in the postsentential position, it takes the result-state scope (i.e., the post-culminative situation). However, if both verbal *le* and sentential *le* are placed in a sentence, the given sentence has the aspectual scope over both the action and the result-state.

3.2.2 Aspect marker *le* and state eventualities

3.2.2.1 Stage-level and individual-level states

Pustejovsky (1995: 15), following Carlson (1977) and Kratzer (1989), distinguishes two kinds of states: individual-level states and stage-level states. Predicates

such as *tall*, *intelligent*, and *overweight* in English are individual-level states, also known as *permanent states*, because they might be thought of as properties that an individual retains, more or less, throughout its lifetime, and can be identified with the individual directly, whereas predicates such as *hungry*, *sick*, and *clean* in English are stage-level states, also known as *temporary* or *transient states*, because they are usually identified with non-permanent states of individuals. As pointed out by Pustejovsky (1995), these two kinds of states have different syntactic behavior. For example, only the stage-level states can appear as resultative predicates, whereas the individual-level states typically cannot, as (11) and (12) illustrate.

(11) Stage-level states

- a. John drank himself sick with that cheap brandy.
- b. Watching the commercial on TV made John hungry.
- c. Bill wiped the counter clean before serving us coffee.

(12) Individual-level states

- a. *Bill ate himself overweight over the years.
- b. *John read himself intelligent with the Great Books.

As suggested by Smith (1997) and Yeh (1993), state verbs in Chinese can also be classified into stage-level states and individual-level states. Stage-level states include predicates such as *e* 'hungry' and *lei* 'tired', whereas individual-level states include predicates such as *haoke* 'hospitable' and *pa she* 'afraid of snake'. These two types of states differ from other eventualities such as activities, achievements, and

accomplishments in that they can take degree adverbs such as *hen* or *feichang* 'very', while other eventualities cannot, as illustrated in (13) and (14).³

(13)a. Stage-level state

Ta xianzai hen/feichang e.
 He now very hungry
 'He is very hungry now.'

b. Individual-level state

Ta hen/feichang haoke.
 He very hospitable
 'He is very hospitable.'

(14)a. Activity

*Ta hen/feichang pao.
 He very run

b. Achievement

*Ta hen/feichang si.
 He very die

c. Accomplishment

*Ta hen/feichang xie yi feng xin.
 He very write one Cl. letter

Though both stage-level states and individual-level states are compatible with degree adverbs, they do not have the same behavior with respect to the aspect marker *le*.

³ As pointed out by Yeh (1993), not all state verbs are compatible with degree adverbs such as *hen* and *feichang* 'very'. State verbs such as *shi* 'be', *xing* 'name after' and *cunzai* 'exist' are not gradable; therefore, they do not occur with degree adverbs.

The stage-level states can occur with the aspect marker *le*, whereas the individual-level states cannot, as the examples in (15) and (16) show.

(15) Stage-level states

- a. Ta e le.
He hungry LE
'He got hungry.'
- b. Ta lei le.
He tired LE
'He got tired.'

(16) Individual-level states

- a. *Ta haoke le.
He hospitable LE
- b. *Ta pa she le.
He afraid snake LE

The aspect marker *le* has been analyzed in many different ways when it occurs with stage-level states. For example, (a) Chao (1968: 699) suggests that it implies a change from a different previous condition, (b) Li and Thompson (1981: 188) claim that it suggests a bounded situation, (c) Teng (1975, 1986) and Chang (1991a) propose that it refers to the inchoative/inceptive aspect, (d) Szeto (1988: 74) argues that it links a change of state and the pre-inceptive situation into succession, converting a state verb into an achievement verb, and (e) Smith (1997: 286) and Teng (1975) assert that it changes a state verb into an activity verb.

At first glance, these analyses differ so greatly that they do not seem to have anything in common. For example, achievements and activities belong to two divergent

eventualities and have discrete syntactic properties; it is not clear why the state expressions with the aspect marker *le* are described as activities in Smith (1997) analysis, but as achievements in Szeto's (1988). In addition, a bounded situation is usually used to refer to an eventuality with an endpoint, whereas the inceptive aspect is usually used to describe the initial point of an eventuality; it is not clear either why the state expressions with the aspect marker *le* are treated as involving an endpoint in Li and Thompson (1981), but as involving an initial point in Teng (1975, 1986) and Chang (1991a). What is the real function of the aspect marker *le* and what semantic properties does it denote, when it occurs with stage-level states? To find out the answers to the questions, I will first discuss the *slightly*- and *almost*-adverbial tests suggested by Talmy (1988a: 186-187) and their relations to state eventualities in the section that follows, holding that these two adverbial tests can help us uncover the function of the aspect marker *le* when in association with stage-level states, and find out the semantic properties of stage-level states.

3.2.2.2 *Slightly*- and *almost*-adverbial tests

According to Talmy (1988a), the English state predicates in a pair like *sick* and *well* behave contrarily when in association with grammatical forms specifying degree like *slightly* and *almost*. That is, *sick* is compatible with *slightly*-adverb, but not *almost*-adverb, whereas *well* is compatible with *almost*-adverb, but not *slightly*-adverb, as in examples (17) and (18). Crucially, they are found to parallel the behavior of certain kinds of expressions that specify spatial relations, e.g., *past the border* and *at the border*. Like the state predicate *sick*, the prepositional phrase *past the border* is compatible with

slightly, but not *almost*, whereas the prepositional phrase *at the border*, like the state predicate *well*, is compatible with *almost*, but not *slightly*, as seen in (19) and (20).

(17)a. ?He's almost sick.

b. He's slightly sick.

(18)a. He's almost well.

b. *He's slightly well.

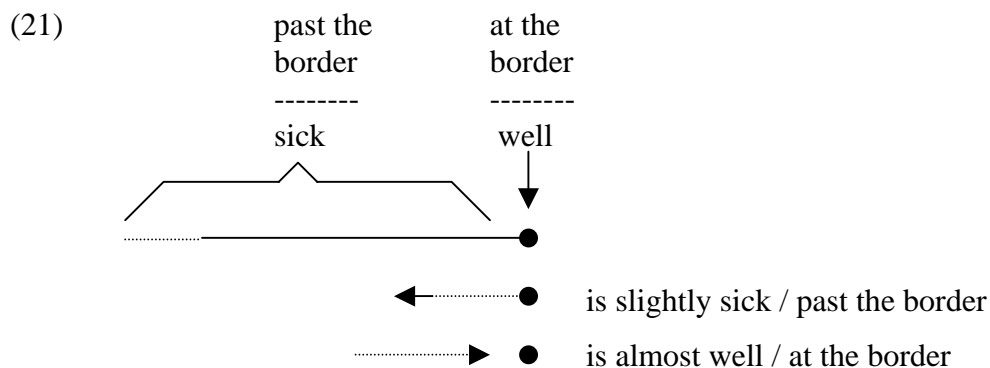
(19)a. ?He's almost past the border.

b. He's slightly past the border.

(20)a. He's almost at the border.

b. *He's slightly at the border.

To account for the contrast in (17)–(20), Talmy (1988a) presupposes a schematic axis in which each state predicate labels a different portion of that axis. The state predicates seem in particular to presuppose a directed line bounded at one end; *well* refers to the endpoint while *sick* refers to the remainder of the line, correlating greater magnitude with greater distance along the line, as schematized in (21). These are called the "axial properties", or "axiality" (p. 187), of the lexical items, i.e., the specific relations each has to a particular conceptual axis and to other lexical items with referents along the same axis. Talmy (1988a) clearly points out that it is the lexicalization of such axiality that can align state predicates with expressions of spatial relation.



Talmy (1988a: 188) further states that the axiality of a grammatical form can conflict with that of a lexical item and, accordingly, can cause the latter to shift. For example, *sick* in (22)—now associated with grammatical forms that refer to an endpoint—shifts from its basic "directed shaft" type of axiality, and indeed from its reference to an axis of 'health'; it now specifies the endpoint of an axis pertaining to "feeling physically bad".

(22) (After exposure to the virus, he felt worse and worse and) he was almost sick at one point. (Talmy 1988a: 188)

Talmy's observation suggests that (a) *almost*-adverb is associated with eventualities involving a boundary (or an endpoint), and (b) it is possible for an eventuality to have an aspectual shift in an appropriate context. Talmy's suggestion that *almost*-adverb can cooccur with state predicates (e.g., *well*) when conceived of as involving a boundary is in consonance with Smith's (1997) analysis that *almost* makes reference to the endpoint. When *almost* refers to the initial endpoint, the eventuality has

an intentional reading, whereas when it refers to the final endpoint, the eventuality has a culminative reading (see section 2.4.2 of Chapter 2 for detailed discussion).

Having discussed state eventualities such as *sick* and *well* and the prepositional phrases such as *past the border* and *at the border*, and their compatibility with *almost*-adverb or *slightly*-adverb, in what follows, I will return to the questions regarding the function of the aspect marker *le* in Chinese and the semantic properties it denotes when in association with Chinese stage-level states.

3.2.2.3 State eventualities and their aspectual properties

As previously mentioned, state verbs in Chinese can be classified into two types: stage-level states and individual-level states. It is noted that both stage-level states and individual-level states are compatible with the adverbial *youdian* 'slightly', but not with the adverbial *chabuduo* 'almost', as exemplified in (23) and (24). The incompatibility of these two kinds of states with the adverbial *chabuduo* 'almost' indicates that they do not involve a boundary or an endpoint.

(23) Stage-level states

- a. Ta youdian e.
He slightly hungry
'He is slightly hungry.'
- b. Ta youdian lei.
He slightly tired
'He is slightly tired.'
- c. *Ta chabuduo e.
He almost hungry

- d. *Ta chabuduo lei.
He almost tired
- (24) Individual-level states
- a. Ta youdian haoke.
He slightly hospitable
'He is slightly hospitable.'
- b. Ta youdian pa she.
He slightly afraid snake
'He is slightly afraid of snakes.'
- c. *Ta chabuduo haoke.
He almost hospitable
- d. *Ta chabuduo pa she.
He almost afraid snake

As previously discussed, the stage-level states can occur with the aspect marker *le*, as seen in (25), repeated from (15). Surprisingly, with the aspect marker *le*, the stage-level states turn out to be grammatical when occurring with the adverbial *chabuduo* 'almost', as shown in (26).

- (25)a. Ta e le.
He hungry LE
'He got hungry.'
- b. Ta lei le.
He tired LE
'He got tired.'
- (26)a. Ta chabuduo e le.
He almost hungry LE
'He is almost hungry.'
- b. Ta chabuduo lei le.
He almost tired LE
'He is almost tired.'

In contrast, the individual-level states are not compatible with the aspect marker *le*, as shown in (27). Because they do not occur with the aspect marker *le*, their occurrence with the adverbial *chabuduo* 'almost' is impossible, as illustrated in (28).

- (27)a. *Ta haoke le.
He hospitable LE
- b. *Ta pa she le.
He afraid snake LE
- (28)a. *Ta chabuduo haoke le.
He almost hospitable LE
- b. *Ta chabuduo pa she le.
He almost afraid snake LE

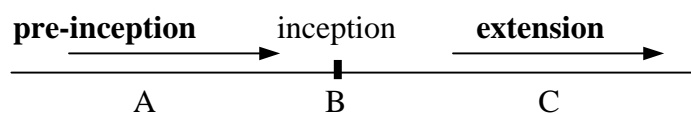
The examples in (26) show that the states can cooccur with the adverbial *chabuduo* 'almost' only when they are also compatible with the aspect marker *le*. Because stage-level states can occur with *le*, while individual-level states cannot, only the former states can occur with the adverbial *chabuduo* 'almost'. If the adverbial *chabuduo* 'almost' is said to occur in the environment where a boundary (i.e., an endpoint) is designated, as Talmy (1988a) and Smith (1997) have claimed, then we can propose that the aspect marker *le*, when occurring with stage-level states, is able to designate a boundary, to which the adverbial *chabuduo* 'almost' can make reference. Because the aspect marker *le* denotes the initial point of an eventuality, a stage-level state with *le* is said to have an intentional reading when in association with the adverbial *chabuduo* 'almost', indicating an entry into a certain state, i.e., the beginning of a state.

To explain why a perfective aspect marker can be used to indicate the beginning of a situation (inceptive meaning) when it occurs with stage-level states, Comrie (1976: 19-20) states that:

There may be some sense in saying that since states are less likely to be described by perfective forms than are events (including entries into states), then there is some functional value in utilising the perfective forms of stative verbs to denote the event of entry into the appropriate state, since otherwise there would be little use for the perfective forms of these verbs.

Comrie's statement supports our assumption that the presence of the perfective aspect marker *le* is in fact able to designate a boundary or an initial point of a stage-level state. In my analysis, a stage-level state with an imposed initial point is schematized in (29).

(29)



The diagram in (29) represents a stage-level state in which an initial point marked by B is designated by the presence of the aspect marker *le*. Point B separates the pre-inceptive situation (A) from the extensional situation (C); therefore, it is conceived of as a boundary of the pre-inceptive situation and the extensional situation. Because point B can be understood as a boundary of two situations, there is no surprise that Chao (1968) interprets this point as a change from a different previous condition (i.e., from the pre-inceptive situation to the extensional situation). On the other hand, because point B can

be interpreted as the endpoint of the inceptive situation, it is natural that Li and Thompson (1981) consider state verbs with *le* as involving a bounded situation. Because point B can also be considered as the initial point of the extensional situation, Teng (1975, 1986) and Chang (1991a) describe state verbs with *le* as involving an inchoative/inceptive aspect.

But why is a state with the aspect marker *le* considered as a derived activity in Smith's (1997) analysis? According to Smith (1997: 23, 32), state eventualities comprise an undifferentiated period with no initial point and inherent endpoint, and they have no dynamics, while activity eventualities involve an initial point and have dynamic semantics. When occurring with the aspect marker *le*, a state eventuality (i.e., the stage-level state) is conceived of as having dynamic semantics, thus, involving an initial point. When the eventuality in question is presented as a dynamic situation and has an initial point, Smith argues that there is an aspectual shift, changing a state into an activity. That's why Smith argues that a state eventuality with *le* is a derived activity.

Like Smith (1997), Szeto (1988) maintains that the initial point and the endpoint are not part of the state eventuality. But unlike Smith's analysis, Szeto treats the state eventuality with the aspect marker *le* as an achievement, arguing that the aspect marker *le*, when occurring with a state, indicates entering into a result state from the pre-inceptive situation. That is, the given state is considered as a resultant state reached by the performance of an activity. Szeto assumes that a state with the aspect marker *le* involves an implicit activity associated with it; therefore, a state with the aspect marker *le* is a complex eventuality, i.e., an achievement.

However, because a stage-level state with *le* can still occur with degree adverbs such as *hen* or *feichang* 'very', as (30a) shows, it is suggested in the present work that the given state is not shifted into an activity or an achievement, as (30b) and (30c) show.

(30)a. Stage-level state

Ta *hen/feichang* *e* *le*.
 He very hungry LE
 'He is very hungry.'

b. Activity

*Ta *hen* *pao* *le*.
 He very run LE

c. Achievement

*Ta *hen* *ying* *le* *na* *chang* *bisai*.
 He very win LE that Cl. game

To sum up, only stage-level states are compatible with the aspect marker *le*, and when associated with the aspect marker *le*, the given states are able to occur with the adverbial *chabuduo* 'almost'. It is thus suggested that the presence of the aspect marker *le* can designate an initial point of a stage-level state, to which the adverbial *chabuduo* 'almost' can refer to, rather than change stage-level states to become activities, as suggested by Smith (1997), or achievements, as suggested by Szeto (1988). In addition, I have pointed out that a state-level state with *le* receives different analyses, because different authors view it from different situations, e.g., the pre-inceptive situation or the extensional situation.

3.2.3 Summary

It is suggested that verbal *le* and sentential *le* have different aspectual foci: when the situation prior to the culmination is focused, verbal *le* is used, whereas when the situation after the culmination is focused, sentential *le* is used. The distribution of verbal *le* and sentential *le* reflects the iconicity of linguistic representations in Chinese.

In addition, it is proposed that when involving the aspect marker *le*, stage-level states are grammatical with the adverbial *chabuduo* 'almost', because the aspect marker *le* is able to designate an initial point. Individual-level states have permanent properties and comprise an undifferentiated period with no initial point and endpoint. Because the initial point of an individual-level state is usually not evoked, the occurrence of an individual-level state with the aspect marker *le* is thus impossible. Because individual-level states do not take the aspect marker *le*, their occurrence with the adverbial *chabuduo* 'almost' is thus impossible.

The aspectual properties associated with stage-level states and individual-level states can be summarized as table 3.1.

	Stage-level state (e.g., <i>lei</i> 'tired')	Individual-level state (e.g., <i>pa she</i> 'afraid of snake')
With <i>hen/feichang</i> 'very'	Yes	Yes
With <i>youdian</i> 'slightly'	Yes	Yes
With <i>chabuduo</i> 'almost'	No	No
With the aspect marker <i>le</i>	Yes	No
With <i>chabuduo</i> 'almost' when <i>le</i> also occurs	Yes	No

Table 3.1: Aspectual properties of stage-level and individual-level states

3.3 Syntactic properties of different eventualities in Chinese

3.3.1 Activities

Activity eventualities in Chinese include transitive verbs such as *chi dongxi* 'eat something', *kan dianshi* 'watch television', and *xue Yingwen* 'study English', and intransitive verbs such as *ku* 'cry', *pao* 'run', and *xiao* 'laugh'. As noted by Li and Thompson (1981), Chu (1983), Tai (1984), He (1992), and Gu (1999), activity eventualities in Chinese can occur in the imperfective expressed by the aspect marker *zai*, as shown in (31a). Because any part of an activity expression is identified as having the same nature, the imperfective form of an activity expression, as given in (31a), entails the perfective form expressed by the aspect marker *le*, as given in (31b).

- (31)a. Ta zai chi dongxi.
 He ZAI eat something
 'He is eating something.'
- b. Ta yijing chi le dongxi.
 He already eat LE dongxi
 'He has eaten something.'

In addition to compatibility with the imperfective, activity eventualities in Chinese involve many other syntactic properties. For example, they can occur as imperatives (Teng 1981), as complements of verbs such as *bi* 'force' or *quan* 'persuade', and with agentive adverbials such as *zhuanxinde* 'attentively' or *guyi* 'purposely' (cf. Yeh 1993), as shown in (32a)–(32c).

- (32)a. Chi dongxi!
 Eat something
 'Eat something!'

- b. Women bi ta chi dongxi.
 We force him eat something
 'We forced him to eat something.'
- c. Ta hen zhuanxinde chi le dongxi.
 He very attentively eat LE something
 'He ate something attentively.'

Like their English counterparts, Chinese activity eventualities can take durative adverbials such as *yi ge xiaoshi* 'for an hour' to indicate the duration of the given eventuality, as (33) illustrates.

- (33) Ta jintian zaoshang ku le yi ge xiaoshi.
 He today morning cry LE one Cl. hour
 'He cried for an hour this morning.'

In (33), the durative adverbial *yi ge xiaoshi* 'for an hour' occurs immediately following the verb *ku* 'cry', and is used to describe the time that the action of crying has extended. Note, however, that if an activity eventuality is composed of a transitive verb such as *chi dongxi* 'eat something', as in (34a), the syntactic process of verb-copying is obligatory for durative adverbials, as (34b) shows. According to Smith (1997: 284-85), the verb-copying operation directly relates the durative adverbial to the verb eventuality. Sentence (34c), in which there is an NP argument occurring between the verb and the

durative adverbial, is ungrammatical, because the durative adverbial is not adjacent to the verb.⁴

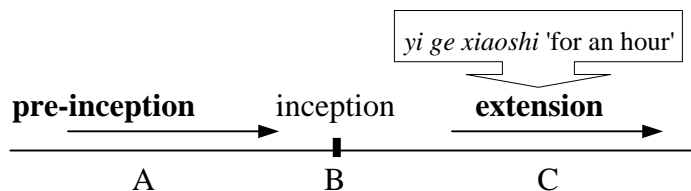
- (34)a. Ta chi le dongxi.
 He eat LE something
 'He ate something.'
- b. Ta chi dongxi chi le yi ge xiaoshi.
 He eat something eat LE one Cl. hour
 'He ate something for an hour.'
- c. *Ta chi le dongxi yi ge xiaoshi.
 He eat LE something one Cl. hour
 'He ate something for an hour.'

As defined in section 2.4.3.2 of Chapter 2, a durative adverbial is an element requiring that the eventualities not make reference to an endpoint at the final sub-interval of the measured interval. According to this definition, when occurring with activity expressions, the durative adverbial can only modify the extensional situation, measuring the time during which the eventualities last. The diagram in (35) represents the activity eventuality *ku* 'cry' and the situation associated with the durative adverbial *yi ge xiaoshi* 'for an hour'.

⁴ In addition to the verb-copying operation, the durative adverbial, when occurring with transitive activity eventualities, can be marked with *de* in the final position, and then placed in the pre-nominal position within a noun phrase, as a modifier, as the example in (i) shows.

- (i) Ta chi le yi ge xiaoshi de dongxi.
 He eat LE one Cl. hour DE something
 'He ate something for an hour.'

(35)



Chinese activity eventualities usually do not occur with frame adverbials such as *zai san fenzhong nei* 'in three minutes', as given in (36a), even in certain contexts, where the aspectual verb such as *kaishi* 'begin' is used or the future auxiliary *hui/yao* 'will' is involved, as given in (36b) and (36c), respectively. It is noted that the frame adverbials can occur with activity eventualities when both the aspectual verb *kaishi* 'begin' and the future auxiliary *hui/yao* occur simultaneously, as (36d) shows.⁵

(36)a. ?Ta zai san fenzhong nei chi le dongxi.
 He in three minutes in eat LE something
 '*He ate something in three minutes.'

b. ?Ta zai san fenzhong nei kaishi chi dongxi.
 He in three minutes in begin eat something
 '?He began to eat something in three minutes.'

⁵ Theoretically, an activity eventuality includes the boundary which distinguishes the pre-inceptive situation from the extensional situation. The boundary can be interpreted as the ending point of the pre-inceptive situation or the starting point of the extensional situation. However, it seems that in Chinese this boundary is invisible to frame adverbials such as *zai san fenzhong nei* 'in three minutes' and scalar adverbials such as *chabuduo* or *jihu* 'almost', unless it is explicitly designated by an aspectual verb such as *kaishi* 'begin'.

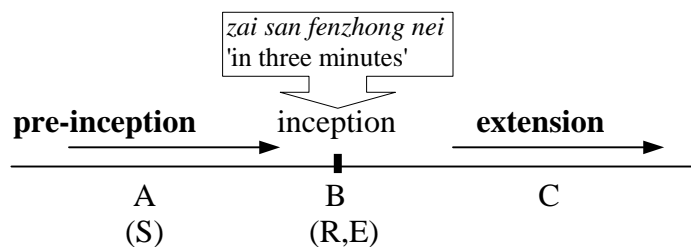
- c. ?Ta hui zai san fenzhong nei chi dongxi.
 He will in three minutes in eat something
 'He will eat something in three minutes.'
- d. Ta hui zai san fenzhong nei kaishi chi dongxi.
 He will in three minutes in begin eat something
 'He will begin to eat something in three minutes.'

Why is the future auxiliary required when the activity eventualities occur with frame adverbials? As defined in section 2.4.3.1 of Chapter 2, the frame adverbial is an element requiring that the eventualities make reference to an endpoint at the final sub-interval of the measured interval. In addition, it requires the condition that the speech time occurs earlier than both the event time and the reference time. Though the activity expression in (36b) involves an initial point signified by the aspectual verb *kaishi* 'begin', it is still ungrammatical with a frame adverbial, because the past tense of the expression designates that the given eventuality has begun at the time before that of the present communication, violating the requirement of frame adverbial that the speech time should be earlier than the event time and the reference time. Though sentence (36c) contains the future auxiliary, entailing that the given eventuality has not started yet, setting the speech time earlier than the event time and the reference time, the expression is still ill-formed with a frame adverbial, because a Chinese activity does not involve an explicit initial point that the frame adverbial can refer to.

Sentence (36d) is grammatical, because it contains both the aspectual verb *kaishi* 'begin', which designates the initial point to which the frame adverbial can refer, and the future auxiliary *hui* 'will', which sets the speech time earlier than the event time and the reference time. In (36d), the frame adverbial *zai san fenzhong nei* 'in three minutes' is

used to describe the time that has elapsed before the action of eating something begins, rather than the time that the action of eating something lasts. The diagram in (37) shows the point to which the frame adverbial refers and the temporal order of the speech time (S), the reference time (R), and the event time (E).

(37)



Moreover, activity eventualities in Chinese do not occur with scalar adverbials such as *chabuduo* or *jihu* 'almost', as exemplified in (38). The incompatibility of activity eventualities with scalar adverbials again implies that activity eventualities in Chinese do not involve an explicit boundary.

- (38)a. *Ta chabuduo/jihu pao le.
 He almost run LE
 'He almost ran.'
- b. *Ta chabuduo/jihu chi le dongxi.
 He almost eat LE something
 'He almost ate something.'

As mentioned before, an activity eventuality does not involve an inherent endpoint, but an arbitrary endpoint that can be imposed on it explicitly by the addition of a temporal adverbial such as *shi fenzhong* 'ten minutes'. With an arbitrarily imposed endpoint, an activity eventuality becomes grammatical with the adverbial *chabuduo* or

jihu 'almost', as seen in (39a) and (39b). The grammaticality of the sentences in (39) confirms that the scalar adverbials do in fact make reference to a boundary (i.e., the initial endpoint or the final endpoint).

- (39)a. Ta chabuduo pao le shi fenzhong.
 He almost run LE ten minute
 'He almost ran for ten minutes (but he stopped within ten minutes).'
- b. Ta chi dongxi chabuduo chi le shi fenzhong.
 He eat something almost eat LE ten minute
 'He almost ate something for ten minutes (but he stopped within ten minutes).'

The linguistic properties associated with activity eventualities in Chinese can be summarized in table 3.2.

	Activity eventualities
Imperfective	Yes
Imperative	Yes
As complements of <i>bi</i> 'force'	Yes
With agentive adverbials	Yes
With durative adverbials	Yes
With frame adverbials	Yes (only when <i>hui</i> 'will' and <i>kaishi</i> 'begin' both occur)
With <i>chabuduo</i> 'almost'	No

Table 3.2 Linguistic properties of activity eventualities in Chinese

3.3.2 States

Unlike activity eventualities, state eventualities (both stage-level states and individual-level states) do not appear in the imperfective, as imperatives, nor do they

occur as complements of *bi* 'force' or *quan* 'persuade', and with agentive adverbials such as *guyi* 'purposely' or *zhuanxinde* 'attentively', as illustrated in (40) to (43).

(40) Imperfective

- a. *Ta zai e.
He ZAI hungry
- b. *Ta zai haoke.
He ZAI hospitable

(41) Imperative

- a. *e!
hungry
- b. *Haoke!
hospitable

(42) As complements of *bi* 'force'

- a. *Women bi ta e.
We force him hungry
- b. *Women bi ta haoke.
We force him hospitable

(43) With agentive adverbials

- a. *Ta guyi e.
He purposely hungry
- b. *Ta guyi haoke.
He purposely hospitable

However, stage-level states differ from individual-level states in the following respects. First, only stage-level states are compatible with durative adverbials such as *san tian* (three days) 'for three days', while individual-level states are not, as seen in (44a)

and (44b). Individual-level states have permanent properties; therefore, they usually do not occur with durative adverbials, indicating the duration of a certain time.

(44)a. Stage-level state

Ta yijing e le san tian le.
 He already hungry LE three day LE
 'He got hungry since three days ago.'

b. Individual-level state

*Ta yijing haoke san tian (le).
 He already hospitable three day LE
 'It has been three days since he became hospitable.'

Second, as discussed in section 3.2.2.3, stage-level states can occur with the perfective aspect marker *le*, whereas individual-level states cannot, as (45a) and (45b) show. With the aspect marker *le*, the stage-level states turn out to be compatible with scalar adverbials such as *chabuduo* 'almost', as (46a) shows. The individual-level states do not occur with the aspect marker *le*, their occurrence with scalar adverbials is impossible, as (46b) shows.

(45)a. Stage-level state

Ta lei le.
 He tired LE
 'He got tired.'

b. Individual-level state

*Ta haoke le.
 He hospitable LE

(46)a. Stage-level state

Ta chabuduo lei le.
 He almost tired LE
 'He is almost tired.'

b. Individual-level state

*Ta chabuduo haoke le.
 He almost hospitable LE

The linguistic properties of stage-level states and individual-level states can be summarized in table 3.3.

	Stage-level states	Individual-level states
Imperfective	No	No
Imperative	No	No
As complements of <i>bi</i> 'force'	No	No
With agentive adverbials	No	No
With durative adverbials	Yes	No
With the aspect marker <i>le</i>	Yes	No
With <i>chabuduo</i> 'almost'	No	No
With <i>chabuduo</i> 'almost' when <i>le</i> also occurs	Yes	No

Table 3.3 Linguistic properties of state eventualities in Chinese

3.3.3 Accomplishments

In section 2.3.2 of Chapter 2, I proposed that both an achievement and an accomplishment involve an activity component and an endpoint component. If the activity component has successfully led to the endpoint, a transition arises as the

aspectual category, determining the properties of that combined set. But if the activity component does not successfully lead to the endpoint, a transition will not occur and the activity component becomes the aspectual category, denoting the properties of that union. The latter operation is called Event Projection (EP), while the former operation is called Event-component Fusion (ECF). Their definitions are stated again in (47) and (48) respectively.

(47) **Event Projection (EP):**

An operation in which the activity component of a complex eventuality projects as the aspectual head so that each complex eventuality has an aspectual head that determines the properties of that complex eventuality.

(48) **Event-component Fusion (ECF):**

An operation in which the activity component and the endpoint component of a complex eventuality are concurrent and are then fused, resulting in a transition.

As I have previously suggested, when an eventuality such as accomplishment undergoes both ECF and EP, it suggests that the given eventuality permits two different viewpoints. Namely, we can view it as a single whole, or we can view it as comprising different components and pay essential attention only to the certain component of the eventuality (i.e., the activity component). However, if an eventuality such as achievement is said to comply only with ECF, but not EP, it implies that we can only view the given eventuality as a unitary entity, designating a transition.

A complex eventuality such as an accomplishment is said to comprise an activity component and an endpoint component; it is natural to assume that the activity of the

given eventuality can successfully lead to the endpoint, resulting in a transition. It is therefore suggested that an accomplishment is universally compatible with ECF. To see how ECF works, consider the examples in (49) and (50) and their interpretations associated with the frame adverbials such as *in three minutes*.

(49) English

- a. John painted a picture in three minutes.
- b. John hammered the metal flat in three minutes.

(50) Chinese

- a. Ta zai san fenzhong nei hua le yi zhang hua.
He at three minutes in paint LE one Cl. picture
'He painted a picture in three minutes.'
- b. Ta zai san fenzhong nei qiao po le liang ge wan.
He at three minutes in hit break LE two Cl. bowl
'He hit two bowls and the bowls became broken in three minutes.'

The English examples in (49) and the Chinese examples in (50) are all accomplishment eventualities. (49a) and (50a) are lexical accomplishments, whereas the resultative verb constructions (RVCs) in (49b) and (50b) are derived accomplishments. When these complex eventualities occur with *in*-adverbials, they all produce a conclusive reading, that is, something is finished as a result of the activity being performed during the time interval. The examples in (49) and (50), in which there is a conclusive reading with *in*-adverbials, show that accomplishments can undergo ECF.

As previously pointed out, an activity can occur in the imperfective, as an imperative, as a complement of verbs such as *bi* 'force' and *quan* 'persuade', and with an

agentive adverbial such as *zhuanxinde* 'attentively'. If an accomplishment such as *hua yi zhang hua* (paint one Cl. picture) 'paint a picture' or *xie yi feng xin* (write one Cl. letter) 'write a letter' undergoes EP, it should be able to occur in the syntactic environments where an activity occurs. The grammaticality of the examples in (51a)–(51d) confirms that Chinese accomplishments allow EP.

- (51)a. Ta zai hua yi zhang hua.
 He ZAI paint one Cl. picture
 'He is painting a picture.'
- b. Qing hua yi zhang hua!
 Please paint one Cl. picture
 'Please paint a picture!'
- c. Women bi ta hua yi zhang hua.
 We force him paint one Cl. picture
 'We forced him to paint a picture.'
- d. Ta hen zhuanxinde hua le yi zhang hua.
 He very attentively draw LE one Cl. picture
 'He attentively painted a picture.'

As seen from the English translation in (51a)–(51d), an English accomplishment such as *paint a picture* can also occur in the imperfective, as an imperative, as a complement of verbs such as *force*, and with an agentive adverbial. However, an accomplishment in Chinese differs from its English counterpart in that the latter is able to produce two ambiguous interpretations (i.e., the intentional reading and the culminative reading) when occurring with scalar adverbials such as *almost*, while the former can have only one, i.e., the culminative reading, as shown in (52) and (53).

(52) Bill almost painted a picture.

⇒ (a) Bill did not even begin to paint a picture.

⇒ (b) Bill was painting a picture, but he did not quite complete it.

(53) Ta chabuduo/jihu hua le yi zhang hua le.
 He almost paint LE one Cl. picture LE
 'He was painting a picture, but he did not quite complete it.'

Moreover, when occurring with frame adverbials (e.g., *in three minutes*), an English accomplishment has two ambiguous interpretations with the auxiliary *will*, that is, the frame adverbial can indicate the time interval before the eventuality starts (i.e., the inceptive reading), or denote the time interval before the transition takes place (i.e., the conclusive reading), as illustrated in (54). But without the auxiliary *will*, the English accomplishment can have only the conclusive reading with the frame adverbial, as shown in (55). However, when occurring with frame adverbials, a Chinese accomplishment can produce only one reading, whether or not it takes the future auxiliary *hui* 'will', as exemplified in (56) and (57).

(54) Bill will paint a picture in three minutes.

⇒ (a) Bill will start to paint a picture within three minutes.

⇒ (b) Bill will paint a picture and complete it in three minutes.

(55) Bill painted a picture in three minutes.

⇒ Bill painted a picture and completed it in three minutes.

(56) Ta zai san fenzhong nei hua le yi zhang hua.
 He at three minutes in paint LE one Cl. picture
 'He painted a picture in three minutes.'

- (57) Ta hui zai san fenzhong nei hua yi zhang hua.
 He will at three minutes in paint one Cl. picture
 'He will paint a picture and complete it in three minutes.'

If a Chinese accomplishment, like its English counterpart, can undergo EP, as I have previously claimed, then it is not clear at this moment why a Chinese accomplishment does not permit two ambiguous readings with scalar adverbials such as *chabuduo/jihu* 'almost', or with frame adverbials such as *zai san fenzhong nei* 'in three minutes' along the same line with its English counterpart. But if we follow Dowty (1979) and claim that an ambiguity arises with *almost* just in case the predicate is an accomplishment, and if this ambiguity does not arise, the predicate is not an accomplishment, then the Chinese expression such as *hua yi zhang hua* (paint one Cl. picture) 'paint a picture' will not be classified as an accomplishment, because it does not produce ambiguous readings.

However, further examination reveals that the inability of an accomplishment to yield ambiguous interpretations when associated with *almost*-adverbials or *in*-adverbials confirms rather than contradicts my claim that Chinese has an accomplishment category and the category can undergo EP. Recall that EP is defined as an operation in which the activity component of a complex eventuality (here, an accomplishment) projects as the aspectual head so that each complex eventuality has an aspectual head that determines the properties of that complex eventuality. That is, when an accomplishment undergoes EP, the activity component turns out to be the aspectual head, determining the properties of the eventuality. However, as previously discussed, activity eventualities in Chinese do not occur with scalar adverbials, as shown in (58), since they do not entail an explicit

initial point for scalar adverbials to refer to. For the same reason, they do not occur with frame adverbials, even though the future auxiliary *hui* 'will' appears, as (58b) shows. The ungrammaticality of the examples in (58) accounts for why Chinese accomplishments, unlike their English counterparts, do not have ambiguous interpretations associated with scalar adverbials or frame adverbials, though they can undergo EP.

- (58)a. *Ta chabuduo/jihu pao le.
 He almost run LE
 'He almost ran.'
- b. *Ta hui zai san fenzhong nei pao.
 He will at three minutes in run
 'He will run in three minutes.'

Though activities in Chinese do not involve an explicit initial point, the initial point can be imposed on it by the insertion of the aspectual verb such as *kaishi* 'begin'. With an imposed initial point, the given eventualities with the auxiliary *hui* 'will' turn out to be grammatical with frame adverbials, as (59a) shows. The ability of an activity to occur with frame adverbials when the aspectual verb *kaishi* 'begin' is involved leads us to predict that an accomplishment in Chinese can also occur in the same structure. The grammaticality of the example in (59b) confirms this prediction.

- (59)a. Ta hui zai san fenzhong nei kaishi pao.
 He will at three minutes in begin run
 'He will begin to run in three minutes.'
- b. Ta hui zai san fenzhong nei kaishi hua yi zhang hua.
 He will at three minutes in begin paint one Cl. picture
 'He will begin to paint a picture in three minutes.'

In short, an accomplishment in Chinese, like its English counterpart, allows two cognitive operations: by ECF, the given accomplishment is viewed as a unitary entity, whereas by EP, the given accomplishment is viewed as not involving an endpoint. This analysis complies with the claim by Tai (1984), Smith (1997), and Sybesma (1997) that an accomplishment may or may not imply the attainment of the goal. If the goal of an accomplishment is attained, the sentence conveys *completion*, but if the goal is not attained, the accomplishment expression conveys *termination* (also known as *partial completion*).⁶ The term *termination* can be understood as *temporal culmination*, where an event of whatever sort simply stops, and the term *completion* as *logical culmination*, whereby something is fulfilled or finished as a result of the activity (Pustejovsky 1995: 242, fn. 9).

⁶ According to Tai (1984), Smith (1997), and Sybesma (1997), the expression *Wo xie le yi feng xin* (I write LE one Cl. letter) 'I wrote a letter' may or may not imply the attainment of the goal, e.g., the letter is completed. They use a conjunctive test to demonstrate that sentence (i) may not necessarily imply the attainment of the endpoint. Therefore, it is compatible with an assertion that the event does not proceed to an endpoint.

- (i) Wo zuotian xie le yi feng xin, keshi mei xie wan.
 I yesterday write LE one Cl. letter but not yet write finish
 'I wrote a letter yesterday, but I did not finish it.'

However, as pointed out by Teng (1986: 31) and He (1992: 106-109), sentence (i) is actually ungrammatical. Sybesma (1997: 256, fn. 9) also mentions that he has not met many native speakers who fully agree with Tai (1984) as to the grammaticality of (i). Though example (i) cannot be used as evidence for claiming that an accomplishment in Chinese may or may not imply the attainment of the goal, it provides an insight that the endpoint of a complex eventuality can be placed outside of view and attention.

3.3.4 Achievements

Chinese achievements include the verbs such as *si* 'die', *ying* 'win', and *diu* 'lose'. Many achievements such as *kan-dao* (look.at-reach) 'see' and *ting-dao* (listen.to-reach) 'hear' are derived from an activity verb followed by a grammaticalized verb, e.g., *dao* 'reach'. Because the second component of these achievements does not retain its lexical meaning, it is treated as a telic Aktionsart marker (Szeto 1988: 66), a semantic feature indicating success (Teng 1975), or a marker expressing a change of state (Smith 1997: 283). As previously mentioned, achievements do not undergo EP; therefore, they do not occur (a) in the imperfective, (b) as imperatives, (c) as complements of *bi* 'force', and (d) with agentive adverbials such as *zhuanxinde* 'attentively', considered as the properties of an activity, as exemplified in (60a)–(60d).

- (60)a. *Ta zai si.
 He ZAI die
- b. *Si!
 Die
- c. *Women bi ta si.
 We force him die
- d. *Ta zhuanxinde si.
 He attentively die

The derived achievement *kan-dao* (look.at-reach) 'see' in (61) shows two important things: (a) an achievement is composed of an activity component (e.g., *kan* 'look at') and an endpoint component (e.g., *dao* 'reach'), and (b) the activity component of an achievement does not project as the aspectual head. For example, the verb *kan* 'look

at' is an activity, which is able to occur in the imperfective, as an imperative, as a complement of *bi* 'force', and with an agentive adverbial, as the examples in (62a)–(62d) show. But when this activity verb combines with a grammaticalized verb to yield an achievement, the newly combined set becomes ungrammatical with the same syntactic structures, as illustrated in (63a)–(63d).

- (61) Ta yijing kan-dao na zhang hua le.
 He already look.at-reach that Cl. picture LE
 'He already saw the picture.'
- (62)a. Ta zai kan na zhang hua.
 He ZAI look.at that Cl. picture
 'He is looking at the picture.'
- b. Qing kan na zhang hua.
 Please look.at that Cl. picture
 'Please look at the picture.'
- c. Women bi ta kan na zhang hua.
 We force him look.at that Cl. picture
 'We forced him to look at the picture.'
- d. Ta zai zhuanxinde kan na zhang hua.
 He ZAI attentively look.at that Cl. picture
 'He is attentively looking at the picture.'
- (63)a. *Ta zai kan-dao na zhang hua.
 He ZAI look.at-reach that Cl. picture
- b. *Kan-dao na zhang hua!
 Look.at-reach that Cl. picture
- c. *Women bi ta kan-dao na zhang hua.
 We force him look.at-reach that Cl. picture
- d. *Ta zhuanxinde kan-dao na zhang hua.
 He attentively look.at-reach that Cl. picture

It is noted that the activity verb *kan* 'look at' can take the aspectual verb *kaishi* 'begin', as (64a) shows, but when it becomes the first component of a derived achievement such as *kan-dao* (look.at-reach) 'see', its occurrence with the aspectual verb is impossible, as shown in (64b), which illustrates that the projection of the activity component is impossible in an achievement.

- (64)a. Ta kaishi kan na zhang hua le.
 He begin look.at that Cl. picture LE
 'He began to look at the picture.'
- b. *Ta kaishi kan-dao na zhang hua le.
 He begin look.at-reach that Cl. picture LE

3.3.5 Summary

I have suggested that when two sub-components, i.e., an activity and an endpoint, are combined into a complex eventuality, the category of the complex eventuality can result from either EP or ECF. By EP, the activity component becomes the head of the combined set, whereas by ECF, a combined category, i.e., the transition, is constructed from the two combined sub-components. The survey shows that a Chinese accomplishment, like its English counterpart, can undergo EP and ECF. By EP, a Chinese accomplishment can occur in the syntactic environments where an activity also occurs, while by ECF, a Chinese accomplishment can produce a conclusive reading with *in*-adverbials and a culminative reading with *almost*-adverbials. However, the inability of a Chinese accomplishment to produce an inceptive reading with *in*-adverbials and an intentional reading with *almost*-adverbials does not result from its incompatibility with

EP; rather, it results from the incompatibility of an activity component with these two kinds of adverbials.

A Chinese complex eventuality such as *kan-dao* (look.at-reach) 'see' is a derived achievement, composed of an activity component *kan* 'look at' and an endpoint-denoting element *dao* 'reach'. Because the verb *kan* 'look at' is an activity, it can occur in the imperfective, as an imperative, as a complement of *bi* 'force', and with an agentive adverbial. But when it is combined with an endpoint-denoting element, e.g., *dao* 'reach', into an achievement, the given activity can never again occur in those syntactic environments. This fact suggests that an achievement involves an activity component and this component cannot project as the aspectual head, determining the properties of that combined set.

3.4 Resultative verb constructions in English and Chinese

3.4.1 Syntactic properties of resultative verb constructions

As pointed out in the literature on verbal aspectuality (Declerck 1979; Dowty 1979, among others), there are various syntactic processes that serve to produce telic eventualities from atelic ones. For example, an atelic eventuality can be converted into a telic one (a) by replacing the object NP of a nonspecific quantity (e.g., *grapes*) with that of a specific quantity (e.g., *a bunch of grapes*), as seen in (65), or (b) by the addition of the Goal-PP such as *to the shed*, as shown in (66) (Levin and Rappaport Hovav 1995: 57).

(65)a. Activity

John ate grapes *in an hour/for an hour.

b. Accomplishment

John ate a bunch of grapes in an hour/*for an hour.

(66)a. Activity

John pushed the cart *in an hour/for an hour.

b. Accomplishment

John pushed the cart to the shed in an hour/*for an hour.

Like the Goal-PP, the resultative predicate, a state which results from the action described by the verb, can be used to bound (or delimit) the eventuality in a resultative verb construction, as shown in (67). Thus, (67a) means that John caused the metal to become flat by hammering it, while (67b) means that the waiter caused the table to become dry by wiping it. In either RVC, the resultative predicate describes the final state of the NP object.

(67)a. John hammered the metal flat.

b. The waiter wiped the table dry.

Though resultative predicates in RVCs specify an achieved state rather than an achieved location, they too can be treated as endpoint-denoting elements, because the emergence of the achieved state can be used to indirectly indicate the endpoint of the activity component (or more specifically, the extensional situation).⁷ The endpoint-

⁷ The resultative predicate *flat* as in *John hammered the metal flat*, and the Goal-PP *to the shed* as in *John pushed the cart to the shed* are treated as goals in Levin and Simpson (1981), while they are treated as endpoint-denoting elements in the present work.

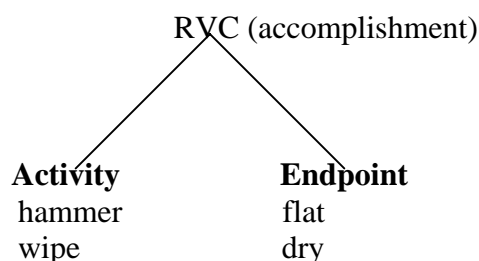
denoting function of resultative predicates can be seen by examining the effect of adding a resultative predicate to a sentence that in the absence of such a predicate may receive an atelic interpretation, as shown in (68).

(68)a. John hammered the metal for an hour.

b. The waiter wiped the table for an hour.

Therefore, like other accomplishment eventualities, the RVCs must be composed of an activity component and an endpoint component; these two components can be structurally represented as in (69).

(69)



In what follows, I will discuss RVCs in English and Chinese, with the aim of finding out semantic similarities and differences of the construction in these two languages, holding that the contrast of RVCs in these two languages can be accounted for in terms of EP and ECF.

RVCs in English are usually composed of an activity verb and a resultative predicate. The resultative predicate is usually an adjective. It is noted that only the activity verb can form an independent sentence, whereas the resultative predicate cannot, unless the copula *be* is inserted. The phenomena are illustrated in (70) and (71).

(70)a. John hammered the metal flat.

b. John hammered the metal.

c. *The metal flat.

d. The metal is flat.

(71)a. The waiter wiped the table dry.

b. The waiter wiped the table.

c. *The table dry.

d. The table is dry.

However, in Chinese RVCs, both the activity component and the resultative predicate are lexical verbs; the activity component is usually an activity verb, whereas the resultative predicate is usually a state verb.⁸ Besides, either of the components can form an independent sentence, as illustrated in the (b) and (c) examples of (72) and (73).

(72)a. Ta qiao po le wan.
He hit broken LE bowl
'He hit the bowl and the bowl became broken as a result.'

b. Ta zai qiao wan.
He ZAI hit bowl.
'He is hitting the bowl.'

⁸ The first component of an RVC in Chinese is usually composed of an activity verb, but it is not restricted to an activity verb. In some cases, the first component of an RVC can be a state verb rather than an activity verb (e.g., *lei* 'tired'), as in (i).

(i) Ta lei ku le.
He tired cry LE
'He cried as a result of being tired.'

- c. Wan po le.⁹
 Bowl broken LE
 'The bowl became broken.'
- (73)a. Ta chi bao fan le.
 He eat full meal LE
 'He was full from eating the meal.'
- b. Ta chi le fan.
 He eat LE meal
 'He ate the meal.'
- c. Ta bao le.
 He full LE
 'He is full.'

In addition, it is observed that the activity and the resultative predicate of an English RVC are separated by an NP object. If we displace the resultative predicate immediately after the activity predicate, the sentence is not fully acceptable, as the examples in (74b) and (75b) show:

- (74)a. John hammered the metal flat.
 b. ?John hammered flat the metal.
- (75)a. The waiter wiped the table dry.
 b. ?The waiter wiped dry the table.

In contrast, Chinese RVCs do not allow any NP object to occur between the activity and the resultative predicate. The two sub-components of an RVC in Chinese are

⁹ The verb *po* 'broken' is analyzed as a state (i.e., a stage-level state), rather than an achievement, because it can occur with degree words such as *feichang* or *hen* 'very', and with adverbs such as *youdian* 'slightly'. In addition, when it occurs with *le*, it can be modified by the adverbial *chabuduo* 'almost'.

required to be adjacent to each other; otherwise, the sentence is ungrammatical, as shown in (76b) and (77b):

(76)a. Ta qiao po le wan.
 He hit broken LE bowl
 'He hit the bowl and the bowl broke as a result.'

b. *Ta qiao wan po le.
 He hit bowl broken LE

(77)a. Ta chi bao fan le.
 He eat full meal LE
 'He was full from eating the meal.'

b. *Ta chi fan bao le.
 He eat meal full LE

Moreover, RVCs in English can occur in all of the following environments such as in the imperfective, as imperatives, as complements of verbs such as *force* and *persuade*, and with agentive adverbials such as *carefully*, as exemplified in (78) to (81).

(78) Imperfective

- a. John is hammering the metal flat.
- b. The waiter is wiping the table dry.

(79) Imperative

- a. Hammer the metal flat!
- b. Wipe the table dry!

(80) As complements of *force*

- a. We forced John to hammer the metal flat.
- b. We forced the waiter to wipe the table dry.

(81) With agentive adverbials

- a. John carefully hammered the metal flat.
- b. The waiter carefully wiped the table dry.

In contrast, RVCs in Chinese cannot occur in any of the following constructions, for example, in the imperfective (Tai 1984: 292; Smith 1990: 317-18; He 1992; Gu 1999), as imperatives, as complements of verbs such as *bi* 'force', and with agentive adverbials such as *zhuanxinde* 'attentively', as exemplified in (82)–(85).

(82) Imperfective

- a. *Ta zai qiao po wan.
 He ZAI hit broken bowl
- b. *Ta zai chi bao fan.
 He ZAI eat full meal

(83) Imperative

- a. *Qiao po wan!
 Hit broken bowl
- b. *Chi bao fan!
 Eat full meal

(84) As complements of *bi* 'force'

- a. ?Women *bi* *ta* *qiao* *po* *wan*.¹⁰
 We force him hit broken bowl
- b. *Women *bi* *ta* *chi* *bao* *fan*.
 We force him eat full meal

(85) With agentive adverbials

- a. *Ta *zhuanxinde* *qiao* *po* *wan*.
 He attentively hit broken bowl
- b. *Ta *zhuanxinde* *chi* *bao* *fan*.
 He attentively eat full meal

It is noteworthy that some Chinese RVCs have a corresponding *Ba*-construction, which has various other names, e.g., the disposal construction (Wang 1954; Chao 1968; Li and Thompson 1981; Tsee 1986), the executive construction (Hashimoto 1971a), and the accusative construction (Teng 1975), while others have a corresponding Verb-copying construction. For example, the Chinese RVC with the verb complex *qiao-po* 'hit-broken' allows the *Ba*-construction, but not the Verb-copying construction, whereas the Chinese RVC with the verb complex *chi-bao* 'eat-full' permits the Verb-copying construction, but not the *Ba*-construction. Their complementary distribution is illustrated in examples (86) and (87), respectively.

¹⁰ A few native speakers may first feel the sentence in (84a) is not as bad as other examples, but when its corresponding *Ba*-construction is mentioned, the speakers all agree that the RVC involving *ba* is more idiomatic and natural, when occurring as the complement of the verb such as *bi* 'force'. It is thus necessary to concede that aktionsart (or aspectuality) is not always "objective" as it may involve the speaker's conception of the situation, as Bache (1982: 65) has pointed out.

(86)a. RVC

Ta qiao po le wan.
 He hit broken LE bowl
 'He broke the bowl.'

b. *Ba*-construction

Ta ba wan qiao po le.
 He BA bowl hit broken LE
 'He broke the bowl.'

c. Verb-copying construction

*Ta qiao wan qiao po le.
 He hit bowl hit broken LE

(87)a. RVC

Ta chi bao fan le.
 He eat full meal LE
 'He was full from eating the meal.'

b. *Ba*-construction

*Ta ba fan chi bao le.
 He BA meal eat full LE

c. Verb-copying construction

Ta chi fan chi bao le.
 He eat meal eat full LE
 'He was full from eating the meal.'

The RVC with the verb complex *qiao-po* 'hit-broken' in (86a) has a corresponding *Ba*-construction, as in (86b). Surprisingly, when in the presence of *ba*, the given RVC can then appear in the imperative, as a complement of *bi* 'force', and with an agentive adverbial, as the examples in (88a)–(88c) show.

- (88)a. Ba wan qiao po!
 BA bowl hit broken
 'Make the bowl broken by hitting it!'
- b. Women bi ta ba wan qiao po.
 We force him BA bowl hit broken
 'We forced him to make the bowl broken by hitting it.'
- c. Ta xiaoxinde ba wan qiao po.
 He carefully BA bowl hit broken
 'He made the bowl broken by hitting it carefully.'

Examples (88a)–(88c) show that when in the presence of *ba*, the RVC with the verb complex *qiao-po* 'hit-broken' is able to occur as an imperative, as a complement of the verb such as *bi* 'force', and with an agentive adverbial. However, this RVC involving *ba* is still incompatible with the imperfective form, as the example in (89) exhibits. Its incompatibility with the imperfective form may result from the contradictory condition, i.e., the *Ba*-construction requires the eventuality to involve an endpoint, while the imperfective form is employed to present a situation which excludes the initial point and endpoint (cf. Smith 1997: 62, 66, 73).

- (89) *Ta zai ba wan qiao po.
 He ZAI BA bowl hit broken

Why does the presence of *ba* change the grammaticality of sentences, as shown in (88)? According to Wang (1954), the *ba*-form describes "how a person is handled, manipulated, or dealt with; how something is disposed of; or how an affair is conducted" (translated by Li 1974: 200-201). In Li's (1974: 205) own words, "the nature of a *ba*-sentence is to describe the particular action made upon its object." The fact that the

Chinese RVC, as in (86a), cannot appear in the imperative, as a complement of *bi* 'force', and with agentive adverbials while its corresponding *Ba*-construction, as in (86b), can imply that the morpheme *ba* is able to denote the semantic properties associated with an activity (e.g., agentivity).

Though the Chinese RVC with the verb complex *chi-bao* 'eat-full' has a corresponding Verb-copying construction, the presence of a copied verb does not allow such construction to grammatically occur in the imperfective, in the imperative, as a complement of *bi* 'force', and with an agentive adverbial, as illustrated in (90a)–(90d).

- (90)a. *Ta zai chi fan chi bao.
 He ZAI eat meal eat full
- b. *Chi fan chi bao.
 eat meal eat full
- c. *Women bi ta chi fan chi bao.
 We force him eat meal eat full
- d. *Ta xiaoxinde/zhuaxinde chi fan chi bao.
 He carefully/attentively eat meal eat full

The ungrammatical sentences in (90a)–(90d) show that the copied verb of an RVC, unlike the morpheme *ba*, is unable to denote the semantic properties licensing the occurrence in the imperative, as a complement of *bi* 'force', and with agentive adverbials.

The main syntactic properties of RVCs between English and Chinese can be summarized in table 3.4.

	English RVCs	Chinese RVCs	Chinese RVCs With a copied verb	Chinese RVCs with <i>ba</i>
Adjacency requirement	No	Yes	Yes	Yes
Imperfective	Yes	No	No	No
Imperative	Yes	No	No	Yes
Complement of <i>force</i>	Yes	No	No	Yes
With agentive adverbials	Yes	No	No	Yes

Table 3.4 Syntactic properties of RVCs in English and Chinese

3.4.2 A contrastive account

3.4.2.1 Event Projection and the syntactic properties associated with it

As discussed in the previous section, RVCs in English can occur (a) as imperfectives, (b) as imperatives, (c) as complements of the *force* verb, and (d) with agentive adverbials, whereas their Chinese counterparts cannot. Notice that the syntactic properties such as occurring in the imperfective, as imperatives, as complements of the *force* verb, and with agentive adverbials are syntactic features of the activity eventuality. The compatibility of the English RVCs with these syntactic properties implies that the activity component of an English RVC is able to project as the aspectual head. By contrast, the incompatibility of the Chinese RVCs with the syntactic properties suggests that the activity component of a Chinese RVC is unable to project as the aspectual head. The compatibility of EP in an English RVC provides grounds for establishing that an English RVC can occur in syntactic environments such as occurring in the imperfective, as an imperative, as a complement of *force*, and with an agentive adverbial, which presuppose an activity condition, while the incompatibility of EP in a Chinese RVC

provides grounds for predicting that a Chinese RVC is unable to occur in the syntactic environments, where an activity condition is required. The contrast between English and Chinese RVCs suggests that the same type of constructions (e.g., the construction with a *cause-result* relationship) does not ensure that they have the same syntactic properties in different languages. The concurrence of RVCs in English and Chinese with *almost*-adverbials, *in*-adverbials and *for*-adverbials, and the interpretations that these adverbials denote will provide further evidence for the claim.

3.4.2.2 Interpretations of *almost*- and *in*-adverbials

Because an RVC in English, as in (91), can undergo EP as well as ECF, it is predicted that it can produce two possible interpretations with the modification by the *almost*-adverbial. The *almost*-adverbial can make reference either to the initial point of the activity component, yielding the intentional reading where the act is intended but never carried out, as in (91a), or to the endpoint of the activity component (e.g., a boundary that enters into the result state), producing the culminative reading where the action is started but not fully completed, as in (91b).

(91) John almost hammered the metal flat.

⇒ (a) John intended to make the metal flat by hammering it.

⇒ (b) John was hammering the metal, but the metal did not become flat yet.

The modification by the *in*-adverbial presents a parallel story. The RVC in (92) has two possible interpretations when modified by *in*-adverbials, because the auxiliary *will* suggests that the current eventuality is in the pre-inceptive situation, allowing the *in*-

adverbial to make reference either to the endpoint of the pre-inceptive situation, or to the endpoint of the extensional situation. When the *in*-adverbial makes reference to the endpoint of the pre-inceptive situation, the RVC produces the inceptive reading, as in (92a), but when it makes reference to the endpoint of the extensional situation, the RVC yields the conclusive reading, as in (92b) (see section 2.4.3.1 for the detailed discussion).

(92) John will hammer the metal flat in an hour.

⇒ (a) John will start to make the metal flat by hammering it.

⇒ (b) The metal will become flat from John's hammering it within an hour.

However, Chinese RVCs present a different story. When a Chinese RVC occurs with a scalar adverbial such as *jihu* 'almost', it can only have a culminative reading, as shown in (93). In addition, when the RVC occurs with the frame adverbial such as *zai yi ge xiaoshi nei* 'in an hour', it can only produce a conclusive reading with or without the auxiliary *hui* 'will', as exemplified in (94).

(93) Ta jihu qiao po le wan.
 He almost hit broken LE bowl
 'He hit the bowl and the bowl is almost broken.'

(94)a. Ta zai yi xiaoshi nei qiao po le wan.
 He in one hour in hit broken LE bowl
 'He broke the bowl in an hour by hitting it.'

b. Ta hui zai yi xiaoshi nei qiao po wan.
 He will in one hour in hit broken bowl
 'He will break the bowl in an hour by hitting it.'

Though the Chinese RVC does not have an intentional reading associated with the scalar adverbial, or a conclusive reading associated with the frame adverbial, this fact cannot be used as evidence for claiming that Chinese RVCs do not allow the activity component to project as the aspectual head, because the activity component itself is not compatible with either scalar adverbials, or frame adverbials when no aspectual verb such as *kaishi* 'begin' is involved. As I have discussed before, an activity eventuality can occur with the aspectual verb such as *kaishi* 'begin'. Because a lexical accomplishment such as *hua yi zhang hua* 'paint a picture' in Chinese allows the activity component to project as the aspectual head, it can occur with the aspectual verb, as illustrated in (95). As shown in (96a), an activity eventuality such as *qiao* 'hit' can occur with the aspectual verb such as *kaishi* 'begin'. If an RVC in Chinese allows its activity component to project as the aspectual head, then it should be able to occur with the aspectual verb. The ungrammaticality of example (96b) confirms our claim that Chinese RVCs do not project their activity component.

(95) Accomplishment

Ta hui zai yi xiaoshi nei kaishi hua yi zhang hua.
 He will at one hour in begin paint one Cl. picture
 'He will begin to paint a picture in an hour.'

(96)a. Activity

Ta hui zai yi xiaoshi nei kaishi qiao wan.
 He will at one hour in begin hit bowl
 'He will begin to hit the bowl in an hour.'

b. RVC

*Ta hui zai yi xiaoshi nei kaishi qiao po wan.
 He will in one hour in begin hit broken bowl
 'He will begin to break the bowl in an hour.'

3.4.3 Interpretations associated with different adverbials

I have previously mentioned that an English RVC can produce two possible interpretations associated with *almost*-adverbials, as shown in (97a), while it can produce only a conclusive reading when it takes *in*-adverbials without involving the auxiliary *will*, as shown in (97b). However, when this RVC occurs with an *almost*-adverbial and an *in*-adverbial within a single clause, it has only one possible interpretation, i.e., the culminative/conclusive reading, as shown in (97c).

- (97)a. John almost hammered the metal flat. Intentional/culminative reading
 b. John hammered the metal flat in three minutes. Conclusive reading
 c. John almost hammered the metal flat in three minutes. Conclusive/culminative reading

Why does sentence (97c) yield only the conclusive/culminative reading, but not the inceptive/intentional reading? The answer to this question is straightforward, if EP and ECF are considered. Note that the *almost*-adverbial can produce two possible readings when occurring with an RVC in English. When EP operates, it makes reference to the initial point of the activity component, producing an intentional reading, while when ECF operates, it makes reference to the endpoint of the activity component, yielding a culminative reading. Because the *in*-adverbial in (97c) does not occur with the

will auxiliary, it can only refer to the endpoint of the activity component (i.e., the culmination point). Sentence (97c) can only have a culminative/conclusive reading, because the ECF is the operation with which both adverbials are compatible or the culmination point is the boundary that both adverbials can refer to.

Because a Chinese RVC can only undergo ECF, it can produce a culminative reading with *almost*-adverbials, or a conclusive reading with *in*-adverbials, as shown in (98). Hence, it is not surprising that when a Chinese RVC takes an *almost*-adverbial and an *in*-adverbial within a single clause, it can only yield the culminative/conclusive reading, for the same reason as in English.

- (98) Ta chabuduo zai san fenzhong nei chi bao le fan.
 He almost at three minutes in eat full LE meal
 'He almost became full in three minutes from eating the meal.'

3.4.4 Summary

I have examined RVCs in English and Chinese, proposing that the properties associated with each construction can be captured in terms of EP and ECF. The contrast between these two constructions can be summarized in table 3.5.

	English RVCs	Chinese RVCs
Compatible with the ECF	Yes	Yes
Compatible with the EP	Yes	No
With <i>almost</i> -adverbials	Intentional or Culminative reading	Culminative reading
With <i>in</i> -adverbials	Conclusive reading	Conclusive reading
With <i>in</i> -adverbials and <i>will</i>	Inceptive or Conclusive reading	Conclusive reading

Table 3.5: Adverbial interpretations of English and Chinese RVCs

Because English RVCs permit two kinds of cognitive operations, i.e., EP and ECF, whereas Chinese RVCs allow only one, i.e., ECF, it is not surprising that English RVCs, but not Chinese RVCs, involve the properties associated with EP. The comparison of English RVCs with their Chinese counterparts shows that the principles governing possible construction properties are given to parametric variation, and the range of syntactic contexts available to a particular construction (e.g. with a *cause-result* relationship) in one language may not be available to the corresponding construction in another language, with systematic differences attested.

3.5 Concluding remarks

I have pointed out that in Chinese there are two types of states: stage-level states and individual-level states, of which only stage-level states can occur with the perfective aspect marker *le*. With *le* marker, stage-level states become grammatical with the scalar adverbial *chabuduo* 'almost'. It is thus proposed that the aspect marker *le* can designate a boundary (or an endpoint) to which scalar adverbials can refer. Individual-level states,

which are permanent in nature, do not occur with the aspect marker *le*, designating an initial point; hence, they do not take *almost*-adverbials.

Because lexical accomplishments such as *paint a picture* in English as well as in Chinese can undergo EP and ECF, they permit two cognitive operations: one (i.e., EP) is to conceptually "zoom in" on the activity component, so that the endpoint disappears from view, and the other (i.e., ECF) is to localize both sub-components (i.e., the activity component and the endpoint component) inside of view, thus resulting in a transition.

I have shown that different aspectual properties of RVCs in different languages can be accounted for in terms of EP and ECF. English RVCs undergo EP; therefore, they can occur in the imperfective, as imperatives, as complements of the *force* verb, and with agentive adverbials, all of which require an activity condition. In addition, they have an additional inceptive reading with *in*-adverbials, and an additional intentional reading with *almost*-adverbials, both of which are associated with the initial point of the activity component. Because Chinese RVCs do not undergo EP, they do not occur in the environments that have an activity requirement, e.g., in the imperfective, as imperatives, as complements of verb such as *bi* 'force', and with agentive adverbials. Besides, I have pointed out that Chinese RVCs do not generate ambiguous readings with either frame adverbials or scalar adverbials.

RVCs in Chinese can be classified into two different types according to different syntactic constructions associated with them: (a) RVCs which have a corresponding *Ba*-construction, and (b) RVCs which have a corresponding Verb-copying construction. When RVCs occur in the *Ba*-construction, they can then occur in the syntactic

environments appropriate for an activity. Their ability to cooccur in the environments where an activity occurs suggests that the morpheme *ba* is able to denote an additional feature that licenses the given syntactic constructions.

Last, though the English expressions such as *John built a house* and *John hammered the metal flat* have two possible interpretations associated with *in*-adverbials or *almost*-adverbials, they fail to generate an inceptive/intentional reading when both types of adverbials occur at the same time, as in *John almost built a house in an hour* and *John almost hammered the metal flat in an hour*. Their inability to produce an additional reading results from the fact that the endpoint of the extensional situation is the boundary to which they both can make reference. Chinese presents a parallel story in this aspect.

CHAPTER 4

THE RELATION OF GRAMMAR TO EVENT STRUCTURE

Theory is continually revisable not merely in the sense that new theories replace or amend older ones, but in the sense that reality is changing.

— PETER T. MANICAS (2000)

4.1. Introduction

It has been experimentally confirmed in physical theory that all known stable matter in the universe is made up of three kinds of elementary particle (i.e., the electron and the two light quarks) coupled via four kinds of fundamental interaction (i.e., gravity, electromagnetism, and the two nuclear interactions).¹ This fact suggests that the infinite diversity and complexity of things we see around us can only be the result of makeup of simple components (Bechtel and Richardson 1993; Auyany 1998). As Bechtel and Richardson (1993) have described, the model of decomposing a complex system into more simple components has great impact on a wide variety of researchers in a wide variety of disciplines. For example, linguists describe linguistic competences in terms of the effect of a multitude of capacities. Likewise, we explain and understand syntactic structures by reducing them to their more simple components such as syntactic categories and the relations among them.

¹ In recent years, scientists have been led to *string theory*, with the goal of seeking a principle that unifies the fields of the Standard Model in a simpler structure and resolves the divergence and naturalness problems (Polchinski 1998).

In addition to decomposition, Bechtel and Richardson (1993: 17) maintain that an explanatory model should be able to account for the behavior of a system in terms of the functions performed by its parts and the interactions between these parts. Such kind of explanations are referred to as *mechanistic explanations*. By calling the explanations *mechanistic*, Bechtel and Richards (1993) highlight the fact that the systems produce a certain behavior in a manner analogous to that of machines developed through human technology. That is, a machine is a composite of interrelated parts; these parts are combined in such a way that each contributes to producing an aspect of the system's behavior. A mechanistic explanation identifies these parts and their organization, showing how the behavior of the machine is a consequence of the parts and their organization. According to Bechtel and Richardson (1993: 233), the explanatory power of a model stems from its ability to show how some phenomenon or range of phenomena would be the consequence of the proposed mechanism.

Decomposition and *mechanistic explanation* are the two strategies I adopted in my earlier discussion of event structures in English and Chinese (see Chapters 2 and 3, respectively). Proceeding from the second chapter, I have assumed that eventualities can be subclassified into four sorts: activities, states, achievements, and accomplishments, as suggested by Vendler (1967), and that both achievements and accomplishments are complex eventualities, which can be decomposed into two simple components, namely, an activity and an endpoint (i.e., state) (cf. Foley and Van Valin 1984; Brinton 1988; Smith 1990, 1997; Pustejovsky 1991, 1995; Alsina 1999; Rapoport 1999, among others).

To account for the intertwined relationships of eventualities, I proposed two cognitive operations, i.e., Event-component Fusion (thereafter, ECF) and Event Projection (thereafter, EP). ECF is an operation in which the concurrent activity component and the endpoint component of a complex eventuality are fused, resulting in a transition, whereas EP is an operation in which the activity component of a complex eventuality projects as the aspectual head so that each complex eventuality has an aspectual head that determines the properties of that complex eventuality. In other words, the operation of EP is to conceptually "zoom in" on the activity component within the complex eventuality such that the endpoint disappears from view or attention. As a consequence, the activity component is responsible for certain phenomena exhibited by that complex eventuality (e.g., the given complex eventuality is able to occur in the imperfective, as an imperative, as a complement of verbs such as *force* or *persuade*, and with an agentive adverbial), whereas the operation of ECF conveys an additional idea of complex eventualities as wholes (unitary entities) such that there is a transition associated with them (e.g., they are able to designate a conclusive reading with the modification by *in*-adverbials).

With these two proposed mechanistic explanations (i.e., EP and ECF), we are able to account for the contrast between different complex eventualities. For instance, in English, accomplishments can undergo EP, while achievements cannot. Therefore, only accomplishments, but not achievements, can occur in the imperfective, as imperatives, as complements of verbs such as *force* or *persuade*, and with agentive adverbials such as *carefully* or *deliberately*, as shown in (1) and (2), respectively. The suggestion that

accomplishments can undergo EP while achievements cannot explain why accomplishments and achievements, both of which are complex eventualities, have different syntactic properties, whereas accomplishments, which are complex eventualities, and activities, which are simplex eventualities, have similar ones.

(1) Accomplishments

a. Imperfective

Jerry is drawing a picture.

b. Imperative

Draw a picture!

c. As a complement of *persuade*

John persuaded Jerry to draw a picture.

d. With an agentive adverbial

Jerry deliberately drew a picture.

(2) Achievements

a. Imperfective

*Fred is winning the game.

b. Imperative

*Win the game!

c. As a complement of *persuade*

*John persuaded Fred to win the game.

d. With an agentive adverbial

*Fred deliberately won the game.

In addition, as pointed out previously, a complex eventuality can undergo ECF, expressing itself as a unitary entity, i.e., when the activity has successfully led to an endpoint, there is a transition. Such mechanistic operation enables both accomplishments and achievements to yield conclusive readings with the modification by *in*-adverbials, as given in (3a) and (3b). In both examples, the adverbial *in three minutes* makes reference to the culmination point, denoting that a transition has taken place during the time interval (see section 2.4.3.1 of Chapter 2 for more detailed discussions).

(3) a. Accomplishment

Harry drew a picture in three minutes. Conclusive reading

b. Achievement

Harry won the game in three minutes. Conclusive reading

In modern Chinese, when a sentence contains two verbs (e.g., V_1 and V_2), these two verbs can be represented in three different ways. First, in resultative verb constructions (thereafter, RVCs), V_1 and V_2 should be adjacent to each other, as exemplified in (4). Second, in serial verb constructions (thereafter, SVCs), V_1 and V_2 cannot be adjacent to each other, as exemplified in (5). Third, in directional verb constructions (thereafter, DVCs), V_1 and V_2 can be optionally adjacent to each other, as exemplified in (6).²

² There are different types of SVCs and DVCs in modern Chinese. In the present work, I only discuss the SVCs with a cause-purpose relationship, and the DVCs with two verbs that have alternative word orders, with the goal of showing the different semantic properties associated with them.

(4) RVCs: V_1 and V_2 should be adjacent to each other

- a. Ta xue hui Fawen le.
 he study know French LE
 'He learned French.'
- b. *Ta xue Fawen hui le.
 he study French know LE

(5) SVCs: V_1 and V_2 cannot be adjacent to each other

- a. Ta dao jiu he.
 he pour wine drink
 'He poured wine to drink.'
- b. *Ta dao he jiu.
 he buy drink wine

(6) DVCs: V_1 and V_2 can be optionally adjacent to each other

- a. Ta na le yi ben shu lai.³
 he take LE one Cl. book come
 'He brought a book here (The book may or may not be here now).'
- b. Ta na lai le yi ben shu.
 he take come LE one Cl. book
 'He brought a book here (The book is here now).'

³ Note that the sentence, as given in (i), can be treated either as a DVC or as an SVC. When it is treated as a DVC, the second verb *lai* 'come' is a deictic marker, indicating the movement toward a deictic center, whereas when it is treated as an SVC, the second verb *lai* 'come' is a full-fledged verb, representing the second independent subevent. The interpretations are shown in (a) and (b), respectively. In the present work, when it is mentioned that the two verbs of a DVC can be optionally adjacent to each other, I refer to the interpretation in (a) only.

- (i) Ta na le yi ben shu lai.
 he take LE one Cl. book come
 (a) 'He brought a book here.' (DVC)
 (a) 'He took a book and came here.' (SVC)

The RVC, as given in (4a), is composed of two lexical verbs, in which the first verb (V₁) such as *xue* 'study' denotes the *cause*, while the second (V₂) such as *hui* 'know' designates the *result*. In general, the first verb tends to be an activity verb, whereas the second tends to be a state verb. Syntactically, the two lexical verbs of an RVC must be placed next to each other; if they do not occur adjacently, the sentences will be ungrammatical, as in (4b). In contrast, the SVC given in (5a) is also composed of two lexical verbs, which are used to represent two independent events. That is, the first event *dao* 'pour' is done for the purpose of achieving the second event *he* 'drink'. In this kind of construction, the two verbs cannot occur adjacently. If they do, the sentence will become ungrammatical, as shown in (5b).

In the DVCs, as given in (6), the first verb *na* 'take' refers to a displacement of the direct object, and the second verb *lai* 'come', which is grammaticalized into a deictic marker, signals that the displacement is toward the speaker of the sentence.⁴ As pointed out by Payne (1997: 307), the English verb *bring* is divisible into two components: (a) the picking up or taking of an object, and (b) the movement toward a deictic center. However, in Chinese, this complex concept is embodied in a DVC rather than encoded in a single lexicon. In Chinese DVCs, the two verbs allow themselves either to be separated, with the direct object of the verb such as *yi ben shu* (one Cl. book) 'a book' intervening

⁴ Heine (1993: 91) lists eight distinct possible grammaticalization outcomes for verbs whose meaning translates as 'come': (a) a marker of future tense, (b) a marker of near past tense, (c) a venitive derivative extension, (d) an ingressive/resultative marker, (e) a marker of relative closeness to the point of reference, (f) a marker of motion away from point of reference, (g) an agent marker of passive constructions, and (h) a proximal (deictic) demonstrative.

between the displacement verb (e.g., *na* 'take') and the directional verb (e.g., *lai* 'come'), as in (6a), or to occur adjacently, with the direct object occurring after the second verb, as in (6b).⁵ Note, however, that when the two verbs of a DVC are placed next to each other, the given DVC indicates that the book is already here.

It has been noted that the verbs denoting a cause-result relationship, as in RVCs, must occur adjacently, while the verbs denoting a cause-purpose relationship, as in SVCs, cannot be adjacent to each other. The adjacency requirement of the two verbs in RVCs and the non-adjacency requirement of the verbs in SVCs cannot be violated; otherwise, ungrammatical sentences will result. However, as pointed out by Li and Thompson (1976), RVCs with the two verbs adjacent to each other in modern Chinese developed from the surface form of SVC, in which the two verbs are separated from each other. For example, the resultative expressions, which are taken from various periods of Chinese literature (e.g. Archaic Chinese and Medieval Chinese), appeared as the surface form of SVC, allowing an NP argument such as *zhi* 'him', *bo* 'cypress', *ru kou* 'your mouth', or *yi* 'clothes' to intervene between the two verbs. The examples are as shown in (7a)–(7d).

- (7) a. You she zhi si. (Zuo zhuan, 4th c. B.C.)
 then shoot him dead
 'Then, (he) shot him dead.'

⁵ In addition to the DVCs such as *na-lai* 'take-come' (bring), in which the first verb is a displacement verb that signals a displacement of the direct object, and the second signals that the displacement is toward the speaker of the sentence, other DVCs such as *na-chu-lai* 'take-exit-come' involve one more additional verb such as *chu* 'exit', denoting a directional meaning, see Lu (1977), Tang (1992b: 99-103), and Liu (1998) for discussions. The DVCs with three verbs are not discussed in the present work.

- b. Guo zhen bo fensui. (Shi shuo xin yu, 5th c. A.D.)
Really shake cypress break.to.pieces
'(Lightning) really shook the cypress tree into pieces.'
- c. Dang da ru kou po. (Taiping guangji, 7th c. A.D.)
Will hit you mouth broken
'I will break your mouth by hitting it.'
- d. Shi jiao gou yi po. (Tang poem by Du Fu, 8th c. A.D.)
rock corner hook clothes broken
'The rock corner hooked the clothes and as a result the clothes were torn.'

According to Li and Thompson (1976: 480), it was during the Tang dynasty (between the seventh and ninth centuries A.D.) that occurrences of the RVC with two verbs adjacent to each other were sufficiently numerous to establish it as a class of verbs (Ohta 1958; Shimura 1984; Mei 1991, 1994), but it was after the ninth century A.D. that the characteristics of the modern RVCs emerged, and the number and the possible types of RVCs increased considerably.

The historical fact that the modern Chinese RVCs, in which the two verbs must occur adjacently, originated from the surface form of SVC, in which an NP argument could appear between the two verbs, has brought up an important question: what caused resultative expressions to change from one surface form with two verbs separated from each other (e.g., NP₁+V₁+NP₂+V₂) to another form with two verbs adjacent to each other (e.g., NP₁+V₁+V₂+NP₂)? In other words, why didn't purposive expressions or directional expressions undergo the same path of grammaticalization? The answers to this question constitute the main parts of this chapter. To achieve these goals, the rest of this chapter is divided into two major parts. Section 4.2 examines RVCs, SVCs, and DVCs in Chinese, and their linguistic properties in terms of EP and ECF in order to find out whether the

two subevents of a given construction can conspire to yield an effect (i.e., the operation of ECF), or whether the activity subevent of a given construction is responsible for some range of grammatical phenomena exhibited by that construction (i.e., the operation of EP). It holds that the properties associated with EP and ECF are relevant to the grammaticalization of RVCs in Chinese. Section 4.3 provides an account of the development of RVCs in Chinese, arguing that the direction of the grammatical change of RVCs was motivated by semantic structure, more precisely, event structure, rather than by the SVO to SOV word-order drift hypothesis, as Li and Thompson (1976) have suggested. Section 4.4 is the concluding remarks.

4.2 Linguistic properties of RVCs, SVCs, and DVCs in Chinese

4.2.1 Grammatical phenomena associated with EP and ECF

As already mentioned, both RVCs and SVCs, as in (8) and (9), involve two verbs expressing two subevents, e.g., *xue* 'study' and *hui* 'know' in RVC, while *dao* 'pour' and *he* 'drink' in SVC. Note that the first subevent in RVC and SVC (e.g., *xue* 'study' in RVC and *dao* 'pour' in SVC) is an activity verb, which can independently occur in the syntactic environments such as in the imperfective, as an imperative, as a complement of *bi* 'force' or *quan* 'persuade', and with an agentive adverbial such as *zhuanxinde* 'attentively' or *guyi* 'purposely', as shown in (10) and (11), respectively.

(8) RVC

Ta	xue	hui	Fawen	le.
he	study	know	French	LE
'He learned French.'				

(9) SVC

Ta zai dao jiu he.
 he ZAI pour wine drink
 'He is pouring wine to drink.'

(10)a. Imperfective

Ta zai xue Fawen.
 he ZAI study French
 'He is studying French.'

b. Imperative

Gankuai xue Fawen!
 Quickly study French
 'Study French quickly!'

c. As a complement of *bi* 'force'

Women bi ta xue Fawen.
 we force him study French
 'We forced him to study French.'

d. With an agentive adverbial

Ta hen zhuanxinde xue Fawen.
 he very attentively study French
 'He studies French attentively.'

(11)a. Imperfective

Ta zai dao jiu.
 he ZAI pour wine
 'He is pouring wine.'

b. Imperative

Gankuai dao jiu!
 Quickly pour wine
 'Pour wine quickly!'

- c. As a complement of *bi* 'force'

Women bi ta dao jiu.
 we force him pour wine
 'He forced him to pour wine.'

- d. With an agentive adverbial

Ta hen zhuanxinde dao jiu.
 he very attentively pour wine
 'He is pouring wine attentively.'

Interestingly, when the activity verb *xue* 'study' participates in an RVC as the first subevent, the RVC cannot occur as an imperfective, as an imperative, as a complement of *bi* 'force', and with an agentive adverbial such as *zhuanxinde* 'attentively', as shown in (12).

(12) RVCs

- a. Imperfective

*Ta zai xue hui Fawen.
 he ZAI study know French

- b. Imperative

*Xue hui Fawen!
 study know French

- c. As a complement of *bi* 'force'

?Women bi ta xue hui Fawen.
 we force him study know French

- d. With an agentive adverbial

*Ta zhuanxinde xue hui Fawen.
 he attentively study know French

These phenomena suggest that RVCs do not undergo EP (i.e., the activity subevent does not project as the aspectual head), and that we cannot conceptually zoom in on the activity component of an RVC. Therefore, the RVC does not involve the properties denoted by its activity subevent.

In contrast, when the activity verb *dao* 'pour' participates in an SVC as the first subevent, the SVC can occur in all of those syntactic environments where an activity eventuality can occur, as shown in (13). These facts suggest that SVCs can undergo EP (i.e., the activity subevent is able to project as the aspectual head), and that we can conceptually zoom in only on the activity component of an SVC. Therefore, the SVC has the properties denoted by its activity subevent.

(13) SVCs

a. Imperfective

Ta zai dao jiu he.
 he ZAI pour wine drink
 'He is pouring wine to drink.'

b. Imperative

Dao jiu he!
 pour wine drink
 'Pour wine to drink!'

c. As a complement of *bi* 'force'

Women bi ta dao jiu he.
 we force him pour wine drink
 'He forced him to pour wine to drink.'

d. With an agentive adverbial

Ta hen zhuanxinde dao jiu he.
 he very attentively pour wine drink
 'He is attentively pouring wine to drink.'

DVCs have dual properties, depending on the distribution of the second verb. For example, the verb *na* 'take' alone is an activity verb, which can occur in the imperfective, as an imperative, as a complement of *bi* 'force', and with an agentive adverbial, as illustrated in (14). But when this activity verb occurs in a DVC as the first component, and it is adjacent to the second verb, the DVC, like an RVC, does not undergo EP; therefore, it cannot occur in the imperfective, as an imperative, as a complement of *bi* 'force', and with an agentive adverbial, as shown in (15). But when V_1 and V_2 are not adjacent to each other, the DVC, like an SVC, can undergo EP, which allows its first single subevent (i.e., the activity subevent) to project as the aspectual head; therefore, it can occur in the syntactic environments where an activity reading is presupposed, as exemplified in (16). Note, however, that the DVC, as given in (16a), cannot appear in the imperfective, though its two component verbs occur separately. It is possible that the deictic verb *lai* 'come' is used to signal that the displacement is toward the speaker of the sentence. Because the deictic verb *lai* 'come' is treated as a marker of relative closeness to the point of reference, it implies the imperfective meaning. Therefore, its concurrence with imperfective form is not necessary.

(14)a. Imperfective

Ta zai na yi ben shu.
 he ZAI take one Cl. book
 'He is taking a book.'

b. Imperative

Na nei ben shu!
 take that Cl. book
 'Take that book!'

c. As a complement of *bi* 'force'

Women bi ta na nei ben shu.
 we force him take that Cl. book
 'We forced him to take that book.'

d. With an agentive adverbial

Ta guyi na nei ben shu.
 he purposely take that Cl. book
 'He purposely took that book.'

(15) DVCs with V_1 and V_2 adjacent to each other

a. Imperfective

*Ta zai na lai nei ben shu.
 he ZAI take come that Cl. book

b. Imperative

*Na lai nei ben shu!
 take come that Cl. book

c. As a complement of *bi* 'force'

?Women bi ta na lai nei ben shu.
 we force him take come that Cl. book

d. With an agentive adverbial

*Ta guyi na lai nei ben shu.
 he purposely take come that Cl. book

(16) DVCs with V₁ and V₂ not adjacent to each other

a. Imperfective

?Ta zai na nei ben shu lai.
 he ZAI take that Cl. book come

b. Imperative

Na nei ben shu lai!
 take that Cl. book come
 'Bring that book here!'

c. As a complement of *bi* 'force'

Women bi ta na nei ben shu lai.
 we force him take that Cl. book come
 'We forced him to bring that book here.'

d. With an agentive adverbial

Ta guyi na nei ben shu lai.
 he purposely take that Cl. book come
 'He brought that book here on purpose.'

So far, I have examined SVCs, RVCs, and DVCs in terms of EP, and the contrast among these three constructions shows that EP is only associated with a construction where the two verbs are not next to each other. In what follows, I will examine SVCs, RVCs, and DVCs in terms of ECF, respectively, holding that if a given construction can undergo ECF, it can occur with *in*-adverbials such as *zai san nian nei* 'in three years' or *zai san fenzhong nei* 'in three minutes', yielding a conclusive reading (i.e., a transition has taken place during the time interval). The test shows that RVCs can take *in*-adverbials,

whereas SVCs cannot, as shown in (17) and (18). Note, however, that when *in*-adverbials occur with RVCs, the time indicated by the frame adverbial describes how long it takes before the transition (e.g., knowing French) takes place, rather than the time interval before the activity is initiated. It is thus considered as a conclusive reading. The contrast between RVCs and SVCs when associated with *in*-adverbials suggests that RVCs, but not SVCs, can undergo ECF, and that the two subevents of a given construction are considered as a unitary semantic entity.

(17) RVC

Ta zai san nian nei xue hui le Fawen.
 he at three year in study know LE French
 'He studied French and acquired it in three years.'

(18) SVC

- a. ?Ta zai san fenzhong nei dao jiu he.
 he at three minutes in pour wine drink

As previously mentioned, DVCs allow two different patterns: the two verbs can either occur adjacently or occur separately. The *in*-adverbial test shows that DVCs can produce a conclusive reading with *in*-adverbials, no matter whether the two verbs are adjacent to each other, as shown in (19a) and (19b). At first glance, this fact seems to contradict my claim that a construction can undergo ECF when its two verbs are placed next to each other. However, further investigation shows that Chinese has been undergoing historical change: ECF is compatible with a construction where the two verbs are not required to occur adjacently in ancient Chinese, whereas in modern Chinese it is compatible with a construction where the two verbs are required to occur adjacently. The

fact that DVCs can undergo EP when the two verbs occur separately, while they can undergo ECF in both patterns (i.e., the two verbs occur adjacently or separately) reveals a continuum of such historical change.

(19)a. DVCs with V_1 and V_2 adjacent to each other

Ta zai san fenzhong nei na lai le yi ben shu.
 he at three minutes in take come LE one Cl. book
 'He brought a book here in three minutes.'

b. DVCs with V_1 and V_2 not adjacent to each other

Ta zai san fenzhong nei na le yi ben shu lai.
 he at three minutes in take LE one Cl. book come
 'He brought a book here in three minutes.'

4.2.2 Grammatical phenomena associated with temporal structure

There are three temporal relations between the two subevents, e_1 and e_2 , of a complex eventuality. First, two subevents are temporally ordered such that the first completely precedes the second (i.e., a non-overlapping event structure). Second, two subevents are temporally ordered such that the first precedes and overlaps the second (i.e., a partially overlapping event structure). Third, two subevents are completely simultaneous (i.e., a fully overlapping event structure) (cf. Pustejovsky 1995; Hwang, to appear). In the following, I will demonstrate that temporal relations of the two subevents in a complex eventuality have grammatical effects in Chinese, e.g., they have an impact on the grammaticality of conjoined sentences and on adverbial scope. For example, because both subevents of an RVC or an SVC are represented by lexical verbs, either

verb of an RVC, as in (20a), or an SVC, as in (21a), can be used to form an independent sentence, as exemplified in (20b) and (20c), and (21b) and (21c), respectively.

- (20)a. Ta xue hui Fawen le.
 he study know French LE
 'He learned French.'
- b. Ta xue le Fawen.
 he study LE French
 'He studied French.'
- c. Ta hui Fawen.
 he know French
 'He knows French.'
- (21)a. Ta changchang dao jiu he.
 he often pour wine drink
 'He often pours wine to drink.'
- b. Ta zai dao jiu.
 he ZAI pour wine
 'He is pouring wine.'
- c. Ta he le jiu.
 he drink LE wine
 'He drank wine.'

Note that both verbs in RVCs and SVCs can occur in separate clauses with a conjunction such as *buguo/keshi* 'but'. However, they have different results: RVCs allow their two verbs to occur in separate clauses only when the first verb also appears in the second clause, as shown in (22b), whereas SVCs allow the two verbs to occur in separate clauses only when the first verb does not appear in the second clause, as given in (23b).

- (22)a. Ta xue hui Fawen le.
 he study know French LE
 'He learned French.'

- b. Ta xue le Fawen, buguo meiyou xue hui.
 he study LE French but do not study know
 'He studied French, but did not learn it'
- c. *Ta xue le Fawen, buguo meiyou hui.
 he study LE French but do not know
- (23)a. Ta changchang dao jiu he.
 he often pour wine drink
 'He often pours wine to drink.'
- b. Ta dao le jiu, buguo meiyou he.
 he pour LE wine but do not drink
 'He poured wine, but he did not drink it.'
- c. *Ta dao le jiu, buguo meiyou dao (jiu) he.
 he pour LE wine but do not pour wine drink

Recall that a DVC has two possible surface forms, with V_2 occurring either after the direct object of V_1 or immediately after V_1 , as repeated in (24a) and (24b). Like an RVC and an SVC, a DVC is also composed of two verbs, but unlike an RVC and an SVC, it only allows V_1 to form an independent sentence because V_1 is a displacement verb and has a full-fledged verbal property, as (25a) shows. However, it does not permit V_2 to occur in an independent sentence because V_2 , which denotes the direction of the displacement, does not have a lexical meaning, as shown in (25b).

- (24)a. Ta na le yi ben shu lai.
 he take LE one Cl. book come
 'He brought a book here.'
- b. Ta na lai le yi ben shu.
 he take come LE one Cl. book
 'He brought a book here.'

(25)a. Ta na le yi ben shu.
 he take LE one Cl. book
 'He took a book.'

b. ?Shu lai le.⁶
 Book come LE
 'That book came (toward the speaker).'

Like an RVC, a DVC does not allow its two verbs to occur in separate clauses unless the first verb also appears in the second clause, as given in (26a). If the second clause does not also involve the first verb, the sentence is ungrammatical, as given in (26b).

(26)a. Lisi na le yi ben shu , buguo meiyou na lai.
 Lisi take LE one Cl. book but do not take come
 'Lisi took a book, but he did not bring it here.'

b. *Lisi na le yi ben shu , buguo meiyou lai.⁷
 Lisi take LE one Cl. book but do not come
 'Lisi took a book, but he did not bring it here.'

As has been pointed out, an SVC allows its two verbs to occur in separate clauses, whereas an RVC and a DVC do not unless the first verb also appears in the second clause. Why is there such contrast among RVCs, SVCs, and DVCs when associated with conjunctions such as *buguo/keshi* 'but'? I am proposing that the idiosyncratic behaviors

⁶ Though the verb *lai* is often used to refer to the movement toward a deictic center, it is sometimes used as a lexical verb, denoting the meaning "come, arrive". If the sentence in (25b) means that the book has come/arrived, the sentence is both grammatically and pragmatically acceptable.

⁷ This sentence is grammatical only when treated as an SVC, designating that 'He took a book, but he did not come'.

of these constructions associated with a conjunction such as *buguo/keshi* 'but' can be accounted for in terms of temporal structure, i.e., the overlapping or non-overlapping of the two subevents in a given construction determines or motivates whether the first verb should or should not appear in the second clause of a conjoined sentence.

According to Tai (1985: 51), when two events (e.g., e_1 and e_2) express consecutive actions in Chinese, they are ordered according to the temporal order of the corresponding events in the conceptual world. For example, in (27a), Lisi must get home before he can have dinner, thus *hui jia* 'to go home' (e_1) must precede *chi wanfan* 'to have dinner' (e_2). Tai (1985) argues that (27a) is a grammatical sentence because it obeys the principle of temporal sequence, while (27b) is not a grammatical sentence because the principle is violated (see Newmeyer 1998: 114-123, 138 for related discussions).

- (27)a. Lisi hui jia chi wanfan.
 Lisi return home eat dinner
 'Lisi went back home and ate/for dinner.'
- b. *Lisi chi wanfan hui jia.
 Lisi eat dinner return home

In addition, Hwang (1998, to appear) examines different types of SVCs in Chinese, noting that different types of SVCs have different consequences when they occur with adverbials occurring right after the subject. For example, adverbials such as *like* 'immediately' or *gaoxingde* 'happily' only modify the first event (i.e., V_1) in (28), while they modify both events (i.e., V_1 and V_2) in both (29) and (30).

(28) Non-overlapping event structure

Zhangsan like e_1 [dao tushuguan] e_2 [na shu].
 Zhangsan immediately reach library take book
 'Zhangsan went to the library immediately to get books.'

(29) Partially overlapping event structure

Zhangsan like e_1 [na shu] e_2 [dao le tushuguan].
 Zhangsan immediately take book reach LE library
 'Zhangsan immediately went to the library carrying the book.'

(30) Fully overlapping event structure

Zhangsan gaoxingde e_1 [tiao zhe wu] e_2 [chang ge].
 Zhangsan happily dance Dur dance sing song
 'Zhangsan happily sings while dancing.'


Hwang (1998, to appear) argues that the different interpretations of examples (28)–(30) associated with adverbials can be accounted for in terms of temporal structure, e.g., whether the event structure is non-overlapping, partially overlapping, or fully overlapping. For example, example (28) is a non-overlapping event structure because the timing of these two events has clear-cut boundaries, e.g., Zhangsan must go to the library before he can get the books, in which the second event 'to get the books' occurs when the first event 'to go to the library' is finished. Because there is no overlap between these two events, adverbials such as *like* 'immediately' can only modify the first event.

However, in (29), the second event *dao tushuguan* 'reach library' occurs when the first event *na* 'take' is still going on. That is, when Zhangsan arrives at the library, he is still carrying the book. There is a partial overlap between these two events, thus, a partially overlapping event structure. In (30), the dancing and the singing are performed at the same time; therefore, there is a full overlap between the two events, thus a fully overlapping event structure. Because the timing of these sequential events cannot be clearly separated in both (29) and (30), adverbials modify both two events; they cannot be used to modify only the first event.

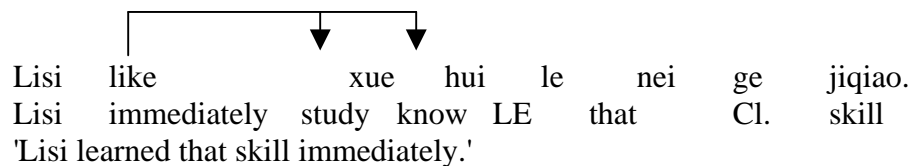
It is suggested that Hwang's (1998, to appear) temporal structure can be further employed to account for why SVCs, RVCs, and DVCs, as in (31)–(33), exhibit different results when they are associated with adverbials such as *like* 'immediately'. For example, the adverbial *like* 'immediately' can only modify the first event in SVCs with a cause-purpose reading, as shown in (31), whereas it modifies both events in RVCs as well as in DVCs, as shown in (32) and (33).

(31) SVC (Non-overlapping event structure)

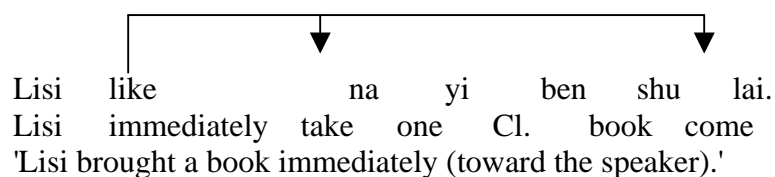
Lisi	like	dao	jiu	he.
Lisi	immediately	pour	wine	drink
'Lisi immediately poured wine to drink.'				



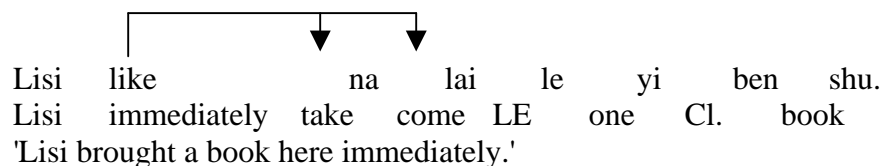
(32) RVC (Partially overlapping event structure)



(33)a. DVC with verbs occurring separately (Fully overlapping event structure)



b. DVC with verbs occurring adjacently (Fully overlapping event structure)



In (31), we know that we should pour the wine (into a glass) first before we can drink it. The second event *he* 'drink' occurs when the first event *dao* 'pour' is finished. Because there is no overlap between these two events, the adverbial *like* 'immediately' has scope only over the first event. The example in (32) is an RVC, in which the action stage and the result stage do not emerge in a clear-cut sequence but have an overlap in time (Hsieh 1989a). In such construction, there is a period that Lisi is studying and becoming cognizant of the skill at the same time during the process of studying. Because there is a partial overlap between these two events, the adverbial *like* 'immediately' has

scope over both events. In the DVCs, as in (33a) and (33b), the second verb *lai* is used to indicate the direction of the displacement expressed by the first verb; it fully overlaps in time with the first event. Because the two events occur simultaneously without a clear-cut temporal order, the adverbial *like* 'immediately' can have scope over both events.

Having discussed the temporal structure and its effects on adverbial modification, let us now turn to the question why SVCs allow the two verbs to appear in separate clauses with a conjunction such as *buguo/keshi* 'but', while RVCs and DVCs do not. It is interesting to find that Hwang's (1998, to appear) analysis of temporal structure, overlapping in time between two events of a construction, plays an important role in determining whether the two verbs of a construction are separable. That is, the two verbs of a construction can occur in separate clauses with a conjunction such as *buguo/keshi* 'but' only when there is no overlap in time between the two subevents of a construction. If there is a partial or full overlap in time between two subevents in question, then the verbs representing these two subevents are not allowed to appear in two different clauses.

As pointed out previously, in the SVC with a cause-purpose reading, as in (34a), Lisi must pour the wine before he can drink it. The second event *he* 'drink' occurs when the first event *dao* 'pour' is finished. There is no overlap between these two subevents; therefore, the appearance of the two verbs in two different clauses is possible. Because the two subevents do not overlap in time in SVCs, the first verb is not required to show up again in the second clause. The contrast is given in (34b) and (34c).

(34) SVCs

- a. Lisi changchang dao jiu he.
Lisi often pour wine drink
'Lisi often pours wine to drink.'
- b. Lisi dao le jiu, buguo meiyou he.
Lisi pour LE wine but do not drink
'Lisi poured wine, but he did not drink it.'
- c. *Lisi dao le jiu, buguo meiyou dao (jiu) he.
Lisi pour LE wine but do not pour wine drink

As for an RVC, as given in (35a), the first subevent denotes the action, while the second denotes the result of the action being performed. The action stage and the result stage do not emerge in a clear-cut sequence but overlap in time. Because there is a partial overlap between the two subevents of an RVC, the occurrence of the two verbs in separate clauses is not allowed, as (35b) shows, unless the first verb also shows up in the second clause, as (35c) illustrates.

(35) RVCs

- a. Lisi xue hui Fawen le.
Lisi study know French LE
'Lisi learned French.'
- b. *Lisi xue le Fawen, buguo meiyou hui.
Lisi study LE French but do not know
- c. Lisi xue le Fawen, buguo meiyou xue hui.
Lisi study LE French but do not study know
'Lisi studied French, but did not acquire it'

As for DVCs, as given in (36a) and (36b), the two subevents occur simultaneously without a clear-cut temporal order: the first subevent is used to designate

the displacement, while the second subevent *lai* is used to indicate the direction of the displacement expressed by the first subevent. Because there is a full overlap between the two subevents, the verbs expressing these two subevents cannot appear in separate clauses, as illustrated in (36c). To make the sentence grammatical, the first verb should also be represented in the second clause, as (36d) shows.

(36) DVCs

- a. Lisi na le yi ben shu lai.
 Lisi take LE one Cl. book come
 'Lisi took a book and was coming here (The book may not arrive yet).'
- b. Lisi na lai le yi ben shu.
 Lisi take come LE one Cl. book
 'Lisi brought a book.'
- c. *Lisi na le yi ben shu , buguo meiyou lai. (= (26b))
 Lisi take LE one Cl. book but do not come
- d. Lisi na le yi ben shu , buguo meiyou na lai.
 Lisi take LE one Cl. book but do not take come
 'Lisi took a book, but he did not bring it here.'

4.2.3 Summary

I have examined three major constructions in Chinese: RVCs, SVCs, and DVCs; their respective linguistic properties can be summarized in table 4.1. (DVC_{S_a} indicates that the two verbs in a given construction are not adjacent to each other, whereas DVC_{S_b} indicates that the two verbs in a given construction are adjacent to each other.)

	RVCs	SVCs	DVCs_a	DVCs_b
Adjacency requirement	Yes	No	No	Yes
Temporal structure of e_1 and e_2	Partial overlap	No overlap	Full overlap	Full overlap
Occurrence of V_1 and V_2 in separate clauses	No	Yes	No	No
Adverbial scope	$V_1 \& V_2$	V_1	$V_1 \& V_2$	$V_1 \& V_2$
Imperfective	No	Yes	No	No
Imperative	No	Yes	Yes	No
As complements of <i>bi</i> 'force'	No	Yes	Yes	No
With agentive adverbials	No	Yes	Yes	No
With <i>in</i> -adverbials	Conclusive reading	---	Conclusive reading	Conclusive reading

Table 4.1: Linguistic properties of RVCs, SVCs, and DVCs

As shown in table 4.1, RVCs, SVCs, and DVCs differ from each other in that they have different consequences associated with adverbials such as *like* 'immediately'. The idiosyncratic behaviors of these constructions are suggested to be correlated with temporal structure. In addition, RVCs, SVCs, and DVCs_{a&b} have different results when their two verbs are separated in different clauses with a conjunction such as *buguo/keshi* 'but'. Their two verbs are allowed to occur in two separate clauses with a 'but' conjunction only when the two subevents do not overlap in time either completely or partially, as in SVCs. If the two subevents of a given construction have a partial or full overlap in time, then the verbs representing these two subevents are not permitted to occur in separate clauses with a 'but' conjunction, unless the first verb also shows up in the second clause, as in RVCs and DVCs.

Moreover, we can group RVCs, SVCs, and DVCs_{a&b} into two different syntactic patterns: one pattern with its two verbs adjacent to each other, e.g., RVCs and DVCs_b, and the other pattern with its two verbs separated from each other, e.g., SVCs and DVCs_a. It is noted that only the latter pattern can occur in the imperfective, as an imperative, as a complement of verbs such as *bi* 'force', and with an agentive adverbial. It is therefore proposed that EP is only associated with a construction where the two verbs of a given construction occur separately in Chinese.

Finally, RVCs and DVCs_b, in which the two verbs occur adjacently, are compatible with ECF, but not EP; therefore, they are able to yield a conclusive reading when modified by *in*-adverbials, but they are unable to occur in the syntactic environments where an activity can occur. It is thus suggested that ECF is usually associated with a construction where the two verbs occur adjacently in modern Chinese.

In the following section, I will discuss how Chinese RVCs developed from a surface form of SVC and explain how the two mechanisms (i.e., EP and ECF) are related to such historical change.

4.3 An account for the development of Chinese RVCs

4.3.1 The relation between form and meaning

I have drawn attention to systematic differences in meaning between sentences with the same lexical items in different constructions. For example, in a DVC, if V₁ and V₂, representing two subevents, occur separately, the construction is allowed to occur in syntactic environments that require an activity reading. But if the two verbs expressing two subevents occur adjacently, the construction is not allowed to occur in any of those

syntactic environments. These phenomena are not restricted to constructions with directional verbs such as *lai* 'come' and *qu* 'go'. Constructions with other lexical verbs can show the same contrasts. For instance, in examples (37) and (38), there are systematic differences in meaning between sentences with the same lexical verbs, e.g., *dou-xiao* 'amuse-laugh' in (37) and *hong-shui* 'coax-sleep' in (38), depending on whether the two verbs are adjacent or not.

(37)a. RVC

Ta yijing dou xiao le nei ge xiaohai.
 He already amuse laugh LE that Cl child
 'He amused the child and as a result the child laughed.'

b. SVC

Ta zai dou nei ge xiaohai xiao.
 He ZAI amuse that Cl. child laugh
 'He is amusing the child in order to make him laugh.'

(38)a. RVC

Ta yijing hong shui le nei ge xiaohai.
 He already coax sleep LE that Cl. child
 'He coaxed the child and as a result the child slept.'

b. SVC

Ta zai hong nei ge xiaohai shui.
 He ZAI coax that Cl. child sleep
 'He is coaxing the child in order to make him sleep.'

The construction, as given in (37a) and (38a), in which the two verbs occur adjacently, requires the proposition to express a cause-result relationship (e.g., an RVC), whereas the construction, as given in (37b) and (38b), in which the two verbs do not

occur adjacently, requires the proposition to denote a cause-purpose relationship (e.g., an SVC). Take the verbs *dou* 'amuse' and *xiao* 'laugh' for example. The construction with these lexical verbs separated from each other can occur in the imperfective, as an imperative, as a complement of *bi* 'force', and with an agentive adverbial such as *guyi* 'purposely', as shown in (39). If the verbs of a given construction occur next to each other, the construction turns out to be ungrammatical in the aforementioned syntactic environments, as shown in (40).

(39)a. Imperfective

Ta zai dou nei ge xiaohai xiao.
 He ZAI amuse that Cl. child laugh
 'He is amusing the child in order to make him laugh.'

b. Imperative

Dou nei ge xiaohai xiao!
 Amuse that Cl. child laugh
 'Amuse the child to make him laugh!'

c. As a complement of *bi* 'force'

Women bi ta dou nei ge xiaohai xiao.
 We force him amuse that Cl. child laugh
 'We forced him to amuse the child to make him laugh.'

d. With an agentive adverbial

Ta guyi dou nei ge xiaohai xiao.
 He purposely amuse that Cl. child laugh
 'He purposely amused the child in order to make him laugh.'

(40)a. Imperfective

*Ta zai dou xiao nei ge xiaohai.
 He ZAI amuse laugh that Cl. child

b. Imperative

*Dou xiao nei ge xiaohai!
Amuse laugh that Cl child

c. As a complement of *bi* 'force'

?Women bi ta dou xiao nei ge xiaohai.
We force him amuse laugh that Cl child

d. With an agentive adverbial

*Ta guyi dou xiao nei ge xiaohai.
He purposely amuse laugh that Cl child

Recall that it is proposed in the present work that EP applies when the two verbs of a given construction are not adjacent to each other, whereas ECF usually applies when the two verbs of a given construction are adjacent to each other. This in turn allows us to show why there is such a contrast between two different syntactic patterns, and at the same time exhibit the interrelationships between SVCs, RVCs, and DVCs.

Why does ECF usually apply where the two verbs of a construction occur adjacently in Chinese? According to Behaghel (1932), words that belong together mentally are placed close together syntactically; conversely, words that appear next to each other in sentences are usually related conceptually (see Haiman 1985b: 147, 122-128, and MacWhinney 1999: 404 for further discussions). That is, all syntactic systems tend to favor adjacency of related elements in linear strings, and to shun discontinuity.

In addition, a number of studies have proposed that adjacency plays a key role in constraining certain syntactic processes—for example, Stowell's (1981) Case assignment under adjacency, which says that the Case assigner and the Case assignee should be

adjacent to each other.⁸ Though Chomsky (1995) explicitly claims that the general framework of the Minimalist Program has no natural place for a condition on adjacency, Lasnik (2000: 192) still retains this condition as a sort of "interface" relation between syntax and morphology.⁹

Because ECF requires that the two verbs of a given construction (e.g., RVCs) be placed next to each other, I propose that ECF operates under an adjacency condition, which is called Event Adjacency Condition (EAC) in the present work. The definition of EAC is given in (41).

⁸ As suggested in Stowell's (1981) Case assignment, individual languages may choose to add an adjacency condition on Case assignment, which requires the Case assigner and the Case assignee to be adjacent to each other. For example, in English, a head category has to be adjacent to an NP to be able to assign it Case, e.g., *John frequently makes mistakes*. If the condition is violated, the sentence is ungrammatical, e.g., **John makes frequently mistakes*.

⁹ To explain why *John did not leave* is grammatical while *John not left* is not, Lasnik (2000), integrating both affixation and checking into the theory, proposes that the derivation involves Affix Hopping, arguing that Affix Hopping demands an adjacency condition. The sentence *John not left* is ungrammatical because the affix (e.g., *-ed*) in I (i.e., Inflection) position is not adjacent to its potential host, *leave* (i.e., there is a negation between the affix and the bare verb). To salvage the stranded affix, Lasnik follows the way Chomsky (1957) did in *Syntactic Structures* by spelling it out as a form of *did* (e.g., *John did not leave*).

(41) **Event Adjacency Condition (EAC):**

No elements (except for *bu* 'not' and *de* 'can') can intervene between predicates designating a *cause-result* relationship.

It has been shown that ECF yields a structure that is not merely an aggregation of two subevents; rather, it views the two subevents as a whole with its own properties not shared by either of the two subevents (e.g., transition). This observation complies with Goldberg's (1995) assumption that the constructions themselves carry meaning independently of the words in a sentence, and that the meaning of an expression is the result of integrating the meanings of the lexical items into the meanings of constructions.¹⁰ For more details about the relationship between the meaning of a larger construction as a whole and the meanings of the parts of the construction, see Langacker (1987), Lakoff (1987), Goldberg (1995, 1997), Fillmore, Kay, and O'Connor (1988), Kay and Fillmore (1999).

However, if constructions themselves carry meaning, then where do the meanings of constructions come from? According to Goldberg (1995: 3), the constructions are directly associated with conceptual structures (*argument structure constructions* in Goldberg's term). For example, RVCs such as *She kissed him unconscious* are associated with the conceptual structure X CAUSES Y to BECOME Z. Because the meanings of

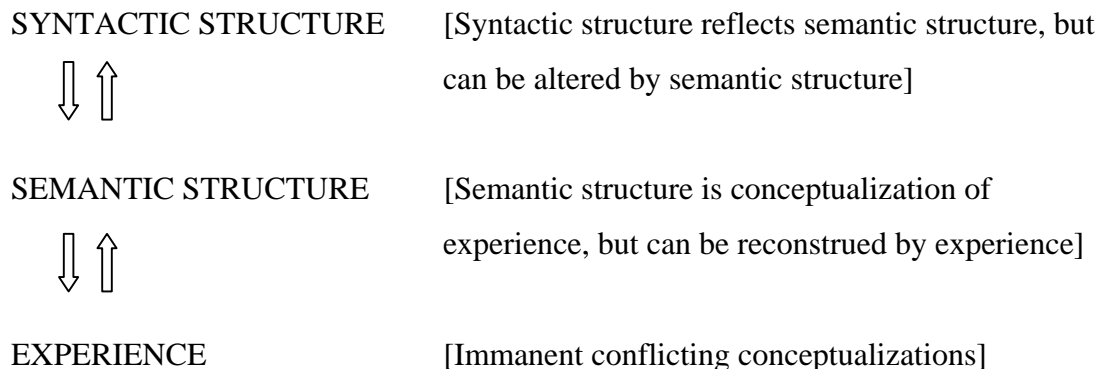
¹⁰ As pointed out by Croft (1999), though there is some variation in what constitutes "construction grammar" in the work such as Langacker (1987), Fillmore and Kay (1993), and Goldberg (1995), among others, all cognitive linguistic approaches to constructions appear to agree that constructions are independent grammatical entities; they exist in the mind as integrated wholes that are greater than the sum of their component categories and relations.

constructions also depend on conceptual structures, the linking of meaning (i.e., semantic structure) with form (i.e., syntactic structure) can be straightforwardly constructed. Croft (1990b: 164) characterizes the close relationship between form and meaning as one of iconicity, which is defined as follows:¹¹

The structure of the language reflects in some way the structure of experience, that is to say, the structure of the world, including (in most functionalists' view) the perspective imposed on the world by the speaker.

Croft (1999: 77, 87) further explains that "there is a parallelism between syntactic structure and semantic structure, and that semantic structure determines or, better, motivates syntactic structure." That is, syntactic structure reflects semantic structure, whereas the semantic structure corresponding to a syntactic construction represents a conceptualization of experience. The multidimensional character of experience can lead to a reconstrual of the semantic structure, and the reconstrual of semantic structure leads in turn to the alteration of the formal syntactic structure (for different views, see Sasse 1991). Croft's (1999: 88) two-way interplay between form, meaning, and experience is summarily illustrated in (42).

¹¹ For works dealing with iconicity in language, see Haiman (1980, 1983, 1985a, 1985b), Bolinger (1982), Verhaar (1985), Dik (1989), Givon (1990, 1991), Croft (1990b), Simone (1995), among others.

(42) **The interplay between form, meaning and experience**

Why does semantic structure have an influence on syntactic structure? According to Clark (1996), one of the most conspicuous functions of language is that it is used for communicating conceptual structures that have been coordinated through speaker-hearer interaction and thus conventionalized in a speech community. The conceptual structures are mediated for us through language; thus, language is not just an instrument of communication but also of human cognition. Because language is about communicating conceptualization, it is no wonder that the latter shapes the former. That is, syntactic structure is adapted to conceptualization in the proper way, and thus conceptualization will shape it to its needs. Therefore, the way we see the world and think about it clearly influences the way language is (see Tomasello 1999: 478-480 for more discussions on the view of language as one particular manifestation of human cognition).

4.3.2 Grammaticalization of RVCs in Chinese

In this section, I will discuss how Chinese RVCs developed from a surface form of SVC and explain how the two mechanisms (i.e., EP and ECF) are related to this

The diachronic process may be represented by the following schema, in which V_1 and V_2 are treated as a complex verb.

(45) S V O V \Rightarrow S ba O $v[V_1V_2]$

However, if the word order change from SVO to SOV turns out to be a determining factor in the direction of the change of the modern RVCs in Chinese, as Li and Thompson (1976) have claimed, then the occurrence of the surface form $SVO_v[V_1V_2]$ should be impossible, because it reinforces the word order of SVO. But, as discussed in section 3.4.1 of Chapter 3, some RVCs have corresponding *Ba*-constructions, while others have corresponding Verb-copying constructions. For example, the Chinese RVC with the verb complex *qiao-po* 'hit-broken', as shown in (46a), has a corresponding *Ba*-construction, as shown in (46b), whereas the Chinese RVC with the verb complex *chi-bao* 'eat-full', as shown in (47a), has a corresponding Verb-copying construction, as shown in (47b). The possibility of the RVC with the verb complex *chi-bao* 'eat-full' to occur in the Verb-copying construction (e.g., $SVO_v[V_1V_2]$) contradicts the claim made by Li and Thompson (1974a, 1974b) that the development of RVC with its two verbs adjacent to each other is to eliminate the word order SVO(V).

(46)a. Ta qiao po le wan.
He hit broken LE bowl
'He broke the bowl.'

b. *Ba*-construction

Ta ba wan qiao po le.
He BA bowl hit broken LE
'He broke the bowl.'

(47)a. Ta chi bao fan le.
 He eat full meal LE
 'He was full from eating the meal.'

b. Verb-copying construction

Ta chi fan chi bao le.
 He eat meal eat full LE
 'He was full from eating the meal.'

In addition, Sun and Givon (1985) and Sun (1996: 10) object the claim made by Li and Thompson (1974a, 1974b) that the general word order of Chinese has been drifting from SVO order to SOV order in the last 2,000 years, and is approaching the end of this historical drift, i.e., modern Chinese is probably an SOV language. They argue that Chinese is still an SVO language from the study of both written and spoken texts of modern Chinese, which show that on the average, 90% of syntactic objects follow the verbs. This finding not only contradicts and falsifies the claim that modern Chinese is, or is becoming, an SOV language, but also suggests that the basic word order of modern Chinese is clearly SVO. If Chinese did not develop from SVO to SOV, then the assumption that the development of RVCs in modern Chinese has been the result of the word order change from SVO to SOV is not justified.

If the word order change is not responsible for the grammaticalization of RVCs in Chinese, then what is the determining factor motivating Chinese RVCs to develop from one surface form of SVC, in which the two verbs are separated from each other, to another, in which the two verbs are adjacent to each other? Following Croft's (1999) idea that "there is a parallelism between syntactic structure and semantic structure and that semantic structure determines or, better, motivates syntactic structure," I propose that the

formation of RVCs in modern Chinese, in which the two verbs must occur adjacently, was motivated by semantic structure, more precisely, event structure, and it is the properties of event structure that has led to the alteration of the formal syntactic structure in Chinese RVCs. Croft's (1990) semantic structure is interpreted as event structure or semantic structure of events in the present work, because event structure is manifested in the semantics of verbs, and it is considered as one level of semantic specification for a lexical item (cf. Pustejovsky 1991; Moens and Steedman 1988).

Recall that in modern Chinese, RVCs only allow their two verbs to occur adjacently, and they do not occur in the syntactic environments that require an activity reading, while SVCs with their two verbs occurring separately are able to occur in the syntactic environments that presuppose an activity reading. In addition, if the two verbs in a DVC are not adjacent to each other, the given DVC can occur in the syntactic environments where an activity occurs, but if the two verbs are adjacent to each other, the given DVC turns out to be ungrammatical in the same syntactic environments. It is thus suggested that different syntactic constructions are associated with different operations. That is, ECF is usually associated with a construction where its two verbs are adjacent to each other, while EP is associated with a construction where its two verbs are separated from each other.

As mentioned previously, ECF in my analysis is an operation in which the two subevents of a complex eventuality are conceived of conceptually as a unitary semantic entity, designating its own properties such as transition. If the semantic structure (of events) can lead to the alteration of the formal syntactic structure, as suggested by Croft

(1999), and if what belongs together semantically is placed together syntactically, as claimed by Behaghel (1932), then it will not be surprising to see why Chinese Causative SVCs with their two verbs separated from each other (denoting a cause-result relationship) developed into constructions with their two verbs adjacent to each other (e.g., RVCs in modern Chinese), because conceptualizing the two subevents of an RVC as a unitary entity semantically leads to the alteration of the syntactic structure such that the two verbs are placed close together syntactically.¹⁴ This analysis not only accounts for why the two verbs of an RVC are required to occur adjacently, but also explains why the perfective aspect marker *le* can only occur after both verbs and has scope over both (see Van Valin and LaPolla 1997: 456 for an explanation within Role and Reference Grammar), while it cannot intervene between the two verbs of an RVC, as (48a) and (48b) show. The placement of the perfective aspect marker *le* exhibits a principle of iconicity, namely, it constitutes a direct correlation between a conceptual notion and its linguistic representation.

- (48)a. Ta [pao lei] le.
 He run tired LE
 'He is tired from running.'
- b. *Ta pao le lei.
 He run LE tired

However, if semantic properties turn out to be the main factor determining the direction of the change of Chinese RVCs, then we should at least demonstrate that the

¹⁴ In addition to semantic factors, Shi (1999) postulates that text frequency also plays an important role in the grammaticalization of Chinese RVCs.

surface form of SVC denoting a cause-result relationship (i.e., Causative SVC) in ancient Chinese denoted the properties associated with ECF rather than EP. As already mentioned, Southern Min still retains a few Causative SVCs, as shown in (49), which reflect the properties of Causative SVCs in ancient Chinese. It is shown that a Causative SVC in Southern Min does not undergo EP, though its two verbs occur separately. Because a Causative SVC in Southern Min does not undergo EP, it does not occur in the imperfective, as an imperative, as a complement of the verbs such as *pek* 'force', and with an agentive adverbial such as *ko-i* 'purposely', as illustrated in (50a)–(50d).

- (49) I chiah png pa a.
 he eat meal full Perf.
 'He was full from eating the meal.'

(50)a. Imperfective

*I ti chiah png pa.
 he Imperf. eat meal full

b. Imperative

*Chiah png pa!
 Eat meal full

c. As a complement of *pek* 'force'

*Goa pek i chiah png pa.
 I force him eat meal full

d. With an agentive adverbial

*I ko-i chiah png pa.
 he purposely eat meal full

Moreover, it is shown that a Causative SVC in Southern Min can take *in-*adverbials designating a conclusive reading, as in (51). This suggests that a Causative SVC in Southern Min can undergo ECF.

- (51) I ti saⁿ huncheng lai chiah png pa a.
 he at three minutes in eat meal full Perf.
 'He became full in three minutes from eating the meal.'

The tests given in (50) and (51) reflect the fact that the verbs expressing the two subevents of a Causative SVC are indeed conceived of as a unitary semantic unit, thus not allowing a certain component alone (e.g. the activity component) to determine the properties of that construction. This fact supports my assumption that the development of RVCs in modern Chinese from the surface form of SVC was motivated by semantic properties (e.g., what belongs together semantically is placed together syntactically) rather than by the word order change from SVO to SOV, as suggested by Li and Thompson (1976).

4.3.3 Summary

I have shown the close relationship between form and meaning in Chinese RVCs, SVCs, and DVCs, holding that form reflects meaning and meaning determines or motivates form (cf. Croft 1999; Hsieh 1997: 334). It is thus suggested that the development of modern Chinese RVCs with their two verbs placed next to each other from the surface form of SVC with the two verbs separated from each other is the result of the fact that an RVC has involved semantic properties associated with ECF, which in turn motivated the alteration of syntactic structure (i.e., the two verbs are placed next to

each other syntactically). Unlike RVCs, SVCs do not place their two verbs next to each other, because they denote properties associated with EP but not with ECF. Without the motivation for the alteration of syntactic structure, SVCs not denoting a cause-result relationship do not undergo the same path of grammatical change.

In addition, I have shown that DVCs, like RVCs, involve semantic properties associated with ECF, when the two verbs are adjacent to each other. But when the two verbs are separated from each other, DVCs, like SVCs, involve semantic properties associated with EP.

4.4 Concluding remarks

This chapter has attempted to answer the question regarding why the modern Chinese RVCs, in which the two verbs must occur adjacently, developed from the surface form of SVC, in which the two verbs occur separately, proposing that the diachronic development of the RVCs in modern Chinese was motivated by semantic factors rather than by the SVO to SOV word-order drift hypothesis, as Li and Thompson (1976) have suggested. That is, the fact that the two subevents of the Causative SVC (with a cause-result relationship) are conceived of conceptually as a unitary semantic entity has led to the alteration of syntactic structure; as a result, the two verbs are placed close to each other syntactically (known as RVCs in modern Chinese) and the perfective aspect marker *le* can only occur after both verbs, but not between the two verbs.

In addition, I have examined SVCs, RVCs, and DVCs in terms of EP and ECF, proposing that EP is only associated with a construction where the two verbs are not adjacent to each other (e.g., SVCs), whereas ECF is only associated with a construction

where the two verbs are adjacent to each other (e.g., RVCs). DVCs are associated with both EP and ECF, depending on whether the two verbs occur adjacently.

In addition to investigating linguistic properties of RVCs, SVCs, and DVCs in terms of EP and ECF, I have examined differences in the behavior of RVCs, SVCs, and DVCs and their relations to temporal structure, i.e., whether the two subevents overlap in time, finding that generalizations of these three syntactic constructions can be captured systematically in terms of temporal structure. For example, in SVCs, the two subevents are temporally ordered such that the first completely precedes the second, whereas in RVCs and DVCs, the first subevent overlaps the second partially (e.g., RVCs) or completely (e.g., DVCs). Because there is no overlap in time between two subevents of SVCs with a purpose reading, adverbials such as *like* 'immediately' have scope only over the first subevent. On the other hand, because there is overlap in time in RVCs or DVCs, adverbials such as *like* 'immediately' have scope over both subevents, rather than over a single subevent. In addition, in terms of temporal structure, we are able to illustrate why an SVC allows its two verbs to occur in separate clauses of a conjoined sentence with a 'but' conjunction, while an RVC and a DVC do not, unless the first verb also shows up in the second clause, because only the two subevents of an SVC do not overlap in time.

The analysis proposed in this chapter has the following advantages. First, it provides an account for why RVCs in modern Chinese developed from the surface form of SVC (i.e., Causative SVC), because they can undergo ECF, but not EP. Second, it accounts for why RVCs do not occur in the syntactic environments where an activity reading is required, because they are not compatible with EP. Third, it gives an account

for why the two verbs of an SVC denoting a cause-purpose relationship did not develop into a syntactic structure with its two verbs adjacent to each other, because an SVC with a cause-purpose relationship can never undergo ECF. Fourth, it explains why DVCs have two possible word order alternations, because they are associated with two discrete semantic properties. Last, it accounts for why the perfective aspect marker *le* occurs after the second verb rather than the first verb in an RVC, because the two verbs of an RVC that belong together conceptually are placed close together syntactically.

CHAPTER 5

EVENT STRUCTURE AND ARGUMENT LINKING

The reason for the triumph of mechanistic theories of phenomena, such as Newtonian mechanics, over their non-mechanistic rivals was not that they had been discovered to be closer to the truth or more empirically adequate than their rivals, but that they facilitated the exploitation of nature.

— Helen E. Longino (1990), paraphrased by Couvalis (1997)

5.1 Introduction

As pointed out in the preceding chapter, resultative verb constructions (RVCs) in modern Chinese, in which no elements (except for *bu* 'not' and *de* 'can') can occur between the two verbs expressing two subevents (i.e., $NP_1+V_1V_2+NP_2$), developed from the surface form of SVC, in which an NP argument can occur between the two verbs (i.e., $NP_1+V_1+NP_2+V_2$). It has been suggested that the development of RVCs in Chinese was motivated by semantic factors; that is, the semantic structure of events, specifying two subevents as a unitary whole, has led to the alteration of the formal syntactic structure. In other words, the two verbs of an RVC, representing two subevents as a unitary entity semantically, are placed close together syntactically. The requirement that the two verbs of an RVC occur adjacently is called the Event Adjacency Condition (EAC), which I have defined as in (1).

(1) **Event Adjacency Condition (EAC):**

No elements (except for *bu* 'not' and *de* 'can') can intervene between predicates designating a *cause-result* relationship.

If the EAC has triggered the diachronic development of Chinese RVCs, then two important questions cry out for answers. First, what impact does the EAC have on Chinese grammar when the NP arguments between the two verbs of an RVC are displaced? To put it in a different way, what syntactic constructions are associated with the NP displacement? Second, where should the NP arguments between the two verbs go when these two verbs are required to occur adjacently? These two questions are the main issues for discussion in this chapter.

The rest of this chapter proceeds in the following order. Section 5.2 discusses RVCs and the syntactic constructions associated with them (e.g., the *Ba*-construction, the *Bei*-construction, and the Verb-copying construction), holding that the emergence of these constructions in Chinese grammar is directly or indirectly related to the development of RVCs. Section 5.3 discusses the linking theoretical framework. The examples show that the syntactic positions of NP arguments of Chinese RVCs are determined by event roles/participants. That is, the NP arguments between the two verbs of an RVC are linked to certain syntactic positions according to the event roles these NP arguments play in event structure. Section 5.4 is the concluding remarks.

5.2 Chinese RVCs and their relevant syntactic constructions

As previously mentioned, with the EAC, no elements (except for *bu* 'not' and *de* 'can') can intervene between the two verbs in an RVC. In order to obey the EAC, the overt NP arguments occurring between the two verbs of an RVC are supposed to be displaced. But where should the given NP arguments be displaced? I suggest that the NP arguments between the two verbs of an RVC are displaced to form other syntactic

constructions such as the *Ba*-construction, the *Bei*-construction, and the Verb-copying construction. In other words, I propose that these constructions are formed after the displacement of NP arguments, which is triggered by the EAC.

If the above proposal is correct, then it should also be true that the emergence of the constructions such as the *Ba*-construction, the *Bei*-construction, and the Verb-copying construction parallels the development of RVCs in Chinese. The assumption under the proposal is supported by Li and Shi (1997) and Shi (1999). According to Li and Shi (1997) and Shi (1999), the development of RVCs in Chinese has led to many changes in Chinese grammar—for example, the innovation of many syntactic constructions such as the *Ba*-construction and the Verb-copying construction.¹ Though the passive construction (i.e., the *Bei*-construction) in Chinese had existed long before the RVCs developed, it is correlated with the development of RVCs for the following reason: nearly 90% of passives in Chinese occur with predicates denoting cause and result (e.g., RVCs), as pointed out by Shi (1999) (cf. Ren 1991). This is why the emergence or flourishing of passive construction has been considered to be correlated with the development of modern RVCs in Chinese in the present work.

However, it should be emphasized that though the *Ba*-construction, the *Bei*-construction, and the Verb-copying construction are related to the development of RVCs, it does not mean that any kind of RVCs can simultaneously occur in all of these constructions. Some RVCs are only compatible with the *Ba*-construction and the *Bei*-

¹ Topicalization is also considered to be related to the development of RVCs in Chinese, for the discussion, see M. Zhu (1990), Li and Shi (1997), and Shi (1999).

construction, whereas some are only compatible with the Verb-copying construction. To account for these seemingly inconsistent distributions, with the aim of finding out the relationships between syntactic constructions and the NP displacement, I will first classify RVCs into five types according to the following two criteria: (a) how many arguments each of the verbs takes (e.g., transitive or intransitive), and (b) whether the arguments from two different verbs denote the same entity. Then, I will try to exemplify in what syntactic constructions the given NP arguments of each type of these RVCs can occur. The first two types of RVCs, in which both V_1 and V_2 are intransitive verbs, are discussed in section 5.2.1, whereas the other three types, in which V_1 is a transitive verb while V_2 is an intransitive verb, are discussed in section 5.2.2.

5.2.1 Both V_1 and V_2 are intransitive verbs

RVCs in modern Chinese can be composed of two intransitive verbs. For example, the RVCs such as *ku-lei* 'cry-tired' and *ku-fan* 'cry-annoyed', as given in (2c) and (3c), comprise two intransitive verbs. In these two RVCs, each of the given verbs is subcategorized for one NP argument, as illustrated in (2a) and (2b), and (3a) and (3b), respectively. However, in RVC (2c), each of the two intransitive verbs takes one NP argument, and these two NP arguments denote the same entity, i.e., the subject NP of V_1 and the subject NP of V_2 are identical (Type I). Likewise, in RVC (3c), each of the two intransitive verbs takes one NP argument, but these two NP arguments denote two different entities (Type II). Because the two arguments of the RVC in (2c) denote the same entity, only one of the identical arguments is realized in the syntax, i.e., $NP_1+V_1V_2$, in which the argument of V_1 (i.e., NP_1) is represented in the subject position, while the

argument of V_2 is not overtly realized in syntactic structure (in section 5.3.4, I will discuss which argument should be syntactically expressed and which one should not, when two arguments refer to the same entity). The arguments of the RVC in (3c) do not refer to the same entity; therefore, both arguments must appear in syntactic structure, i.e., $NP_1+V_1V_2+NP_2$, in which the argument of V_1 (i.e., NP_1) is represented in the subject position, whereas the argument of V_2 (i.e., NP_2) is represented in the postverbal object position (i.e., after V_2).

(2) RVC in which Subj. of $V_1 =$ Subj. of V_2 (Type I)

a. *ku* 'cry' (V_i): <Zhangsan>

Zhangsan	zai	ku.
Zhangsan	ZAI	cry
'Zhangsan is crying.'		

b. *lei* 'tired' (V_i): <Zhangsan>

Zhangsan	yijing	lei	le.
Zhangsan	already	tired	LE
'Zhangsan is already tired.'			

c. *ku-lei* 'cry-tired': [V_1 <Zhangsan>; V_2 <Zhangsan>]

Zhangsan	ku	lei	le.
Zhangsan	cry	tired	LE
'Zhangsan was tired from crying.'			

(3) RVC in which Subj. of $V_1 \neq$ Subj. of V_2 (Type II)

a. *ku* 'cry' (V_i): <Zhangsan>

Zhangsan	zai	ku.
Zhangsan	ZAI	cry
'Zhangsan is crying.'		

- b. *fan* 'annoyed' (Vi): <Lisi>

Lisi xianzai hen fan.
 Lisi now very annoyed
 'Lisi feels annoyed now.'

- c. *ku-fan* 'cry-annoyed': [V₁<Zhangsan>; V₂<Lisi>]

Zhangsan ku fan le Lisi.
 Zhangsan cry annoyed LE Lisi
 'Zhangsan's crying made Lisi feel annoyed.'

It is worth pointing out that the RVC (Type II) composed of two intransitives such as *ku* 'cry' and *fan* 'annoyed' in (3c) can have a corresponding *Ba*-construction or *Bei*-construction, as shown in (4) and (5). However, it does not have a corresponding Verb-copying construction, as shown in (6).

- (4) *Ba*-construction

Zhangsan ba Lisi ku fan le.
 Zhangsan BA Lisi cry annoyed LE
 'Zhangsan's crying made Lisi feel annoyed.'

- (5) *Bei*-construction

Lisi bei Zhangsan ku fan le.
 Lisi BEI Zhangsan cry annoyed LE
 'Lisi felt annoyed from Zhangsan's crying.'

- (6) Verb-copying construction

*Zhangsan ku Lisi ku fan le.
 Zhangsan cry Lisi cry annoyed LE
 'Zhangsan's crying made Lisi feel annoyed.'

Because the RVC in (2c) (Type I) does not have an additional overt NP argument, it does not have a corresponding *Ba*-construction or *Bei*-construction, nor does it have a corresponding Verb-copying construction, as illustrated in (7)–(9).

(7) *Ba*-construction

*Ba	Zhangsan	ku	lei	le.
BA	Zhangsan	cry	tired	LE
	'Zhangsan was tired from crying.'			

(8) *Bei*-construction

*Bei	Zhangsan	ku	lei	le.
BEI	Zhangsan	cry	tired	LE
	'Zhangsan was tired from crying.'			

(9) Verb-copying construction

*Ku	Zhangsan	ku	lei	le.
Cry	Zhangsan	cry	tired	LE
	'Zhangsan was tired from crying.'			

In addition to *ku-lei* 'cry-tired', there are many other similar examples in which RVCs are composed of two intransitives, and the NP arguments designated by two different verbs tend to denote the same entity—for example, *xiao-feng* 'laugh-crazy', *ke-yun* 'thirsty-dizzy', *lei-bing* 'tired-sick', *pao-lei* 'run-tired', and so on. In contrast, there are many other examples in which RVCs are composed of two intransitives and the arguments designated by both verbs tend to denote different entities—for example, *ku-shi* 'cry-wet', *ku-hong* 'cry-red', *ku-xing* 'cry-awake', *xiao-wan* 'laugh-bend', and so on.

5.2.2 V_1 is a transitive verb while V_2 is an intransitive verb

RVCs in modern Chinese can be composed of a transitive verb (e.g., V_1) and an intransitive verb (e.g., V_2). Such RVCs can be divided into three different groups. First, the object NP of a transitive verb (V_1) is identical with the subject NP of an intransitive verb (V_2) (Type III). Second, the subject NP of a transitive verb (V_1) is identical with the subject NP of an intransitive verb (V_2) (Type IV). Third, none of the three NP arguments are identical (Type V).

For example, the RVC involving the resultative verb complex *tui-dao* 'push-fall', as in (10c), is composed of a transitive verb *tui* 'push', which has two arguments (e.g., *Zhangsan* and *Lisi*), and an intransitive verb *dao* 'fall', which has one argument (e.g., *Lisi*). In this type of RVC (Type III), the object NP of V_1 is identical with the subject NP of V_2 (e.g., *Lisi*). Sentences with this type of RVC have a corresponding *Ba*-construction or *Bei*-construction, as in (11) and (12), but they do not have a corresponding Verb-copying construction, as in (13).

(10) RVC with identical arguments (Obj. of V_1 = Subj. of V_2) (Type III)

a. *tui* 'push' (Vt): <Zhangsan, Lisi>

Zhangsan zai tui Lisi.
 Zhangsan ZAI push Lisi
 'Zhangsan is pushing Lisi.'

b. *dao* 'fall' (Vi): <Lisi>

Lisi dao le.
 Lisi fall LE
 'Lisi fell.'

- c. *tui-dao* 'push-fall': [V_1 <Zhangsan, Lisi>; V_2 <Lisi>]

Zhangsan tui dao le Lisi.
 Zhangsan push fall LE Lisi
 'Zhangsan pushed Lisi and as a result Lisi fell.'

- (11) *Ba*-construction

Zhangsan ba Lisi tui dao le.
 Zhangsan BA Lisi push fall LE
 'Zhangsan pushed Lisi and as a result Lisi fell.'

- (12) *Bei*-construction

Lisi bei Zhangsan tui dao le.
 Lisi BEI Zhangsan push fall LE
 'Lisi fell from Zhangsan's pushing.'

- (13) Verb-copying construction

*Zhangsan tui Lisi tui dao le.
 Zhangsan push Lisi push fall LE

Many more examples of such RVCs (Type III) can be found. For example, *tui-kai* 'push-open', *qiao-po* 'hit-break', *da-pao* 'hit-escape', *sha-si* 'kill-die', *shai-gan* 'dehydrate-dry', *la-chang* 'pull-long', *zhu-shou* 'cook-cooked', *qi-ku* 'angry-cry', *xi-ganjing* 'wash-clean', *jiao-xing* 'call-awake', *jiu-huo* 'save-alive', *xia-fei* 'frighten-fly', and so on.

On the other hand, the RVC, as in (14c), is also composed of a transitive verb and an intransitive verb. The transitive verb *chi* 'eat' takes two arguments (e.g., *Zhangsan* and *fan* 'meal'), whereas an intransitive verb *bao* 'full' takes only one (e.g., *Zhangsan*). In this type of RVC (Type IV), the subject NP of V_1 is identical with the subject NP of V_2 . In addition, this type of RVC usually occurs in the Verb-copying construction, as in (17), but it does not occur in the *Ba*-construction or the *Bei*-construction, as in (15) and (16).

More examples of this type of RVC are *kan-fan* 'read-bored', *kan-lei* 'read-tired', *xie-fan* 'write-bored', *xie-lei* 'write-tired', *chi-ni* 'eat-fed.up', *he-zui* 'drink-inebriated', among others.

(14) RVC with identical arguments (Subj. of V₁ = Subj. of V₂) (Type IV)

a. *chi* 'eat' (Vt): <Zhangsan, fan>

Zhangsan	yijing	chi	le	fan.
Zhangsan	already	eat	LE	meal

'Zhangsan already ate meal.'

b. *bao* 'full' (Vi): <Zhangsan>

Zhangsan	yijing	bao	le.
Zhangsan	already	full	LE

'Zhangsan is already full.'

c. *chi-bao* 'eat-full': [V₁<Zhangsan, fan>; V₂<Zhangsan>]

Zhangsan	yijing	chi	bao	fan	le.
Zhangsan	already	eat	full	meal	LE

'Zhangsan was full from eating meal.'

(15) *Ba*-construction

*Zhangsan	ba	fan	chi	bao	le.
Zhangsan	BA	meal	eat	full	LE

(16) *Bei*-construction

*Fan	bei	Zhangsan	chi	bao	le.
meal	BEI	Zhangsan	eat	full	LE

(17) Verb-copying construction

Zhangsan	chi	fan	chi	bao	le.
Zhangsan	eat	meal	eat	full	LE

'Zhangsan was full from eating meal.'

Though the object *fan* 'meal' of the transitive verb *chi* 'eat' in (14c) is placed in the position immediately following the second verb, it should be pointed out that examples like this (e.g., NP₁+V₁V₂+NP₂) are not common. In addition, the replacement of *fan* 'meal' with *mian* 'noodles', as in (18), or the replacement of the indefinite NP *fan* 'meal' with the definite one such as *na dun fan* (that Cl. meal) 'that meal', as in (19), will cause the sentences to become ungrammatical.

- (18) *Zhangsan yijing chi bao mian le.
 Zhangsan already eat full noodles LE
 'Zhangsan was full from eating noodles.'
- (19) *Zhangsan yijing chi bao na dun fan le.
 Zhangsan already eat full that Cl. meal LE
 'Zhangsan was full from eating that meal.'

The RVC, as in (20c), is composed of a transitive verb such as *xi* 'wash' and an intransitive verb such as *shi* 'wet'. In this type of RVC (Type V), the two verbs take three NP arguments, and none of them are identical. Note that these three NP arguments occur in different syntactic positions. The NP argument of V₂ (e.g., *xiezi* 'shoes') occurs in the position immediately following the second verb, the subject of V₁ (e.g., *Zhangsan*) occurs in the subject position of the RVC, whereas the object of V₁ (e.g., *yifu* 'clothes') occurs in the position immediately following the first of the two identical verbs. Sentences with this type of RVC have a corresponding *Ba*-construction or *Bei*-construction, but it must also involve the Verb-copying construction, as in (21) and (22).²

² For more discussions on the RVCs and their related syntactic constructions (e.g., the *Ba*-construction, the *Bei*-construction, and the Verb-copying construction), see L. Li (1986: 181-204).

(20) RVC with no identical arguments (Type V)

- a.
- xi*
- 'wash' (Vt): <Zhangsan, yifu>

Zhangsan zai xi yifu.
 Zhangsan ZAI wash clothes
 'Zhangsan is washing clothes.'

- b.
- shi*
- 'wet' (Vi): <xiezi>

Zhangsan-de xiezi shi le.
 Zhangsan's shoes wet LE
 'Zhangsan's shoes got wet.'

- c.
- xi-shi*
- 'wash-wet': [V
- ₁
- <Zhangsan, yifu>; V
- ₂
- <xiezi>]

Zhangsan xi yifu xi shi le xiezi.
 Zhangsan wash clothes wash wet LE shoes
 'Zhangsan washed his clothes and his shoes got wet as a result.'

(21) RVC with Verb-copying construction + *Ba*-construction

Zhangsan xi yifu ba xiezi xi shi le.
 Zhangsan wash clothes BA shoes wash wet LE
 'Zhangsan washed his clothes and his shoes got wet as a result.'

(22) RVC with Verb-copying construction + *Bei*-construction

Xiezi bei Zhangsan xi yifu xi shi le.
 Shoes BEI Zhangsan wash clothes wash wet LE
 'The shoes' getting wet results from Zhangsan's washing clothes.'

Because Chinese is a pro-drop language, it permits an NP argument of a verb to be inferred from discourse context; therefore, the given NP argument can be left empty. For example, the RVC in (23) is composed of a transitive verb and an intransitive verb. The transitive verb *da* 'hit' takes two NP arguments (e.g., *Zhangsan* and *wangqiu* 'tennis'), whereas the intransitive verb *huai* 'broken' takes only one (e.g., *san fu wangqiu pai* 'three pairs of tennis rackets'). As mentioned previously, all the three arguments can be

represented in syntactic structure. The subject of V_1 (e.g., *Zhangsan*) occurs in the subject position of the RVC; the object of V_1 (*wangqiu* 'tennis') occurs in the position immediately following the first of the two identical verbs; and the subject of V_2 (e.g., *san fu wangqiu pai* 'three pairs of tennis rackets') occurs in the position immediately following the second verb, as in (23). Because the subject of V_2 can also occur in the position immediately following *ba* (i.e., the *Ba*-construction), sentence (23) has a corresponding counterpart, as in (24). However, the omission of the NP object of V_1 (e.g., *wangqiu* 'tennis') prevents the occurrence of the Verb-copying construction. That is, when the NP object of V_1 is omitted for the discourse-pragmatic factors, the RVC in question does not involve the verb-copying device, as (25) and (26) show. This suggests that the NP object of V_1 has a close relationship with the Verb-copying construction. Note, however, that the omission of arguments is influenced by discourse-pragmatic considerations.

(23) *da-huai* 'hit-broken': [V_1 <Zhangsan, wangqiu>; V_2 <san fu wangqiu pai>]

Zhangsan da wangqiu da huai le san fu wangqiu pai.
 Zhangsan hit tennis hit broken LE three Cl. tennis racket
 'Zhangsan ruined three pairs of tennis rackets by playing tennis.'

(24) RVC with Verb-copying construction + *Ba*-construction

Zhangsan da wangqiu ba san fu wangqiu pai da huai le.
 Zhangsan hit tennis BA three Cl. tennis racket hit broken LE
 'Zhangsan ruined three pairs of tennis rackets by playing tennis.'

(25) RVC without Verb-copying construction

Zhangsan da huai le san fu wangqiu pai.³
 Zhangsan hit broken LE three Cl. tennis racket
 'Zhangsan ruined three pairs of tennis rackets (by playing tennis).'

(26) RVC with *Ba*-construction but not Verb-copying construction

Zhangsan ba san fu wangqiu pai da huai le.
 Zhangsan BA three Cl. tennis racket hit broken LE
 'Zhangsan ruined three pairs of tennis rackets (by playing tennis).'

5.2.3 RVCs with ambiguous interpretations

Unlike RVCs with verb complexes such as *ku-fan* 'cry-annoyed', *tui-dao* 'push-fall', and *chi-bao* 'eat-full' that only allow one interpretation when they are represented in the surface form 'NP₁+V₁V₂+NP₂', another type of RVC with verb complexes such as *qi-lei* 'ride-tired' allows two interpretations when occurring in the same syntactic structure, as (27) illustrates. Note that the NP argument *ma* 'horse' can occur postverbally (i.e., after the second verb). It can also appear in all the other syntactic constructions discussed so far, namely, the *Ba*-construction, the *Bei*-construction, and the Verb-copying construction, as exemplified in (28)–(30). However, only the RVC in (27), in which the NP argument *ma* 'horse' occurs in the position immediately following the second verb, has two possible interpretations; in other constructions there is only one. That is, the *Ba*-construction, as in (28), and the *Bei*-construction, as in (29), only allow the interpretation

³ Notice that we can interpret the sentences in (25) and (26) as 'Zhangsan ruined three pairs of tennis rackets by hitting them', if the missing argument is not inferred from discourse context. But in this way, these RVCs are treated as Type III RVCs, in which the object of V₁ is identical with the subject of V₂.

of (27a), whereas the Verb-copying construction, as in (30), only allows the interpretation of (27b).

- (27) Zhangsan qi lei le ma.
 Zhangsan ride tired LE horse
 (a)'The horse was tired from Zhangsan's riding.'
 (b)'Zhangsan was tired from riding horses.'

- (28) *Ba*-construction

Zhangsan ba ma qi lei le.
 Zhangsan BA horse ride tired LE
 'The horse was tired from Zhangsan's riding.'

- (29) *Bei*-construction

Ma bei Zhangsan qi lei le.
 horse BEI Zhangsan ride tired LE
 'The horse was tired from Zhangsan's riding.'

- (30) Verb-copying construction

Zhangsan qi ma qi lei le.
 Zhangsan ride horse ride tired LE
 'Zhangsan was tired from riding horses.'

Though it is noted by Y. Li (1990), Cheng (1997), Chang (1998), and many others that there are two possible interpretations for the sentence (27), the interpretation in (27a) is a preferred reading to most native speakers (Tang 1992b: 155). In addition, it should be emphasized that the ambiguous interpretations disappear when the indefinite NP (e.g., *ma* 'horse') in the position immediately following the second verb is replaced with a definite one (e.g., *nei pi ma* 'that horse'). In this case, only the interpretation in (31a) is possible (Y. Li 1990; Cheng 1997; Chang 1998; Gu 1992, among others).

- (31) Zhangsān qī lèi lè nēi pī mā.
 Zhangsān ride tired LE that Cl. horse
 (a) 'That horse was tired from Zhangsān's riding.'
 (b) '*Zhangsān was tired from riding that horse.'

5.2.4 Summary

I have discussed five types of RVCs according to the number of arguments the given verbs take, and whether the given arguments refer to the same entity. The syntactic distribution of these RVCs can be summarized as follows:

type	Arguments of verbs	Surface form	<i>Ba</i> -construction	<i>Bei</i> -construction	Verb-copying construction
I	V1(Vi)+V2(Vi) Subj. of V ₁ = Subj. of V ₂	<i>ku-lei</i> 'cry-tired' NP ₁ +V ₁ V ₂	No	No	No
II	V1(Vi)+V2(Vi) Subj. of V ₁ ≠ Subj. of V ₂	<i>ku-fan</i> 'cry-annoyed' 'NP ₁ +V ₁ V ₂ +NP ₂	Yes	Yes	No
III	V1(Vt)+V2(Vi) Obj. of V ₁ = Subj. of V ₂	<i>tui-dao</i> 'push-fall' NP ₁ +V ₁ V ₂ +NP ₂	Yes	Yes	No
IV	V1(Vt)+V2(Vi) Subj. of V ₁ = Subj. of V ₂	<i>chi-bao</i> 'eat-full' NP ₁ +V ₁ V ₂ +NP ₂ (rare) NP ₁ +V ₁ +NP ₂ +V ₁ V ₂	No	No	Yes
V	V1(Vt)+V2(Vi) No identical arguments	<i>xi-shi</i> 'wash-wet' NP ₁ +V ₁ +NP ₂ +V ₁ V ₂ +NP ₃	Yes	Yes	Yes

Table 5.1: different types of RVCs and syntactic constructions associated with them

From table 5.1, we can see that all the RVCs in Type II to Type IV can occur in the surface form of NP₁+V₁V₂+NP₂. However, Type II (e.g., *ku-fan* 'cry-annoyed') and Type III (e.g., *tui-dao* 'push-fall') have a corresponding *Ba*-construction or *Bei*-construction, but they do not have a corresponding Verb-copying construction, whereas Type IV (e.g., *chi-bao* 'eat-full') has a corresponding Verb-copying construction, but it

does not have a corresponding *Ba*-construction or *Bei*-construction. In addition, in Type V (e.g., *xi-shi* 'wash-wet'), the occurrence of either the *Ba*-construction or the *Bei*-construction is also associated with the Verb-copying construction. That is, a sentence must contain the Verb-copying construction and the *Ba*-construction, or the Verb-copying construction and the *Bei*-construction at the same time, when no NP argument occurs in the position immediately following the second verb.

In addition, I have pointed out that the RVCs with verb complexes such as *qi-lei* 'ride-tired' have two possible interpretations. The given RVCs can occur in all three syntactic constructions (i.e., the *Ba*-construction, the *Bei*-construction, and the Verb-copying construction), but there is only one interpretation in each construction: the *Ba*-construction and the *Bei*-construction share one interpretation, whereas the Verb-copying construction has the other interpretation.

Three questions arise from the above discussion. First, why do RVCs with the verb complex *ku-fan* 'cry-annoyed' occur only in the *Ba*-construction and the *Bei*-construction, but not in the Verb-copying construction, whereas RVCs with the verb complex *chi-bao* 'eat-full' occurs only in the Verb-copying construction, but not in the *Ba*-construction and the *Bei*-construction? Second, why do the RVCs with the verb complex *qi-lei* 'ride-tired' have two possible interpretations, but the ambiguous interpretations disappear when they occur in each of the syntactic constructions such as the *Ba*-construction, the *Bei*-construction, and the Verb-copying construction? Third, why does the *Ba*-construction share the same interpretation with the *Bei*-construction, but not with the Verb-copying construction?

The answers to these questions will be provided in the sections that follow. I will point out that the analysis based on event roles/participants is able to systematically account for the linking of arguments to syntactic positions in Chinese RVCs, and at the same time provides answers to the puzzles that have been raised.

5.3 Linking theoretical framework

5.3.1 Argument linking and thematic roles

There has been a long-standing intuition in linguistic research that the relationship between the syntactic and thematic (semantic) arguments is highly constrained. The theory about this relationship is generally called *linking theory* (Jackendoff 1990: 246); it is sometimes called *mapping theory*. There are hypotheses in the recent literature maintaining that there is a one-to-one linking between thematic argument and syntactic position. For example, Perlmutter and Postal (1984) suggest the Universal Alignment Hypothesis (UAH) in the framework of Relational Grammar, which states that:

(32) Universal Alignment Hypothesis (UAH):

There exist principles of universal grammar which predict the initial relation borne by each nominal in a given clause from the meaning of the clause.

A parallel notion, Baker (1988: 46) proposes the Uniformity of Theta Assignment Hypothesis (UTAH) in the framework of Government and Binding Theory, which claims that:

(33) Uniformity of Theta Assignment Hypothesis (UTAH):

Identical thematic relationships between items are represented by identical structural relationships between those items at the level of D-structure.

However, as Jackendoff (1990: 246) has pointed out, surface grammatical relations do not obey such a stringent correspondence (one-to-one mapping) because any of these 'rigid' theories entails various amounts of syntactic movement and deletion or insertion of prepositions in order to account for surface syntactic distribution.

In what follows, I will show that the analysis based on thematic roles is inadequate to account for the syntactic positions of the NP arguments in Chinese RVCs, because the same thematic roles can occur in many positions in a sentence. That is, it cannot be predicted which thematic relation a given noun phrase will have, given only its structural position. For example, the RVC in (34) is composed of two intransitive verbs (e.g., *ku* 'cry' and *fan* 'annoyed'). Each of the two intransitive verbs specifies one NP argument and each NP argument receives an *experiencer* role.⁴ Though both arguments of V₁ and V₂ have the same thematic roles (i.e., *experiencer*), they occur in different syntactic positions: one occurs in the subject position of the RVC and the other in the position immediately following the second verb, as shown in (34).

⁴ The thematic roles discussed in the present work are defined according to O'Grady (1996).

Agent: an entity that instigates an action (e.g., *Harry jumped off the table*).

Theme: an entity which undergoes the effect of an action or change (e.g., *The child fell*), or an entity to which a property is attributed (e.g., *That rock is big*).

Experiencer: an entity which experiences a psychological state (e.g., *The children fear loud noises*).

- (34) *ku-fan* 'cry-annoyed': [V₁<Zhangsan>; V₂<Lisi>]
- |
|
Experiencer
Experiencer
- Zhangsan ku fan le Lisi.
 Zhangsan cry annoyed LE Lisi
 'Zhangsan's crying made Lisi feel annoyed.'

In addition, it is noted that the *experiencer* argument of V₂ can occur in the position immediately following *ba* (i.e., the *Ba*-construction), whereas it cannot occur in the position immediately following the first of the two identical verbs (i.e., the Verb-copying construction), as in (35) and (36).

- (35) *Ba*-construction

Zhangsan ba Lisi ku fan le.
 Zhangsan BA Lisi cry annoyed LE
 'Zhangsan's crying made Lisi feel annoyed.'

- (36) Verb-copying construction

*Zhangsan ku Lisi ku fan le.
 Zhangsan cry Lisi cry annoyed LE
 'Zhangsan's crying made Lisi feel annoyed.'

In (37), the RVC is composed of a transitive verb *tui* 'push' and an intransitive verb *dao* 'fall'. The transitive verb takes two NP arguments and specifies these two NP arguments as the *agent* role and the *theme* role, respectively, while the intransitive verb takes only one NP argument and specifies it as the *theme* role. The *agent* role is assigned to the subject position of the RVC, while the *theme* role is assigned to the position immediately following the second verb. However, it is found that this *theme* role can

occur in the position immediately following *ba*, but it cannot occur in the position immediately following the first of the two identical verbs, as shown in (38) and (39).

- (37) *tui-dao* 'push-fall': [V₁<Zhangsan, Lisi>; V₂<Lisi>]
- | | | |
|-------|-------|-------|
| | | |
| Agent | Theme | Theme |

<u>Zhangsan</u>	tui	dao	le	<u>Lisi</u> .
Zhangsan	push	fall	LE	Lisi

'Zhangsan pushed Lisi and as a result Lisi fell.'

- (38) *Ba*-construction

Zhangsan	ba	<u>Lisi</u>	tui	dao	le.
Zhangsan	BA	Lisi	push	fall	LE

'Zhangsan pushed Lisi and as a result Lisi fell.'

- (39) Verb-copying construction

*Zhangsan	tui	<u>Lisi</u>	tui	dao	le.
Zhangsan	push	Lisi	push	fall	LE

In (40), the RVC is also composed of a transitive verb and an intransitive verb. The transitive verb *chi* 'eat' takes two NP arguments and specifies them as the *agent* role and the *theme* role, respectively; the intransitive verb *bao* 'full' takes only one argument and specifies it as the *experiencer* role. Note that the second identical argument (e.g., *Zhangsan* denoted by V₂) is not overtly realized in syntax. In this case, the *agent* role occurs in the subject position of the RVC, while the *theme* role occurs in the position immediately following the second verb, as in (40). This *theme* role can also occur in the position immediately following the first of the two identical verbs, as in (42), but it cannot occur in the position immediately following *ba*, as in (41), in contrast to the

example in (38), where the *theme* role can occur in the position immediately following *ba* rather than the first of the two identical verbs.

- (40) *chi-bao* 'eat-full': [V₁<Zhangsan, fan>; V₂<Zhangsan>]
- | | | | | | | |
|--|--|-------|-------|-------------|--|--|
| | | | | | | |
| | | Agent | Theme | Experiencer | | |
- Zhangsan yijing chi bao fan le.
 Zhangsan already eat full meal LE
 'Zhangsan was full from eating meal.'

- (41) *Ba*-construction

*Zhangsan	ba	<u>fan</u>	chi	bao	le.
Zhangsan	BA	meal	eat	full	LE

- (42) Verb-copying construction

Zhangsan	chi	<u>fan</u>	chi	bao	le.
Zhangsan	eat	meal	eat	full	LE

'Zhangsan was full from eating meal.'

Like the RVCs in (37) and (40), the RVC in (43) is composed of a transitive verb and an intransitive verb. But unlike (37) and (40), the RVC in (43) has three distinct NP arguments. The transitive verb takes two NP arguments, with an *agent* role and a *theme* role, respectively, while the intransitive verb takes one NP argument with a *theme* role. Interestingly, the *agent* role can occur in the subject position, while the *theme* role of V₁ can occur in the position immediately following the first of the two identical verbs (e.g., *xi* 'wash'). The *theme* role of V₂ can occur in two positions: the position immediately following the second verb, as in (43), or the position immediately following *ba* (i.e., the *Ba*-construction), as in (44).

(43) *xi-shi* 'wash-wet': [V₁<Zhangsan, yifu>; V₂<xiezi>]

| | |
 Agent Theme Theme

Zhangsan xi yifu xi shi le xiezi.
 Zhangsan wash clothes wash wet LE shoes
 'Zhangsan washed his clothes and his shoes got wet as a result.'

(44) Verb-copying construction + *Ba*-construction

Zhangsan xi yifu ba xiezi xi shi le.
 Zhangsan wash clothes BA shoes wash wet LE
 'Zhangsan washed his clothes and his shoes got wet as a result.'

The investigation of the RVCs shows that only *agent* roles consistently appear in subject position; other thematic roles are not so predictable, because *theme* roles can occur in the position immediately following the second verb, the word *ba*, or the first of the two identical verbs, and *experiencer* roles can occur in the subject position, in the position immediately following the second verb or the word *ba*. The fact that there is no one-to-one correspondence between the thematic roles and syntactic positions is in apparent contradiction to the core assumption of both Perlmutter and Postal's UAH and Baker's UTAH. Hence, van Voorst (1988), Dowty (1991), van Hout (1993), Tenny (1994), Croft (1998), Rosen (1996, 1999), Van Valin and LaPolla (1997), among many others, have suggested that it is the event role an argument plays in event structure, rather than the thematic role an argument plays, that determines how and where the argument is linked to the syntax.

5.3.2 Representation of event structure

Before discussing how event roles are linked to syntax, let me illustrate first how event structure is represented. Dowty (1979) uses *states* as primitives, representing the end state of an event, and reformulates Vendler's four categories, using logical definitions and the primitives BECOME, DO, and CAUSE. In his aspectual calculus, achievements are derived from states, and accomplishments are derived from achievements. Activities are often part of accomplishments and often involve 'unmediated self-control' by the agent.

Referring to Dowty (1979), Van Valin and LaPolla (1997) also paraphrase aspectual categories in terms of primitive elements—for example, the verb *kill* can be paraphrased into something like 'cause to die', and then the verb *die* can be broken down into 'become dead'. Thus, the lexical representation of *kill* would be something like 'x causes [y become dead]'. To support their analysis, Van Valin and Lapolla (1997: 90) take Lakhota as an example, explaining that verbs of killing in Lakhota can be formed from the verb *t'a* 'die, be dead' by adding instrumental prefixes, as illustrated in (45a)–(45e). The evidence shows that all of these verbs of killing are derived from a base verb meaning 'die' or 'be dead' via causativization, which illustrates that the addition of the instrumental prefix is able to causativize the verb and code a type of causing action.

(45) Lakhota (Van Valin and Lapolla 1997: 90)

- a. t'a 'die, be dead'
- b. **ka**-t'a 'cause to die by striking' (ka- 'by striking')
- c. **yu**-t'a 'strangle' (yu- 'with the hands')
- d. **ya**-t'a 'bite to death' (ya- 'with the teeth')
- e. **wo**-t'a 'shoot to death' (wo- 'by action from a distance')

According to Van Valin and LaPolla (1997), the derivational relationships between Vendler's four aspectual categories are given as follows.

(46) Event structures for different aspectual categories

a. State:

predicate' (x) or (x, y)

b. Achievement:

[BECOME **predicate'** (x) or (x, y)]

c. Activity:

[**do'** (**predicate'** (x) or (x, y))]

d. Accomplishment:

[[**do'** (**predicate'** (x) or (x, y))] CAUSE [BECOME (**predicate'** (y) or (z))]

Van Valin and LaPolla (1997: 102) present *constants* (which are normally predicates) in boldface followed by a prime, whereas they present *variable elements* in normal typeface (e.g., x, y, etc.). The elements in both boldface and prime are part of the vocabulary of the semantic metalanguage used in the decomposition; they are not words from any particular human language. The elements in all capitals, CAUSE and

BECOME, are modifiers of the predicate in the event structure. Note that there is no special formal indicator when a predicate is stative. All activity event structures contain the generalized activity predicate **do'**, which serves as the marker of membership in this class.

The English examples in (47)–(49) illustrate how an accomplishment expression, an achievement expression, and a state expression, are represented in event structure. Note that the accomplishment expression in (47) tells us that John did the breaking and the window broke, but it does not specify exactly what John did to break the window. Such an unspecified action is represented in logical structure as '**do'** (x, \emptyset)'.

(47) Accomplishment

- a. John broke the window.
- b. Event structure

[[**do'** (John, \emptyset)] CAUSE [BECOME **broken'** (window)]]

(48) Achievement

- a. The window broke.
- b. Event structure

[BECOME **broken'** (window)]

(49) State

- a. The window is broken.
- b. Event structure

broken' (window)

Unlike the English accomplishment verb *break*, which is coded by a single lexical verb, its Chinese counterpart, as given in (50), is expressed by a resultative verb complex *da-po* 'hit-broken', which involves a causing activity *da* 'hit' and a resulting state *po* 'broken'. The event structure of (50a) is represented as in (50b).

(50)a. Zhangsan da po le chuangzi.
 Zhangsan hit broken LE window
 'Zhangsan broke the window.'

b. Event structure

[[**do'** (**hit'**(Zhangsan, chuangzi))] CAUSE [BECOME **broken'** (chuangzi)]]

The RVCs in (51a) and (52a) are composed of two intransitive verbs; (52a) differs from (51a) in that there are no identical arguments. The event structures of these two examples can be represented in (51b) and (52b), respectively.

(51)a. Zhangsan ku lei le.
 Zhangsan cry tired LE
 'Zhangsan was tired from crying.'

b. Event structure

[[**do'** (**cry'**(Zhangsan))] CAUSE [BECOME **tired'** (Zhangsan)]]

(52)a. Zhangsan ku fan le Lisi.
 Zhangsan cry annoyed LE Lisi
 'Zhangsan's crying made Lisi feel annoyed.'

b. Event structure

[[**do'** (**cry'**(Zhangsan))] CAUSE [BECOME **annoyed'** (Lisi)]]

The RVCs in (53a), (54a), and (55a) are composed of a transitive verb and an intransitive verb. Each of these RVCs has three arguments associated with it. In (53a) the object NP of V₁ and the subject NP of V₂ are identical, in (54a) the subject NPs of both V₁ and V₂ are identical, whereas in (55a) none of the NP arguments are identical. Their event structures are shown in (53b), (54b), and (55b), respectively.

(53)a. Zhangsan tui dao le Lisi.
 Zhangsan push fall LE Lisi
 'Zhangsan pushed Lisi and as a result Lisi fell.'

b. Event structure

[[**do'** (**push'**(Zhangsan, Lisi))] CAUSE [BECOME **fall'** (Lisi)]]

(54)a. Zhangsan yijing chi bao fan le.
 Zhangsan already eat full meal LE
 'Zhangsan was full from eating meal.'

b. Event structure

[[**do'** (**eat'**(Zhangsan, fan))] CAUSE [BECOME **full'** (Zhangsan)]]

(55)a. Zhangsan xi yifu xi shi le xiezi.
 Zhangsan wash clothes wash wet LE shoes
 'Zhangsan washed his clothes and his shoes got wet as a result.'

b. Event structure

[[**do'** (**wash'**(Zhangsan, yifu))] CAUSE [BECOME **wet'** (xiezi)]]

5.3.3 Event roles

In the previous section, I have shown lexical representations of events for RVCs in Chinese and the NP arguments associated with them. In this section I will discuss the event roles (i.e., event participants) that NP arguments play in event structure, holding

that event roles have significant grammatical consequences and are the entities that grammatical rules refer to primarily.

But how to identify event roles? According to Croft (1991, 1998), an event structure consists of a one-dimensional linear sequence of subevents or segments, each of which is in a causal relation with the following segment. Subevents are individuated at the relevant level of granularity by causal, aspectual and other qualitative properties. For example, a process leading to a resulting state causes that state, and is treated as a distinct segment in the causal sequence even though the participant is the same. This sequence is called the *causal chain*. Following Croft (1998: 59), I suggest that event roles or participants are situated at the beginning or the endpoint of the subevents where they enter into the causal chain. That is, if the role is involved in the initiation of the event, the given event role is called *Initiator* (i.e., Initiation-point participant). If the role is involved in the endpoint of the event, it is called *Locus of affect* (i.e., Endpoint participant). In other words, the Initiator role is used to indicate cause or instigation of an event, whereas the Locus of affect role is used to indicate the delimitation or endpoint of an event. Because Chinese RVCs allow the event role that undergoes the action to occur overtly in syntactic structure, the given event role is called *Target of activity*. The event role Initiator has many different names—for example, the Antagonist (Talmy 1988b), originator (Borer 1994), trajector (Langacker 1987), instigator, or the causer. Likewise, the event role Locus of affect has many other names—for example, the Agonist (Talmy 1988b), event measure (Borer 1994), landmark (Langacker 1987), or delimiter (Ritter and

Rosen 1998). The definitions of these event roles proposed in the present work are given in (56).

(56) Definitions of event roles

- a. **Initiator**: an entity that is involved in the initiation or bringing about of an object.
- b. **Target of activity**: an entity that undergoes an action.
- c. **Locus of affect**: an entity that is involved in the endpoint or resulting state.

In (57), there are two event roles (i.e., Initiator and Locus of affect) in the RVC, and they refer to the same entity (e.g., *Zhangsan*), while in (58), there are also two event roles (i.e., Initiator and Locus of affect) in the RVC, but they refer to different entities (e.g., *Zhangsan* and *Lisi*).

(57)a. Zhangsan ku lei le.
 Zhangsan cry tired LE
 'Zhangsan was tired from crying.'

b. Event structure and event roles

Initiator		Locus of affect
↑		↑
([do' (cry'(Zhangsan)) CAUSE [BECOME tired' (Zhangsan)])		

(58)a. Zhangsan ku fan le Lisi.
 Zhangsan cry annoyed LE Lisi
 'Zhangsan's crying made Lisi feel annoyed.'

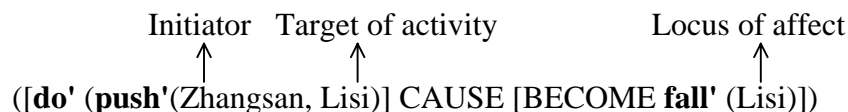
b. Event structure and event roles

Initiator		Locus of affect
↑		↑
([do' (cry'(Zhangsan)) CAUSE [BECOME annoyed' (Lisi)])		

Each of the RVCs in (59)–(61) involves three event roles: Initiator, Target of activity, and Locus of affect, but they differ in the following aspects. In RVC (59), the Target of activity role and the Locus of affect role refer to the same entity, while in RVC (60), the Initiator role and the Locus of affect role refer to the same entity. The RVC in (61) has three distinct event roles and none of them refer to the same entity.

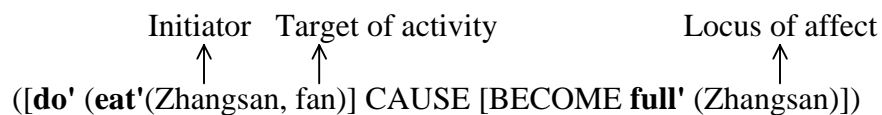
- (59)a. Zhangsan tui dao le Lisi.
 Zhangsan push fall LE Lisi
 'Zhangsan pushed Lisi and as a result Lisi fell.'

b. Event structure and event roles



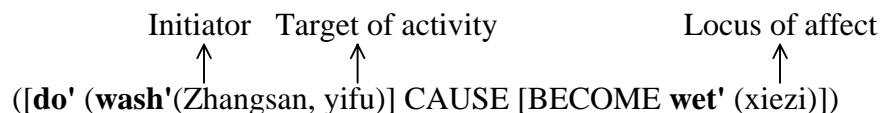
- (60)a. Zhangsan yijing chi bao fan le.
 Zhangsan already eat full meal LE
 'Zhangsan was full from eating meal.'

b. Event structure and event roles



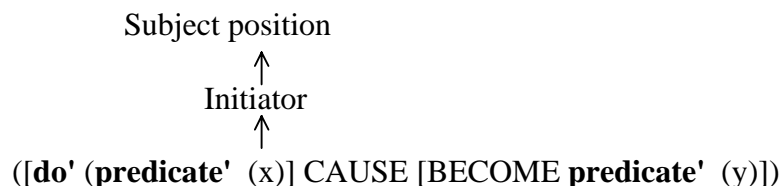
- (61)a. Zhangsan xi yifu xi shi le xiezi.
 Zhangsan wash clothes wash wet LE shoes
 'Zhangsan washed his clothes and his shoes got wet as a result.'

b. Event structure and event roles



(64)a. **Linking Rule 1:** the NP argument with the Initiator role is linked to the subject position.

b.



(65)a. **Linking Rule 2:** the NP argument with the Locus of affect role is linked to the position immediately following the second verb.

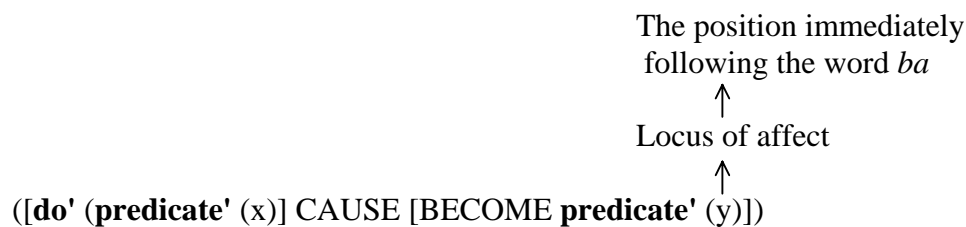
b.



It should be noted that in addition to the position immediately following the second verb, the Locus of affect NP argument in Chinese can be linked to the position immediately following the word *ba* (Linking Rule 3), as illustrated in (66).

(66)a. **Linking Rule 3:** the NP argument with the Locus of affect role is linked to the position immediately following the word *ba*.

b.



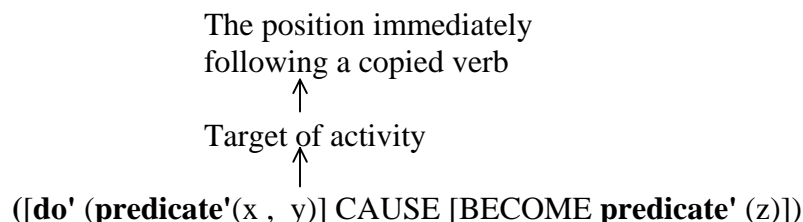
In the literature, the word *ba* has been treated in many different ways. For example, it is treated as a case marker for direct objects (Liang 1971; Goodall 1986; Huang 1992; Y. Y. Huang 1991), as a preposition (Huang 1982; L.-Y. Huang 1990; Y.-H. Li 1990; Li and Thompson 1976; McCawley 1992), as a coverb (Li and Thompson 1981), as a verb (Hashimoto 1971b; Ross 1991; Yang 1995; Bender 2000), as a secondary topic marker (Tsao 1987b), and as a functional category heading its own projection (Zou 1993; Sybesma 1999). In my analysis, the word *ba* is used to mark the displaced NP argument denoting the endpoint of the event (i.e., the Locus of affect NP).⁵

Note, however, that Chinese RVCs can overtly express the third argument (i.e., the NP argument with the Target of activity role) in syntax, in addition to the argument with the Initiator role or the Locus of affect role. As to how the Target of activity role is linked to syntax, I propose that it is linked to the position immediately following a copied verb (Linking Rule 4), as illustrated in (67). In my analysis, the copied verb refers to the first of the two identical verbs in an RVC (e.g., *Zhangsan chi_(copied) fan chi_(original) bao le* 'Zhangsan was full from eating meal.').

⁵ For the relationship between RVCs and *ba*, see Gao (1997), Zou (1995), Y. Y. Huang (1996), among others, whereas for the relationship between delimitedness/boundedness and *ba*, see Cheng (1988), Szeto (1988), Yong (1993), F.-H. Liu (1997), among others.

(67)a. **Linking Rule 4:** the NP argument with the Target of activity role is linked to the position immediately following a copied verb.

b.



Opinions differ as to which of the two identical verbs is a copied verb, and why it should be copied. Huang (1982) suggests that in a Verb-copying construction, the first of the two identical verbs is an original verb, while the other is a copied one. Tsao (1987a) also assumes that the second of the two identical verbs in the Verb-copying construction is a copy of V₁, the original verb. According to Tsao (1987a), the first verb and the NP argument are treated as a topicalized matrix V, which is moved out of the matrix VP. After the movement, the second dummy verb is inserted to fill the empty verb position left behind by verb topicalization. In contrast to Huang (1982) and Tsao (1987a), Y. Li (1990) argues that in the Verb-copying construction the second verb is in fact an original verb; the first verb is copied for Case assignment. The copied verb is inserted during syntactic derivation in the same way the English *of* is inserted for the purpose of Case assignment in the sentence *he is proud of his brother*.⁶

Following Y. Li (1990), I suggest that in the Verb-copying construction the first of the two identical verbs is a copied verb, but in contrast to Y. Li's (1990) analysis, I

⁶ For more discussions on the Verb-copying construction in Chinese, see Tsao (1987a), Chang (1991b), M.-L. Hsieh (1992), Paris (1988), X. Liu (1997), among others.

propose that the verb is copied to mark the event role (i.e., Target of activity), rather than to assign Case. Recall that in Chinese, the two verbs of an RVC are required to occur adjacently; therefore, the NP arguments between the two verbs should be displaced to other syntactic positions. It is suggested that the displaced NP argument with the Target of activity role is marked by a copied verb, while the displaced NP argument with the Locus of affect role is marked by the word *ba*.

Though both the Target of activity role and the Locus of affect role can be linked to the positions before a resultative verb complex, expressed by a copied verb and the word *ba*, respectively, the Target of activity role marked by a copied verb must occur before the Locus of affect role marked by *ba*. Why is there such a constraint? According to Croft's (1991, 1998) causal chain, an event structure consists of a one-dimensional linear sequence of subevents (also known as *segments* in Croft's analysis), each of which is in a causal relation with the following subevent. That is, an activity leading to a result state causes that state, and is treated as a distinct subevent in the causal sequence. Because in the linear sequence, the Initiator role occurs before the Target of activity role, which occurs before the Locus of affect role, the linking of these event roles to syntax also follows the order of the event roles in the causal chain. This accounts for why the Locus of affect role in the position immediately following *ba* or the second verb always follows the Target of activity role marked by a copied verb. Because event roles are represented according to the order in the causal chain, the order of the event roles: *Initiator*→*Target of activity*→*Locus of affect* in the syntactic structure is an iconic reflection of event structure in Chinese.

As discussed in section 5.2.2, an RVC comprising a transitive verb and an intransitive verb is allowed to have three distinct NP arguments, in which no NP arguments refer to the same entity, or it can have three NP arguments, two of which refer to the same entity. In addition, I have pointed out that when two NP arguments refer to the same entity, one is syntactically expressed while the other is not. But which NP argument is syntactically expressed and which is not? It is suggested that when two NP arguments refer to the same entity, the NP argument with an event role in a higher hierarchy is syntactically expressed, while the other one with an event role in a lower hierarchy is not. The hierarchy of event roles is defined as in (68).

(68) **Hierarchy of Event Roles**

Initiator > Locus of affect > Target of activity

For example, if an RVC has two identical NP arguments and specifies them as Initiator and Locus of affect, respectively, the NP argument with the event role of Initiator is syntactically expressed, because the Initiator role is higher than the Locus of affect role in the hierarchy. Note that the NP argument with the event role Locus of affect is suggested to be satisfied by binding and is not syntactically realized, because it is bound to the NP argument with the Initiator role. Because the NP argument with the Locus of affect role is bound to the NP argument with the Initiator role, the former makes reference to the latter for interpretation. But if an RVC has two identical NP arguments and specifies them as Locus of affect and Target of activity, respectively, then only the NP argument with the Locus of affect role is syntactically is expressed, since the Locus

of affect role is higher than the Target of activity role in the hierarchy. The NP argument with the Target of activity role is satisfied by binding and is not syntactically expressed, because it is bound to the NP argument with the Locus of affect role.

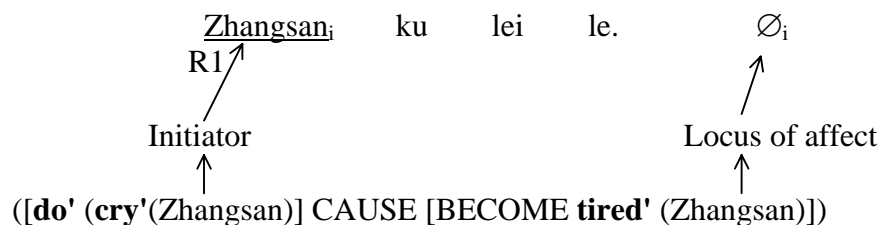
In the sections that follow, I will show that the proposed linking rules are able to systematically account for the syntactic positions of NP arguments in Chinese RVCs, and that the Hierarchy of Event Roles is able to illustrate the binding relation between the overt and covert arguments.

5.3.4.1 Both V_1 and V_2 are intransitives

The RVC in (69) is composed of two intransitive verbs *ku* 'cry' and *lei* 'tired'; each verb takes one NP argument. Notice that these two NP arguments refer to the same entity and are specified as the Initiator role and the Locus of affect role, respectively. Based on the Hierarchy of Event Roles, defined in (68), when two NP arguments refer to the same entity, only the NP argument with the event role in a higher hierarchy is syntactically expressed. Because the Initiator role is higher than the Locus of affect role in the hierarchy, the NP argument with the event role of Initiator is syntactically expressed, while the one with the event role of Locus of affect is not. By Linking Rule 1, the NP argument with the Initiator role is linked to the subject position. The NP argument with the Locus of affect role is satisfied and not syntactically expressed, because it is bound to the NP argument with the Initiator role. Because the unrealized NP argument with the Locus of affect role is bound to the NP argument with the Initiator role in the subject position, it is conceived of as having the same reference as the NP argument in the

subject position (e.g., *Zhangsan*). (The symbol \emptyset indicates the unrealized NP argument, while the subscript *i* indicates the binding relationship.)

- (69) Zhangsan ku lei le.
 Zhangsan cry tired LE
 'Zhangsan was tired from crying.'

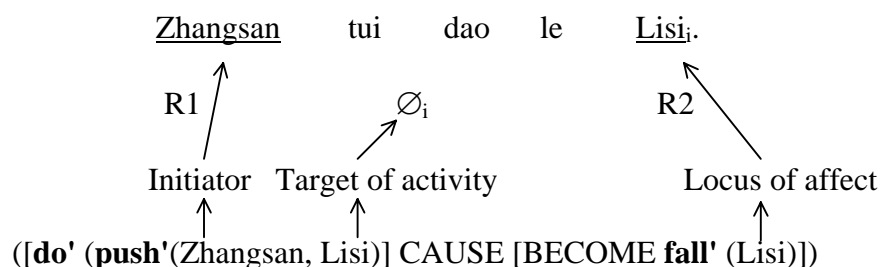


Like the RVC in (69), the RVC in (70) comprises two intransitive verbs; each verb takes one NP argument. But unlike the RVC in (69), the two NP arguments of the RVC in (70) do not refer to the same entity. Because there are no identical arguments, both NP arguments should be overtly expressed in syntax. By Linking Rule 1, the NP argument with the Initiator role (e.g., *Zhangsan*) is linked to the subject position, whereas by Linking Rule 2, the NP argument with the Locus of affect role (e.g., *Lisi*) is linked to the position immediately following the second verb, as shown in (70). Note, however, that in addition to the position immediately following the second verb, the NP argument with the locus of affect role can be linked to the position immediately following the word *ba* by Linking Rule 3, as (71) shows.

5.3.4.2 V_1 is a transitive whereas V_2 is an intransitive

In the RVC demonstrated in (72), there are three NP arguments, which are specified as Initiator, Target of activity, and Locus of affect, respectively. Note that in this type of RVC, the NP argument with the Target of activity role and the NP argument with the Locus of affect role refer to the same entity. Because there are identical NP arguments, only one of the two NP arguments will be syntactically expressed. According to the Hierarchy of Event Roles in (68), the Locus of affect role is higher than the Target of activity role. Thus, the NP argument with the Locus of affect role is syntactically expressed, while the NP argument with the Target of activity role is not. By Linking Rule 1, the NP argument with the Initiator role (e.g., *Zhangsan*) is linked to the subject position. By Linking Rule 2, the NP argument with the Locus of affect role (e.g., *Lisi*) is linked to the position immediately following the second verb, as shown in (72), or by Linking Rule 3, the NP argument with the Locus of affect role is linked to the position immediately following the word *ba*, as shown in (73). The NP argument with the Target of activity role is satisfied and is not syntactically realized, because it is bound to the NP argument with the Locus of affect role.

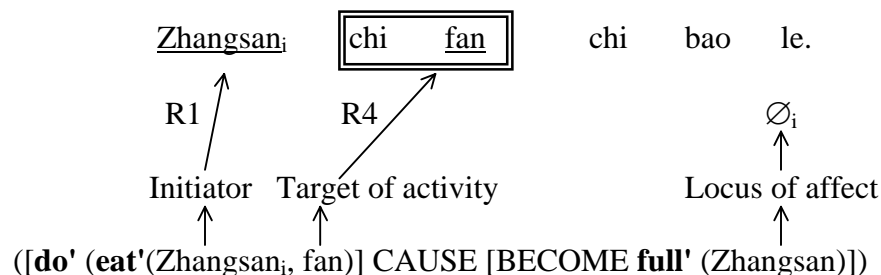
- (72) Zhangsan tui dao le Lisi.
 Zhangsan push fall LE Lisi
 'Zhangsan pushed Lisi and as a result Lisi fell.'



Like the RVC in (72), the RVC in (75) has three NP arguments. But unlike the RVC in (72), in which the NP argument with the Target of activity role and the NP argument with the Locus of affect role refer to the same entity, the RVC in (75) allows the NP argument with the Initiator role and the NP argument with the Locus of affect role to refer to the same entity. Because the Initiator role is higher than the Locus of affect role in the hierarchy, the NP argument with the Initiator role is syntactically expressed, while the NP argument with the Locus of affect role is not. The NP argument with the Locus of affect role is satisfied and is not syntactically realized, because it is bound to the NP argument with the Initiator role. As expected, by Linking Rule 1, the NP argument with the Initiator role (e.g., *Zhangsan*) is linked to the subject position, while by Linking Rule 4, the NP argument with the Target of activity role (e.g., *fan* 'meal') is linked to the position immediately following a copied verb (e.g., *chi* 'eat').

(75) RVC with Verb-copying construction

Zhangsan chi fan chi bao le.
 Zhangsan eat meal eat full LE
 'Zhangsan was full from eating meal.'



But why can the NP argument with the Target of activity role (e.g., *fan* 'meal') sometimes occur in the position immediately following the second verb, as shown in (76)?

expressions like *beer drinking* as in the expression *she's gone beer drinking* (Van Valin and LaPolla 1997: 122-123).

In RVC (76), the omission of the NP *fan* 'meal' does not change the meaning of the sentence, which supports the claim made by Van Valin and LaPolla (1997) that NP arguments with no definite reference can be freely omitted. According to Y. Y. Huang (1991: 140), the NP argument *fan* 'meal' in the position immediately following the second verb is a pseudo-object, because (a) it cannot be replaced with other objects or definite NPs, and (b) the deletion of the object is acceptable (no change of meaning). It is thus suggested that an NP argument with the Target of activity role can occur in the position immediately following the second verb in a Chinese RVC, only when it expresses an intrinsic facet of the meaning of the verb. This accounts for why the replacement of the NP expressing an intrinsic facet of the meaning of the verb with other NPs is not permitted.

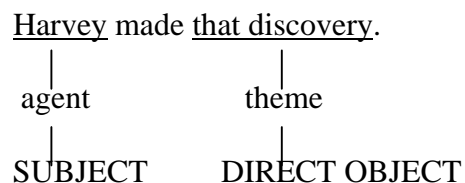
The RVC in (77) has three distinct NP arguments. Because these three NP arguments refer to three different entities, all of these arguments should be overtly expressed in syntax. By Linking Rule 1, the NP argument with the Initiator role (e.g., *Zhangsan*) is linked to the subject position; by Linking Rule 2, the NP argument with the Locus of affect role (e.g., *xiezi* 'shoes') is linked to the position immediately following the second verb, while by Linking Rule 4, the NP argument with the Target of activity role (e.g., *yifu* 'clothes') is linked to the position immediately following a copied verb (e.g., *wash*). Recall that in addition to the position immediately following the second verb, the NP argument with the Locus of affect role can be linked to the position immediately

argument. This difference accounts for the following facts. First, RVCs can involve the *Ba*-construction and the Verb-copying construction at the same time when the three NP arguments are distinctive in an RVC. Second, RVCs do not occur in the Verb-copying construction when the Target of activity NP argument is identical with the Locus of affect NP argument, because the Target of activity NP argument is not syntactically realized. Third, RVCs do not occur in the *Ba*-construction when the Locus of affect NP argument is identical with the Initiator NP argument, because the Locus of affect NP argument is not syntactically realized.

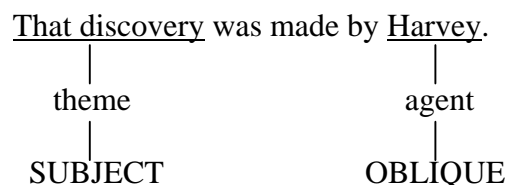
5.3.4.3 Passivization of RVCs in Chinese

In most linguistic analyses, passivization is an operation that restructures the linking relations between thematic roles and grammatical relations, 'downgrading' the element that would otherwise have been the subject and (usually) 'upgrading' the element that would otherwise have been the direct object (O'Grady 1996). Example (79) is an active sentence, whereas example (80) is the resulting sentence of passivization. In Relational Grammar, 'upgrading' is referred to as 'promotion' and 'downgrading' as 'demotion'. In Foley and Van Valin (1984, 1985), the former is labeled 'foregrounding' and the latter 'backgrounding'.

(79) Active sentence



(80) Passive sentence



The NP *Harvey* is the subject in the active sentence and is realized as an oblique in the passive sentence ('downgrading'), while the NP *that discovery*, which is the direct object in the active sentence, is realized as subject in the passive sentence ('upgrading'). According to Bresnan (1982), O'Grady (1996), and many others, passivization is thought of as an operation that has the following effect in the case of 'basic' passives.

(81) The Passivization Operation

subject => oblique

direct object => subject

Because in my analysis of Chinese RVCs thematic roles play no primary role in determining the linking of arguments to syntax, to account for the passives of RVCs in Chinese, I redefine passivization as an operation that restructures the linking relations between event roles and grammatical relations, permitting the Locus of affect NP argument to occur as subject, and the Initiator NP argument to appear in the periphery as

object of *bei* or is omitted (Linking Rule 5), as given in (82) (for the functions and status of *bei*, see D. Shi 1997).

(82) **Linking Rule 5** (The Passivization Operation in Chinese):

- a. Locus of affect => subject
- b. Initiator => object of *bei* or omission

By formulating the rule this way, we predict that if an RVC can occur in the *Ba*-construction, it can also occur in the *Bei*-construction, because both constructions are related to the displacement of the event role Locus of affect. In addition, we predict that when the Initiator NP argument is identical with the Locus of affect NP argument in an RVC, the RVC does not have a corresponding *Ba*-construction or *Bei*-construction, because the Locus of affect NP argument, which is lower than the Initiator NP argument in the hierarchy, is not syntactically expressed.

The most important feature of passivization is that the choice of the syntactic subject can be influenced by discourse-pragmatic factors. That is, in topic chains in languages like English, the primary topical event role is chosen as subject. As pointed out by Keenan (1985: 243), Foley and Van Valin (1985: 299), Givon (1990: 566), the upgraded argument comes to be seen as more prominent and topical—i.e., what the sentence is about. This suggests that the discourse-pragmatic status of the arguments can influence the linking.

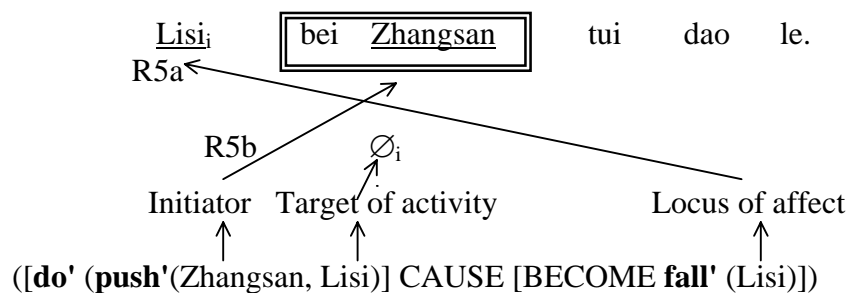
In Chinese, the *Bei*-construction reflects an operation of passivization. That is, the morpheme *bei* is used to mark a change in semantic function from the Initiator role to

are transitive or intransitive. Rather, what matters is whether the given RVC has an overt Locus of affect role in event structure.

In the passive of the RVC in (85), the NP argument with the Initiator role (e.g., *Zhangsan*) is realized as the object of *bei* while the NP argument with the Locus of affect role (e.g., *Lisi*) is realized as the subject, according to the Linking Rule 5. Note that the NP argument with the Target of activity role is not syntactically realized, and is bound to the NP argument with the Locus of affect role, because the Target of activity role is lower than the Locus of affect role in the hierarchy.

(85) *Bei*-construction

Lisi bei Zhangsan tui dao le.
 Lisi BEI Zhangsan push fall LE
 'Lisi fell from Zhangsan's pushing.'



In the passive of the RVC in (86), the NP argument with the Initiator role (e.g., *Zhangsan*) is realized as the object of *bei* while the NP argument with the Locus of affect role (e.g., *xiezi* 'shoes') is realized as the subject, according to the Linking Rule 5. In addition, by Linking Rule 4, the NP argument with the Target of activity role (e.g., *yifu* 'clothes') is realized as the object of a copied verb (here, *wash*).

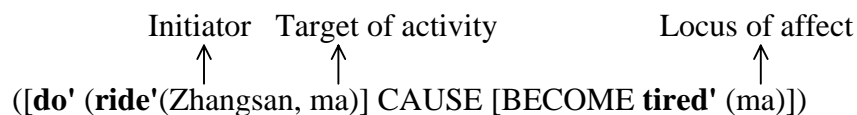
Recall that in Chinese the NP argument with the Target of activity role usually occurs in the position immediately following a copied verb, but it can occur in the position immediately following the second verb, only when the given NP argument expresses an intrinsic facet of the meaning of the verb. The indefinite NP argument with the Target of activity role (e.g., *fan* 'meal'), as in (87), expresses an intrinsic facet of the meaning of the verb *chi* 'eat'; therefore, its occurrence in the position immediately following the second verb is possible.

- (87) Zhangsan yijing chi bao fan le.
 Zhangsan already eat full meal LE
 'Zhangsan was full from eating meal.'

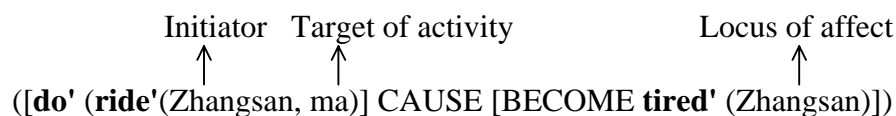
It is suggested that the RVC in (88) has two ambiguous interpretations, because it is associated with two different event structures: (a) the event structure in which the Locus of affect is identical with the Target of activity role (e.g., *ma* 'horse'), as in (89a) and (b) the event structure in which the Locus of affect role is identical with the Initiator role (e.g., *Zhangsan*), as in (89b). Put differently, the ambiguity of RVC (88) results from the fact that the Target of activity NP argument (e.g., *ma* 'horse') expressing an intrinsic facet of the meaning of the verb *qi* 'ride' occurs in the position where the Locus of affect NP argument normally occur, i.e., the position immediately following the second verb.

- (88) Zhangsan qi lei le ma.
 Zhangsan ride tired LE horse
 (a)'The horse was tired from Zhangsan's riding.'
 (b)'Zhangsan was tired from riding horses.'

(89)a.



b.



As for why the ambiguous interpretations of the RVC in (88) disappear when the NP argument in the position immediately following the second verb is replaced with a definite one (e.g., *nei pi ma* 'that horse'), as in (90), I suggest that sentence (90) can have only the interpretation of (90a), but not (90b), because the definite NP *nei pi ma* 'that horse' cannot be understood as an *inherent argument* in Van Valin's and LaPolla's (1997) sense (i.e., an argument expressing an intrinsic facet of the meaning of the verb); thus, it cannot be interpreted as the Target of activity NP argument.

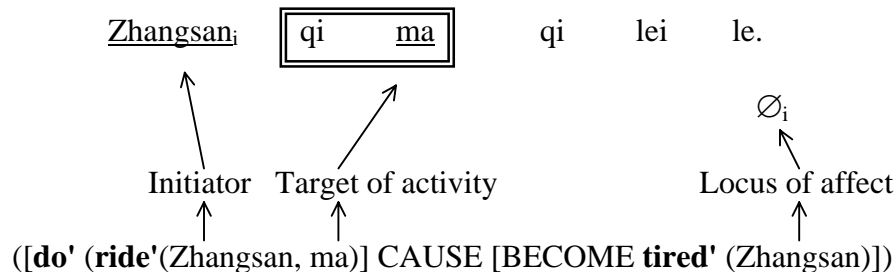
- (90) Zhangsan qi lei le nei pi ma.
 Zhangsan ride tired LE that Cl. horse
 (a)'That horse was tired from Zhangsan's riding.'
 (b)*'Zhangsan was tired from riding that horse.'

As for why ambiguous interpretations disappear when the given RVC occurs in the *Ba*-construction, the *Bei*-construction, or the Verb-copying construction, the explanation is as follows. In the Verb-copying construction, as in (91), the NP argument *ma* 'horse' is placed in the position immediately following a copied verb *qi* 'ride', which suggests that this NP argument is an entity that undergoes the action. In addition, since in (91) there is no overt NP argument indicating the Locus of affect role (i.e., the endpoint

participant), the Locus of affect role is understood as having the same reference as the Initiator role (e.g., *Zhangsan*), according to the Hierarchy of Event roles, giving the interpretation as 'Zhangsan was tired from riding horses'.

(91) Verb-copying construction

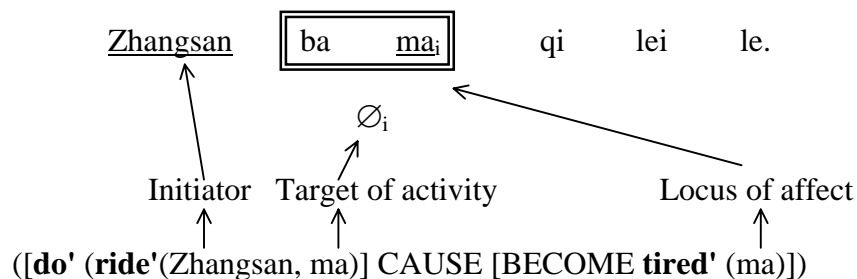
Zhangsan qi ma qi lei le.
 Zhangsan ride horse ride tired LE
 'Zhangsan was tired from riding horses.'



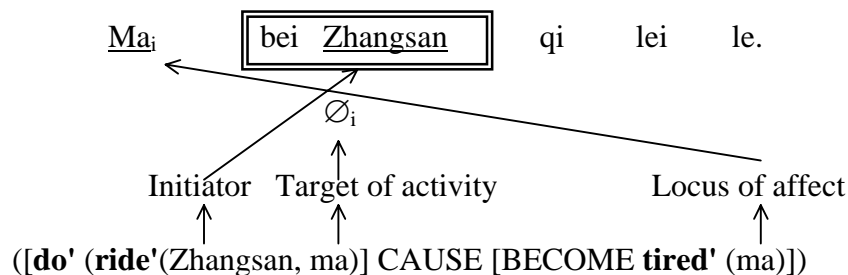
Recall that in my analysis, the word *ba* is used to mark the Locus of affect role of an RVC. The NP argument *ma* 'horse' marked by *ba* in (92) can only be interpreted as an entity participating in the resulting state or the endpoint, i.e., *lei* 'tired'. In addition, I have pointed out before that in the *Bei*-construction, the subject NP is associated with the Locus of affect role; therefore, the NP argument *ma* 'horse' in the subject position of the *Bei*-construction can only be interpreted as an entity participating in the resulting state. Sentences (92) and (93) share the same interpretation, because the NP argument *ma* 'horse' in both sentences is understood as an endpoint participant.

(92) *Ba*-construction

Zhangsan ba ma qi lei le.
 Zhangsan BA horse ride tired LE
 'The horse was tired from Zhangsan's riding.'

(93) *Bei*-construction

Ma bei Zhangsan qi lei le.
 horse BEI Zhangsan ride tired LE
 'The horse was tired from Zhangsan's riding.'



In this section, I have pointed out that an RVC has ambiguous interpretations when a Target of activity NP argument with no definite reference happens to occur in the position immediately following the second verb where a Locus of affect NP argument normally occurs. The ambiguous interpretations disappear in the *Ba*-construction, the *Bei*-construction, or the Verb-copying construction, because in these constructions, no NP arguments occur in the position immediately following the second verb. In addition,

because the Locus of affect NP argument marked by *ba* in the *Ba*-construction and the Locus of affect NP argument in the subject position of the *Bei*-construction can only be interpreted as an entity participating in the resulting state, this accounts for why the two constructions share the same interpretation.

5.4 Concluding remarks

In this chapter I have shown that the emergence of syntactic constructions such as the *Ba*-construction, the *Bei*-construction, and the Verb-copying construction has resulted from the development of RVCs in Chinese. Because the two verbs of an RVC are required to occur adjacently under the EAC, which says that no element (except for *bu* 'not' and *de* 'can') can intervene between predicates designating a cause-result relationship, the NP arguments between the two verbs are forced to be displaced in other syntactic positions. It is thus suggested that the formation of the *Ba*-construction, the *Bei*-construction, and the Verb-copying construction results from the displacement of NP arguments between the two verbs of an RVC.

In addition, I have suggested that the NP arguments between the two verbs of an RVC are displaced according to the event roles they play in event structure. For instance, the NP argument with the Initiator role is linked to the subject position of an RVC, the NP argument with the Target of activity role is linked to the position immediately following a copied verb, and the NP argument with the Locus of affect role is linked to the position immediately following the second verb or the word *ba*.

Moreover, it was suggested that in the Verb-copying construction, the first of the two identical verbs (V_1) is a copied verb, used to indicate the event role Target of activity,

whereas in the *Ba*-construction, the word *ba* is used to indicate the event role Locus of affect. The verb-copying device in the Verb-copying construction and the *ba*-marking device in the *Ba*-construction actually have the same function—namely, they are used to mark the displaced NP arguments in an RVC.

As for passivization of Chinese RVCs, I have shown that when both verbs of an RVC are intransitives, passivization is still possible. This implies that the transitivity of verbs in RVCs is not a determining factor of passivization. An RVC can have a passive form only when it has an overt Locus of affect NP argument.

Last, I have pointed out that an RVC has ambiguous interpretations when a Target of activity NP argument with no definite reference unusually occurs in the position immediately following the second verb where a Locus of affect NP argument normally occurs. In addition, the reason that the *Ba*-construction and the *Bei*-construction share the same interpretation is because both the Locus of affect NP argument marked by *ba* in the *Ba*-construction and the Locus of affect NP argument in the subject position of the *Bei*-construction can only be referred to as an entity participating in the resulting state.

CHAPTER 6

CONCLUSION

... the aim of science is to secure theories with a high problem-solving effectiveness. From this perspective, *science progresses just in case successive theories solve more problems than their predecessors.*

— LARRY LAUDAN (1996: 78)

This work opened with a discussion of the classification of eventuality types and aspectual shift phenomena, holding that event structure plays an important role in linguistic analysis. I hope that I have presented a convincing case that the role event structure plays is able to account for (a) the systematic contrast between different languages (e.g., why English accomplishments can produce ambiguous interpretations with the *almost*-adverbial, whereas their Chinese counterparts cannot); (b) the divergent linguistic properties of different constructions in Chinese (e.g., RVCs, SVCs, and DVCs); (c) the grammaticalization of Chinese RVCs (e.g., how RVCs in modern Chinese, in which the two verbs are adjacent to each other, developed from the surface form of SVC, in which the two verbs are separated from each other); and (d) the syntactic positions of NP arguments in Chinese RVCs (e.g., how the syntactic positions of NP arguments in RVCs are determined).

Chapter 2 and 3 have been devoted to presenting eventualities of different types in English and Chinese (e.g., activities, states, achievements, and accomplishments) and the linguistic properties associated with them. It has been demonstrated that we can explain and understand complex eventualities such as achievements and accomplishments by

reducing them to their more simple components such as the activity component and the endpoint component and the relations among them. In addition, it has been proposed that the contrast between complex eventualities in a single language or different languages can be accounted for in terms of Event-component Fusion (ECF) and Event Projection (EP). ECF is an operation in which the concurrent activity component and the endpoint component of a complex eventuality are fused, resulting in a transition (also known as change of state). As for EP, it is an operation in which the activity component of a complex eventuality projects as the aspectual head so that each complex eventuality has an aspectual head that determines the properties of that complex eventuality. It has been assumed that when a complex eventuality is compatible with EP, it is able to carry the properties associated with an activity eventuality, whereas when it is compatible with ECF, it is conceived of as a whole, not allowing its compositional part alone to represent the properties of that complex eventuality.

In Chapter 2, I have examined four eventuality classes in English, in an attempt to account for the intertwined relationships between these eventualities in terms of EP and ECF. Because accomplishments but not achievements are compatible with EP, only accomplishments share the syntactic properties of activities—for example, they can occur in imperatives, as complements of *persuade* or *force*, with agentive adverbials, with manner adverbials, and in the imperfective, all of which presuppose an activity reading. Achievements do not comply with EP; therefore, they do not share the syntactic properties of activities. EP enables us to explain why accomplishments and

achievements form an aspectual natural class, e.g., both are telic complex eventualities, but they have divergent behaviors.

In addition, because only accomplishments, but not achievements, comply with EP, accomplishments are able to yield one more interpretation than achievements when modified by *almost*-adverbials, *in*-adverbials and *for*-adverbials, or when occurring with the grammatical form "keep V-ing". Because only accomplishments, but not activities and states, comply with ECF, accomplishments have the following properties. First, they are able to yield an additional culminative reading with the *almost*-adverbial, whereas the activities and states yield only the intentional reading. Second, they are able to yield an additional conclusive reading with the *in*-adverbial, whereas the activities and states yield only the inceptive reading. Third, they are able to denote an additional result-state reading with the *for*-adverbial, whereas the activities and states denote only the extension of the eventualities. Fourth, they are able to produce one more repetitive reading than the activities with the grammatical form "keep V-ing".

In Chapter 3, I have demonstrated that the intertwined syntactic properties and the interrelationships of different eventualities in Chinese can be generalized in terms of the EP and the ECF. With these two principles, we can explicate the following systematic contrasts in English and Chinese.

First, because in Chinese lexical accomplishments, but not achievements, are compatible with EP, it is not surprising that Chinese lexical accomplishments, like their English counterparts, can occur in the syntactic environments that require an activity reading, e.g., in the imperfective, as imperatives, as complements of *bi* 'force', with

agentive adverbials. Like English, Chinese achievements do not comply with EP; therefore, they do not have the syntactic properties associated with activities.

Second, the comparison of RVCs in English and Chinese shows that the existence of the same type of construction (e.g., with a cause-result relationship) in different languages does not necessarily imply that they have the same syntactic distribution. For example, because English RVCs, but not Chinese RVCs, are compatible with EP, only English RVCs can occur in the syntactic environments where an activity reading is required. In addition, I have classified RVCs in Chinese into two different types according to different syntactic constructions associated with them: (a) RVCs which have a corresponding *Ba*-construction, and (b) RVCs which have a corresponding Verb-copying construction. It has been noted that when RVCs occur in the *Ba*-construction, they can then occur in the syntactic environments of an activity. Their ability to cooccur in the environments where an activity reading is required suggests that the morpheme *ba* is able to denote an additional feature of activity that licenses the given syntactic properties.

Third, lexical accomplishments in English are compatible with EP; therefore, they are able to yield one more interpretation than achievements when modified by the *almost*-adverbial. In contrast, though lexical accomplishments in Chinese are also compatible with EP, they can only have a culminative reading with the adverbial *chabuduo/jihu* 'almost'. The impossibility of Chinese lexical accomplishments to produce an intentional reading with *chabuduo/jihu* 'almost' results from the fact that Chinese activities do not occur with *chabuduo/jihu* 'almost'. The same explanation also accounts for why

accomplishments in English do not yield an inceptive reading without the auxiliary *will*, when modified by *in*-adverbials, because *in*-adverbials do not occur with activity eventualities with the past tense (e.g., **John ran in an hour*).

Fourth, the analysis based on EP and ECF complies with the fact that in Chinese, an accomplishment expression such as *Ta hua le yi zhang hua* 'He painted a picture' (a lexical accomplishment in my analysis) may or may not imply the attainment of the goal, while in a derived accomplishment (e.g., an RVC) such as *Ta qiao po le wan* 'He broke the bowl', the attainment of the goal is always implied, as claimed by Tai (1984) and Smith (1997). In my analysis, when the EP applies, the endpoint of the lexical accomplishment falls outside of view or attention; therefore, the goal is not attained. Because RVCs in Chinese do not comply with the EP, the endpoint of an RVC cannot fall outside of view or attention; therefore, the goal is always implied.

Last, I have pointed out that in Chinese there are two types of states: stage-level states and individual-level states, of which only stage-level states can occur with the perfective aspect marker *le*. With the *le* marker, stage-level states become grammatical with the scalar adverbial *chabuduo/jihu* 'almost'. It is thus proposed that the aspect marker *le* can designate a boundary (or an endpoint) to which scalar adverbials can refer. Individual-level states are permanent in nature. They do not occur with the aspect marker *le*, designating an initial point; therefore, they do not take the adverbials such as *chabuduo/jihu* 'almost'.

Chapter 4 has attempted to answer the question regarding why the modern Chinese RVCs, in which the two verbs must occur adjacently, developed from the surface

form of SVC, in which the two verbs occur separately. It has been argued that the diachronic development of the RVCs in modern Chinese was motivated by semantic factors rather than by the SVO to SOV word-order drift hypothesis. That is, the fact that the two subevents of the Causative SVC (the construction with a cause-result relationship) are conceived of as a unitary semantic entity has led to the alteration of syntactic structure; as a result, the two verbs are placed close to each other syntactically in modern RVCs and the perfective aspect marker *le* can only occur after both verbs, but not between them.

In addition, I have examined SVCs, RVCs, and DVCs in terms of EP and ECF, proposing that the differences among SVCs, RVCs, and DVCs are as follows. Because SVCs can undergo EP, whereas RVCs cannot, only SVCs, but not RVCs, can occur in the syntactic environments where an activity reading is required. DVCs have dual properties, depending on whether the two verbs occur adjacently: they can undergo EP and occur in the syntactic environments that presuppose an activity reading, when the two verbs occur separately. But if their two verbs occur adjacently, the given DVCs can undergo ECF, but not EP; therefore, their occurrence in the syntactic environments where an activity occurs is impossible.

In addition to investigating linguistic properties of RVCs, SVCs, and DVCs in terms of EP and ECF, I have examined differences in the behavior of RVCs, SVCs, and DVCs and their relations to temporal structure, e.g., whether the two subevents overlap in time. It has been found that generalizations of these three syntactic constructions can be captured systematically in terms of temporal structure. For example, in SVCs, the two

subevents are temporally ordered such that the first completely precedes the second, whereas in RVCs and DVCs, the first subevent overlaps the second partially (e.g., RVCs) or completely (e.g., DVCs). Because there is no overlap in time between two subevents of SVCs with a purpose reading, adverbials such as *like* 'immediately' have scope only over the first subevent. On the other hand, because there is a time overlap in RVCs or DVCs, adverbials such as *like* 'immediately' have scope over both subevents, rather than over a single subevent. In addition, in terms of temporal structure, we are able to illustrate why an SVC allows its two verbs to occur in separate clauses of a conjoined sentence with a 'but' conjunction, while an RVC and a DVC do not, unless the first verb also shows up in the second clause. The two verbs of an SVC can appear in separate clauses because they do not overlap in time.

Chapter 5 has argued that the NP arguments of an RVC are linked to the syntactic positions according to the event roles that they play. It has proposed that '*ba*+NP' is only associated with the Locus of affect role, whereas 'a copied verb+NP' is only associated with the Target of activity role. The RVC with *ku-fan* 'cry-annoyed' (e.g., *Zhangsan ku fan le Lisi*) cannot occur in the Verb-copying construction, because it does not involve a Target of activity role. The RVC with *chi-bao* 'eat-full' (e.g., *Zhangsan chi bao fan le*) cannot occur in the *Ba*-construction and the *Bei*-construction, because it does not contain an overt NP argument with the Locus of affect role. The ambiguity of the RVC with *qi-lei* 'ride-tired' in the form ' $NP_1+V_1V_2+NP_2$ ' (e.g., *Zhangsan qi lei le ma*) results from the fact that the Target of activity NP argument used to characterize the nature of the action happens to occur in a position where the Locus of affect normally occurs.

In addition, it has been suggested that in a Verb-copying construction, the first of the two identical verbs (V_1) is a copied verb, used to indicate the event role Target of activity, whereas in a *Ba*-construction, the word *ba* is used to indicate the event role Locus of affect.

REFERENCES

- Aarts, Bas. 1995. Secondary predicates in English. *The verb in contemporary English: Theory and description*, ed. by Bas Aarts and Charles F. Meyer, 75-101. Cambridge: Cambridge University Press.
- Allen, Robert L. 1966. *The verb system of present-day American English*. The Hague: Mouton.
- Alsina, Alex. 1999. On the representation of event structure. *Grammatical semantics: Evidence for structure in meaning*, ed. by Tara Mohanan and Lionel Wee, 77-122. Stanford: Center for the Study of Language and Information.
- Aristotle. 1984. *Metaphysics*. *The complete works of Aristotle: The revised oxford translation*, Volume 2, ed. by J. Barnes. Princeton: Princeton University Press.
- Auyang, Sunny A. 1998. *Foundations of complex-systems theories: In economics, evolutionary biology and statistical physics*. Cambridge: Cambridge University Press.
- Bach, Emmon. 1981. On time, tense, and aspect: An essay in English metaphysics. *Radical Pragmatics*, ed. by P. Cole, 63-81. New York: Academic Press.
- Bach, Emmon. 1986. The algebra of events. *Linguistics and Philosophy* 9.1: 5-16.
- Bache, C. 1982. Aspect and Aktionsart: Towards a semantic distinction. *Journal of Linguistics* 18: 57-72.
- Baker, M. 1988. *Incorporation: A theory of grammatical function changing*. Chicago: University of Chicago Press.
- Bechtel, William, and Robert C. Richardson. 1993. *Discovering complexity: Decomposition and localization as strategies in scientific research*. Princeton: Princeton University Press.
- Behaghel, Otto. 1932. *Deutsche syntax: Eine geschichtliche Darstellung*, Vol. 4, Wortstellung: Periodenbau. Heidelberg: Carl Winters Universitätsbuchhandlung.
- Bender, Emily. 2000. The syntax of Mandarin BA: Reconsidering the verbal analysis. *Journal of East Asian Linguistics* 9: 105-145.

- Binnick, Robert I. 1991. *Time and the verb: A guide to tense and aspect*. New York: Oxford University Press.
- Biq, Yung-o, James Tai, and Sandra Thompson. 1996. Recent developments in functional approaches to Chinese. *New horizons in Chinese linguistics*, ed. by C.-T. James Huang and Y.-H. Audrey Li, 97-140. Dordrecht: Kluwer Academic Publishers.
- Bolinger, Dwight. 1982. Intonation and its parts. *Language* 58: 505-533.
- Borer, H. 1994. The projection of arguments. *Functional projections*, University of Massachusetts Occasional Papers 17, ed. by Elena Benedicto and Jeff Runner. Massachusetts: GLSA, University of Massachusetts.
- Borer, H. 1996. Passive without theta grids. *Morphological interfaces*, ed. by P. Farrell and S. Lapoint. Stanford: CSLI Publications.
- Bresnan, Joan. 1982. The passive in lexical theory. *The mental representation of grammatical relations*, ed. by J. Bresnan, 3-86. Cambridge: MIT Press.
- Brinton, Laurel J. 1988. The development of English aspectual systems: Aspectualizers and post-verbal particles. Cambridge: Cambridge University Press.
- Brinton, Laurel J. 1998. Aspectuality and countability: A cross-categorical analogy. *English Language and Linguistics* 2.1: 37-64.
- Bybee, Joan. 1985. Diagrammatic iconicity in stem-inflection relations. *Iconicity in syntax*, ed. by John Haiman, 11-48. Amsterdam: John Benjamins.
- Carlson, G. 1977. Reference to kinds in English. Ph. D. dissertation, University of Massachusetts.
- Cartwright, Nancy. 1983. *How the laws of physics lie*. Oxford: Clarendon Press.
- Chang, Claire Hsun-huei. 1989. Compounds in Mandarin Chinese: With special emphasis on resultative verb compounds. *University of Hawaii Linguistics Department Working Papers* 20: 59-84.
- Chang, Claire Hsun-huei. 1990. On serial verbs in Mandarin Chinese. VV compounds and co-verbial phrases. *Working Papers in Linguistics* 39, The Ohio State University, ed. by Brian D. Joseph and Arnold M. Zwicky, 288-315.

- Chang, Claire Hsun-huei. 1991a. Interaction between syntax and morphology: A case study of Mandarin Chinese. Ph. D. dissertation, University of Hawaii.
- Chang, Claire Hsun-huei. 1991b. Verb copying: Toward a balance between formalism and functionalism. *Journal of the Chinese Language Teachers Association* 1: 1-32.
- Chang, Claire Hsun-huei. 1998. V-V compounds in Mandarin Chinese: Argument structure and semantics. *New approaches to Chinese word formation: Morphology, phonology and the lexicon in modern and ancient Chinese*, ed. by Jerome L. Packard, 77-101. New York: Mouton de Gruyter.
- Chang, Jung-hsing. 1999. Complex predicates and grammatical forms in Mandarin. Paper presented at Third Annual Conference for Students in the College of Languages, Linguistics and Literature, University of Hawaii, March 13, 1999.
- Chang, Jung-hsing. 2000. Events and temporal adverbials. Paper presented at Fourth Annual Conference for Students in the College of Languages, Linguistics and Literature, University of Hawaii, April 18, 2000.
- Chang, Jung-hsing. 2000. Event Structure in English and Chinese. Paper presented at Twelfth North American Conference of Chinese Linguistics, San Diego State University, June 16-18, 2000.
- Chao, Yuen Ren. 1968. *A grammar of spoken Chinese*. Berkeley: University of California Press.
- Chen, C.-S. 1983. Zaoqi chuzhishi luetan (A brief discussion of the early disposal form). *Zhongguo Yuwen* 3: 201-206.
- Chen, Ping. 1988. Lun xiandai hanyu shijian xitong de sanyuan jiegou (On the triplex structure of the temporal system in modern Chinese). *Zhongguo Yuwen* 5: 401-422.
- Cheng, Lisa Lai-Shen. 1988. Aspects of the *ba*-construction. *Studies in generative approaches to aspect*. *Lexicon Project Working Papers* 24, M.I.T., ed. by C. Tenny, 73-84.

- Cheng, Lisa Lai-Shen. 1997. Resultative compounds and lexical relational structures. *Chinese Languages and Linguistics* 3: 167-197. Institute of History and Philology, Academia Sinica, Taiwan.
- Cheng, Lisa Lai-Shen, and James Huang. 1994. On the argument structure of resultative compounds. In honor of William S.-Y. Wang: *Interdisciplinary studies on language and language change*, ed. by Matthew Chen and Ovid Tzeng, 187-221. Taipei: Pyramid Press.
- Cheng, Lisa L.-S., C.-T. James Huang, Y.-H. Audrey Li, and C.-C. Jane Tang. 1997. Causative compounds across Chinese dialects: A study of Cantonese, Mandarin and Taiwanese. *Chinese Languages and Linguistics* 4: 199-224. Institute of History and Philology, Academia Sinica, Taiwan.
- Cheng, Robert L. 1997. Taiwanese and Mandarin structures and their developmental trends in Taiwan III: Temporal and spatial relations, questions and negatives in Taiwanese and Mandarin. Taipei, Taiwan: Yuan-Liou Publishing Co., Ltd.
- Chomsky, Noam. 1957. *Syntactic structures*. The Hague: Mouton.
- Chomsky, Noam. 1995. *The Minimalist Program*. Cambridge: The MIT Press.
- Chu, Chauncey C. 1983. *A reference grammar of Chinese for English speakers*. New York: Peter Lang.
- Chu, Chauncey C. 1993. The prototypicality of topic in Mandarin Chinese. *Journal of the Chinese Language Teachers Association* 28.1: 25-48.
- Chu, Chauncey C. 1998. *A discourse grammar of Mandarin Chinese*. New York: Peter Lang.
- Chu, Chauncey C., and W. Vincent Chang. 1987. The discourse function of the verbal suffix -LE in Mandarin. *Journal of Chinese Linguistics* 15: 309-334.
- Clark, Herbert H. 1996. Communities, commonalities, and communication. *Rethinking linguistic relativity*, ed. by J. J. Gumperz and S. C. Levinson, 324-355. Cambridge: Cambridge University Press.
- Comrie, Bernard. 1976. *Aspect*. Cambridge: Cambridge University Press.
- Comrie, Bernard. 1985. *Tense*. Cambridge: Cambridge University Press.

- Couvalis, G. 1997. *The sociology of knowledge and feminism. The philosophy of science: Science and objectivity.* London: Sage.
- Croft, William. 1990a. Possible verbs and the structure of events. *Meanings and prototypes: Studies on linguistic categorization*, ed. by S. L. Tsohatzidis, 48-73. London: Routledge & Kegan Paul.
- Croft, William. 1990b. *Typology and universals.* Cambridge: Cambridge University Press.
- Croft, William. 1991. *Syntactic categories and grammatical relations: The cognitive organization of information.* Chicago: The University of Chicago University.
- Croft, William. 1993. A noun is a noun is a noun—or is it? Some reflections on the universality of semantics. *Proceedings of the Nineteenth Annual Meeting of the Berkeley Linguistics Society*, ed. by Joshua S. Guenter, Barbara A. Kaiser and Cheryl C. Zoll, 369-380. Berkeley: Berkeley Linguistics Society.
- Croft, William. 1998. Event structure and argument linking. *The projection of arguments: Lexical and compositional factors*, ed. by Miriam Butt and Wilhelm Geuder, 21-63. Stanford: CSLI Publications.
- Croft, William. 1999. Some contributions of typology to cognitive linguistics, and vice versa. *Cognitive linguistics: Foundations, scope, and methodology*, ed. by Theo Janssen and Gisela Redeker, 61-93. New York: Mouton de Gruyter.
- Dahl, Östen. 1981. On the definition of the telic-atelic (bounded-nonbounded) distinction. *Syntax and semantics 14. Tense and aspect*, ed. by P. Tedeschi, and A. Zaenen, 79-90. New York: Academic Press.
- Dahl, Östen. 1999. Aspect: Basic principles. *Concise encyclopedia of grammatical categories*, ed. by Keith Brown and Jim Miller, 30-37. New York: Elsevier.
- Dai, John Xiang-ling. 1992. The head in *wo pao de kuai*. *Journal of Chinese Linguistics* 20.1: 84-118.
- Dalrymple, Mary. 1999. Comments on Wong. *Grammatical semantics: Evidence for structure in meaning*, ed. by Tara Mohanan and Lionel Wee, 211-216. Stanford: CSLI Publications.

- de Swart, Henriette. 1998. Aspect shift and coercion. *Natural Language and Linguistic Theory* 16: 347-385.
- Declerck, R. 1979. Aspect and the bounded/unbounded (telic/atelic) distinction. *Linguistics* 17: 761-94.
- Demirdache, H. to appear. 'Out of control' in Salish and event (de)composition. *Issues on the morphology-syntax interface*, ed. by A. Mendikotxea and M. Uribe-Etxebarria.
- Dik, Simon C. 1989. *The theory of functional grammar. Part 1: The structure of the clause*. Dordrecht: Foris.
- Dowty, David R. 1972. *Studies in the logic of verb aspect and time reference in English*. Ph. D. dissertation, University of Texas.
- Dowty, David R. 1977. Towards a semantic analysis of verb aspect and the English imperfective progressive. *Linguistics and Philosophy* 1: 45-77.
- Dowty, David R. 1979. Word meaning and Montague grammar: The semantics of verbs and times in generative semantics and in Montague's PTQ. Dordrecht: Reidel.
- Dowty, David R. 1991. Thematic proto-roles and argument selection. *Language* 67: 547-619.
- Dunges, Petra. 2000. Eventualities in time. *Grammar* 3.1: 21-35.
- Ernst, Thomas. 1987. Duration adverbials and Chinese phrase structure. *Journal of the Chinese Language Teachers Association* XXII.2: 1-11.
- Fagan, Sarah M. B. 1992. *The syntax and semantics of middle constructions*. Cambridge: Cambridge University Press.
- Fiengo, R. and H. Lasnik. 1973. The logical structure of reciprocal sentences in English. *Foundation of Language* 9: 37-57.
- Filip, Hana. 1999. *Aspect, eventuality types and nominal reference*. New York: Garland Publishing, Inc.
- Fillmore, Charles J. and Paul Kay. 1993. *Construction grammar coursebook, Chapters 1 through 11 (Reading materials for Ling. X20)*. University of California, Berkeley.

- Fillmore, Charles J., Paul Kay, and Mary Catherine O'Connor. 1988. Regularity and idiomaticity in grammatical constructions: The case of LET ALONE. *Language* 64.3: 501-538.
- Foley, William A. and Robert D. Van Valin. 1984. *Functional syntax and universal grammar*. Cambridge: Cambridge University Press.
- Foley, William A. and Robert D. Van Valin. 1985. Information-packaging in the clause. *Language typology and syntactic description, Vol. 1: Clause structure*, ed. by T. Shopen, 282-364. New York: Cambridge University Press.
- Frawley, William. 1992. *Linguistic semantics*. Hillsdale: Lawrence Erlbaum Associates, Inc., Publishers.
- Freed, Alice F. 1979. *The semantics of English aspectual complementation*. Dordrecht: Reidel.
- Gao, Qian. 1997. Resultative verb compounds and *ba*-construction in Chinese. *Journal of Chinese Linguistics* 25.1: 84-131.
- Garey, Howard B. 1957. Verbal aspect in French. *Language* 33: 91: 110.
- Givon, Talmy. 1990. *Syntax: A functional-typological perspective, Volume 2*. Philadelphia: John Benjamins.
- Givon, Talmy. 1991. Serial verbs and the mental reality of "event": Grammatical vs. cognitive packaging. *Approaches to grammaticalization I: Focus on theoretical and methodological issues*, ed. by Elizabeth Closs Traugott and Bernd Heine, 81-127. Amsterdam: John Benjamins Publishing Company.
- Goldberg, Adele E. 1995. *Constructions: A construction grammar approach to argument structure*. Chicago: University of Chicago Press.
- Goldberg, Adele E. 1997. The relationships between verbs and constructions. *Lexical and syntactical constructions and the construction of meaning*, ed. by Marjolijn Verspoor, Kee Dong Lee, and Eve Sweetser, 383-398. Amsterdam: John Benjamins.

- Goldberg, Adele E. 1998. Semantic principles of predication. *Discourse and cognition: Bridging the gap*, ed. by Jean-Pierre Koenig, 41-54. Stanford: Center for the Study of Language and Information.
- Goodall, Grant. 1986. On argument structure and L-marking with Mandarin Chinese *ba*. *Proceedings of NeLS 17*, volume 1, ed. by Joyce McDonough and Bernadette Plunkett, 232-242.
- Grimshaw, Jane. 1990. *Argument structure*. Cambridge: The MIT Press.
- Gu, Yang. 1992. *The syntax of resultative and causative compounds in Chinese*. Ph. D. dissertation, Cornell University.
- Gu, Yang. 1999. Dongci de ti ji titai (the aspect and aspectuality of verb). *Gongxing yu gexing—hanyu yuyanxue zhong de zhengyi*, ed. by Xu Liejiong, 191-212. Beijing: Beijing Yuyan Wenhua Chubanshe.
- Györi, Gábor. 2000. Semantic change as linguistic interpretation of the world. *Evidence for linguistic relativity*, ed. by Susanne Niemeier and Rene Dirven, 71-89. Amsterdam: John Benjamins.
- Haiman, John. 1980. The iconicity of grammar: Isomorphism and motivation. *Language* 56: 515-540.
- Haiman, John. 1983. Iconic and economic motivation. *Language* 59: 781-819.
- Haiman, John (ed.). 1985a. *Iconicity in syntax*. Amsterdam: John Benjamins.
- Haiman, John. 1985b. *Natural syntax: Iconicity and erosion*. Cambridge: Cambridge University Press.
- Hale, Ken, and Jay Keyser. 1986. Some transitivity alternations in English. *Lexicon Project Working Papers 7*, Center for Cognitive Science, MIT.
- Hale, Ken, and Jay Keyser. 1987. A view from the middle. *Lexicon Project Working Papers 10*, Center for Cognitive Science, MIT.
- Hale, Ken, and Jay Keyser. 1991. The syntactic projection of argument structure. *Lexicon Project Working Papers 34*, Center for Cognitive Science, MIT.
- Hale, Kenneth, and Samuel Jay Keyser. 1993. On argument structure and the lexical expression of syntactic relations. *The view from building 20: Essays in*

- linguistics in honor of Sylvain Bromberger, ed. by Kenneth Hale and Samuel Jay Keyser. Cambridge: The MIT Press.
- Hansell, Mark. 1993. Serial verbs and complement constructions in Mandarin: A clause linkage analysis. *Advances in role and reference grammar*, ed. by Robert D. Van Valin, 197-233. Amsterdam: John Benjamins.
- Hanson, N. R. 1958. *Patterns of discovery*. Cambridge: Cambridge University Press.
- Hashimoto, Anne Yue. 1971a. Mandarin syntactic structure. *Unicorn* 8: 1-149.
- Hashimoto, Anne Yue. 1971b. Descriptive adverbials and the passive construction. *Unicorn* 7: 84-93.
- He, Baozhang. 1992. Situation types and aspectual classes of verbs in Mandarin Chinese. Ph. D. dissertation, Ohio State University.
- Heine, Bernd. 1993. *Auxiliaries: Cognitive forces and grammaticalization*. New York: Oxford University Press.
- Hengeveld, Kees. 1992. Parts of speech. Layered structure and reference in a functional perspective: *Papers from the functional grammar conference in Copenhagen 1990*, ed. by Michael Fortescue, Peter Harder, and Lars Kristoffersen, 29-55. Amsterdam: John Benjamins.
- Hinrichs, Erhard. 1985. A compositional semantics for aktionsarten and NP reference in English. Ph. D. dissertation, Ohio State University.
- Hollosoy, Bela. 1983. On aspectual classes of verb phrases. *Hungarian Studies in English* 16: 81-100.
- Hornstein, Norbert. 1990. *As time goes by: Tense and universal grammar*. Cambridge: The MIT Press.
- Hsieh, Hsin-I. 1989a. Time and imagery in Chinese. *Functionalism and Chinese grammar*, ed. by James H-Y. Tai and Frank F. S. Hsueh, 45-94. Chinese Language Teacher's Association Monograph Series 6.
- Hsieh, Hsin-I. 1989b. History, structure, and competition. Paper presented at the Eighth International Workshop on Chinese Linguistics, POLA, University of California, Berkeley, 1989.
- Hsieh, Hsin-I. 1992. In search of a grammatical foundation for

- dialect subgrouping. *Chinese languages and linguistics I: Chinese dialects*, 333-378. Taipei: Academia Sinica.
- Hsieh, Hsin-I. 1997. *Lexicon and morphology in a compositional cognitive grammar: With particular reference to Chinese verbal compounds*. *Chinese Languages and Linguistics* 3: 333-368.
- Hsieh, Miao-Ling. 1992. *Analogy as a type of interaction: The case of verb copying*. *Journal of the Chinese Language Teachers Association* XXVIII.3: 75-92.
- Huang, C.-T. James. 1982. *Logical relations in Chinese and the theory of grammar*. Ph. D. dissertation, MIT.
- Huang, C.-T. James. 1988. *Wo pao de kuai and Chinese phrase structure*. *Language* 64.2: 274-311.
- Huang, C.-T. James. 1992. *Complex predicates in control*. *Control and grammar*, ed. by Richard K. Larson, Sabine Iatridou, Utpal Lahiri, and James Higginbotham, 109-147. Dordrecht: Kluwer.
- Huang, C.-T. James, and Y.-H. Audrey Li. 1996. *Recent generative studies in Chinese syntax*. *New horizons in Chinese linguistics*, ed. by C.-T. James Huang and Y.-H. Audrey Li, 49-95. Dordrecht: Kluwer Academic Publishers.
- Huang, L. Meei-jin. 1987. *Aspect: A general system and its manifestation in Mandarin Chinese*. Ph. D. dissertation, Rice University.
- Huang, L. Meei-jin, and Philip W. David. 1989. *An aspectual system in Mandarin Chinese*. *Journal of Chinese Linguistics* 17: 128-166.
- Huang, Li-yi Pamela. 1990. *The deep word order and some prepositional constructions of Chinese*. Ph. D. dissertation, University of Washington.
- Huang, Yue Yuan. 1991. *Verbal compounding and Chinese phrase structure*. Ph. D. dissertation, SUNY.
- Huang, Yue Yuan. 1996. *Ba/bei jiegou yu dongci chongfu jiegoude hubufenbu xianxiang*. *Zhongguo Yuwen* 251: 92-99.
- Hwang, Hui-hua. 1998. *True temporal sequence*. Paper presented at IACL-7/NACCL-10, Stanford University, June 26-28, 1998.

- Hwang, Hui-hua. to appear. Serial verbs and temporal structure in Mandarin. University of Hawaii Working Papers.
- Jackendoff, Ray. 1972. Semantic interpretation in generative grammar. Cambridge: MIT Press.
- Jackendoff, Ray. 1983. Semantics and cognition. Cambridge: The MIT Press.
- Jackendoff, Ray. 1987. The status of thematic relations in linguistic theory. *Linguistic Inquiry* 18: 369-411.
- Jackendoff, Ray. 1990. Semantic structures. Cambridge: The MIT Press.
- Jackendoff, Ray. 1991. Parts and boundaries. *Cognition* 41: 9-45.
- Jackendoff, Ray. 1996. The proper treatment of measuring out, telicity, and perhaps even quantification in English. *Natural Language and Linguistic Theory* 14: 305-354.
- Jackendoff, Ray. 1997. The architecture of the language faculty. Cambridge: The MIT Press.
- Jacobs, Roderick A. 1993. English syntax: A grammar for English language professionals. Oxford: Oxford University Press.
- Jia, Ying. 1985. Guanyu shiliang buyu de ling wai liang zhong ge shi (Two more types of complement of time). *Yuyan Jiaoxue yu Yanjiu* 1: 23-29.
- Kay, Paul, and Charles J. Fillmore. 1999. Grammatical constructions and linguistic generalizations: The *What's X doing Y?* Construction. *Language* 75: 1-33.
- Keenan, Edward. 1985. Passive in the world's languages. *Language typology and syntactic description, Vol. 1: Clause structure*, ed. by T. Shopen, 243-81. New York: Cambridge University Press.
- Kenny, Anthony. 1963. Action, emotion, and will. London: Routledge and Kegan Paul.
- Kent, S. J. H. 1993. Modeling events from natural language. Ph. D. dissertation, Imperial College, University of London.
- Kiryu, Kazuyuki. 1999. Conceptualization and aspect in some Asian languages. *Tense-aspect, transitivity and causativity*, ed. by Werner Abraham and Leonid Kulikow, 43-62. Amsterdam: John Benjamins.

- Klein, Wolfgang. 1994. *Time in language*. London and New York: Routledge.
- Kratzer, A. 1989. An investigation into the lumps of thought. *Linguistics and Philosophy* 12: 607-653.
- Krifka, Manfred. 1986. *Nominalreferenz und Zeitkonstitution. Zur Semantik von Massentermen, Individualtermen, Aspektklassen*. Ph. D. dissertation, The University of Munich, Germany.
- Krifka, Manfred. 1989. Nominal reference, temporal constitution and quantification in event semantics. *Semantics and contextual expression*, ed. by R. Bartsch, J. van Benthem and P. van Emde Boas, 75-115. Dordrecht: Foris.
- Krifka, Manfred. 1992. Thematic relations as links between nominal reference and temporal constitution. *Lexical matters*, ed. by Ivan A. Sag and Anna Szabolcsi, 29-53. Stanford: Center for the Study of Language and Information.
- Krifka, Manfred. 1998. The origins of telicity. *Events and grammar*, ed. by Susan Rothstein, 197-235. Dordrecht: Kluwer Academic Publishers.
- Lakoff, George. 1970. *Irregularity in syntax*. New York: Holt, Rinehart, and Winston.
- Lakoff, George. 1987. *Women, fire and dangerous things: What categories reveal about the mind*. Chicago: University of Chicago Press.
- Langacker, Ronald W. 1987. *Foundations of cognitive grammar I: Theoretical prerequisites*. Stanford: Stanford University Press.
- Lasnik, Howard. 2000. *Syntactic structures revisited: Contemporary lectures on classic transformational theory*/Howard Lasnik with Marcela Depiante and Arthur Stepanov. Cambridge: The MIT Press.
- Laudan, Larry. 1996. *Beyond positivism and relativism: Theory, method, and evidence*. Westview: Boulder.
- Lehmann, C. 1999. Aspectual type(s). *Concise encyclopedia of grammatical categories*, ed. by Keith Brown and Jim Miller, 43-49. New York: Elsevier.
- Levin, Beth, and Malka Rappaport Hovav. 1995. *Unaccusativity: At the syntax-lexical semantics interface*. Cambridge: The MIT Press.

- Levin, L., and J. Simpson. 1981. Quirky case and the structure of Icelandic lexical entries. In *Papers from the Seventeenth Regional Meeting, Chicago Linguistic Society*, 185-96. Chicago Linguistic Society, University of Chicago, Chicago.
- Li, Charles N., and Sandra A. Thompson. 1974a. Historical change of word order: A case study of Chinese and its implications. *Historical linguistics*, ed. by J. M. Anderson and C. Jones, 199-217. Amsterdam: North Holland Publishing.
- Li, Charles N., and Sandra A. Thompson. 1974b. An explanation of word order change: SVO → SOV. *Foundations of Language* 12: 201-214.
- Li, Charles N., and Sandra A. Thompson. 1976. Development of the causative in Mandarin Chinese: Interaction of diachronic processes in syntax. *Syntax and semantics: The grammar of causative constructions* 6, ed. by Masayoshi Shibatani, 477-492. New York: Academic Press.
- Li, Charles N., and Sandra A. Thompson. 1981. *Mandarin Chinese: A functional reference grammar*. Berkeley: University of California Press.
- Li, Charles N., Sandra A. Thompson, and R. M. Thompson. 1982. The discourse motivation for the perfect aspect: The Mandarin particle LE. *Tense-aspect: Between semantics and pragmatics*, ed. by Paul J. Hooper, 19-43. Amsterdam: Benjamins.
- Li, Charles N., and Yuzhi Shi. 1997. Hanyu dongci kaobei jiegou de fazhan (The development of the verb-copying construction in Chinese). *Guowai Yuyanxue* 3: 32-38.
- Li, Charles, and Yuzhi Shi. 1998. Hanyu dong-bu jiegou de fazhan yu jufa jiegou de shanbian (Development of the 'V-complement' construction and changes of syntactic structures). *Studies in Chinese Linguistics* 2: 83-100. Beijing: Beijing Language and Culture University Press.
- Li, Linding. 1984. Jiujiing nage 'bu' nage? (Which is really the complement to which). *Hanyu Xuexi* 1: 1-10.
- Li, Linding. 1986. *Xiandai hanyu juxing* (The sentence patterns of modern Chinese). Beijing: Shangwu Yinshu Guan.

- Li, Yafei. 1990. On V-V compounds in Chinese. *Natural language and Linguistic Theory* 8: 177-207.
- Li, Yafei. 1993. Structural head and aspectuality. *Language* 69: 480-504.
- Li, Yafei. 1995. The thematic hierarchy and causativity. *Natural Language and Linguistic Theory* 13: 255-282.
- Li, Yafei. 1998. Chinese resultative constructions and the uniformity of theta assignment hypothesis. *New approaches to Chinese word formation: Morphology, phonology and the lexicon in modern and ancient Chinese*, ed. by Jerome L. Packard, 285-310. New York: Mouton de Gruyter.
- Li, Yen-Hui Audrey. 1987. Duration phrases: Distributions and interpretations. *Journal of the Chinese Language Teachers Association* XXII.3: 27-65.
- Li, Yen-Hui Audrey. 1990. *Order and constituency in Mandarin Chinese*. Dordrecht: Kluwer.
- Li, Ying-che. 1974. What does 'disposal' mean? Features of the verb and noun in Chinese. *Journal of Chinese Linguistics* 2: 200-218.
- Li, Ying-che. 1989. Aspects of historical and comparative syntax in Taiwanese and Mandarin. *Proceedings on the second international conference on sinology*, 715-752. Taipei: Academia Sinica.
- Liang, James Chao-ping. 1971. *Prepositions, co-verbs, or verbs? A commentary on Chinese grammar past and present*. Ph. D. dissertation, University of Michigan, Ann Arbor.
- Lien, Chinfa. 1994. The order of 'verb-complement' constructions in Taiwan Southern Min. *The Tsing Hua Journal of Chinese Studies* 24.3: 345-369.
- Lin, Fu-Wen. 1989. The verb-complement (V-R) compounds in Mandarin Chinese. *Proceedings of ROCLING II*, ed. by Chu-Ren Huang and Keh-jiann Chen, 253-276. Taipei: Academia Sinica.
- Lin, Helen T. 1981. *Essential grammar for modern Chinese*. Boston: Cheng & Tsui Company.

- Link, G. 1983. The logical analysis of plurals and mass terms: A lattice-theoretic approach. *Meaning, use, and interpretation of language*, ed. by R. Bauerle, C. Schwarze, and A. von Stechow, 302-323. Berlin: Walter de Gruyter.
- Liu, Feng-Hsi. 1997. An aspectual analysis of *ba*. *Journal of East Asian Linguistics* 6: 51-99.
- Liu, Meichun. 1997. Conceptual basis and categorial structure: A study of Mandarin V-R compounds as a radial category. *Chinese Languages and Linguistics* 4: 425-451. Institute of History and Philology, Academia Sinica, Taiwan.
- Liu, Xianmin. 1997. The verb-copying construction and imperfectivity. *Journal of the Chinese Language Teachers Association* 32.3: 1-13.
- Liu, Yue-Hua. 1998. *Quxiang buyu tongshi* (General explanations of directional verb complements). Beijing: Beijing Language and Culture University Press.
- Longino, Helen E. 1990. *Science as social knowledge: Values and objectivity in scientific inquiry*. Princeton: Princeton University Press.
- Lu, John Hsiao-tung. 1977. Resultative verb compounds vs. directional verb compounds in Mandarin. *Journal of Chinese Linguistics* 5.5: 276-313.
- Lü, Shuxiang. 1991. *Xiandai Hanyu babai ci* (Eight hundred words in modern Chinese). Beijing: Commercial Press.
- Ludlow, Peter. 1999. *Semantics, tense, and time: An essay in the metaphysics of natural language*. Cambridge: The MIT Press.
- Lys, Franziska. 1988. *An analysis of aspectual compositionality in English and German*. Ph. D. dissertation, Northwestern University.
- MacWhinney, Brian. 1999. *Functional analysis. A companion to cognitive science*, ed. by William Bechtel and George Graham, 402-412. Malden, Massachusetts: Blackwell Publishers.
- Manicas, Peter T. 2000. *Interdisciplinary social science*. MS.
- Mark, Poh Leng. 1995. *Basic arguments of BA*. Honours Thesis, National University of Singapore, Singapore.

- Maslov, J. S. 1959. Glagol'nyj vid v sovremennom bolgarskom literaturnom jazyke (znacenie i upotreblenie). Voprosy grammatiki bolgarskogo literaturnogo jazyka, ed. by S. B. Bernstejn, 157-312. Moscow: Izd-vo AN SSSR.
- Matsuo, Ayumi. 2000. Children's acquisition of reciprocal sentences with stative and active predicates. *Language Acquisition* 8.1: 1-22.
- McCawley, Robert N. 1999. Levels of explanation and cognitive architectures. A companion to cognitive science, ed. by William Bechtel and George Graham, 611-624. Malden: Blackwell Publishers.
- McCawley, James D. 1992. Justifying part-of-speech assignments in Mandarin Chinese. *Journal of Chinese Linguistics* 20: 211-245.
- McCawley, James D. 1998. *The syntactic phenomena of English*, 2nd edition. Chicago: The University of Chicago Press.
- McDonald, Edward. 1996. The complement in Chinese Grammar: A functional reinterpretation. *Functional descriptions: Theory in practice*, ed. by Ruqaiya Hasan, Carmel Cloran and David G. Butt, 265-286. Philadelphia: John Benjamins.
- Mei, Tsulin. 1990. Tang-Song chuzhishi de laiyuan (The origin of the disposal forms in the Tang and Song dynasties). *Zhongguo Yuwen* 3: 191-216.
- Mei, Tsulin. 1991. Cong Handai de dong sha, dong si lai kan dongbu jieou de fazhan—jian lun zhongguo shiqi qi ci de shi shou guanxi de zhonglihua (The development of verb-complement constructions examined from the perspectives of *dong sha*, *dong si* of Han times—the neutralization of the agent-patient relationship of subject in the Middle Chinese period). *Yuyanxue Luncong* 16: 112-136. Beijing: Shangwu Yinshuguan.
- Mei, Tsulin. 1994. Tandai, Songdai gongtongyu de yufa he xiandai fangyan de yufa (The grammar of the common language in Tang and Song and the grammar of modern dialects). *Zhongguo jinnei yuyan ji yuyanxue* (Languages and linguistics within China) 2: 61-97.

- Michaelis, Laura A. 1998. Aspectual grammar and past-time reference. London and New York: Routledge.
- Miller, J. 1999. Aspect: Further developments. Concise encyclopedia of grammatical categories, ed. by Keith Brown and Jim Miller, 37-43. New York: Elsevier.
- Mochizuki, Keiko. 1990. Generation of resultative compound verb. *Chuugoku Gogaku* 237: 128-137.
- Moens, Mark. 1987. Tense, aspect and temporal reference. Ph. D. dissertation, University of Edinburgh.
- Moens, M., and M. Steedman. 1988. Temporal ontology and temporal reference. *Computational Linguistics* 14.2: 15-28.
- Mohanan, Tara. 1990. Arguments in Hindi. Ph. D. dissertation, Stanford University, Stanford. (Published 1994: *Argument structure in Hindi*. Stanford: CSLI Publications.)
- Mohanan, Tara. 1994. Case OCP: A constraint on word order in Hindi. *Theoretical perspectives on word order in south Asian languages*, ed. by Miriam Butt, Tracy Holloway King, and Gillian Ramchand. Stanford: CSLI Publications.
- Mohanan, Tara, and K. P. Mohanan. 1999. On representations in grammatical semantics. *Grammatical semantics: Evidence for structure in meaning*, ed. by Tara Mohanan and Lionel Wee, 23-75. Stanford: Center for the Study of Language and Information.
- Morgan, J. L. 1969. On arguing about semantics. *Papers in Linguistics* 1.1: 49-70.
- Mourelatos, Alexander P. D. 1978. Events, processes, and states. *Linguistics and Philosophy* 2: 415-434.
- Mourelatos, Alexander P. D. 1981. Events, processes, and states. *Tense and aspect: Syntax and semantics* 14, ed. by Philip J. Tedeschi and Annie Zaenen, 191-212. New York: Academic Press.
- Nedjalkov, Vladimir P. (ed.). 1988. *Typology of resultative constructions*. Amsterdam: John Benjamins.
- Newmeyer, Frederick J. 1975. *English aspectual verbs*. The Hague: Mouton.

- Newmeyer, Frederick J. 1998. *Language form and language function*. Cambridge: The MIT Press.
- Ng, Eve. 1997. The syntax of Mandarin de sentences: A role and reference grammar analysis, 301-314. *Chicago Linguistic Society 33: The Main Session*.
- Nishiyama, Kunio. 1998. V-V compounds as serialization. *Journal of East Asian Linguistics 7: 175-217*.
- Norman, Jerry. 1988. *Chinese*. Cambridge: Cambridge University Press.
- O'Grady, William. 1996. *The syntax files: An introductory survey of basic syntactic concepts and phenomena*. MS.
- Ohta, Tatsuo. 1958. *Chugoku go rekishi bunpo (A historical grammar of modern Chinese)*. Tokyo: Konan Shoin.
- Ono, Hideki. 1990. A study of the forms of possibility in Chinese. *Chuugoku Gogaku 237: 93-100*.
- Ota, A. 1963. *Tense and aspect of present-day American English*. Tokyo: Kenkyusha.
- Pan, Haihua. 1996. Imperfective aspect *zhe*, agent deletion, and locative inversion in Mandarin Chinese. *Natural Language and Linguistic Theory 14: 409-432*.
- Paris, Marie-Claude. 1988. Durational complements and verb copying in Chinese. *Tsing Hua Journal of Chinese Studies 28.2: 423-439*.
- Parsons, Terence. 1990. *Events in the semantics of English: A study in subatomic semantics*. Cambridge: The MIT Press.
- Paul, Waltraud. 1988. *The syntax of verb-object phrases in Chinese: Constraints and reanalysis*. Paris: Langages Croises.
- Payne, Thomas E. 1997. *Describing morphosyntax: A guide for field linguists*. Cambridge: Cambridge University Press.
- Perlmutter, D., and P. Postal. 1984. The 1-advancement exclusiveness law. *Studies in relational grammar 2*, ed. by D. Perlmutter and C. Rosen, 81-125. Chicago: University of Chicago Press.

- Peyraube, Alain. 1985. Les structures en *ba* en chinois vernaculaire medieval et moderne (*Ba*-constructions in vernacular Medieval and Modern Chinese). *Cahiers de Linguistique Asie-Orientale* 14.2: 193-213.
- Peyraube, Alain. 1989. Zaoqi 'ba' ziju de jige wenti (A few problems of the early *ba*-construction). *Yuwen Yanjiu* 1: 1-19.
- Peyraube, Alain. 1994. Nouvelles reflexions sur l'histoire des formes accusatives en 'ba' du chinois (New reflections on the history of the Chinese *ba*-accusative forms). *Cahiers de Linguistique Asie-Orientale* 23: 265-277.
- Peyraube, Alain. 1996. Recent issues in Chinese historical syntax. *New horizons in Chinese linguistics*, ed. by C.-T. James Huang and Y.-H. Audrey Li, 161-213. Dordrecht: Kluwer Academic Publishers.
- Pinker, Steven. 1989. *Learnability and cognition: The acquisition of argument structure*. Cambridge: MIT Press.
- Pinon, C. 1995. *An ontology for event semantics*. Ph. D. dissertation, Stanford University.
- Platzack, Christer. 1979. *The semantic interpretation of aspect and aktionsarten: A study of internal time reference in Swedish*. Dordrecht: Foris.
- Plungian, Vladimir A. 1999. A typology of phasal meanings. *Tense-aspect, transitivity and causativity*, ed. by Werner Abraham and Leonid Kulikow, 311-321. Amsterdam: John Benjamins.
- Polchinski, Joseph. 1998. *String theory, Vol. I: An introduction to the Bosonic string*. Cambridge: Cambridge University Press.
- Pustejovsky, James. 1991. The syntax of event structure. *Cognition* 41: 47-81.
- Pustejovsky, James. 1995. *The generative lexicon*. Cambridge: MIT Press.
- Ramchand, Gillian Catriona. 1997. *Aspect and predication: The semantics of argument structure*. Oxford: Clarendon Press.
- Rapoport, T. R. 1993. Verbs in depictives and resultatives. *Semantics and the lexicon*, ed. by James Pustejovsky, 163-184. Dordrecht: Kluwer.
- Rapoport, T. R. 1999. Structure, aspect, and the predicate. *Language* 75.4: 653-677.

- Rapp, Irene, and Arnim von Stechow. 1999. *Fast* 'almost' and the visibility parameter for functional adverbs. *Journal of semantics* 16: 149-204.
- Rappaport, Malka, and Beth Levin. 1988. What to do with theta-roles. *Syntax and semantics: Thematic relations* 21, ed. by Wendy Wilkins, 7-36. San Diego: Academic Press.
- Reichenbach, Hans. 1947. *Elements of symbolic logic*. New York: Macmillan.
- Ren, Xiaobo. 1991. The post-verbal constituent in Chinese passive forms. *Journal of Chinese Linguistics* 19.2: 221-241.
- Ritter, Elizabeth, and Sara Thomas Rosen. 1996. Strong and weak predicates: Reducing the lexical burden. *Linguistic Analysis* 26: 29-62.
- Ritter, Elizabeth, and Sara Thomas Rosen. 1998. Delimiting events in syntax. *The projection of arguments: Lexical and compositional factors*, ed. by Miriam Butt and Wilhelm Geuder, 135-164. Stanford: CSLI Publications.
- Rohsenow, J. S. 1978. Perfect *-le*: Aspect and relative tense in Mandarin Chinese. *Proceedings of symposium on Chinese linguistics: 1977 Linguistic Institute of LSA*, ed. by Robert Cheng, Y. C. Li and T. C. Tang, 267-291. Taipei: Student Book Co. Ltd.
- Rosen, Carol. 1984. The interface between semantic roles and initial grammatical relations. *Studies in Relational Grammar* 2, ed. by D. M. Perlmutter and C. Rosen, 38-77. Chicago: University of Chicago Press.
- Rosen, Sara Thomas. 1996. Events and verb classification. *Linguistics* 34: 191-223.
- Rosen, Sara Thomas. 1999. The syntactic representation of linguistic events. *Glott International* 4.2: 3-11.
- Ross, Claudia. 1990. Resultative verb compounds. *Journal of the Chinese Language Teachers Association* XXV.3: 61-83.
- Ross, Claudia. 1991. Coverbs and category distinctions in Mandarin Chinese. *Journal of Chinese Linguistics* 19: 79-115.
- Rozwadowska, Bozena. 2000. Event structure, argument structure and the *by*-phrase in Polish nominalizations. *Lexical specification and insertion*, ed. by Peter

- Coopmans, Martin Everaert, and Jane Grimshaw, 329-347. Amsterdam: John Benjamins.
- Ryle, Gilbert. 1949. *The concept of mind*. London: Hutchinson.
- Sasse, Hans-Jürgen. 1991. Predication and sentence constitution in universal perspective. *Semantic universals and universal semantics*, ed. by Dietmar Zaefferer, 75-95. Berlin: Foris.
- Schlesinger, I. M. 1995. On the semantics of the object. *The verb in contemporary English: Theory and description*, ed. by Bas Aarts and Charles F. Meyer, 54-74. Cambridge: Cambridge University Press.
- Shi, Dingxu. 1997. Issues on Chinese passive. *Journal of Chinese Linguistics* 25.1: 41-70.
- Shi, Yuzhi. 1999. *The formation of the resultative construction and its effects on the establishment of modern Chinese grammar*. Ph. D. dissertation, Stanford University.
- Shi, Z. Q. 1990. Decomposition of perfectivity and inchoativity and the meaning of the particle *le* in Mandarin Chinese. *Journal of Chinese Linguistics* 18.1: 95-123.
- Shimura, Ryoji. 1984. *Chugoku chuse gohoshi kenkyu (Studies on the history of Middle Chinese grammar)*. Tokyo: Santo Sha.
- Shirai, Yasuhiro. 1998. Where the progressive and the resultative meet imperfective aspect in Japanese, Chinese, Korean and English. *Studies in Language* 22.3: 661-692.
- Silnitsky, Georgij. 1999. Verbal temporalization in Russian and English. *Tense-aspect, transitivity and causativity*, ed. by Werner Abraham and Leonid Kulikow, 293-309. Amsterdam: John Benjamins.
- Simone, Raffaele (ed.). 1995. *Iconicity in language*. Amsterdam: John Benjamins.
- Smith, Carlota S. 1990. Event types in Mandarin. *Linguistics* 28: 309-336.
- Smith, Carlota S. 1994. Aspectual viewpoint and situation type in Mandarin Chinese. *Journal of East Asian Linguistics* 3: 107-146.
- Smith, Carlota S. 1997. *The parameter of aspect*, 2nd edition. Dordrecht: Kluwer.

- Smith, Carlota S. 1999. Activities: States or events? *Linguistics and Philosophy* 22: 479-508.
- Spanos, G. A. 1979. Contemporary Chinese uses of *-le*: A survey and a pragmatic proposal Parts I & II. *Journal of the Chinese Language Teachers Association* 14.1: 36-70 & 14.2: 47-102.
- Starosta, S., K. Kuiper, S.-A. Ng, and Z.-Q. Wu. 1998. On defining the Chinese compound word: Headedness in Chinese compounding and Chinese VR compounds, 347-370. *New approaches to Chinese word formation: Morphology, phonology and the lexicon in modern and ancient Chinese*, ed. by Jerome L. Packard. New York: Mouton de Gruyter.
- Stede, Manfred. 1998. A generative perspective on verb alternations. *Computational Linguistics* 24.3: 401-430.
- Steedman, Mark. 1982. Reference to past time. *Speech, place, and action*, ed. by R. J. Jarvella and W. Klein, 12-157. John Wiley and Sons Ltd.
- Stowell, Tim. 1981. *Origins of phrase structure*. Ph. D. dissertation, MIT.
- Sun, Chaofen. 1996. *Word-order change and grammaticalization in the history of Chinese*. Stanford: Stanford University Press.
- Sun, Chaofen. 1998. Aspectual categories that overlap: A historical and dialectal perspective of the Chinese *zhe*. *Journal of East Asian Linguistics* 7: 153-174.
- Sun, Chaofen, and T. Givon. 1985. On the so-called SOV word order in Mandarin Chinese: A quantified text study and its implications. *Language* 61: 329-51.
- Sybesma, Rint. 1992. *Causatives and accomplishments: The case of Chinese ba*. Dordrecht: ICG Printing.
- Sybesma, Rint. 1997. Why Chinese verb-*le* is a resultative predicate. *Journal of East Asian Linguistics* 6: 215-261.
- Sybesma, Rint. 1999. *The Mandarin VP*. Dordrecht: Kluwer.
- Szeto, Yee-kit. 1988. *A semantic description of aspectual and temporal reference in Chinese*. Ph. D. dissertation, University of Ottawa.

- Tai, James H-Y. 1984. Verbs and times in Chinese: Vendler's four categories. *Papers from the parasession on lexical semantics*, Chicago Linguistic Society, 289-296.
- Tai, James H-Y. 1985. Temporal sequence and Chinese word order. *Iconicity in syntax*, ed. by John Haiman, 49-72. Amsterdam: John Benjamins Publishing Company.
- Tai, James H-Y. 1989. Toward a cognition-based functional grammar of Chinese. *Functionalism and Chinese grammar*, ed. by James H-Y. Tai and Frank F. S. Hsueh, 187-226. Chinese Language Teachers Association. Monograph Series, no. 1.
- Tai, James H-Y. 1997. Topic, subject and argument selection in Chinese. *The Tsing Hua Journal of Chinese Studies* 27.1: 83-101.
- Talmy, Leonard. 1972. *Semantic structures in English and Atsugewi*. Ph. D. dissertation, University of California, Berkeley.
- Talmy, Leonard. 1985. Lexicalization patterns: Semantic structure in lexical forms. *Language typology and syntactic description: Grammatical categories and the lexicon*, ed. by Timothy Shopen, 57-149. Cambridge: Cambridge University Press.
- Talmy, Leonard. 1988a. The relation of grammar to cognition. *Topics in cognitive linguistics*, ed. by Brygida Rudzka-Ostyn, 165-205. Amsterdam: John Benjamins.
- Talmy, Leonard. 1988b. Force dynamics in language and cognition. *Cognitive Science* 12: 49-100.
- Talmy, Leonard. 1991. Path to realization: A typology of event conflation. *Proceedings of the 17th Annual Meeting of the Berkeley Linguistics Society*. Berkeley: Berkeley Linguistics Society.
- Talmy, Leonard. 1996. The windowing of attention in language. *Grammatical constructions: Their forms and meaning*, ed. by Masayoshi Shibatani and Sandra A. Thompson, 235-287. Oxford: Oxford University Press.
- Tang, C.-C. J. 1993. Hanyu dong hou chengfen de fenbu yu xianzhi (The distribution and constraints of the postverbal elements). *Bulletin of the Institute of History and Philology, Academia Sinica, Taiwan*, Vol. 63, Part 2: 269-300.

- Tang, Ting-chi. 1992a. Hanyu dongcizu buyude jufajiegou yu yuyi gongneng: Beipinghua yu minnanhua de bijiao fengxi (The syntax and semantics of VP complements in Chinese: A comparative study of Mandarin and Southern Min). *Studies on Chinese morphology and syntax* 4, 1-93. Taipei: Student Book.
- Tang, Ting-chi. 1992b. Hanyu shubushi fuhedongci de jiegou, gongneng yu qi yuan (The structure, function, and origin of V-C compound verbs in Chinese). *Studies on Chinese morphology and syntax* 4, 95-164. Taipei: Student Book.
- Tang, Ting-chi. 1992c. The syntax and semantics of resultative complements in Chinese: A comparative study of Mandarin and Southern Min. *Studies on Chinese morphology and syntax* 4, 165-204. Taipei: Student Book.
- Tang, Ting-chi. 1992d. *Studies on Chinese morphology and syntax: 3*. Taipei: Student Book.
- Taylor, Barry. 1985. *Modes of occurrence: Verbs, adverbs and events*. Oxford: Basil Blackwell.
- Teng, Shou-hsin. 1975. *A semantic study of transitivity relations in Chinese*. Berkeley: University of California Press.
- Teng, Shou-hsin. 1981. *Semantic transitivity in Chinese*. Taipei: Student Book.
- Teng, Shou-hsin. 1986. Hanyu dongci de shijian jiegou (The temporal structure of Chinese verbs). *Diyijie Guoji Hanyu Jiaoxue Taolunhui Lunwenxuan*. Beijing: Beijing Yuyuan Xueyuan Chubanshe.
- Tenny, Carol L. 1987. *Grammaticalising aspect and affectedness*. Ph. D. dissertation, MIT.
- Tenny, Carol L. 1992. The aspectual interface hypothesis. *Lexical matters*, ed. by Ivan A. Sag and Anna Szabolcsi, 1-27. Stanford: CSLI Publications.
- Tenny, Carol L. 1994. *Aspectual roles and the syntax-semantics interface*. Dordrecht: Kluwer.
- Tenny, Carol L. 1995. Modularity in thematic versus aspectual licensing: Paths and moved objects in motion verbs. *Canadian Journal of Linguistics* 40.2: 201-234.

- Tenny, Carol L. 2000. Aspectual roles, modularity, and acquisition; with a discussion of contact locatives. *Lexical specification and insertion*, ed. by Peter Coopmans, Martin Everaert, and Jane Grimshaw, 379-401. Amsterdam: John Benjamins.
- ter Meulen, Alice G. B. 1980. *Substances, quantities and individuals: A study in the formal semantics of mass terms*. Bloomington: Indiana University Linguistics Club.
- ter Meulen, Alice G. B. 1995. *Representing time in natural language: The dynamic interpretation of tense and aspect*. Cambridge: The MIT Press.
- Thompson, J. Charles. 1968. Aspects of the Chinese verb. *Linguistics* 38: 70-76.
- Thompson, Sandra A. 1973. Resultative verb compounds in Mandarin Chinese: A case for lexical rules. *Language* 49.2: 361-379.
- Tiee, H. H. Y. 1986. *A reference grammar of Chinese sentences*. Tucson: University of Arizona Press.
- Tobin, Yishai. 1993. *Aspect in English verb: Process and result in language*. London: Longman.
- Tomasello, Michael. 1999. Cognitive linguistics. *A companion to cognitive science*, ed. by William Bechtel, and George Graham, 477-487. Malden: Blackwell Publishers.
- Torrego, Esther. 1998. *The dependencies of objects*. Cambridge: The MIT Press.
- Tortora, Christina M. 1998. Verbs of inherently directed motion are compatible with resultative phrases. *Linguistics Inquiry* 29.2: 338-345.
- Trask, R. L. 1993. *A dictionary of grammatical terms in linguistics*. London and New York: Routledge.
- Travis, Lisa. 1991. Inner aspect and the structure of VP. *Proceedings of NELS XXII*.
- Tsao, Feng-fu. 1987a. On the so-called verb-copying construction in Chinese. *Journal of the Chinese Language Teachers Association* XXII.2:13-43.
- Tsao, Feng-fu. 1987b. A topic-comment approach to the *ba* construction. *Journal of Chinese Linguistics* 15: 1-55.

- van Hout, A. 1993. Projection based on event structure. *Lexical specification and lexical insertion*, ed. by P. Coopmans, M. Everaert, and J. Grimshaw. Hillsdale: Lawrence Erlbaum Associates.
- van Hout, A. 2000. Projection based on event structure. Aspectual roles, modularity, and acquisition; with a discussion of contact locatives. *Lexical specification and insertion*, ed. by Peter Coopmans, Martin Everaert, and Jane Grimshaw, 403-427. Amsterdam: John Benjamins.
- Van Valin, Robert D. 1990. Semantic parameters of split intransitivity. *Language* 22: 221-260.
- Van Valin, Robert D., and Randy J. LaPolla. 1997. *Syntax: Structure, meaning and function*. Cambridge: Cambridge University Press.
- van Voorst, Jan G. 1988. *Event structure*. Amsterdam: John Benjamins.
- van Voorst, Jan G. 1995. The semantic structure of causative constructions. *Studies in Language* 19.2: 489-523.
- Vendler, Zeno. 1967. *Linguistics in Philosophy*. Ithaca: Cornell University Press.
- Verhaar, John W. M. 1985. On iconicity and hierarchy. *Studies in Language* 9: 21-76.
- Verkuyl, Henk J. 1972. On the compositional nature of the aspects. Dordrecht: Reidel.
- Verkuyl, Henk J. 1989. Aspectual classes and aspectual composition. *Linguistics and Philosophy* 2: 39-94.
- Verkuyl, Henk J. 1993. *A theory of aspectuality: The interaction between temporal and atemporal structure*. Cambridge: Cambridge University Press.
- Verkuyl, Henk J. 1999. *Aspectual issues: Studies on time and quantity*. Stanford: CSLI Publications.
- Vlach, Frank. 1981. The semantics of the progressive. *Tense and aspect: Syntax and semantics* 14, ed. by P. Tedeschi and A. Zaenen. New York: Academic Press.
- von Wright, G. H. 1963. *Norm and action*. London: Routledge and Kegan Paul.
- Wang, Li. 1947. *Zhongguo xiandai yufa*. Beijing: Commercial Press.
- Wang, Li. 1954. *Zhongguo yufa lilun (Theory of Chinese grammar)*. Peking: Zhonghua Shuju.

- Wang, M. Q. 1987. Transitivity and the *ba*-construction in Mandarin. Ph. D. dissertation, Boston University.
- Wanner, Anja. 1999. Verbklassifizierung und aspektuelle Alternationen im Englischen. Tübingen: Max Niemeyer Verlag.
- Wechsler, Stephen and Yae-Sheik Lee. 1996. The domain of direct case assignment. *Natural Language and Linguistics Theory* 14: 629-664.
- Wei, P.-C. 1997. Lun gu hanyu zhong ji zhong chuzhishi fazhan zhong de fen yu he (Discussion of the differences and similarities in the development of the various kinds of ancient Chinese disposal forms). *Chinese Languages and Linguistics* 4: 555-594.
- White, Michael. 1994. A computational approach to aspectual composition. Ph. D. dissertation, University of Pennsylvania.
- Wong, Geraint. 1999. Representing the semantics of Mandarin *ba*. *Grammatical semantics: Evidence for structure in meaning*, ed. by Tara Mohanan and Lionel Wee, 159-210. Stanford: CSLI Publications.
- Wu, Guo. 2000. The origin of the Mandarin particle *le*. *Journal of the Chinese Language Teachers Association* 35.1: 29-60.
- Wu, Xinhua. 1999. A corpus-based construction grammar analysis of the Mandarin BA constructions. Ph. D. dissertation, University of Hawaii at Manoa.
- Xu, Dan. 1990. Postverbal word order in Chinese. *Centre de Recherches Linguistiques sur l'Asie Orientale* XIX.1: 91-107.
- Yang, Suying. 1995. *Ba* and *bei* constructions in Chinese. *Journal of the Chinese Language Teachers Association* 30: 1-36.
- Yeh, Meng. 1993. The stative situation and the imperfective *zhe* in Mandarin. *Journal of the Chinese Language Teachers Association* XXVIII.1: 69-98.
- Yong, Shin. 1993. The aspectual phenomena of the *ba* construction. Ph. D. dissertation, University of Wisconsin.
- Zaenen, Annie. 1993. Unaccusativity in Dutch: Integrating syntax and lexical semantics. *Semantics and the lexicon*, ed. by J. Pustejovsky, 129-61. Dordrecht: Kluwer.

- Zhang, Lihua. 1995. A contrastive study of aspectuality in German, English, and Chinese. New York: Peter Lang.
- Zhang, Zheng-sheng. 1997. The aspectual and discourse properties of definite and indefinite NPs. Referential properties of noun phrases in Chinese, ed. by Liejiong Xu. Centre de Recherches Linguistiques sur l'Asie Orientale.
- Zhu, Dexi. 1984. Yufa jiangyi (Lectures on grammar). Beijing: Commercial Press.
- Zhu, Mingche. 1990. "Zhuzi yulei" zhong de dongci buyu—jian tan dongci houzhui (The resultative constructions and verbal particles in Zhuzi yulei). Wang Li Xiansheng Jinian Lunwen Ji, 240-251. Beijing: Shangwu Yinshu Guan.
- Ziegeler, Debra. 2000. A possession-based analysis of the *ba*-construction in Mandarin Chinese. *Lingua* 110: 807-842.
- Zou, Ke. 1993. The syntax of the Chinese BA construction. *Linguistics* 31: 715-736.
- Zou, Ke. 1995. The syntax of the Chinese *ba*-constructions and verb compounds: A morpho-syntactic analysis. Ph. D. dissertation, University of Southern California.