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**TEMPORAL AND ATEMPORAL
RELATIONS IN MANDARIN**

Jiun-Shiung Wu

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The monograph discusses how the temporal and atemporal relations are determined among the clauses (or sentences) with no aspect markers in Mandarin texts. Telic events behave in parallel and by default indicate Narration, which in turn specifies temporal progression. When an achievement is elaborated on, the elaborating event(s) must temporally precede the achievement. Atelic situations do not behave in parallel. Activities by default also specify Narration. But, when an activity serves as a temporal background, it provides its process, instead of the time after the activity is terminated, as the temporal background. States by default serve as a temporal background. Only stage-level states can be connected to the following clause by Narration because only stage-level states have a starting point to be temporally followed. When an individual-level state serves as a reason, instead of temporally precedence, it temporally overlaps the result. Explanation, Background, and Elaboration_{NP} are three rhetorical relations that do not specify any temporal relation, especially when a generalizing sentence is involved. These three rhetorical relations are a little different in terms of atemporal relations. Both Background_I and Elaboration_{NP} by default specify no temporal relation though other temporal information in the context may provide a temporal relation. Explanation loses its ability to specify a temporal relation when a generalizing sentence is involved.

Jiun-Shiung Wu has a Ph.D. degree in Linguistics from the University of Texas at Austin. He is currently a faculty member in the Department of Foreign Languages, National Chiayi University. His research interests include formal semantics, computational semantics, formal pragmatics, syntax and syntax-semantics interface.



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TABLE OF CONTENTS

Acknowledgements.....	iii
List of Abbreviations.....	v
List of Logic Symbols.....	vi
Chapter I Introduction.....	1
1.1 Setting the Scene.....	1
1.2 Source of Data and Conventions.....	6
1.3 Introduction to Segmented Discourse Representation Theory.....	7
1.4 Organization of the Book.....	15
Chapter II Aspect Markers and Temporal Relations.....	16
2.1 Introduction.....	16
2.2 Perfective <i>le</i> and Temporal Relations.....	17
2.3 Experiential <i>guo</i> and Temporal Relations.....	21
2.4 Imperfective Markers and Temporal Relations.....	25
2.5 Summary and Discussion.....	31
Chapter III Temporal Relations: When There Are No Aspect Markers.....	33
3.1 Introduction.....	33
3.2 Telic Events.....	35
3.2.1 Narration.....	36
3.2.2 Elaboration _E	44
3.2.3 Explanation.....	48
3.2.4 Background _T	54
3.2.5 Summary.....	60
3.3 Atelic Eventualities.....	61
3.3.1 Activities.....	63
3.3.1.1 Narration.....	63
3.3.1.2 Elaboration _E	70
3.3.1.3 Explanation.....	72
3.3.1.4 Background _T	75
3.3.1.5 Summary.....	81
3.3.2 States.....	82
3.3.2.1 Background _T	83

3.3.2.2 Narration	86
3.3.2.3 Explanation	91
3.3.2.4 Elaboration _E	99
3.3.2.5 Summary	102
3.4 Conclusion	103
Chapter IV Atemporal Relations: When Temporal Relations	
Disappear	105
4.1 Introduction	105
4.2 Elaboration _{NP}	107
4.2.1 Generalizing Sentences – Atemporal Relations of Elaboration _{NP}	109
4.2.2 When Temporal Relations Surfaces	112
4.2.3 Summary	115
4.3 Explanation	116
4.4 Background _i	121
4.5 What Remains When Temporal Relations Disappear	124
4.6 Conclusion	125
Chapter V Modeling (A)Temporal Relations in Mandarin	
5.1 Introduction	127
5.2 How to Infer Rhetorical Relations and Temporal Relations	127
5.3 Semantic Derivations	133
5.4 Conclusion	155
Chapter VI Concluding Remarks	
6.1 Summary	157
6.2 Implications of the Study	159
References	161

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LIST OF ABBREVIATIONS

CL: classifier
DE: a modifier-modifiee marker
Disp: Disposal marker
Dur: Durative marker
Exp: Experiential marker
Pass: Passive marker
PL: Plural marker for humans
Poss: Possessive marker
Prc: Particle
Prg: Progressive marker
Prv: Perfective marker
Rel: Relative marker

LIST OF LOGIC SYMBOLS

\exists	existential quantifier
\forall	universal quantifier
\wedge	and
$>$	defeasible (non-monotonic) inference
\rightarrow	monotonic inference
$<$	temporal precedence
$?$	underspecified information
\emptyset	no temporal relation
$\text{occasion}(e_a, e_p)$	natural event-sequence
$\text{overlap}(e_a, e_p)$	temporal overlapping
$\text{part_of}(e_a, e_p)$	temporal part of

**CHAPTER I
INTRODUCTION**

1.1 Setting the Scene

The clauses (or sentences) in a coherent discourse are related to each other either temporally or atemporally. In languages such as English, temporal relations can be determined by tenses. For example, a past-tense sentence must always occur before (= in the past of) a present-tense sentence, as in (1).

- (1) a. John is in the hospital now.
 b. He was in a terrible car accident a few days ago and was badly hurt.

In this example, (1b) occurs before (1a), as indicated by the contrast between the past tense and the present tense. Two additional approaches are independently proposed by Asher and Lascarides (2003) and Smith (2003) to determine temporal relations. Asher and Lascarides (2003) propose a theory named the Segmented Discourse Representation Theory (hereafter, SDRT) and argue that the sentences in a coherent discourse are connected to each other by rhetorical relations, which determine temporal relations, among other things. Smith (2003) suggests that a certain number of sentences in a discourse are grouped together by what she calls discourse modes. The function of Asher and Lascarides' (2003) theory and Smith's (2003) proposal is significant when tenses do not help. See the examples below.

- (2) a. John was hospitalized yesterday.
 b. He was badly beaten up.

Chapter 1

In SDRT terms, (2b) is attached to (2a) by *Explanation*,¹ which under this circumstance indicates the temporal precedence of the explaining event over the explained event. That is, though both of the sentences in (2) are in the past tense, SDRT predicts that (2b) occurs before (2a). This inference correctly describes the temporal relation between (2a-b).

Smith (2003: 25) proposes that “[t]he dynamic temporal mode, Report and Narrative, progress as time advances.” That is, in Smith’s (2003) theory, sentences grouped together by Report² or Narrative involve temporal progression. One of the examples Smith (2003: 27) uses is:

- (3)
- a. I slipped outside into a shock of cool air,
 - b. and ran down the pier.
 - c. Several small boats were rocking lazily to and fro in the water.
 - d. I unfastened the rope to one,
 - e. paddled out toward the “Republic”,
 - f. then hauled myself hand over hand up a rope ladder to the topgallant bulwark, over onto a broad empty deck.

Smith claims that (3a) and (3b) on the one hand and (3d), (3e) and (3f) on the other are grouped together by the discourse mode Narrative, and that the narrative time progresses as the description of events in the text moves forward.

Mandarin does not have a tense morphology (cf. J. Lin 2003, 2006). Hence, tenses cannot be used to help in determining temporal relations in Mandarin. However, Mandarin has a rich aspectual system (e.g., Li and Thompson 1981: 184-237). Wu (2003b, 2004, 2005b, 2006a, to appear, etc) argues that aspect markers indirectly affect temporal relations via rhetorical relations, and that aspect markers specify a default rhetorical relation and exert a constraint on rhetorical relations, based on their semantics.

However, not all sentences in a discourse manifest temporal relations. Asher and Lascarides (2003: 208-209) suggest the sentences connected by *Parallel* or *Contrast* do not show any particular temporal relations. Smith (2003: 31-34) proposes that Information and Argument are

¹ In this book, rhetorical relations are italicized, with the first letter capitalized.

² Smith’s (2003) discourse modes are not italicized in this book so that they can be distinguished from rhetorical relations.

atemporal modes, i.e., that the sentences grouped together by these two discourse modes do not manifest any temporal relation.

Atemporal relations are interesting because they are not naturally indicated by tenses or aspects. Tenses and aspects are intrinsically related to time, and naturally they play a role in determining temporal relations. However, what conditions evoke the atemporal relations between sentences? Under what circumstances are the sentences in a coherent discourse not temporally related?

This book aims to explore how both the temporal and atemporal relations in Mandarin Chinese are determined. In Mandarin, temporal adverbials can directly determine temporal relations, similar to Smith and Erbaugh's (2001, 2005) proposal in regard to temporal adverbials and temporal reference in Mandarin Chinese. See the example below.

- (4) a. 知名 鑄劍 師 歐胡子 在 西元前 530 年
zhiming zhujian shi Ouhuzi zai xiyuanqian 530 nian
famous saber-maker Ouhuzi at B.C. 530 year
鑄造 這 把 名 劍
zhuzao zhe ba ming jian
forge this CL famous saber
'The famous saber-maker, Ouhuzi, forged this famous saber in 530 B.C.'
- b. 歐胡子 於 西元前 550 年 出生 於 吳 國
ouhuzi yu xiyuanqian 550 nian chusheng yu wu guo
Ouhuzi at B.C. 550 year born at Wu kingdom
'Ouhuzi was born in the Kingdom of Wu in 550 B.C.'

In the example above, even though it is not clear at the first glance what rhetorical relation connects these two sentences, the temporal adverbials clearly tell us that (4b) occurs before (4a). However, not all the sentences in a discourse contain temporal adverbials. In such cases then, how are the temporal relations determined? See the examples below.

Chapter 1

- (5) a. 所長 郭 豐木 率 員警 趕赴 現場
suozhang guo fengmu shuai yuanjing ganfu xianchang
Lieutenant Guo Fengmu lead police officers rush to spot
'Lieutenant Guo Fengmu rushed with his officers to the scene
(of the rockfall).'
- b. 用 擔架 將 三 名 重 傷 遊客 抬至
yong danjia jiang san ming zhong shang youke taizhi
use stretcher Dis three CL heavily injured tourist carry to
公路 旁
gonglu pang
road beside
'(They) carried the badly injured tourists to the road by
stretcher.'
- c. 由 趕來 的 救護車 送 醫 急救
you ganlai de jiuhuge song yi jiji
by rush Rel ambulance send hospital emergency room
'(The victims) were taken to the emergency room by
ambulances that had rushed there.'

The example above does not contain any temporal adverbials. Native speakers of Mandarin have the intuition that (5a) occurs before (5b), which in turn occurs before (5c). How is this temporal relation decided? The clauses in (5) all describe specific events. However, to provide a description of specific events is not a required condition for the determination of temporal relations. For example,

- (6) a. 警察 應 封鎖 現場
jingcha ying fengsuo xianchang
police should seal scene
'The police should seal off crime scenes.'
- b. 詢問 附近 民眾 是否 有 目擊證人
xunwen fujin mingzhong shifo you mujizhengren
inquire nearby people whether have eyewitness
'(They should) ask the people nearby whether there were any
eyewitnesses.'

- c. 檢查 四週 環境 是否有可疑之處
jiancha si zhou huanjing shifo you keyi zhi
check four side environment whether have suspicious DE
處
chu
place
'(They should) check around to see if there is anything
suspicious.'
- d. 最後 等待 鑑識組 前來 採證
zuihou dengdai jianshizu qianlai cai zheng
finally wait CSI³ come collect evidence
'Finally, (they should) wait for the CSI team to search the
evidence.'

The passage (6) is an instruction and does not describe any specific events. However, the intuition is that the clauses also progress as the text goes on. At the same time, clauses (or sentences) that do not describe specific events can actually be atemporally organized and specify no particular temporal relation, as shown by (7).

- (7) a. 一件 好的 作品 必須要符合 現代 潮流
yi jian hao de zuopin bixuyao fuhe xiandai chaoliu
one CL good DE work must match modern trend
'A good (artistic) work must match current trends.'
- b. 更 須 具有 簡單 明快 銳利 創意的
geng xu juyou jiandan mingkuai reili chuangyi de
more must have simple clear-cut sharp creative DE
表現 特徵
biaoxian tezheng
presentation feature
'Even more, the presentation must contain features which are
simple, clear-cut, sharp and creative.'

³ CSI is an acronym for crime scene investigation.

Chapter I

- c. 最 重 要 的 是 情 感 要 融 入 其 中
zui zhongyao de shi qinggan yao rongru qizhong
most important DE be feelings must be included in
'Most importantly, feelings must be included in it.'
- d. 因 此 現 代 陶 藝 的 基 本 精 神 是
yinci xiandai taoyi de jiben jingshen shi
for this reason modern pottery DE basic spirit be
鼓 勵 創 作 反 對 模 仿 複 製 的
guli chuangzuo fandi mofang fuzhi de
encourage creation oppose imitate copy Prc
'Therefore, the basic spirit of modern pottery is to encourage
creation, and to oppose imitation and copying.'

In this book, I discuss only examples containing no temporal adverbials or aspect markers. Following Wu's (2003b, 2004, 2005b, 2006a, to appear, etc) ideas about the relationship between aspect markers on the one hand and rhetorical and temporal relations on the other, I hypothesize that, under the circumstances where no temporal adverbials or aspect markers surface, situation types (or *aktionsart*) play a significant role in determining temporal relations. I examine each situation type in detail and explore how they affect temporal relations. I also compare the behavior of situation types with that of aspect markers and discuss their similarities and differences. Following Asher and Lascardies' (2003: 208-209) generalization regarding rhetorical relations and atemporal relations, I explore what rhetorical relations, in addition to *Parallel* and *Contrast*, are related to atemporal relations and under what circumstance these rhetorical relations manifest differences with respect to atemporal relations.

1.2 Source of Data and Conventions

The data used in this book are all natural data. The sources of data include: the Five-million Word Balanced Academia Sinica Corpus (for short, the Sinica Corpus), the on-line United Daily News, on-line China Times, *Lin Long dai lu badao jinxiangtuan* [The tour group led by Lin Long in Formosa] and *shizuniao, yumao yu niaolei feixing zhi mi* [The mystery of Archaeopteryx, feathers and bird flight]. The Sinica Corpus contains roughly five million words. It is a representative sample of the

Mandarin Chinese used in Taiwan. The United Daily News and China Times are two of the most popular newspapers in Taiwan. They are available on-line. *Lin Long dai lu baodao jinxiangtuan* [The tour group led by Lin Long in Formosa] is a tour book written by a famous tour guide Lin Long, in which he recommends his favorite tourist spots in Taiwan. *Shizuniao, yumao yu niaolei feixing zhi mi* [The mystery of Archaeopteryx, feathers and bird flight] is a book about the discovery of the fossils of Archaeopteryx and arguments about the origins of birds.

One convention that needs to be clarified is the use of ‘sentence’ or ‘clause’ in this book. In Mandarin, zero anaphora prevails. Word strings with a zero anaphor are referred to as ‘clauses’ because they are not complete sentences, each of whose arguments needs to surface. However, please note that the generalizations about clauses proposed in this book also apply to sentences.

1.3 Introduction to Segmented Discourse Representation Theory

In this book, I adopt Segmented Discourse Representation Theory as the framework to analyze the phenomena discussed. As previously noted in 1.1, both Smith’s (2003) theory and SDRT (Asher and Lascarides 2003) deal with temporal relations in passages, among other things. However, Smith’s theory of discourse modes does not seem to be able to account for examples such as (2). When she refers to temporal relations, she either describes temporal progression (Smith 2003: 25-30) or temporal reference (Smith 2003: 92-99). She does not outline how to deal with cases such as the one in (2) where the temporal order mismatches the contextual order, and the many other cases discussed in Asher and Lascarides (2003), such as temporal inclusion, temporal overlapping, etc. Thus SDRT provides more complete account of temporal relations and is adopted as the framework for analysis in this book.

Here I will now review SDRT. The theory is developed to model and to interpret discourse. It contains two different, but related, logics. The first is the logic of information content, which is the semantics used to interpret discourse. The second is the logic of information packaging, which consists of the glue logic, discourse update and discourse revision. The glue logic is the reasoning performed to glue the logical forms of clauses to form a logic form of discourse, i.e., Segmented Discourse Representation Structure (SDRS, henceforth). Discourse update defines

how the SDRS for the discourse context plus the SDRS for the new information are integrated into a new SDRS. Discourse revision⁴ defines how the SDRS for the discourse in a dialogue plus the SDRS for the new information are revised to form a new SDRS.

SDRT utilizes underspecified logical forms (for short, ULF) to represent semantic ambiguity, e.g., anaphora, scopal interactions, rhetorical relations, etc. The basic insight of underspecified semantics is to use a labeling scheme to build on the syntax/semantics interface a partial description of the logical form. The labeling is partial because it specifies the constraints on the form of the logical form itself, which is a formula in a base language that does not have labels. Those constraints do not necessarily determine a unique logical form in the base language. ULF can be directly mapped from a formula in the unlabeled base language. The arity of each constructor in the base language is increased by one and the additional argument place is used for the label. For a sentence like (8a), its LF in the base language is like (8b). Its ULF is like (8c) and can be glossed as in (8d).

- (8) a. Many problems preoccupy every politician.⁵
 b. $\text{many}'(x, \text{problem}'(x), \forall(y, \text{politician}'(y), \text{preoccupy}'(x, y)))$
 or $\forall(y, \text{politician}'(y), \text{many}'(x, \text{problem}'(x), \text{preoccupy}'(x, y)))$
 c. $\exists l_4, l_5 (\text{R}_{\text{many}}(l_6, l_7, l_4, l_1) \wedge \text{R}_x(l_6) \wedge \text{R}_{\text{problem}}(l_8, l_7) \wedge \text{R}_x(l_8) \wedge$
 $\text{R}_y(l_9, l_{10}, l_5, l_2) \wedge \text{R}_y(l_9) \wedge \text{R}_{\text{politician}}(l_{11}, l_{10}) \wedge \text{R}_y(l_{11}) \wedge$
 $\text{R}_{\text{preoccupy}}(l_{12}, l_{13}, l_3) \wedge \text{R}_x(l_{12}) \wedge \text{R}_y(l_3) \wedge \text{outscope}(l_1, l_3)$
 $\wedge \text{outscope}(l_2, l_3)$
 d. $\exists l_4, l_5 (l_1: \text{many}'(l_6, l_7, l_4) \wedge l_6: x \wedge l_7: \text{problem}'(l_8) \wedge l_8: x \wedge$
 $l_2: \forall (l_9, l_{10}, l_5) \wedge l_9: y \wedge l_{10}: \text{politician}'(l_{11}) \wedge l_{11}: y \wedge$
 $l_3: \text{preoccupy}'(l_{12}, l_{13}) \wedge l_{12}: x \wedge l_3: y \wedge \text{outscope}(l_1, l_3)$
 $\wedge \text{outscope}(l_2, l_3)$

⁴ Discourse revision is not used in this book because this book focuses on written texts only. Therefore, discourse revision will not be discussed further. Interested readers are referred to Asher and Lascarides (2003).

⁵ All of the examples and their logical forms used in this section to demonstrate SDRT are taken from Asher and Lascarides (2003).

(8a) is ambiguous in that the scope between *many problems* and *every politician* is not determined. The ULF (8c) bears much resemblance to the formulae of the base language (8b) except that the ULF contains labels. For example, *many* in the base language is three-place. In the ULF, it becomes four-place with an extra argument for the label representing *many* itself. Variables in the base language, such as x, y , become one-place in the ULF. This extra argument is for the label that represents the variable itself. The labels for underspecified information have to be existentially quantified. In (8c), the existentially quantified labels, l_4 and l_5 , are labels for underspecified information, i.e., the scopal interaction between *many problems* and *every politician* in this example.

(8a) does not have an anaphor. The ULF for an anaphor is $\exists Y (R_x(l_x, l_y, l) \wedge R_x(l_x) \wedge Y(l_y))$, glossed as $l: x = ?$ or $x = ?$, which means that the antecedent for the anaphor represented as x is unknown so far.

The discussion above is in regard to ULFs for clauses. The ULFs for discourse is the ULFs for clauses with one extra argument for the label representing the clause, which is marked as π_i . Rhetorical relations take the labels for clauses as their arguments. Therefore, the ULF for an underspecified rhetorical relation is $\exists R R(\pi_1, \pi_2, \pi)$, where R is the underspecified rhetorical relation and π_1, π_2 , and π are labels for SDRSs for clauses.

An ULF, such as (8c), is a partial description because it poses constraints on the form of the LF itself, i.e., the fully-specified LF for (8a) should contain every condition that (8c) has. However, (8c) does not specify the scopal relation between *many problems* and *every politician*, which requires extra information before it may be resolved.

The language of the logic of information content can be translated from the ULF language. The arity of an n -ary constructor in the base language is increased by two to form an ULF for discourse, which is a formula in the logic of information content. The interpretation of discourse is performed within the logic of the information content by the Satisfaction Schema for veridical rhetorical relations.

The formulae of the glue language can be translated from ULFs for discourse in a homophonic way except that the quantifiers in the ULFs ranging over variables are dropped. For example, an ULF $\exists R R(\pi_1, \pi_2, \pi)$ can be translated into a formula of the glue language as $?(\pi_1, \pi_2, \pi)$. To support nonmonotonic inference, such as default inference for rhetorical relations, the glue language contains in its vocabulary a modal

Chapter 1

connective \triangleright , where $A \triangleright B$ means if A then normally B. The existential quantifiers are removed in the translation of an ULF for discourse into a formula of the glue language in order to maintain computability. The glue language also contains axioms to defeasibly infer rhetorical relations.

To illustrate how SDRT works, an example is presented below. A step-by-step discourse update is demonstrated to incorporate new information into old information to form a new SDRS. In addition, also illustrated is the way in which the final SDRS is interpreted and how the temporal relations between the clauses in the discourse are determined by the Satisfaction Schema.

- (9) a. Max experienced a lovely evening last night.
 b. He had a fantastic meal.
 c. He ate salmon.
 d. He devoured lots of cheese.
 e. He won a dancing competition.

The discourse in (9) can be translated in glue logic formulae as below.

- (10) a. π_1 : $\text{experience}'(\text{Max}', y, e) \wedge \text{lovely}'(\text{night}'(y)) \wedge e \subseteq \text{last night}' \wedge e \prec \text{ST}$
 b. π_2 : $\text{had}'(x, y, e') \wedge \text{meal}'(y) \wedge x = \text{Max}' / x = ? \wedge e' \prec \text{ST}$
 π_0 : $\text{Elaboration}(\pi_1, \pi_2) / ?_0(\pi_1, \pi_2)$
 c. π_3 : $\text{eat}'(x, y, e'') \wedge \text{salmon}'(y) \wedge x = \text{Max}' / x = ? \wedge e'' \prec \text{ST}$
 π_{23} : $\text{Elaboration}(\pi_2, \pi_3) / ?_{23}(\pi_2, \pi_3)$
 d. π_4 : $\text{many}'(y, \text{cheese}'(y), \text{devour}'(x, y, e''')) \wedge x = \text{Max}' / x = ? \wedge e''' \prec \text{ST}$
 π_{34} : $\text{Narration}(\pi_3, \pi_4) / ?_{34}(\pi_3, \pi_4)$

First, (9a) is translated into a formula of the glue logic, as in (10a). Then, when the event of (10b) comes into the discourse, it has to be attached to a clause already existing in the discourse. Here, since (10a) is the only choice, (10b) is attached to (10a). And, the attachment is performed by an underspecified rhetorical relation. This is represented as (10b).

The underspecified rhetorical relation $?_0$ can be resolved to *Elaboration* by the subtype relation between *experiencing a lovely*

evening and *having a fantastic meal* represented as an axiom in the glue logic. Since (10b) is attached to (10a) and the only possible antecedent candidate for the pronoun in (10b) is *Max*, the underspecified antecedent for the pronoun is resolved to *Max*.

If there is more than one clause in the discourse and a new clause comes in, the new clause will have several possible attachment sites. The attachment sites of a new clause are determined by the principle (Asher and Lascarides 2003: 148) below:

- (11) Available Attachment Points
 Suppose that β is to be attached to a constituent in the SDRS $\langle A, F, LAST \rangle$. Then the available attachment points are:
- (i) The label $\alpha = LAST$;
 - (ii) Any label γ such that:
 - (a) $i\text{-scopes}(\gamma, \alpha)$ (i.e., $R(\delta, \alpha)$ or $R(\alpha, \delta)$ is a conjunct in $F(\gamma)$ for some R and some δ); or
 - (b) $R(\gamma, \alpha)$ is a conjunct in $F(\lambda)$ for some label λ , where R is subordinating discourse relation (like *Elaboration*, *Explanation* or \Downarrow). This is glossed as $\alpha < \gamma$.
 - (iii) Transitive closure:
 Any label γ that dominates α through a sequence of labels $\gamma_1, \gamma_2, \dots, \gamma_n$ such that $\alpha < \gamma_1, \gamma_1 < \gamma_2, \dots, \gamma_n < \gamma$.

In words, (11) says that the available nodes are the previous clause α and any label γ that dominates α via a series of outscopings and/or subordinating rhetorical relations.

So, when (10c), marked as π_3 , comes into the discourse, it has three possible attachment sites: π_1, π_2 and π_0 . It is not good to attach π_3 to π_0 because the pronoun in π_3 cannot find an accessible antecedent and because it is impossible to compute what rhetorical relation connects them together. If π_3 is attached to π_1 , although the pronoun can find an accessible antecedent and a rhetorical relation can be computed, the relationship between π_3 and π_2 is not accounted for. If π_3 is attached to π_2 , the subtype relation determines that they are connected by *Elaboration*, the pronoun in π_3 can find an accessible antecedent, and π_3 indirectly elaborates π_1 . Therefore, π_3 should be attached to π_2 by *Elaboration*.

Discourse update does not determine which available attachment site the label for the new clause should be attached to. This is determined by

Chapter I

Maximize Discourse Coherence (MDC). Informally, MDC (Asher and Lascarides 2003: 233) states that:

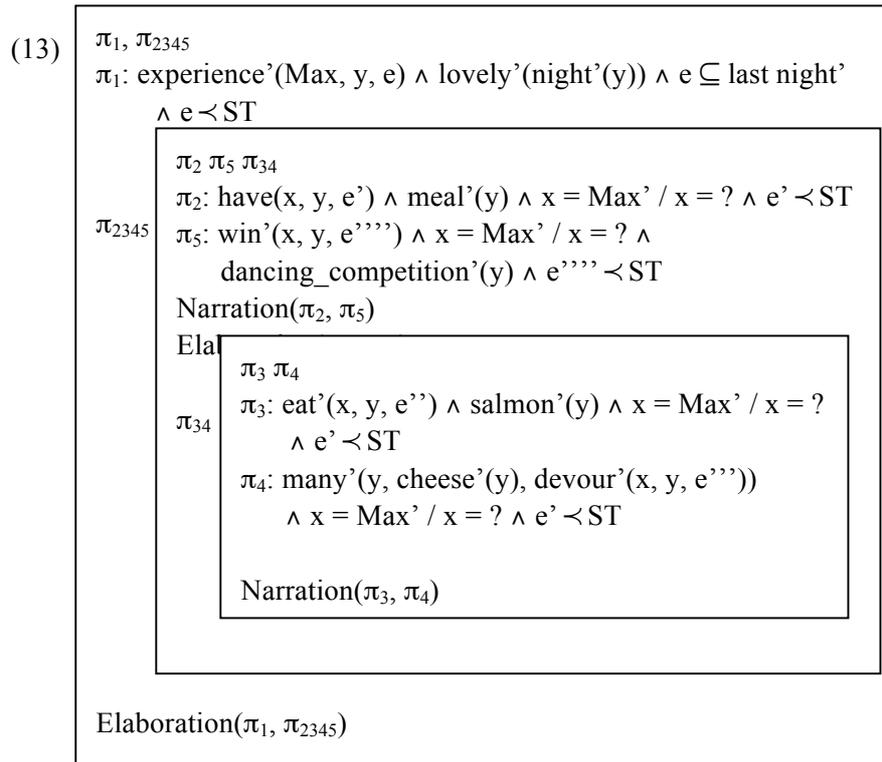
- (12) If discourse update produces two SDRSs K and K' , K describes a preferred or more coherent interpretation of the discourse (so far) if the following conditions hold:
- (a) K has more and better quality rhetorical relations than K'
 - (b) K has fewer inconsistencies and pragmatic clashes
 - (c) K has a simpler structure unless a simpler structure would generate an inconsistency or a clash
 - (d) K has fewer unresolved underspecifications

Attaching π_3 to π_0 violates (12d) since the underspecified pronoun is unresolved. Attaching π_3 to π_1 violates (12a) because the relationship between π_2 and π_3 is not accounted for and this attachment cannot produce an SDRS which has more rhetorical relations than the one produced by the attachment of π_3 to π_2 . Attaching π_3 to π_2 can produce an SDRS which maximizes the connections between the propositions and minimizes the number of unresolved underspecifications.

When (10d), labeled as π_4 , enters the discourse, it has four possible attachment sites: π_3 , π_2 , π_1 and π_0 . If π_4 is not connected to π_3 , then important information about a possible rhetorical relation is lost. That is, if π_4 is connected to π_3 , $Narration(\pi_3, \pi_4)$ can be inferred from $occasion(\pi_3, \pi_4)$ since (9b-d) describe the order of courses in a meal. Attaching π_4 to other labels violates (12a) because the important (pragmatic and temporal) relationship between π_3 and π_4 cannot be accounted for and the SDRS produced cannot have more and better quality rhetorical relations.

When (10e), labeled as π_5 , comes into the discourse, it has five choices of attachment site: π_0 , π_1 , π_2 , π_{34} , and π_4 . MDC can help to decide which site π_5 is attached to. There are no axioms which allow one to infer *occasion* (for *Narration*), *subtype_D* (for *Elaboration*) or *cause_D* (for *Explanation*) to connect π_5 and π_4 together. This would leave an underspecified rhetorical relation in the discourse, which would not be coherent. The same holds between π_5 and π_{34} . If π_5 is attached to π_1 , then *subtype_D* verifies that π_5 is a subtype of π_1 , and the underspecified rhetorical relation can be resolved to *Elaboration*(π_1, π_5). This additional information can verify an *occasion*-axiom for π_5 and π_2 , producing *Narration*(π_2, π_5). Since *Elaboration*(π_1, π_5) and *Elaboration*(π_1, π_5)

have been inferred, π_1 can be treated as the common topic to the narrative sequence consisting of π_2 and π_5 , which is labeled as π_{2345} . The result of the discourse update of (10) can be represented as the SDRS in (13) below.



This SDRS is interpreted in the logic of information content by the Satisfaction Schema for veridical rhetorical relations (Asher and Lascarides 2003: 156). The temporal relations between the clauses in this discourse are also determined, in the Satisfaction Schema, by the meaning postulates for different rhetorical relations. The Satisfaction Schema is represented in (14).

Chapter I

- (14) a. Satisfaction Schema for Veridical Rhetorical Relations:
 $(w, f) \llbracket R(\pi_1, \pi_2) \rrbracket_M (w', g)$ iff
 $(w, f) \llbracket K_{\pi_1} \wedge K_{\pi_2} \wedge \Phi_{R(\pi_1, \pi_2)} \rrbracket_M (w', g)$
 b. A relation R is veridical iff $R(\alpha, \beta) \Rightarrow (K_\alpha \wedge K_\beta)$

In words, (14) says that $R(\pi_1, \pi_2)$ can relate an input world-assignment pair (w, f) to an output pair (w', g) if and only if the SDRS labeled by π_1 , K_{π_1} , the SDRS labeled by π_2 , K_{π_2} , and the meaning postulate for the rhetorical relation R can relate the same input pair to the same output pair, where \wedge is interpreted dynamically.

Take $Elaboration(\pi_2, \pi_{34})$ and $Narration(\pi_3, \pi_4)$ as an example. These two rhetorical relations have their own meaning postulates which specify their temporal consequence, as presented below.

- (15) a. $\Phi_{Elaboration(\alpha, \beta)} \Rightarrow Part_of(e_\beta, e_\alpha)$
 b. $\Phi_{Narration(\alpha, \beta)} \Rightarrow overlap(prestate(e_\beta), ADV(poststate(e_\alpha)))$

(15a) says that if the elaboration of α is β , then the event β is part of the event α , that is, temporal inclusion. (15b) says that if β narrates α , then the prestate of the event β overlaps the result of the poststate of the event α modified by an adverbial.

Therefore, to interpret $Elaboration(\pi_2, \pi_{34})$, it is placed within the Satisfaction Schema, as shown in (16).

- (16) $(w, f) \llbracket Elaboration(\pi_2, \pi_{34}) \rrbracket_M (w', g)$ iff
 $(w, f) \llbracket K_{\pi_2} \wedge K_{\pi_{34}} \wedge \Phi_{Elaboration(\pi_2, \pi_{34})} \rrbracket_M (w', g)$

According to the meaning postulate (15a), the event π_{34} is part of the event π_2 , that is, π_{34} is temporally included in π_2 . This inference accurately captures the intuition about the temporal relation between π_2 and π_{34} .

To interpret $Narration(\pi_3, \pi_4)$, it is also placed within the Satisfaction Schema:

- (17) $(w, f) \llbracket Narration(\pi_3, \pi_4) \rrbracket_M (w', g)$ iff
 $(w, f) \llbracket K_{\pi_3} \wedge K_{\pi_4} \wedge \Phi_{Narration(\pi_3, \pi_4)} \rrbracket_M (w', g)$

Based on the meaning postulate (15b), the pre-state of the event π_4 overlaps the post-state of the event π_3 modified by an adverbial. Since

there is no adverbial in this sentence, the prestate of π_4 overlaps with the post-state of π_3 . That is, π_4 temporally follows π_3 . This inference also captures the intuition about the temporal relation between π_3 and π_4 .

In sum, SDRT models temporal relations in a context, utilizing the meaning postulates for rhetorical relations. The clauses in a discourse are translated into the formulae of the glue language first. Then discourse update attaches the new information of a new clause to the current SDRS, and determines which rhetorical relation connects them together. Discourse update does not determine the attachment site of the new information. Maximize Discourse Coherence (MDC) determines where the best attachment site is for the information of a new clause coming in the discourse. When all of the clauses are processed, the discourse is interpreted in the logic of information content, and the temporal relations between the clauses are determined by the meaning postulates for rhetorical relations in the Satisfaction Schema.

1.4 Organization of the Book

This book is organized as follows. Chapter Two is a review of the previous work on how aspect markers in Mandarin affect temporal relations. I review Wu's (2003b, 2004, 2005b, 2006a, to appear, etc) work, which serves as a basis for the explorations of clauses with no aspect markers.

In Chapter Three, I examine the four situation types in detail and explore their relationship with temporal relations. I compare the results with those of clauses with aspect markers and attempt to determine the similarities and differences.

In Chapter Four, I discuss the condition under which temporal relations disappear. I examine what rhetorical relations do not specify particular temporal relations and attempt to decide whether these rhetorical relations either do not specify a temporal relation or lose their ability to indicate a temporal relation under certain circumstances.

In Chapter Five, I offer an SDRT account of the phenomena discussed in Chapters Three and Four. I propose new axioms and meaning postulates to model the phenomena observed in this book. Finally, Chapter Six concludes this book.

CHAPTER II ASPECT MARKERS AND TEMPORAL RELATIONS

2.1 Introduction

Mandarin is a language that is not morphologically marked for tense⁶ (cf. J. Lin 2006). Therefore, morphological tense plays no role in determining temporal relations. However, Mandarin has a rich aspectual system. Since different aspects present different temporal parts of a situation (Smith 1997), it is reasonable to hypothesize that in Mandarin aspects are also related to the determination of temporal relations. Based on this hypothesis, Wu (2004, 2005b, 2006a, to appear) discusses how the four aspect markers in Mandarin influence temporal relations. He follows Asher and Lascarides' (2003) argument that temporal relations, among other things, are determined by rhetorical relations, and further argues that aspect markers indirectly affect temporal relations via rhetorical relations in two ways: first, the semantics of an aspect marker determines a default rhetorical relation, and second, an aspect marker exerts constraints on rhetorical relations based on its semantics.

This chapter reviews the research on the relationship between aspect markers and temporal relations. Section 2.2 discusses the perfective *le* and its interaction with temporal relations. Section 2.3 deals with the experiential *guo* and its influence on temporal relations. Section 2.4 illustrates how the two imperfective markers, *zai* and *zhe*, determine temporal relations. Section 2.5 briefly summarizes the ideas in the

⁶ Some linguists suggest that Mandarin has tense, though implicit, e.g. W. Lin (1979) and J. Lin (2002a, 2002b and 2003). Their arguments are based on the semantic behavior of the perfective *le*. J. Lin (2000) further suggests that the perfective *le* moves to the head of T(ense)P to support his analysis. Please note that J. Lin revises his position in his (2006) paper. Wu (2003a and 2005a) also argues against that the perfective *le* in Mandarin denote the past tense.

previous sections and discusses the implication of these studies on the temporal relations between clauses with no aspect markers.

2.2 Perfective *le* and Temporal Relations

Wu (2003a, 2005a) utilizes significant point (SigP) analysis to account for the divergent syntactic and semantic behaviors of the perfective *le*. He argues that, by default, the SigP for accomplishments and achievements is their natural final endpoint, that the SigP for activities is underspecified, that stage-level states have their initial points as their SigPs and individual-level states do not have an SigP at all. The SigP of an accomplishment can be overridden if the context specifies so explicitly. In addition, the SigP of an activity can be determined by the information in the context.

Wu then proposes that the perfective *le* identifies the SigP of the eventuality it presents and locates the interval from the starting point to the SigP before a reference time. That is, the perfective *le* presents a completed event if the default SigP is not overridden, and it presents a terminated event if the default SigP is overridden. However, the event presented by the perfective *le* is presented as a whole, no matter whether it presents a terminated event or a completed event. Therefore, a hypothesis for the role of the perfective *le* in temporal relations is proposed (Wu 2005b: 182):

- (18) a. The narrative time of a clause with the perfective *le* can be advanced without any explicit indication in the context.
b. The internal process of a clause with the perfective *le* cannot be accessed unless it is opened up to be accessible.

In SDRT terms, (18a) means that a clause with the perfective *le* is connected to a following clause by *Narration* unless the context indicates otherwise. That is, if the context does not specify the contrary, a clause that follows another one with the perfective *le* describes an event that occurs after (i.e., in the future of) the event presented by *le*. Not all the events that occur in a series have a causal relationship (e.g. Lu 2004: 1-2). If some events with a causal relationship occur in sequence, it is easy to determine the temporal relation among them. If events with no (or a less obvious) causal relationship occur in sequence,

Chapter II

the semantics of the perfective *le* can help to determine the temporal relation. For example,

- (19) a. 她 不 能 再 聽 蘇 普 這 般 哭 叫
ta bu neg zai ting supu zheban kujiao
she(= Li) not can again hear Supu so cry
'Li could not bear to hear Supu crying like that any more.'
- b. 於 是 回 到 了 計 老 人 家 中
yushi huidaole ji laoren jia zhong
so return Pfv Ji old man home in
'so, (she) returned to Ji's home.'
- c. 從 被 褥 底 下 拿 出 那 張 狼 皮 來
cong beiru dixia nachu na zhang lang pi lai
from bed sheet under take out that CL wolf skin come
'(She) took out the wolf skin from under the bed sheet.'
- d. 看 了 很 久 很 久
kan le henjiu henjiu
look at Pfv very long very long
'and (she) looked at the skin for a long long time.'

In this small passage, (19b) contains the perfective *le*. There is no causal relation between a *return home* event and a *take out a wolf skin from under the bed sheet* event. In addition, there is no contextual information indicating which rhetorical relation connects (19c) to (19b).

Under such a circumstance, the perfective *le* specifies that (19c) is connected to (19b) by *Narration*, which indicates temporal progression, i.e., (19c) occurs after (in the future of) (19b). This temporal information specified by the default function of the perfective *le* matches the intuition about the temporal relation between (19b) and (19c) of a native speaker of Mandarin.

Since the perfective *le* presents an eventuality as a whole, the internal process of the eventuality presented by *le* cannot be accessed, unless it is required to do so. The rhetorical relation that requires the access of the internal process of an event is *Elaboration_E* because an elaborating event provides more details about the elaborated event. The following example illustrates the function of *Elaboration_E*.

- (20) a. 胡適 院長 在 開幕式 的 致辭 中 談到 了
 hushi yuanzhang zai kaimushi de zhici zhong tandao le
 Hushi dean at opening DE speech in talk Pfv
 不少 令 人 深 思 的 話
 bushao ling ren shen si de hua
 many make people deep think Rel words
 ‘Dean Hushi talked about a lot of things At the opening
 speech that made people think profoundly.’
- b. 他 談到 科學 是 一 種 方法 民主 是 一 種
 ta tandao kexue shi yi zhong fangfa minzhu shi yi zhong
 he talk science is one kind method democracy is one kind
 生活 方式
 shenghuo fangshi
 life style
 ‘He said that science was a way (of explaining the unknown)
 and democracy was a way of life.’

In this passage, (20b) provides more details about (20a) because of the repetition of *tandao* ‘to talk about’. That is, (20b) is connected to (20a) by *Elaboration_E*, which indicates temporal inclusion. This inference also matches a native speaker’s intuition about the temporal relation between (20a) and (20b).

In (20), the repetition of *tandao* ‘to talk about’ is the lexical hint that indicates *Elaboration_E*. It is because of this rhetorical relation that the internal process of the event described in (20a) can be accessed even though the event is presented by the perfective *le*. However, when the rhetorical relation does not require accessing the internal process of an event, then the event cannot be accessed if it is presented by the perfective *le*. See the following example.

- (21) a. 過 了 七 點
 guo le qi dian
 pass Pfv seven o’clock
 ‘After it has passed seven o’clock (= after seven o’clock),’

Chapter II

- b. 垃圾 便 不 能 攜 出 寢 室
lèse biān bù néng xīchū qǐnshì
garbage then not can bring out dorm room
'(t)hen garbage cannot be brought out of the dorm rooms.'

(21a) provides a temporal frame when the event described by (21b) can occur. That is, (21b) is attached to (21a) by *Background_T*, a temporal background. *Background_T* does not require any specific time in order for it to serve as a temporal background. Since the time available for an event presented by the perfective *le* is the time after the event is terminated or completed (or initiated for the case of a state-level state), such a time can serve as a temporal background when a clause with the perfective *le* is attached to the clause following it by *Background_T*. This inference also matches a native speaker's intuition about the temporal relation between (21a) and (21b).

Other rhetorical relations can connect a clause with the perfective *le* to another one as long as they do not specify a temporal relation that does not fit the semantics of this aspect marker. See the example below.

- (22) a. 全 班 同 學 認 真 練 習 整 整 三
quán bān tóngxué rènzhēn liànxì zhěngzhěng sān
whole class classmate diligently practice in total three
個 月
gè yuè
CL month
'The whole class practiced diligently for three whole months.'
- b. 終 於 得 到 了 冠 軍
zhōngyú dédào le guānjūn
finally receive Pfv championship
'Finally (they) won the championship.'
- c. 所 以 大 家 都 很 高 興
suǒyǐ dàjiā dōu hěn gāoxìng
so everyone all very happy
'so, everyone was very happy.'

In this passage, (22c) is attached to (22b) by *Result*, as indicated by the cue phrase *suoyi* ‘so’. *Result* indicates that the *everyone be happy* eventuality occurs after the *they win the championship* event. Since this temporal relation indicated by *Result* does not violate the constraint exerted by the semantics of the perfective *le*, this rhetorical relation is acceptable.

In sum, the perfective *le* presents a terminated or completed event as a whole. Since an event presented by *le* is either terminated or completed, the perfective *le*, by default, indicates that a clause which contains it is connected to the following clause by *Narration*, which specifies temporal progression. Because the perfective *le* presents an event as a whole, the internal process of the event presented by *le* cannot be accessed, unless it is required that it be done. Therefore, only *Elaboration_E* can force open the internal process of an event that *le* presents to be accessed. Other rhetorical relations can connect a clause with *le* to another clause as long as they do not specify a temporal relation that violates the constraint set up by the semantics of *le*.

2.3 Experiential *guo* and Temporal Relations

Wu (2005c, 2006b) argues that the experiential *guo* predicates on an eventuality with a reversible target state.⁷ Wu (2006b) further suggests that the difference between the perfective *le* and the experiential *guo* is that the target state of an eventuality *guo* presents has ceased to hold, while *le* indicates nothing about the target state. An event presented by *guo* usually occurs in the indefinite past⁸ (cf. W. Lin 1979) if no event time is specified. W. Lin (1979) also suggests that perfective *le* is currently relevant while *guo* is not. When the target state of an eventuality no longer holds, i.e., the resulting state caused by the eventuality is no longer effective, the event is more likely to occur in

⁷ The definition of target state is similar to the one in Parsons (1990: 235), though Wu (2005c, 2006b) proposes another kind of target state. Interested readers are referred to Wu (2005c, 2006b).

⁸ W. Lin (1979) suggests that experiential *guo* describes an event completed in an indefinite past. However, he seeks to distinguish phase complement *guo* from experiential *guo*. But this distinction is not clear. In particular, he associates discontinuity with phase complement *guo*, but many of his examples of experiential *guo* involve discontinuity. Therefore, this distinction is not adopted.

Chapter II

some indefinite past and to be not currently relevant. This is why *guo* is described as having these two properties.

Based on these two properties, i.e., *guo* indicates that an eventuality occurs in the indefinite past and is not currently relevant, Wu (2006a) provides a hypothesis for the role of *guo* in temporal relations:

- (23) a. The event time of a situation presented by *guo* cannot be advanced unless its event time is explicitly specified.
b. The internal process of a situation presented by *guo* cannot be accessed unless it is opened up to be accessible.
c. A situation presented by *guo* cannot serve as a temporal background, which indicates temporal overlapping.

The experiential *guo* presents an eventuality that takes place in the indefinite (unknown) past if the event time is not specified. Therefore, the narrative time of an eventuality presented by *guo* cannot be advanced unless there is an explicit specification of its event time. In SDRT terms, a clause with the experiential *guo* cannot be connected to the clause following by *Narration* unless the event time of the previous clause is specified. See the example below.

- (24) a. !(兩年前) 他回過湖南老家
!(liang nian qian)⁹ ta hui guo hunan laojia
two year before he return Exp Hunan hometown
'He had returned to his hometown in Hunan two years before.'
- b. 1958 年底再度返鄉時
yijiuwuba nian di zaidu fan xiang shi
1958 year end again return home time
'When he returned home again at the end of 1958,'
- c. 發現人事已非
faxian renshiyifei
find everything change
'(he) found that everything had changed.'

⁹ The exclamation mark indicates incoherence. That is, if *liang nian qian* 'two years before' is omitted, the discourse becomes incoherent. However, for (24a) along, the optionality of the temporal phrase does not affect its grammaticality.

In (24), obviously, the two *return home* events occur in sequence: the first one occurs two years before 1958 and the second one occurs in 1958 itself. If the temporal phrase *liang nian qian* ‘two years before’ in (24a) is deleted, then this passage becomes incoherent. That is, in order to advance the narrative time of an eventuality with *guo*, its event time must be specified explicitly.¹⁰

The experiential *guo* is also a perfective marker. That is, it also presents an eventuality as a whole.¹¹ Hence, just like the perfective *le*, the internal process of an eventuality presented by *guo* cannot be accessed unless it is required. *Elaboration_E* requires accessing the internal process of an eventuality. See the following example.

- (25) a. 我 只 聽 過 一 次 錢 校 長 給
 wo zhi ting guo yi ci qian xiaozhang gei
 I only hear Exp one time Qian president for
 化 學 系 同 學 做 的 有 關 分 析
 huaxue xi tongxuemen zuo de youguan fenxi
 chemistry department classmates make Rel about analytic
 化 學 的 演 說
 huaxue de yanshuo
 chemistry DE speech
 ‘I heard the speech on analytic chemistry that President
 Qian delivered to the chemistry majors only once.’

¹⁰ This is why Yeh’s (1996) quantificational analysis of the experiential *guo* is not accurate. She proposes that *guo* is a temporal quantifier because the event time of an event *guo* presents can be accessed only under ‘temporal subordination’ (Partee 1973, 1984), similar to modal subordination (Roberts 1987). However, the example discussed here shows that her analysis is not correct because the event time of an event presented by *guo* can still be accessed even though there is no temporal subordination.

¹¹ *Guo* can also present a terminated, but not completed, event. For example,
 i. zhe bu dianying wo kan guo san ci keshi mei yi ci kanwan de
 this CL movie I see Exp three time but no one time see-finish Prc
 ‘I’ve seen this movie three times, but I have never been able to see it to the end.’
 But, this distinction does not affect the discussion on temporal relations, so, no examples of this kind are provided in this section.

Chapter II

- b. 他 語重心長地 勉勵 同學 一 番 話
ta yuzhongxinchangde mianli tongxue yi fan hua
he sincerely encourage classmate one CL words
'He was sincere in his address in his encouragement to the students.'
- c. 至今 還 記憶猶新
zhi jin hai jiyiyouxin
to now still memory-fresh
'The memory of this event is still fresh in my mind even now.'

(25b) elaborates on (25a) because what President Qian said to encourage the students was obviously what was said at the speech described in (25a). Since *Elaboration_E* requires accessing the internal process of the elaborated event, (25a) has to allow its internal process to be accessed by (25b) even though (25a) contains *guo*.

The above two passages contain cues of one kind or another that indicates rhetorical relations. In (24b), *zaidu* 'again' indicates the repetition of an event at a later time and therefore it specifies *Narration*. In (25), *mianli* 'to encourage' is part of the content of a speech and this lexical hint specifies *Elaboration_E* in this context. However, if there is no indication of any cue phrase at all, what does the presence of *guo* indicate in regard to the nature of rhetorical relation which connects the clauses together? See the example below.

- (26) a. 我 倆 一起 經歷 過 無數 危難
wo liang yiqi jingli guo wushu weinan
I both together experience Exp countless danger
'We have experienced countless dangers together before.'
- b. 這 次 或許 也 能 逃脫
zhe ci huoxu ye neng taotuo
this time maybe also can escape
'This time perhaps we will also be able to escape.'

(26a) provides information, based on which (26b) can be inferred. That is, by default, *guo* provides certain background information, based on which an inference or a decision can be made about. This default

function follows naturally from the semantics of *guo* since its primary meaning is to denote an experience. In SDRT terms, (26b) is attached to (26a) by *Background_i*, informational background. This rhetorical relation indicates that the eventuality that serves as informational background occurs before (in the past of) the eventuality that serves as an inference or a decision.

In sum, the experiential *guo* presents an eventuality that usually occurs in the indefinite (unknown) past and that is not currently relevant. The event time of an event presented by *guo* is unknown unless it is specified explicitly. Based on the temporal properties of an eventuality presented by *guo*, it is proposed that *guo*, by default, indicates that an eventuality it presents serves as informational background, *Background_i*. *Guo* also sets up two constraints: first, a clause with *guo* cannot be connected to the following clause by *Narration* unless the event time of the former is specified explicitly, and secondly, the internal process of an eventuality presented by *guo* cannot be accessed unless it is required to do so.

2.4 Imperfective Markers and Temporal Relations

There are two imperfective markers in Mandarin: the progressive *zai* and the durative *zhe*. Li and Thompson (1981: 218) suggest that the progressive *zai* can only go with activity verbs and Yeh (1993) proposes that the durative *zhe* has to go with stage-level states. Wu and Kuo (2003) argue that the durative *zhe* has to go with homogeneous eventualities. Stage-level states are homogeneous and activities that are not homogeneous can be rendered homogenous via syntactic and discourse means. Based on these ideas, Wu (2004, to appear) argues that the progressive *zai* presents an event ongoing at an instant and that the durative *zhe* describes an eventuality that lasts over an interval.

In addition to the semantic difference between the progressive *zai* and the durative *zhe*, two more points about imperfectivity are relevant in terms of temporal relations. First, Hopper (1979: 216) observes “a tendency for punctual verbs to have perfective aspect (i.e., to occur in foregrounded sentences) and conversely for verbs of the durative/stative/iterative types to occur in imperfective, i.e., backgrounded, clauses.”

Secondly, the Imperfective Paradox (Dowty 1977, 1979) stipulates that a progressive event does not necessarily come to an end though

Chapter II

under natural circumstances it may be expected to do so. That is, an event presented by *zai* does not necessarily come to an end, while the Imperfective Paradox does not apply to *zhe* because *zhe* presents only homogeneous eventualities, which do not have a natural final endpoint to reach.

Given the above discussion, Wu (2004, to appear) proposes a hypothesis for the role of the imperfective markers in temporal relations as follows:

- (27)
- a. The event time of an event presented by the progressive *zai* cannot be advanced, while the event time of an eventuality presented by the durative *zhe* can be advanced under an appropriate context.
 - b. An eventuality presented by the two imperfective markers defeasibly provides a temporal frame in which another eventuality can occur.

(27a) follows from the Imperfective Paradox. *Zai* presents an event ongoing at a certain instant and it is unknown if the event will come to an end according to the Imperfective Paradox. This is why the event time of an event that *zai* presents cannot be advanced. On the other hand, *zhe* goes with an eventuality that lasts over an interval. Although the eventuality does not have a natural final endpoint to reach, it can be terminated if the context so specifies and therefore its event time can be advanced. See the following examples.

- (28)
- a. 他從瓦壺裏倒了一碗熱奶酪
ta cong wahu li dao le yi wan re nailao
he from kettle inside pour Pfv one bowl hot fermented milk
'He poured a bowl of hot fermented milk from the kettle.'
 - b. 瞧著她喝下了
qiao zhe ta hexia le
watch Dur she drink-down Pfv
'(he) watched her drink it.'
 - c. 又替她攏好被窩
you ti ta longhao beiwo
also for she tuck comforter

- (29) a. (and then he) tucked her in.’
 他 從 瓦壺 裏 倒 了 一 碗 熱 奶 酪
 ta cong wahu li dao le yi wan re nailao
 he from kettle inside pour Pfv one bowl hot fermented milk
 ‘He poured a bowl of hot fermented milk from the kettle.’
- b. 在 瞧 她 喝 下 (*了)
 zai qiao ta hexia (*le)¹²
 Prg watch she drink-down Pfv
 ‘(he) was watching her drinking it.’
- c. !又 替 她 攏 好 被 窩
 !you ti ta longhao beiwo
 also for she tuck comforter
 ‘(and he) tucked her in.’

In (28b), *zhe* presents a homogeneous activity *qiao* ‘to look at’. The event embedded under it, *hexia* ‘to drink’, is marked by the perfective *le* and hence this event is completed.¹³ The completion of the embedded *hexia* ‘to drink’ event terminates the *qiao* ‘to look at’ event and therefore the event time of the *qiao* ‘to look at’ event can be advanced. This is why the *qiao* ‘to watch’ event in (28b) can be followed by a *longhao beiwo* ‘to tuck in’ event in (28c).

If the durative *zhe* is replaced with the progressive *zai*, as in (29b), the passage becomes incoherent. It is no longer allowed to describe what comes after the *qiao* ‘to look at’ event. When the progressive *zai* is used, the focus of time is fixed on the instant at which the event is ongoing. The time cannot be advanced. The difference in the semantics of the durative *zhe* and the progressive *zai* is responsible for the well-formed contrast between (28) and (29).

If the context does not provide any clue, then the eventuality presented by the imperfective markers serves as a temporal frame, in which another eventuality can occur. See the following examples.

¹² Some native speakers of Mandarin suggest that with or without *le* ‘Pfv’, this sentence is ungrammatical. This judgment also supports the theory argued here, i.e., *zai* ‘Prg’ is not compatible with a verb which, by default, advances the narrative time because *zai* is inherently incompatible with advancement of narrative time.

¹³ Note that an event presented by the perfective *le* is completed, unless the context specifies otherwise. See Wu (2003a, 2005a) for a detailed discussion.

Chapter II

- (30) a. 小李 在 游泳
xiaoli zai youyong
Xiaoli Prg swim
'Xiaoli was swimming.'
- b. 老王 看到 了 忍不住 教 了 他 幾 招
laozhang kandao le renbuzhu jiao le ta ji zhao
Laozhang see Pfv can't help teach Pfv he several move
'Laozhang saw him swimming, and couldn't help but show
him a few moves.'

In (30), there is no indication specifying which rhetorical relation connects these two clauses together. Hence, the default function of the progressive *zai* applies. That is, (30a) provides a temporal frame, in which (30b) occurs. This inference matches a native speaker's intuition about the temporal relation between these two clauses since the *seeing* and *teaching* events both temporally overlap the *swimming* event. In SDRT terms, (30b) is attached to (30a) by *Background_T*, a temporal background, which indicates temporal overlapping.

- (31) a. 那 天 晚上 李文秀 發 著 高 燒
na tian wanshang liwenxio fa zhe gao shao
that day night Li Wenxio have Dur high fever
'That night, Li Wenxio had a high fever.'
- b. 小 臉蛋兒 燒 得 通 紅
xiao liandanr shao de tong hong
small face burn to a degree that completely red
'Her small face was so hot that it was all red.'
- c. 說 了 許多 胡話
shuo le xuduo huhua
say Pfv many nonsense
'She bubbled a lot of incoherent things.'

Again, in (31), there is no clue to specify which rhetorical relation connects these two clauses. The default function of the durative *zhe* applies. The *fa gao shao* 'to have a high fever' event lasts for a period of

time and *zhe* identifies this period of time as a temporal frame, in which other events occur. That is, both (31b) and (31c) temporally overlap (31a). (31b) and (31c) are attached to (31a) by *Background_T*. This inference again matches a native speaker's intuition about the temporal relations in (31).

Other rhetorical relations can connect a clause with an imperfective marker to another clause as long as they do not specify temporal relations violating the hypothesis (27). For example, *Elaboration_E* specifies temporal inclusion. This temporal relation does not violate anything the hypothesis (27) says, and hence this rhetorical relation is allowed. For example,

- (32) a. 小店 裏 賣 冰 的 老 太太 十 幾
 xiaodian li mai bing de lao taitai shi ji
 small store inside sell ice Rel old woman ten several
 年 下 來 還 在 賣 冰
 nian xialai hai zai mai bing
 year down still Prg sell ice
 'The old woman who has been selling ice for over ten years is still doing so.'
- b. 她的 生命 好像 靜止 在 那 個 小小 的
 ta de shengming haoxiang jingzhi zai na ge xiaoxiao de
 she DE life seem freeze at that CL small DE
 範圍 裏
 fanwei li
 domain inside
 'Her life seemed to freeze in that small domain,'
- c. 不斷 在 做 同樣 的 事
 buduan zai zuo tongyang de shi
 without stop Prg do same DE thing
 '(and she) was doing the same thing without stopping.'

In this example, there is a lexical hint that indicates *Elaboration_E*. In (32c), *buduan zai zuo tongyang de shi* 'to do the same thing without stopping' is, in fact, one specific example of *shengming haoxiang jingzhi zai na ge xiaoxiao de fanwei li* 'life seems to freeze in that small domain'. According to Asher and Lascarides' (2003: 282-283) discussion on

subtype, (32c) is a subtype of (32b). The subtype relation is an indication of *Elaboration*.¹⁴ Since (32c) elaborates on (32b), (32c) is temporally included in (32b). This inference matches a native speaker's intuition about the temporal relation here.

- (33) a. 政治 的 發展 對 經濟 有 著
zhengzhi de fazhan dui jingji you zhe
politics DE development toward economy have Dur
深重 的 影響
shenzhong de yingxiang
deep-serious DE influence
'Political development has a deep and serious influence on economics.'
- b. 這 八 年 來 政治 不 太 安定
zhe ba nian lai zhengzhi bu tai anding
this eight year come politics not too stable
'In these past eight years, the political situation has not been very stable.'
- c. 所以 搞 得 人心惶惶
suoyi gao de renxinhuanghuang
so make to the degree that people panic
'so, this has made people panic.'
- d. 談 經濟 復甦 更 是 空 談
tan jingji fusu geng si kong tan
talk economic recover also be empty talk
'(and) talking about an economic recovery is also useless.'

Again, lexical information specifies which rhetorical relation connects (33a) to (33b-d). Clearly, (33b-d) is a specific example of (33a). (33a) talks about political development having a deep and serious influence on economics. (33b-d) talks about unstable politics having a

¹⁴ Although there is only one type of *Elaboration* in Asher and Lascardies (2003), I distinguish two types of *Elaboration* in this book, due to their different behavior in temporal relations: elaboration on NPs, labeled as *Elaboration_{NP}*, and elaboration on events, labeled as *Elaboration_E*. Subtype is an indication of both types of *Elaboration*. *Elaboration_{NP}* will be discussed later.

negative influence on economics. As also in (32), (33b-d) is a subtype of (33a), and therefore, (33b-d) elaborates on (33a). Since an elaborating event is a temporal part of the event on which it elaborates, (33b-d) is temporally included in (33a).

(32) and (33) show that an event presented by *zai* can elaborate on another event and that an eventuality presented by *zhe* can be elaborated on by another event. A clause with either of the imperfective markers can be connected to another clause by any rhetorical relation as long as the rhetorical relation does not indicate a temporal relation incompatible with the hypothesis (27).

In sum, the two imperfective markers specify a default rhetorical relation. An eventuality presented by *zai* or *zhe*, by default, serves as a temporal background. Both the progressive *zai* and the durative *zhe* place a constraint on *Narration*. A clause *zai* presents can never be connected to a clause that follows by *Narration*. A clause with *zhe* can be connected to the following clause by *Narration* only when a predicate that has come to an end is embedded within the predicate that goes with *zhe*.

2.5 Summary and Discussion

Given the discussions on the four aspect markers and their interactions with temporal relations, I derive three universal generalizations and four specific generalizations. The three universal generalizations are: first, each aspect marker identifies a default rhetorical relation based on its semantics. Secondly, the semantics of every aspect marker sets up a constraint on which rhetorical relation can connect the clauses. And thirdly, any rhetorical relation can connect the clauses as long as the rhetorical relation does not specify a temporal relation incompatible with the semantics of the aspect markers.

The four specific generalizations include: first, the perfective marker which marks a more or less clear endpoint, by default, indicates that a clause which contains it is connected to the clause following by *Narration* because a perfective marker of this kind presents a terminated or completed event as a whole.

Secondly, the imperfective markers by default specify that a clause which contains either of them is connected to the following clause by *Background_T* because they both provide a time, although one provides an instant while the other an interval.

Chapter II

Thirdly, to be connected to the clause that follows by *Narration*, the clause must describe an event that arrived at a clear and specific endpoint. The aspect marker that marks an event that occurs in the indefinite past requires that its event time be specified, in order to be connected to the clause that follows by *Narration*. The aspect marker that presents an event that does not necessarily come to an end cannot be attached to the clause that follows by *Narration*. The aspect marker that presents an eventuality that lasts over an interval needs to embed a completed event under it to be connected by *Narration*.

Fourthly, *Elaboration_E* requires accessing the internal process of the elaborated event. Therefore, it can open up the internal process to be accessed even though the elaborated event is presented by a perfective marker and its internal process is supposed to be closed.

However, aspect markers are not required in Chinese texts and most Chinese texts do not have aspect markers, as noted in Smith and Erbaugh (2001, 2005). How are the temporal relations between the clauses with no aspect markers determined? The studies of aspect markers suggest that the situation types (lexical aspects or *aktionsart*) of the eventualities in clauses can help. Kang (1999, 2001) proposes that directional verb compounds behave like the perfective *le* and describe telic events. Since those compounds behave like the perfective *le*, it is reasonable to hypothesize that they also behave in a manner similar to the perfective *le* in terms of temporal relations. More generally, can we hypothesize that in terms of rhetorical relations and temporal relations, telic events behave like the perfective *le* while atelic eventualities behave like the imperfective markers? In the following chapters, we will examine natural data from the Sinica Corpus and other sources, and put this hypothesis to the test.

CHAPTER III
TEMPORAL RELATIONS: WHEN THERE ARE NO ASPECT MARKERS

3.1 Introduction

From the review in Chapter Two, we know that aspect markers influence temporal relations indirectly via rhetorical relations. Based on its semantics, an aspect marker either specifies a default rhetorical relation or exerts a constraint on rhetorical relations. Based on those results, I hypothesize that in a discourse without any aspect marker the situation types of the eventualities in the discourse play a role similar to aspect markers. This hypothesis is tested in this chapter. Examples of all four situation types, i.e., accomplishment, achievement, activity and state,¹⁵ are examined. The behaviors of predicates of these four situation types in temporal relations are discussed in detail.

Smith and Erbaugh (2001, 2005) observe that a Mandarin text does not necessarily have aspect markers. J.-P. Chang (1998), Smith and Erbaugh (2001, 2005) and J. Lin (2006) independently propose that the temporal reference of a clause with no aspect marker depends on the situation type of the eventuality described by the clause, among other things.

J.-P. Chang (1998: 113-154) proposes the following generalizations. First, states in Chinese characteristically imply present time. Secondly, achievements, most naturally, are interpreted as past time. Thirdly, accomplishments are seldom used as bare forms because the

¹⁵ Smith (1997: 17-38) proposes five situation types, i.e., the traditional Vendlerian (1957) four types plus semelfactive. Smith (ibid: 29) suggests that semelfactive is atelic. However, Krifka (1998: 197) provides a basic difference between telic predicates and atelic predicates, that is, atelic predicates have a subinterval property while telic predicates do not. Semelfactives do not have a subinterval property. Semelfactives can be considered as a variation of achievement. Therefore, this type is not discussed in this book.

accomplishments lack specific temporal and/or aspectual information.¹⁶ Last, activities take on a habitual interpretation.

J. Lin (2003, 2006) makes a similar, but not identical, generalization. Utilizing Bohnemeyer and Swift's (2001) theory of default aspect, J. Lin (2003 and 2006) proposes that the default viewpoint¹⁷ aspect of telic events is perfective, while the default viewpoint aspect of atelic eventualities is imperfective. To put it another way, a telic event is viewed as completed, whereas an atelic eventuality is ongoing or durative.

Smith and Erbaugh (2001, 2005) propose a pragmatic principle¹⁸ to account for the temporal references of a sentence with no aspect marker. They suggest that in a clause with no aspect marker its temporal reference is determined by the temporal schema of its situation type, unless there is explicit information that indicates otherwise. Their principle is similar to that proposed by J. Lin (2006). They suggest that "unbounded situations are located in the present" and that "bounded events are located in the past" (Smith and Erbaugh 2005: 715).

The above works all share the common idea that a telic event can be regarded as a completed event. This means that a telic event functions similar to an event presented by the perfective *le*. Activity is special among the atelic eventualities. Chang suggests that an activity usually describes a habitual event, while J. Lin proposes that atelic eventualities have an ongoing or durative reading. What is more, Smith (1999) examines activities in English and proposes that perfective activity behaves as an event and can advance the narrative time of a narrative. To complicate the picture more, Smith (2003: 24) identifies a new type of sentence: General Statives, which include both generics and generalizing

¹⁶ This statement is not accurate since many examples in the Sinica Corpus show otherwise. His observation about activities is also problematic. The discussions in the following sections of this chapter show that the situation is not as simple as observed in Chang's dissertation.

¹⁷ In addition to the default viewpoint aspect, J. Lin (2006: 2) names three other factors that influence temporal interpretations in Mandarin: temporal adverbials, aspectual markers and modal verbs. For the functions of these three, interested readers are referred to this paper.

¹⁸ In addition to this pragmatic principle, Smith and Erbaugh propose that the determination of temporal references in Mandarin rely on two types of information: semantic information delivered by aspectual, lexical and adverbial forms, and a group of pragmatic principles. Interested readers are referred to these two papers.

sentences. She further proposes that General Statives are not dynamic in nature because they do not describe any specific event or state. Smith (2003: 24) seems to imply that an activity is not dynamic when it functions as General Stative.

The works above propose discrepant views of the functions of different situation types in temporal anchorage. But, generally speaking, telic events function differently from atelic situations with respect to temporal reference. In this chapter, I examine examples of all four situation types. I explore whether telic events behave like an event presented by the perfective *le* in terms of temporal relations. I also discuss examples of activity and try to determine if activity, with respect to temporal relations, behaves like state, as implied by J. Lin (2003, 2006) and proposed in Smith and Erbaugh (2001, 2005), or like a telic event, as in English, discussed in Smith (1999). Furthermore, I study the examples of state and compare them with the cases of the progressive *zai* and the durative *zhe*.

This chapter is organized as follows. Section 3.2 discusses telic events and their similarity and difference with respect to temporal relations. Section 3.3 examines atelic eventualities and how they affect temporal structure. Section 3.4 concludes this chapter.

3.2 Telic Events

Both accomplishments and achievements are telic because they have a natural final endpoint. Smith (1997: 26-32) shows that the difference between accomplishment and achievement lies in that accomplishment is durative whereas achievement is instantaneous. Along the same lines, Wu (2003a and 2005a) suggests that accomplishment contains a process between its starting point and its natural final endpoint, while the starting point of achievement coincides with its natural final endpoint.

According to J.-P. Chang (1998), J. Lin (2003 and 2006) and Smith and Erbaugh (2001, 2005), a telic event is viewed as completed. That is, we can hypothesize that a telic event specifies *Narration* when there is no clue at all in the context. However, accomplishment and achievement have different behavior in terms of temporal relations when access to the internal process is required. Since telic events are viewed as completed, according to J. Lin (2006) and Smith Erbaugh (2001, 2005), the internal process of a telic event cannot be accessed unless it is required. The

Chapter III

hypothesis for the role of telic events in temporal relations can be summarized as (34):

- (34) Hypothesis for the Role of Telic Events in Temporal Relations
- a. The narrative time of a telic event can be advanced with no explicit indication in the context.
 - b. For an achievement, the preparatory process, which is not included in the semantics of the achievement, is accessed when a retrieval of the information in the internal process is required. An accomplishment provides its internal process to be accessed under the same circumstance. Under other circumstances, neither of the two kinds of process can be accessed.
 - c. Other rhetorical relations can connect telic events as long as there are cues in the context and the temporal relations indicated by those rhetorical relations do not violate (34b).

3.2.1 Narration

When two events are connected by *Narration*, these two events occur in sequence. These two events do not necessarily have a causal relation, though a causal relation is indeed a cue for *Narration*. Below is a case where the clauses are connected by *Narration*, but do not have a causal relation among them.

- (35) a. 她 不 能 再 聽 蘇 普 這 般 哭 叫
ta bu neg zai ting supu zheban kujiao
she(=Li) not can again hear Supu so cry
'Li could not hear Supu crying like that any more,'
- b. 於 是 回 到 了 計 老 人 家 中
yushi huidao le ji lao ren jia zhong
so return Pfv Ji old man home in
'so, (she) returned to Ji's home,'
- c. 從 被 褥 底 下 拿 出 那 張 狼 皮 來
cong beiru dixia nachu na zhang lang pi lai
from bed sheet under take out that CL wolf skin come
'(she) took out the wolf skin from under the bed sheet,'

- d. 看 了 很 久 很 久
 kan le hen jiu hen jiu
 look at Pfv very long very long
 ‘(and she) looked at the skin for a long long time.’

In (35), (35c) is connected to (35b) by *Narration*. However, there is no causal relation between a *go home* event and a *take out the wolf skin from under the bed sheet* event. Since there is no cue in this context to indicate which rhetorical relation connects these two clauses together, the default function of the perfective *le* applies and specifies that *Narration* connects these two clauses, as argued in Wu (2005b).

Just like the perfective *le*, telic events specify that the clauses are connected by *Narration* when there is no cue in the context. No causal relation is required between the events. See the following examples.

- (36) a. 所長 郭 豐木 率 員警 趕赴 現場
 suozhang guo fengmu shuai yuanjing ganfu xianchang
 Lieutenant Guo Fengmu lead police officers rush to spot
 ‘Lieutenant Guo Fengmu rushed with his officers to the scene (of the rockfall).’
- b. 用 擔架 將 三 名 重 傷 遊客 抬至
 yong danjia jiang san ming zhong shang youke taizhi
 use stretcher Disp three CL heavily injured tourist carry to
 公路 旁
 gonglu pang
 road beside
 ‘(They) carried badly injured tourists to the road by stretcher.’
- c. 由 趕來 的 救護車 送 醫 急救
 you ganlai de jiuhuge song yi jiji
 by rush Rel ambulance send hospital ER
 ‘(The victims) were taken to the emergency room by ambulances that had rushed there.’

The predicate *ganfu xianchang* ‘to rush to the scene’ in (36a) is telic since the event has a natural final endpoint. It is an accomplishment because there is a process between its starting point and its natural final point. This process can be brought out by *zhengzai* ‘in the middle of (an

Chapter III

action)’ because this adverbial has to access the internal process of an event. This adverbial is incompatible with typical achievement, such as *dida* ‘to arrive’, as in (37a). It cannot go with a state either, as in (37b).

- (37) a. *老張 正在 抵達 台北
 *laozhang zhengzai dida taibei
 Laozhang in the middle of arrive Taipei
 ‘*Laozhang was arriving (was in the middle of arriving) at Taipei.’
- b. *花 正在 紅
 *hua zhengzai hong
 flower in the middle of red
 ‘*The flower was becoming red (was in the middle of becoming red).’
- c. 警方 正在 趕赴 現場
 jingfang zhengzai ganfu xianchang
 police in the middle of rush to spot
 ‘The police were rushing to (in the middle of rushing to) the spot.’

Since *ganfu xianchang* ‘to rush to the scene’ is telic and is compatible with *zhengzai* ‘in the middle of (an action)’, as shown in (37c), it has to be an accomplishment. Now that *ganfu xianchang* ‘to rush to the scene’ is an accomplishment, it can be regarded as a completed event in an unmarked clause, as proposed by J. Lin (2006) and Smith and Erbaugh (2001, 2005). The context provides no cue as to which rhetorical relation connects (36b) to (36a). The default function of telic events applies, that is, (36b) is connected to (36a) by *Narration*, which specifies that (36b) occurs after (36a). This inference matches a native speaker’s intuition about the temporal order between (36a) and (36b).

The predicate *taizhi gonglu pang* ‘to carry to the side of the road’ in (36b) is also telic since obviously it also has a natural final endpoint. It is an achievement because it does not have a process. Its lack of process can also be brought out by *zhengzai* ‘in the middle of’ because this predicate is incompatible with *zhengzai*. See the example below.

- (38) ???他們 正在 把 傷者 抬至 公路
 ???tamen zhengzai ba shangzhe taizhi gonglu
 they in the middle of Disp injured people carry to road
 旁
 pang
 side
 ‘???They were carrying the injured people to the side of the road.’”

Since *taizhi gonglu pang* ‘to carry to the side of the road’ is an achievement,¹⁹ it specifies that the clause is connected to the following one by *Narration*. That is, (36c) is also attached to (36b) by *Narration*, which indicates that (36b) occurs before (36c). This inference also matches a native speaker’s intuition about the temporal relation between (36b) and (36c).

See another example in the following.

- (39) a. 賽拉芬 1665 年 出生 於 義大利 北 部 的
 sailafen yiliuliwu nian chusheng yu yidali bei bu de
 Selifen 1665 year be born at Italy North part DE
 烏黛恩
 Udine
 Udine
 ‘Selifen was born in Udine, the north part of Italy, in 1665.’
- b. 年輕 時 他 熱愛 提琴 製作
 nianqing shi ta reai tiqin zhizuo
 young time he hot-love violin making
 ‘(When he was) young, he loved making violins very much,’
- c. 因此 前往 克立蒙那
 yinci qianwang kelimona
 so go to Cremona
 ‘so, (he) went to Cremona.’

¹⁹ Some native speakers may consider this sentence acceptable, if not grammatical. However, this difference in grammaticality judgment does not affect our generalization here since the predicate is telic, regardless of whether it is an achievement or an accomplishment.

either because it is not compatible with the durative *zhe*,²² as in (41c). Therefore, it has to be an achievement.

- (41) a. *老張 正在 投靠
 *laozhang zhengzai tokao
 Laozhang in the middle of seek help from and stay with
 laoli
 Laoli
 ‘*Laozhang was seeking help from and staying with Laoli.’
- b. 老張 三 年 前 投靠
 laozhang san nian qian tokao
 Laozhang three year ago seek help from and stay with
 了 老李
 le laoli
 Pfv Laoli
 ‘Laozhang sought help from and stayed with Laoli three years ago.’
- c. *老張 投靠 著 老李
 *laozhang tokao zhe laoli
 Laozhang seek help from and stay with Dur Laoli
 ‘*Laozhang was seeking help from and staying with Laoli.’

The situation type of *chengwei tade xuesheng* ‘to become his student’ is less obvious. This predicate is not compatible with *zhengzai* ‘in the middle of’ and therefore it is not an accomplishment, as shown in (42a). It is compatible with the perfective *le* without the context specifying an endpoint, as in (42b), and hence it cannot be an activity. It cannot be a state because it is incompatible with the durative *zhe*, as shown in (42c). Its compatibility with the perfective *le* indicates that it is not an individual-level state.²³ Therefore, *chengwei tade xuesheng* ‘to become his student’ is an achievement.

endpoint on it. See Wu (2003a: 466, 2005a: 321-325) for detailed discussions.

²² Yeh (1993) observes that some states are compatible with the durative *zhe* while the others are not. She convincingly argues that the former is stage-level, while the latter is individual-level.

²³ Please refer to Wu (2005a: 325-327) for the compatibility of these two types of state with the perfective *le*.

Chapter III

- (42) a. *老張 正在 成為 小李 的 學生
*laozhang zhengzai chengwei xiaoli de xuesheng
Laozhang in the middle of become Xiaoli Poss student
'*Laozhang was becoming (in the middle of becoming)
Xiaoli's student.'
- b. 女人 為了 不 當 男人的 奴隸 咀嚼 那種
nüren weile bu dang nanren de nuli jūjue na zhong
woman in order to not be man Poss slave chew that kind
茶葉 卻 也 因此 成為 了 那種 茶葉 的
chaye que ye yinci chengwei le na zhong chaye de
leaf but also so become Prf that kind tea leaf Poss
奴隸
nuli
slave
'In order not to be men's slaves, women chewed that kind of
tea leaves. However, for the very same reason, they became
the slaves of the tea leaves (= addiction).'
- c. *老張 成為 著 小李 的 學生
*laozhang chengwei zhe xiaoli de xuesheng
Laozhang become Dur Xiaoli Poss student
'*Laozhang was being Xiaoli's student.'

Since all the relevant predicates in (39) are achievements and there is no cue in the context indicating rhetorical relations, the default function of telic events specifies that those clauses are connected by *Narration*. That is, (39b) is connected to (39a) by *Narration*, as is (39d) to (39c), (39e) to (39d) and (39f) to (39e). This inference means that these events occurred in the order in which they are described in the context. The inference matches a native speaker's intuition about the temporal relations among those events.

The two examples above demonstrate the default function of achievements. The next example shows that, contrary to Chang's (1998: 138-145) suggestion, accomplishments also by default specify *Narration*

and imply that the temporal order matches the contextual order, just like achievements, because they are both telic.²⁴

- (43) a. 警方 蓋上 水塔 的 蓋子
jingfang gaishang shuita de gaizi
Police cover water tank Poss lid
'The police put the lid on the water tank,'
- b. 收拾 用 過 的 鑑識 工具
shoushi yong guo de jianshi gongju
put away use Exp Rel forensic tool
'put away the forensic tools that had been used,'
- c. 離開 命案 現場
likai mingan xianchang
leave murder scene
'(and) left the crime scene.'

The relevant predicates in this example are *gaishang shuita de gaizi* 'to replace the lid of the water tank' and *shoushi yong guo de jianshi gongju* 'to put away the forensic tools that had/have been used'. They are both accomplishments because they are both compatible with *zhengzai* 'in the middle of', as in (44), and they both have a natural final endpoint.

- (44) a. 警方 正在 蓋上 水塔 的 蓋子
jingfang zhengzai gaishang shuita de gaizi
police in the middle of cover water tank DE lid
'The police were replacing the lid of the water tank.'

²⁴ The discussion about accomplishments here suggests that J. Lin's (2003, 2006) and Smith and Erbaugh's (2001, 2005) proposals are preferable over Chang's (1998) in regard to temporal anchorage of events not presented by any aspect marker.

Chapter III

- b. 警方 正在 收拾 用 過 的 鑑識
jīngfāng zhèngzài shōushì yòng guò de jiānshí
police in the middle of put away use Exp Rel forensic
工具
gōngjù
tool
'The police were putting away the forensic tools that have/had
been used.'

There is no cue indicating which rhetorical relation connects (43b) to (43a) and (43c) to (43b). There are no causal relations among the events described in (43). The default function of telic events specifies that these clauses are connected to each other by *Narration*, which means that these events take place in the order they are described. This inference matches a native speaker's intuition about the temporal relations in this passage.²⁵

To sum up, just like the perfective *le*, telic events defeasibly specify that the events are connected by *Narration*, which indicates that the events progress in the order they are described in cases where the context provides no clue at all.

3.2.2 Elaboration_E

The internal process of an event presented by the perfective *le* cannot be accessed unless the clause describing the event is connected to the clause that follows by *Elaboration_E*, as proposed in Wu (2005b). This observation is a little inadequate. An achievement does not have a process between its starting point and its natural final endpoints. Even though *Elaboration_E* has to retrieve the information in the internal process of an elaborated event, it cannot access the internal process of an achievement as an achievement does not have one.

Does this mean that an achievement cannot be elaborated on? There are examples that show otherwise. (45) shows that (45a) can still be elaborated on even though it describes an achievement, just as in (46), where (46a), which describes an accomplishment, can be elaborated on.

²⁵ In terms of *Narration*, iconicity, e.g., Tai (1985), is revealed. The contextual order reflects the temporal order, although not all rhetorical relations specify a temporal relation that matches the contextual order of the clauses.

- (45) a. 林義傑 終於 抵達 這次 超級 馬拉松 的
lin yijie zhongyu dida zhi ci chaoji malasong de
Lin Yijie finally arrive this time super marathon DE
終點
zhongdian
end
'Lin Yijie finally reached the end of the super marathon.'
- b. 他 經歷 了 許多的 困難
ta jingli le xuduo de kunnan
he experience Pfv many DE difficulty
'He had experienced many difficulties.'
- c. 他 被 毒 蚊 叮 了 兩次
ta bei du wen ding le liang ci
he Pass poisonous mosquito bite Pfv two time
'He had been bitten by poisonous mosquitoes twice.'
- d. 好幾次 差點 被 毒 蛇 攻擊
haoji ci chadian bei du she gongji
several time almost Pass poisonous snake attack
'(He) had been almost attacked by poisonous snakes several times.'
- e. 最後 腳 又 抽筋
zuihou jiao you choujin
finally leg also cramped
'Finally, he also got cramp in his legs.'
- f. 但是 他 都 咬 牙 撐 過 來 了
danshi ta dou yao ya chengguolai le
but he all clench teeth make it through to the end Prc
'But, he had clenched his teeth to endure the difficulties and made it through to the end.'

Chapter III

- (46) a. 林義傑 從戈壁 沙漠 的 第一大城 跑到 第二
lin yijie cong gebi shamo de diyi da cheng paodao di'er
Lin Yijie from Gebi desert DE first big city run to second
大城
da cheng
big city
'Lin Yijie ran from the biggest city on the Gebi desert to the
second biggest one.'
- b. 總共 三 百 公里
zonggong san bai gongli
total three hundred kilometer
'(The distance was) three hundred kilometers in total.'
- c. 他 被 毒 蚊 叮 了 兩 次
ta bei du wen ding le liang ci
he Pass poisonous mosquito bite Pfv two time
'He had been bitten by poisonous mosquitoes twice.'
- d. 好 幾 次 差 點 被 毒 蛇 攻 擊
haoji ci chadian bei du she gongji
several time almost Pass poisonous snake attack
'(He) had been almost attacked by poisonous snakes several
times.'
- e. 最 後 腳 又 抽 筋
zuihou jiao you choujin
finally leg also cramped
'Finally, he also got cramp in his legs.'
- f. 但 是 他 都 咬 牙 撐 過 來 了
danshi ta dou yao ya chengguolai le
but he all clench teeth make it through to the end Prc
'But, he had clenched his teeth to endure the difficulties and
made it through to the end.'

In (45a), the predicate is *dida zhe ci chaoji malasong de zhongdian* 'to reach the end of this super marathon', which is a typical achievement. The predicate in (46a) is *cong gebi shamo de diyi da cheng paodao di'er*

da cheng ‘to run from the biggest city on the Gebi desert to the second biggest’, which is an accomplishment since both the starting point and the natural final endpoint of this event are explicitly specified. (45b-f) elaborate on (45a), just as (46c-f) elaborate on (46a).

Asher and Lascarides (2003: 160) propose that *Elaboration*²⁶ implies temporal inclusion. This inference for temporal relations is true for (46) since (46a) describes an accomplishment, which can temporally include the events described in (46c-f). However, the same inference is not true for (45) because (45a), the elaborated event, describes an achievement, which is instantaneous and can never temporally include anything lasting longer than an instant.

So, which part of an achievement is elaborated on? If we examine (45) closely, we can find that what is elaborated on is the preparatory process that leads to the achievement. Even though, in the Vendlerian notion, an achievement is considered as describing an instant, few things in the world, if any, are actually instantaneous. An event that is classified as an achievement is, as a matter of fact, a way of coding in natural language. All events have a process, which can be long or short, and which humans can choose whether to encode in natural language. For example, *dida* ‘to arrive’, *si* ‘to die’, *yingde yanjiang bisai guanjun* ‘to win the championship of the speech contest’ are typical examples of achievement. Before one arrives somewhere, he or she definitely has to be on the way first. For many cases of death, there is always a preparatory process, such as a (lengthy or brief) period of being (seriously) ill. There must be a speech contest that almost definitely will last for a period of time before any participant can be announced to have won the contest. However, humans can choose to encode only the final stages of those events in language and this choice produces achievements, although we are all certain that there is a process that leads to them.

That is, in terms of linguistic encoding, an achievement does not have a process and is instantaneous, whereas an accomplishment has a process events in the world, we can usually infer that there is a preparatory process that will lead to the instant described by an achievement. While the process is included in the seman and is durative. Nevertheless, in terms of a human understanding of the tics of an

²⁶ As noted before, Asher and Lascarides (2003) do not distinguish *Elaboration_E* from *Elaboration_{NP}*, which indicate different temporal relations. The *Elaboration* in their book is actually *Elaboration_E*.

accomplishment, an achievement is assumed (or inferred) to have a process, which is not encoded in the semantics of an achievement. To put it another way, while the process is an integrated part of the semantics of an accomplishment, it is a pragmatic inference that an achievement has a preparatory process.

Given the above discussion about the preparatory process for an accomplishment and an achievement, we can conclude that *Elaboration_E* does access the preparatory process of an event and that the difference is whether the accessed process is semantic or pragmatic. This distinction is very important because it indicates different temporal relations. When the accessed preparatory process is semantic, i.e., the event that is being elaborated on is an accomplishment, the elaborating event(s) are temporally included within the event time of the elaborated event. On the other hand, if the accessed process is pragmatic, which means that the elaborated event is an achievement, the elaborating event(s) temporally precede the elaborated event, for the reason that the elaborated event is just the final stage (the change of state stage) of a series of sub-events.

One might ask what clue in (45) and (46) determines that the first clause is attached to the following ones by *Elaboration_E*. Asher and Lascarides (2003: 282-283) propose that an elaborating event must be a subtype of the event it elaborates on. (45b-f) and (46c-f) are all descriptions of difficulties, and difficulties are expected to happen in a super marathon, that is, difficulties can be considered as subtypes of (the experience of) a super marathon. This subtype relation points out the rhetorical relation *Elaboration_E*. Since there is a clear clue for *Elaboration_E* in the context, this specified rhetorical relation overrides the default one indicated by telic events.

3.2.3 Explanation

Telic events can be connected by *Explanation*. Asher and Lascarides (2003: 159) propose that event β temporally precedes another event α if β explains α . This temporal relation is actually the same as the one specified by *Narration*, although the rhetorical functions of *Narration* and *Explanation* are certainly different. Since the temporal relation indicated by *Explanation* does not violate the constraint exerted by the semantics of telic events, telic events can be connected by *Explanation* as long as there is a cue phrase or other information in the context specifying so. See the following example.

- (47) a. 現代 陶藝 除了 仍 繼承 其 傳統
xiandai taoyi chule reng jicheng qi chuantong
modern pottery art in addition to still inherit its traditional
功能 外
gongneng wai
function outside
'In addition to still carrying its traditional function,'
- b. 更 擴展到 純粹 藝術 的 創作
geng kuozhandao chuncue yishu de chuanguo
even extend pure art DE creation
'pottery has been extended to the creation of pure art.'
- c. 成為 一 門 獨立 的 藝術
chengwei yi men duli de yishu
become one kind independent DE art
'(Pottery) has become a kind of independent art.'
- e. 製作 陶藝 的 黏土 與 釉藥 被
zhizuo taoyi de niantu yu youyao bei
produce potter REL clay and porcelain glaze Pass
視為 藝術 創作 的 媒介 材料
shiwei yishu chuanguo de meijie cailiao
regard as art creation REL medium material
'The clay and porcelain glaze that are used to produce pottery
are regarded as the medium and material of artistic creation,'
- f. 應用 在 作品 創作 表現 上
yingyong zai zuopin chuanguo biao xian shang
apply at work creation presentation top
'(they) are utilized in the presentation to the viewer of (artistic)
works.'

In this passage, (47e) explains (47f). This decision is made based on the information provided by (47a-c). Pottery used to have solely a practical function, i.e., to create containers to use in everyday life. While pottery still has its traditional function, it is extended to become a kind of pure art. Hence, the clay and porcelain glaze have a function additional to the one they originally had, which is why these two kinds of raw

Chapter III

material for pottery are utilized as a means to use different ways of creating pottery to produce artistic works.

The predicate in (47e) *shiwei* ‘to regard something/someone as’ is an achievement, just like *chengwei* ‘to become’, which is discussed above, because *shiwei* ‘to regard something/someone as’ is incompatible with *zhengzai* ‘in the middle of’ and the durative *zhe*, but is compatible with the perfective *le*. Although by default a telic event indicates *Narration*, yet in (47) there is explicit information indicating *Explanation*. Since the temporal relation indicated by *Explanation* does not violate the constraint set up by the semantics of telic events, the default one is overridden by the one provided by the explicit information in this passage. It should be obvious that (47e) temporally precedes (47f). In order for the clay and porcelain glaze to be used as a means to present different artistic styles, they have to be recognized as a legitimate material for artistic creation first. This example clearly verifies Point (c) in the Hypothesis (34).

Accomplishments obey the same constraint. See the example below.

- (48) a. 我 同學 以前 連 一 千 公尺 都
wo tongxue yiqian lian yi qian gongchi dou
I classmate before even one thousand meter also
跑 不 完
pao-bu-wan
run-no-finish
‘My classmate could not even finish 1000 meters before.’
- b. 但 這 次 運 動 會 他 參 加 跑 步 比 賽
dan zhe ci yundonghui ta canjia paobu bisai
but this time athletic meet he participate running competition
‘But, he participated in the running competition at this athletic meet.’
- c. 繞 校 園 跑 五 圈
rao xiaoyuan pao wu quan
around campus run five lap
‘He ran five laps around the campus.’

- d. 共 五 千 公 尺
gong wu qian gongchi
total five thousand meter
'(The distance was) 5000 meters in total.'
- e. 贏 得 了 全 班 的 掌 聲
yingde le quan ban de zhangsheng
win Pfv whole class Poss applause
'The whole class applauded him.'

In (48), (48c) explains (48e) because the running of five laps around the campus is the reason why the writer's classmate won applause from the whole class. The predicate in (48c) is an accomplishment because obviously it has a starting point, a process and a natural final endpoint. Since the information in this passage clearly indicates that (48c) explains (48e), the default function of telic events is, again, overridden. Since the temporal relation specified by *Explanation* obeys the constraint (b) in the Hypothesis (34), this short discourse is coherent.

One might ask how we can be certain that (47e) and (47f) on the one hand and (48c) and (48e) on the other are connected by *Explanation*, not *Narration*, since these two rhetorical relations specify the same temporal relation. The test is quite simple. We can add a cue phrase that indicates *Explanation*, such as *yinci* 'so', *suoyi* 'so', etc, between two clauses connected by *Explanation*, but we cannot do so between two clauses connected by *Narration*. The following three examples clearly demonstrate this point.

- (49) a. 製 作 陶 藝 的 黏 土 與 釉 藥 被
zhizuo taoyi de niantu yu youyao bei
produce potterr REL clay and porcelain glaze Pass
視 為 藝 術 創 作 的 媒 介 材 料
shiwei yishu chuangzhu de meijie cailiao
regard as art creation REL medium material
'The clay and porcelain glaze that are used to produce pottery are regarded as the medium and material of artistic creation.'

Chapter III

- b. 因此應用 在 作品 創作 表現 上
yinci yingyong zai zuopin chuangzuo biao xian shang
so apply at work creation presentation top
'(Therefore, (they) are utilized in the presentation to the viewer of (artistic) works.'
- (50) a. 我 同學 以前 連 一 千 公尺 都
wo tongxue yiqian lian yi qian gongchi dou
I classmate before even one thousand meter also
跑不完
pao-bu-wan
run-no-finish
'My classmate could not even finish 1000 meters before.'
- b. 但 這 次 運動會 他 參加 跑步 比賽
dan zhe ci yundonghui ta canjia paobu bisai
but this time athletic meet he participate running competition
'But, at this athletic meet he participated in the running competition.'
- c. 繞 校園 跑 五 圈
rao xiaoyuan pao wu quan
around campus run five lap
'He ran five laps around the campus.'
- d. 共 五 千 公尺
gong wu qian gongchi
total five thousand meter
'(The distance was) 5000 meters in total.'
- e. 所以 贏得 了 全 班 的 掌聲
suoyi yingde le quan ban de zhangsheng
so win Pfv whole class Poss applause
'So, the whole class applauded him.'

- (18) a. 所長 郭 豐木 率 員警 趕赴 現場
suozhang guo fengmu shuai yuanjing ganfu xianchang
Lieutenant Guo Fengmu lead police officers rush to spot
'Lieutenant Guo Fengmu rushed with his officers to the scene
(of the rockfall).'
- b. 因此 用 擔架 將 三 名 重 傷 遊客
!yinci yong danjia jiang san ming zhong shang youke
use stretcher Disp three CL heavily injured tourist carry to
抬至 公路 旁
taizhi gonglu pang
road beside
'(They) carried the badly injured tourists to the road by
stretcher.'
- c. 由 趕來 的 救護車 送 醫 急救
you ganlai de jiuहुche song yi jiji
by rush Rel ambulance send hospital emergency room
'(The victims) were taken to the emergency room by
ambulances that had rushed there.'

(49) and (50) are just (47) and (48) with the cue phrases *yinci* 'so' or *suoyi* 'so' added between the clauses connected by *Explanation*. This addition does not render the two discourses incoherent. Both (49) and (50) remain coherent. (51) is an example of *Narration*, which is discussed above as (36). Because (51b) is connected to (51a) by *Narration*, adding a cue phrase indicating *Explanation* is contradictory and this is why (51) is incoherent. That is, although *Narration* and *Explanation* indicate the same temporal relation, they perform different rhetorical functions and cannot be used exchangeably.

To sum up, since *Explanation* indicates a temporal relation that obeys the constraint exerted by the semantics of telic events, as long as there is clear information in the context specifying the clauses are connected by *Explanation*, telic events allow the possibility to be connected by *Explanation*.

3.2.4 Background_T

Telic events tend to be considered as completed ones. To put it another way, telic events tend to be presented as a whole. The internal process of a telic event is not accessible unless it is required. *Background_T* does not require accessing the internal process. Telic events can only provide, as a temporal background, the time after the events are completed because that is the only visible and accessible time of a completed event under normal circumstances. See the following example.

- (52) a. 父親 回到 莫斯科
fuqin huidao mosike
father return Moscow
'Father returned to Moscow.'
- b. 我 對 要 不 要 把 我 聽 到 的 一 切
wo dui yao-bu-yao ba wo tingdao de yiqie
I toward want-no-want Disp I hear REL everything
告訴 他 還 有 點 猶 豫 不 決
gaosu ta hai youdian youyubujue
tell he still somewhat hesitant and indecisive
'I was still hesitant and indecisive as to whether or not I
should tell Father everything that I had heard about.'

(52a) has an achievement, *huidao mosike* 'to return to Moscow', and there is no clue in the context to indicate any rhetorical relation. The default function of telic events should apply and identify *Narration* to connect these two clauses. However, the default rhetorical relation cannot connect these two clauses here. Asher and Lascarides (2003: 164) propose a topic constraint on *Narration*, which says that two sentences (or clauses) connected by *Narration* must share the same topic. In Mandarin, one of the ways to show that a few clauses share a topic is to utilize zero anaphora (e.g. Pan 1997, Pu 1997, Tao 1994, 1996, Yeh and Mellish 1997, etc). This way to show a shared topic can be observed in (35), (36) and (39), which are repeated below.

- (53) a. 她 不 能 再 聽 蘇 普 這 般 哭 叫
ta bu neg zai ting supu zheban kujiao
she(=Li) not can again hear Supu so cry
'Li could not hear Supu crying like that any more,'
- b. 於 是 回 到 了 計 老 人 家 中
yushi huidao le ji lao ren jia zhong
so return Pfv Ji old man home in
'so, (she) returned to Ji's home,'
- c. 從 被 褥 底 下 拿 出 那 張 狼 皮 來
cong beiru dixia nachu na zhang lang pi lai
from bed sheet under take out that CL wolf skin come
'(she) took out the wolf skin from under the bed sheet,'
- d. 看 了 很 久 很 久
kan le hen jiu hen jiu
look at Pfv very long very long
'(and she) looked at it for a very very long time.'

In this example, (53b-d) do not have an explicit subject. Instead, the subjects in these clauses are zero anaphors. There are different ways to resolve zero anaphora, e.g. Huang (1984), Lee (2002), Yeh and Chen (2003), Wu (2006c), etc. Here, the zero anaphors are resolved to the subject of the (53a). Zero anaphora guarantees that all of the clauses in (53) share the same topic and make it possible for *Narration* to connect these clauses.

The situation is the same in (54) and (55). (54b) and (54c) do not have an explicit subject, either. The zero anaphor²⁷ in (54b) is resolved to the subject of (54a) and the zero anaphor in (54c) is resolved to the direct object of (54b). (55b-f) do not have an overt subject, either. The zero anaphor subjects in these clauses are all resolved to the subject of (55a). These three examples all show that clauses connected by *Narration* need to share a topic and in Mandarin zero anaphor is one of a number of ways ways to do so.

²⁷ Zero anaphora resolution is not the key issue in this book and therefore the details of how to resolve these zero anaphors will not be pursued further here.

Chapter III

- (54) a. 所長 郭 豐木 率 員警 趕赴 現場
suozhang guo fengmu shuai yuanjing ganfu xianchang
Lieutenant Guo Fengmu lead police officers rush to spot
'Lieutenant Guo Fengmu rushed with his officers to the scene
(of the rockfall).'
- b. 用 擔架 將 三 名 重 傷 遊客 抬至
yong danjia jiang san ming zhong shang youke taizhi
use stretcher Dis three CL heavily injured tourist carry to
公路 旁
gonglu pang
road beside
'(They) carried the badly injured tourists to the road by
stretcher.'
- c. 由 趕來 的 救護車 送 醫 急救
you ganlai de jiuhuge song yi jiji
by rush Rel ambulance send hospital emergency room
'(The victims) were taken to the emergency room by
ambulances that had rushed there.'
- (55) a. 賽拉芬 1665 年 出生 於 義大利 北 部 的
sailafen yiliuliwu nian chusheng yu yidali bei bu de
Selifen 1665 year be born at Italy North part DE
烏黛恩
Udine
Udine
'Selifen was born in Udine, the north part of Italy, in 1665.'
- b. 年輕 時 他 熱愛 提琴 製作
nianqing shi ta reai tiqin zhizuo
young time he hot-love violin making
'(When he was) young, he loved making violins very much.'
- c. 因此 前往 克立蒙那
yinci qianwang kelimona
so go to Cremona
'so, (he) went to Cremona.'

Chapter III

- (56) a. 癌 細胞 已經 從 鼻子 轉移到 淋巴腺
ai xibao yijing cong bizi zhuangyidao linbaxian
cancer cell already from nose spread to lymph glands
'The cancer cells had already spread from the nose to the
lymph glands.'
- b. 他仍然 拒絕 接受 任何 治療
ta renran jujue jiashou renhe zhiliao
he still refuse receive any treatment
'He still refused to receive any treatment.'
- c. 只是 到處 求神問卜
zhishi daochu qiushenwenbu
just everywhere ask gods for help
'He just went to every temple to ask the gods for help.'

In (56a), the predicate *cong bizi zhuangyidao linbaxian* 'to spread from the nose to the lymph glands' is obviously an accomplishment because it contains a starting point, a process and a natural final endpoint. Again, even though the context does not provide any clue as to the rhetorical relations, the three clauses do not share a topic and therefore (56b) cannot be connected to (56a) by *Narration*. Just like (52a), (56a) provides a temporal frame in which the man's belief in the efficacy of appealing for aid from the gods at every temple to hold.

One reasonable question to ask here is how to make sure that (52) and (56) are not examples of *Narration*, but of *Background_T*. Again, we can utilize cue phrases that indicate *Narration* and *Background_T* respectively to demonstrate this distinction. The two cue phrases that are used here are *ranhou* 'then', which indicates *Narration*, and *zai zhe ge shihou* 'at this time', which identifies *Background_T*. We can see, from the examples below, that (52) and (56) allow *zai zhe ge shihou* 'at this time' to lead (52b) and (56b) respectively, but not *ranhou* 'then'.

With *ranhou* 'then', (57b) is no longer a good continuation to (57a). However, with *zai zhe ge shihou* 'at this time', (57b') is still a good continuation to (57a). The case is the same in (58).

- (57) a. 父親 回到 莫斯科
fuqin huidao mosike
father return Moscow
'Father returned to Moscow.'
- b. !然後 我 對 要 不要 把 我 聽到 的
!ranhou wo dui yao-bu-yao ba wo tingdao de
then I toward want-no-want Disp I hear Rel
一切 告訴 他 還 有點 猶豫不決
yiqie gaosu ta hai youdian youyubujue
everything tell he still somewhat hesitant and indecisive
'!Then, I was still hesitant and indecisive as to whether or
not I should tell Father everything that I had heard about.'
- b'. 在 這 個 時 候 我 對 要 不 要 把 我 聽 到
zai zhe ge shihou wo dui yao-bu-yao ba wo tingdao
at this CL time I toward want-no-want Disp I hear
的 一 切 告 訴 他 還 有 點 猶 豫 不 決
de yiqie gaosu ta hai youdian youyubujue
Rel everything tell he still somewhat hesitant and indecisive
'At this time, I was still hesitant and indecisive as to whether
I should tell Father everything I heard about.'
- (58) a. 癌 細 胞 已 經 從 鼻 子 轉 移 到 淋 巴 腺
ai xibao yijing cong bizi zhuangyidao linbaxian
cancer cell already from nose transfer to lymph gland
'The cancer cells already transferred from the nose to the
lymph gland.'
- b. !然後 他 仍 然 拒 絕 接 受 任 何 治 療
!ranhou ta renran jujue jiashou renhe zhiliao
then he still refuse receive any treatment
'!Then, he still refused to receive any treatment.'
- b'. 在 這 個 時 候 他 仍 然 拒 絕 接 受 任 何 治 療
at zhe ge shihou ta renran jujue jiashou renhe zhiliao
at this CL time he still refuse receive any treatment
'At this time, he still refused to receive any treatment.'

Chapter III

- c. 只是 到處 求神問卜
zhishi daochu qiushenwenbu
just everywhere ask gods for help
'He just went to every temple to ask the gods for help.'

In sum, telic events can also serve as a temporal background. Since *Background_T* does not require accessing a specific part of an eventuality, a telic event provides the time after the event is completed to be a temporal background. This point is very important in regard to the description of achievements. Achievements are instantaneous. If an event time had to be provided as a temporal background, it could be a temporal background only for achievements because the event time of an achievement is only an instant, and cannot include any time longer than an instant.

3.2.5 Summary

Following the studies on temporal anchorage in Mandarin that telic events tend to be regarded as completed ones when the events are not marked by any aspect marker, e.g. J.-P. Chang (1998), J. Lin (2003, 2006), Smith and Erbaugh (2001, 2005), etc, I propose that telic events behave like the perfective *le* in terms of rhetorical/temporal relations. The default function of telic events is to point out that a clause describing a telic event is connected the following one by *Narration*, which indicates that the temporal order matches the contextual order.

Wu (2005b) proposes that the internal process of an eventuality presented by the perfective *le* cannot be accessed unless it is required to do so and that *Elaboration_E*, i.e., elaboration on events, requires accessing the internal process. This proposal is argued to be inadequate. It is shown here that for an elaborated achievement the process accessed is the preparatory process, which leads to the single point in the temporal schema of an achievement,²⁹ and which is not semantically encoded but can be pragmatically inferred, and, in contrast, an elaborated accomplishment has its internal process accessed by elaborating events. That is, an eventuality temporally precedes an achievement when the former elaborates on the latter, whereas an eventuality is temporally

²⁹ Please refer to Wu (2005a: 308) for the discussion and formalization of the temporal schema of the four situation types.

included in an accomplishment when the former elaborates on the latter. This is a constraint on temporal relations set up by the semantics of different types of telic events.

Telic events can be connected to other clauses by any rhetorical relation, as long as the following two conditions are met. First, there must be a cue phrase or explicit information in the context that specifies a certain rhetorical relation. A rhetorical relation specified by a cue phrase or explicit information in the context can override the default one provided by a telic event. Secondly, the temporal relation specified by the rhetorical relation cannot violate the constraint exerted by the semantics of telic events. For example, an achievement does not have an internal process and therefore no rhetorical relation can require accessing the internal process of an achievement. An accomplishment has an internal process. Rhetorical relations such as *Elaboration_E* must access the internal process of an accomplishment.

3.3 Atelic Eventualities

There are discrepant views in the studies on temporal reference in Mandarin on how to determine the temporal anchorage of activities. J.-P. Chang (1998: 146-151) suggests that activities have a habitual interpretation. J. Lin (2003, 2006) proposes that an atelic eventuality is, by default, viewed as ongoing or durative. Smith and Erbaugh (2001, 2003) suggest that unbounded events are located in the present. However, Smith (1999) proposes that activity can behave like achievement or accomplishment in that all three situation types can advance the narrative time. The discrepancy lies in the types of data they use. J.-P. Chang (1998) and J. Lin (2003, 2006) look at single sentences only, whereas Smith (1999) and Smith and Erbaugh (2001, 2005) examine editorials in newspapers or articles where sentences are grouped together to form a coherent context.

Activities are not telic because they do not have a natural final endpoint. Standing alone out of any context, an activity might have a habitual reading or to be ongoing or durative because there is nothing that can impose a final endpoint on it. Wu (2005a: 321-325) argues that linguistic contexts can impose a final endpoint on an activity so that the activity can become compatible with the perfective *le*. Smith and Erbaugh (2005: 733) propose that “[p]resent situations are unbounded, located at speech time; expressed by [...] cases with state or activity verb

constellations, zero marked; [...].” While they cite an example from Wu (2003b) where a zero marked activity is located in the past, they adhere to their proposal and suggest that “[a] printed text automatically imposes knowledge that an author wrote at some earlier time, making a past interpretation often the preferred one” (Smith and Erbaugh 2005: 736).

However, Smith (1999) also observes that an activity can behave like an achievement and an accomplishment in that all three situation types can advance the narrative time, when the activity is perfective. Although the study examines English data, it raises an interesting question for Smith and Erbaugh’s (2005) viewpoint on activity, that is, why a zero marked activity in Mandarin has to be located at the present time, not in the past.

The temporal inference of states is less ambiguous than that of activities. J.-P. Chang (1998) and Smith and Erbaugh (2001, 2005) all agree that states are located at the present time. J. Lin (2003, 2006) proposes that atelic eventualities are by default durative or ongoing and he specifically points out that “Covert present tense must select imperfective AspP as its complement” (J. Lin 2003: 264).³⁰ That is, J. Lin also agrees that a state, by default, has a present-tense interpretation. In a context, whether or not a state gets a present-tense reading depends on the topic time of the context. If the topic time of the context is past, then a state in it can get a past-tense reading. With respect to rhetorical/temporal relations, I propose that states behave like the imperfective markers.

In the two subsections below, we examine the examples of activities and states respectively and explore how they interact with rhetorical/temporal relations. I first propose a hypothesis for the role of activities (and states) in temporal relations and then present data to verify the hypothesis.

³⁰ Please note that J. Lin (2003) proposes a possible way to handle tense in Mandarin without a tense phrase (TP) assumed in the Chinese. He confirms this possibility in his (2006) paper. This generalization is quoted here because it is complicated to obtain the tense readings through default aspect and default topic time. Since this point is not under discussion here, the mechanism is not reviewed. In reading this quote, please note the relation between tense and aspect in Mandarin, and put aside the question as to whether or not there is a TP in Chinese syntax.

3.3.1 Activities

Although Smith (1999) proposes that a perfective activity can advance the narrative time, she does not say anything about how an activity behaves, in terms of temporal relations, in a non-perfective situation, such as a generalizing sentence. Klein, Li and Hendrik (2000) propose a very interesting idea about events. They (2000: 730) say that “In reality, with very few exceptions, all situations are bounded, or have some temporal boundaries.”³¹ This idea suggests that an activity can be used as a bounded event though the inherent semantics is unbounded. Therefore, I propose that activities are used as bounded events with or without the context specifying a past topic time and a past reference time. In addition, an activity has a process, just like an accomplishment. Based on the temporal schema of activity, its role in temporal relations is hypothesized as follows:

- (59) Hypothesis for the Role of Telic Events in Temporal Relations
- a. An activity advances the narrative time when the context does not indicate otherwise.
 - b. The internal process of an activity is accessed otherwise.
 - c. Other rhetorical relations can connect activities as long as there are cues in the context and the temporal relations indicated by those rhetorical relations do not violate (59a-b).

3.3.1.1 Narration

Smith (1999) examines English data and proposes that a perfective activity can advance the narrative time. Wu (2005a) discusses how a

³¹ I think that Klein, Li and Hendriks fail to distinguish the inherent semantics of an event from the semantics of an event in real use. Some events simply do not have a natural final endpoint in their semantics. Liton Wang (p.c.) points out that *to count natural numbers* is most certainly unbounded because there are infinite natural numbers. However, even though it is not possible to count every single natural number, one can always stop counting. That is, an event can be inherently unbounded, but may be treated as a bounded one. Claiming that in reality almost all situations are bounded is similar to proposing that syntactic rules do not have to be recursive because in reality the length of sentences is always limited due to processing reasons. Just like syntactic rules need to have the ability to produce indefinitely long sentences, the inherent semantics of activities should be allowed to be unbounded.

Chapter III

natural final endpoint can be imposed on an activity to make the activity compatible with the perfective *le*, although Smith and Erbaugh (2005) propose that zero marked unbounded situations are located in the present. If Klein, Li and Hendriks' (2000) idea about unbounded situations and Wu's (2005a) proposal about imposing a final endpoint on an activity are correct, an activity should behave like an achievement and an accomplishment, that is, in a context where there is no clue at all with respect to rhetorical relations, an activity by default indicates *Narration*. This proposal in regard to the default function of activities is verified by the following examples.

- (60) a. 明明 昨天 很 乖
mingming zuotian hen guai
Mingming yesterday very good
'Mingming behaved very well yesterday.'
- b. 他 一 下 課 回 家
ta yi xia ke hui jia
he as soon as leave school return home
'As soon as he had returned home after school,'
- c. 就 乖乖 寫 回家功課
jiu guaiguai xie huijiagongke
then obediently write homework
'he did his homework obediently.'
- d. 整理 房間
zhengli fangjian
tidy up room
'(And then he) tidied up his room.'
- e. 然後 吃飯
ranhou chifan
then eat meal
'Then, (he) ate some food.'

- f. 一點 都 不 需要 我 操心
 yidian dou bu xuyao wo caoxin
 at all all no need I worry
 ‘I did not have to worry about him at all.’

In (60c), *xie huijiagongke* ‘to do homework’ is an activity because it does not have a natural final endpoint, which can be proved by its incompatibility with completive phrases such as *yi xiaoshi nei* ‘in one hour’. An event with a natural final endpoint is compatible with completive phrases whereas one with no natural final endpoint is not. This can be demonstrated by the following examples.

- (61) a. *他 一小時 內 寫 回家功課
 *ta yi xiaoshi nei xie huijiagongke
 he one hour within write homework
- b. 他 一小時 內 寫完 回家功課
 ta yi xiaoshi nei xiewan huijiagongke
 he one hour within write-finish homework
 ‘He did and finished his homework in one hour.’

Xie huijiagongke ‘to do homework’ does not have a natural final endpoint and is incompatible with *yi xiaoshi nei* ‘in one hour’. In contrast, *xiewan huijiagongke* ‘to write and finish homework’ has a natural final endpoint because *wan* ‘to finish’ specifies the final endpoint. That is why it is compatible with *yi xiaoshi nei* ‘in one hour’.

There is no cue phrase or any clue in (60c) and (60d) to indicate which rhetorical relation connects them. There is no causal relation between a *do homework* event and a *tidy up the room* event. Since an activity behaves like a telic event, by default, the situation type specifies *Narration*, which indicates that the temporal order matches the contextual order. That is, (60d) is connected to (60c) by *Narration*, which indicates that (60d) occurs after (60c). This inference accords with a native speaker’s intuition about the temporal relation between these two clauses.

In (60), the adverbial *zuotian* ‘yesterday’ helps to provide an endpoint to the activity *xie huijiagongke* ‘to do homework’. In a context in which a past situation is not described, according to Klein, Li and

Chapter III

Hendriks' (2000) idea about boundedness, an activity used in a context is most likely to be telic. The following example supports this inference.

- (62) a. 警察 應 封鎖 現場
jingcha ying fengsuo xianchang
police should seal scene
'The police should seal off crime scenes.'
- b. 詢問 附近 民眾 是否 有 目擊證人
xunwen fujin mingzhong shifo you mujizhengren
ask nearby people whether have eyewitness
'(They should) ask the people nearby whether there were any eyewitnesses.'
- c. 檢查 四 週 環境 是否 有 可疑 之 處
jiancha si zhou huanjing shifo you keyi zhi chu
check four side environment whether have suspicious DE
place
'(They should) check around to see if there is anything suspicious.'
- d. 最後 等待 鑑識組 前來 採 證
zuihou dengdai jianshizu qianlai cai zheng
finally wait CSI come collect evidence
'Finally, (they should) wait for the CSI team to search for evidence.'

(62) is an instruction, not a description of any particular crime scene, as the modal *ying* 'should' indicates. The predicates in (62a-c) have no natural final endpoint and are all activities, because they are all incompatible with completive phrases, such as *yi ge xiaoshi nei* 'in one hour', as shown below.

- (63) a. *警察 一 個 小時 內 封鎖 現場
*jingcha yi ge xiaoshi nei fengsuo xianchang
police one CL hour within seal scene

- b. *警察 一個小時內詢問附近
 *jingcha yi ge xiaoshi nei xunwen fujin
 police one CL hour within ask nearby
 民眾 是否有目擊證人
 mingzhong shifo you mujizhengren
 people whether have eyewitness
- c. *警察 一個小時內檢查四週
 *jingcha yi ge xiaoshi nei jiancha si zhou
 police one CL hour within check four side
 環境 是否有可疑之處
 huanjing shifo you keyi zhi chu
 environment whether have suspicious DE place

Since an activity behaves as a telic event even in a non-past context, it by default indicates *Narration*. That is, (62b) is attached to (62a), and (62c) to (62b), by *Narration*, which means that (62a-c) occur in the order that they are described. Again, this inference accords with a native speaker's intuition about the temporal order in this passage.

Example (62) is interesting in another way. These clauses are generalizing clauses because they describe generally what the police do when they reach a crime scene and they are true at all times, i.e., their truth values do not depend on a specific time or location. Smith (2003: 25) suggests that states, General Statives and abstract entities are not organized temporally. General statives include generic sentences and generalizing sentences (Smith 2003: 12). However, as we can see from (62), generalizing sentences (or clauses) can be organized temporally, though generalizing sentences may be temporally independent of the context where they occur, which point is discussed in the next chapter.

(62) also has some interesting implications for Smith and Erbaugh's (2005) proposal about unbounded situations. As discussed above, they propose that zero marked unbounded situations are located in the present. Even though they notice examples that suggest otherwise, they claim that a printed text automatically prefers a past-tense reading, because a writer is assumed to have written at some time earlier. However, even in a printed text, generalizing sentences do not get a past-tense reading. If zero marked activities were located in the present, which means that they would get an on-going or durative interpretation, it would be either impossible or require some other information for a generalizing sentence

Chapter III

denoting an activity to be connected by *Narration*, according to Wu (2004, to appear). However, (62) shows that generalizing sentences describing activities can be easily connected by *Narration*, even though there is no any clue or other information in the context. That is, Smith and Erbaugh's (2005) idea presents problems in its application to the discussion of temporal reference.

One might ask how we can be positive that the activities in (60) and (62) really occur in sequence, not in parallel. Again, we can use cue phrases such as *zailai* 'next', *zhihou* 'after that', *jiexialai* 'what follows', etc to verify our intuition. The examples below show that the clauses in (60) and (62) can be led by these cue phrases that indicate *Narration*. The intuition based on which the judgment about rhetorical relations is made is thus borne out.

- (64) a. 明明 昨天 很 乖
mingming zuotian hen guai
Mingming yesterday very good
'Mingming behaved very well yesterday.'
- b. 他 一 下 課 回 家
ta yi xia ke hui jia
he as soon as leave school return home
'As soon as he had returned home after school,'
- c. 就 乖乖 寫 回家功課
jiu guaiguai xie huijiagongke
then obediently write homework
'he did his homework obediently.'
- d. 再 整理 房間
zai zhengli fangjian
next tidy up room
'Next, (he) tidied up his room.'
- e. 然後 吃飯
ranhou chifan
then eat meal
'Then, (he) ate a meal.'

- f. 一點 都 不 需要 我 操心
yidian dou bu xuyao wo caoxin
at all all no need I worry
'I did not have to worry about him at all.'
- (65) a. 警察 應 封鎖 現場
jingcha ying fengsuo xianchang
police should seal scene
'The police should seal off crime scenes.'
- b. 再來 詢問 附近 民眾 是否 有 目擊證人
zailai xunwen fujin mingzhong shifo you mujizhengren
next ask nearby people whether have eyewitness
'Next, (they should) ask the people nearby whether there is any eyewitness.'
- c. 之後 檢查 四 週 環境 是否 有
zhihou jiancha si zhou huanjing shifo you
after that check four side environment whether have
可疑 之處
keyi zhi chu
suspicious DE place
'After that, (they should) check around to see if there is anything suspicious.'
- d. 最後 等待 鑑識組 前來 採 證
zuihou dengdai jianshizu qianlai cai zheng
finally wait CSI come collect evidence
'Finally, (they should) wait for the CSI team to come to search for evidence.'

To sum up, although an activity is inherently atelic, it functions as a telic event when it is used to describe a real situation. This is due to a pragmatic real-world constraint. Nobody would spend his whole life performing one single activity, although it is inherently possible for an activity to last forever. Since activities are used as telic events, they defeasibly indicate *Narration*. One interesting point is that an activity does not need a past context to be used as a telic event. Activities in

generalizing sentences also function as telic events and hence are temporally organized, contrary to Smith's (2003: 25) proposal.

3.3.1.2 Elaboration_E

An activity behaves like a telic event when it is used to describe a real situation. More specifically, an activity behaves like an accomplishment, not an achievement, because both an activity and an accomplishment have a process. Therefore, when an activity is elaborated on, its internal process is accessed. That is, for an elaborated activity, temporal inclusion is involved. In terms of the temporal relations specified by *Elaboration_E*, accomplishments and activities are grouped together because both situation types involve temporal inclusion, while achievements stand alone because this situation involves temporal precedence. The following example demonstrates this point.

- (66) a. 昨天 早上 同學 們 一 到 學校
zuotian zaoshang tongxue men yi dao xuexiao
yesterday morning classmate PL as soon as reach school
'Yesterday morning, as soon as the classmates had reached the school.'
- b. 就 立刻 打掃 教室
jiu like dasao jiaoshi
then immediately clean classroom
'(they) immediately cleaned the classroom.'
- c. 他們 先 擦 黑板
tamen xian ca heiban
they first erase blackboard
'First, they erased the blackboard first.'
- d. 然後 擦 窗戶
ranhou ca chuanghu
then wipe window
'Then, (they) wiped the windows.'

- e. 再 掃 地
 zai sao di
 next sweep floor
 ‘Next, they swept the floor.’

In this passage, *dasao jiaoshi* ‘to clean the classroom’ is an activity because it is compatible with *zhengzai* ‘in the middle of’ but incompatible with completive phrases such as *yi xiaoshi nei* ‘in one hour’, as shown below.

- (67) a. 同學 們 正在 打掃 教室
 tongxue men zhengzai dasao jiaoshi
 classmate PL in the middle of clean classroom
 ‘The classmates were (in the middle of) cleaning the classroom.’
- b. *同學 們 一 小時 內 打掃 教室
 *tongxue men yi xiaoshi nei dasao jiaoshi
 classmate PL one hour within clean classroom

(66c-e) is attached to (66b) by *Elaboration_E* because (66c-e) are all part of a *clean the classroom* event, that is, (66c-e) are subtypes of (66b). Obviously, the *erase the blackboard* event, the *wipe the window* event and the *sweep the floor* event are temporally included in the *clean the classroom* event. That is, just like accomplishments, it is the internal process that is accessed when an activity is elaborated on.

When an elaborated activity occurs in a non-past context, it is still its internal process that is accessed, as demonstrated below.

- (68) a. 我們 接到 報案 趕抵 現場 後
 women jiedao bao'an gandi xianchang hou
 we (= the police) receive report-case rush to scene after
 ‘After we receive the report (of some crime) and rush to the scene,’
- b. 立刻 封鎖 現場
 like fengsuo xianchang
 immediately seal scene
 ‘(we) immediately seal off the crime scene’.

Chapter III

- c. 首先 檢視 現場 範圍
shouxian jianshi xianchang fanwei
first check scene domain
'First, (we) establish how large the total area of the crime scene is.'
- d. 再以 警戒線 將 整個 現場 圍起
zai yi jingjiexian jiang zheng ge xianchang weiqi
next use crime scene tape Disp whole CL scene close off
'Next, (we) close off the scene with tape.'
- e. 等待 鑑視 人員 前來
dengdai jianshi ren yuan qianlai
wait CSI personnel come
'(Then), wait for the CSI team to come.'

(68) is an instruction of the steps to take to seal a crime scene and therefore all of the clauses are generalizing clauses and do not describe any specific events. (68c-e) provide details about (68b), i.e., (68c-e) are subtypes of (68b). A subtype relation indicates *Elaboration_E*. That is, (68c-e) are connected to (68b) by *Elaboration_E*. Although these are generalizing clauses, it is certain that (68c-e) occurs when (68b) occurs, i.e., temporal inclusion.

In summary, activities behave like accomplishments, in terms of *Elaboration_E*, because both of these two situation types involve a process. When there is a subtype relation between the events, an activity can be elaborated on, and it is the internal process of the elaborated activity that is accessed, in contrast to an achievement that is elaborated on.

3.3.1.3 Explanation

Activities can be explained as long as there is a cue phrase or other clue in the context indicating that. When some event explains an activity, that event temporally precedes the activity, as shown below.

- (69) a. 數 萬 人 參與 這 次
 shu wan ren canyu zhe ci
 several ten thousand people participate this time
 遊行
 youxing
 (political) rally
 ‘Tens of thousands of people participated in this political rally.’
- b. 因為 他們 再也 不能 忍受 超 低 工資
 yinwei tamen zaiye bu neng renshou chao di gongzi
 because they any more no can tolerate super low wage
 超 長 工時 了
 chao chang gongshi le
 super long working hours Pre
 ‘Because they can no longer tolerate very low wages and very long working hours.’

In this example, *canyu zhe ci youxing* ‘to participate in this (political) rally’ is an activity, because it has a process, which can be brought out by *zhengzai* ‘in the middle’, and it does not have a natural final endpoint, which is manifested by its incompatibility with completive phrases. See the following example.

- (70) a. 他們 正在 參與 這 次 遊行
 tamen zhengzai canyu zhe ci youxing
 they in the middle of participate this time (political) rally
 ‘They were (in the middle of) participating in this political rally.’
- b. *他們 一 小時 內 參與 這 次 遊行
 *tamen yi xiaoshi nei canyu zhe ci youxing
 they one hour within participate this time (political) rally

The cue phrase *yinwei* ‘because’ in (69b) specifies that (69b) is connected to (69a) by *Explanation*. (69b) must have occurred before (69a) can take place, as suggested in Asher and Lascarides (2003: 160).

An activity in a generalizing context can also be explained and the same temporal relation remains. This is demonstrated by the example below. The predicate *dasao jiaoshi* ‘to clean the classroom’ has been

proved to be an activity. (71a) and (71b) are the reasons why (71c) occurs. The relationship between (71a) and (71b) on the one hand and (71c) on the other is explicitly spelled out by the cue phrase *yinci* ‘so’. Therefore, (71c) is connected to (71a-b) by *Explanation*.

- (71) a. 這 班 的 同 學 十 分 喜 歡 乾 淨
zhe ban de tongxue shifen xihuan ganjing
this class DE students very much like cleanliness
‘The students of this class like cleanliness very much.’
- b. 又 都 很 早 到 學 校
you dou hen zao dao xuexiao
and all very early arrive school
‘And, (they) all come to school very early.’
- c. 因 此 他 們 天 天 打 掃 教 室
yinci tamen tiantian dasao jiaoshi
so they every day clean classroom
‘so, they clean the classroom every day.’

The temporal relation between (71b) and (71c) matches the one specified by *Explanation*. But, (71a) is different. *Xihuan* ‘to like’ is a stage-level state. Does this state temporally precede the *clean the classroom every day* event? It should not be the case because to claim that a state temporally precedes an event implies that the state has stopped holding. A state, individual-level or stage-level, can theoretically last forever. Hence, nothing can temporally follow a state unless the state has stopped holding. But, this passage does not imply at all that the students of this class have stopped liking cleanliness. Does this mean that there is no temporal precedence between (71a) and (71c)? Not necessarily because the *like cleanliness* state has to start so that the *clean the classroom every day* event can take place. Therefore, the temporal relation of *Explanation* proposed in Asher and Lascarides (2003: 160) is inadequate. They propose that if β explains α and β is an event, then β temporally precedes α . However, this generalization is inaccurate in two respects. First, the example here shows that the reason does not have to be an event when temporal precedence is involved. Secondly, it also shows that it does not have to be the time of the whole event (or a state)

that temporally precedes the result. It will also do if a state which serves as the reason starts before the eventuality which functions as the result.

To sum up, just like telic events, activities can be explained as long as there is a cue phrase or other explicit information specifying so, because the temporal relation specified by *Explanation* does not violate the constraint determined by the semantics of activities. What is more interesting is that the reason does not have to be an event, contrary to the generalization proposed in Asher and Lascarides (2003: 160). A stage-level state can serve as a reason. In addition, it does not have to be the whole event (or state) that temporally precedes another when the former serves as a reason, unlike the temporal relation of *Explanation* proposed in Asher and Lascarides (ibid). It will do as long as the stage-level state which serves as a reason starts before the event which serves as its result takes place.

3.3.1.4 Background_T

Telic events provide the time after the events are completed as the temporal frame because a natural final endpoint is built into the semantics of telic events. While activities behave like telic events in that activities can temporally precede another eventuality, activities differ from telic events in that the endpoint of an activity is imposed by the context. That is, when the context does not require the imposition of an endpoint, an activity remains ‘open-ended’, i.e., atelic. This difference is borne out by the examples of *Background_T*, *Narration* and *Explanation*³² require imposing an endpoint on an activity because these two rhetorical relations indicate temporal precedence between eventualities. However, *Background_T* does not require any specific time; instead, *Background_T* takes any time that an eventuality provides and uses the time as a temporal frame. When an activity serves as a temporal background, the rhetorical relation does not impose any endpoint and takes whatever time an activity provides. Since no endpoint is imposed, the only time an activity can provide is its process. Therefore, when an activity functions as a temporal background, other eventualities temporally overlap the process of the activity. See the following examples.

³² At least some cases of *Explanation* do. Atemporal relations are discussed in Chapter Four.

Chapter III

- (72) a. 走 在 林 間 小 徑
zou zai lin jian xiao jing
walk on woods in small trail
'(When you) walk along the small trail in the woods.'
- b. 清亮 的 鳥語 不時 在 耳 邊 響起
chingliang de niaoyu bushi zai er bian xiangqi
clear and loud DE bird song continuous at ear side be heard
'The sound of birds singing clearly and loudly can be heard continuously.'
- c. 不時 看見 許多 小鳥 從 頭頂 飛過
bushi kanjian xuduo xiaoniao cong touding feiguo
often see many bird from head-top fly-pass
'Many birds can often be seen flying over (your) head.'
- d. 偌大 的 水池 中 還 有 綠頭鴨
nuoda de shuichi zhong hai you lütouya
big DE pool in also have green-head duck
三五成群 嬉戲 著
sanwuchengqun xixi zhe
in group play Dur
'In the big pool there are green-headed ducks playing in groups.'
- e. 讓 人 彷彿 置身 室外桃源
rang ren fangfu zhishen shiwaitaoyuan
make people feel like locate in beautiful heaven-like place
的 感覺
de ganjue
DE feeling
'(All of the above) make people feel like they are in a beautiful heavenly place.'

In this example, *zou zai lin jian xiao jing* 'to walk along the small trail in the woods' is an activity because it obviously has a process but no natural final endpoint. There is no clue, in the context, which indicates which rhetorical relation connects (72b-e) to (72a). According to the hypothesis (59), the rhetorical relation that connects (72a) to

(72b-e) should be *Narration* here because that is the default rhetorical relation of activities. However, in Section 3.2.4, I discussed the topic constraint on *Narration*. The clauses connected by *Narration* must share a topic and in Mandarin zero anaphora is one of the most common ways to indicate a shared topic. In (72), neither a shared topic nor zero anaphor is found. Therefore, as in the discussion in Section 3.2.4, we can conclude that (72b-e) is attached to (72a) by *Background_T*. And, obviously, (72b-e) occur simultaneously with (72a). That is, an activity provides its process as a temporal background and this is because *Background_T* does not impose a final endpoint and also an activity with no final endpoint has only its process to offer.

One might ask why (72b-c) is connected to (72a) by *Background_T* instead of by *Elaboration_E*. The difference is there, although very subtle. Asher and Lascarides (2003: 206) propose that an elaborating event must be a subtype of the elaborated event and they (2003: 282) further point out that the subtype relation involves logical metonymy. For the *wonderful evening* example in Chapter One, cheese and salmon are lexically specified as food. For (20) in Chapter Two, a speech is the cover term for its contents. However, in (72), *to walk along the small trail in the woods* is definitely not a cover term for those events described in (72b-e). The predicate can reasonably be a cover term for different ways of walking. Since there is no subtype relation, (72b-e) cannot be connected to (72a) by *Elaboration_E*. Instead, (72b-e) are attached to (72a) by *Background_T*.

(72) is a description of a famous tourist spot in Taitung. The clauses in this example are generalizing clauses because they do not describe the place at a particular time, and instead describe the general condition of the place. Therefore, (71a) provides its process as the temporal background because a generalizing context does not impose a final endpoint on the activity described by (71a). Given this case, does an activity in a past context behave like a telic event in terms of *Background_T* since the past context can provide a final endpoint for an activity? The answer is negative. When an activity serves as a temporal background, it provides its process as the background, even though it occurs in a past context, as shown below.

Chapter III

- (73) a. 昨天 早上 我們 全 家 分工 合作
zuotian zaoshang women quan jia fengong hezuo
yesterday morning we hole family divide work cooperate
'Yesterday morning, all our family divided the work and
cooperated.'
- b. 整理 很 久 沒 碰 的 倉庫
zhengli hen jiu mei pong de cangku
tidy up very long no tough Rel store room
'(and we) tidied up the store room that we had not touched for a
long time.'
- c. 媽媽 突然 想起來 中午 要 用 的 咖哩 忘
mama turan xiangqilai zhongwu yao yong de gali wang
Mom suddenly remember noon will use Rel curry forget
了 買
le mai
Pfv buy
'Mom suddenly remembered that she had forgotten to buy the
curry powder that she needed for lunch.'
- d. 連忙 丟下 掃把 跑去 超市
lianmang diuxia saoba paoqu chaoshi
in a hurry drop broom run to supermarket
'(She) dropped the broom in a hurry and rushed to the
supermarket.'
- e. 弟弟 接到 同學 的 電話 也 出去
didi jiedao tongxue de dianhua ye chuqu
younger brother receive classmate DE phone call also go out
了
le
Prc
'(My) younger brother received a phone call from his
classmate and he left too.'

- f. 結果 我 和爸爸兩 個人 忙 了 整 個 早上
 jieguo wo he baba liang ge ren mang le zheng ge zaoshang
 result I and Dad two CL people busy Pfv whole CL morning
 ‘As a result, Dad and I were kept busy the whole morning.’
- g. 累死 我 了
 leisi wo le
 exhaust I Prc
 ‘(All the cleaning) really exhausted me!’

This example is a description of a past event. In (73b), *zhengli cangku* ‘to tidy up the store room’ is an activity because it is compatible with *zhengzai* ‘in the middle of’ but is not compatible with completive phrases such as *yi xiaoshi nei* ‘in one hour’, as demonstrated below.

- (74) a. 他們 正在 整理 倉庫
 tamen zhengzai zhengli cangku
 they in the middle of tidy up store room
 ‘They were (in the middle of) tidying up the store room.’
- b. *他們 一 小時 內 整理 倉庫
 *tamen yi xiaoshi nei zhengli cangku
 they one hour within tidy up storage

Again, there is no clue in the context indicating rhetorical relations and the default function of activities should apply. However, there is no shared topic, which violates the topic constraint on *Narration*. Therefore, it is *Background_T* that connects (73c-d) and (73e) to (73b). Although the past adverbial *zuotian zaoshang* ‘yesterday morning’ in (73a) clearly shows that this is a past context, (73c-d) and (73e) are still temporally included in (73b). That is, an activity always provides its process as a temporal background, regardless of the topic time of the context.

The above discussion about activities and *Background_T* has an interesting implication. Although Wu (2005a: 321-325) proposes several ways to impose a final endpoint on an activity, an imposed final endpoint is not always accessible, and the accessible final endpoint of an activity is not provided by the topic time of the context. Instead, it is provided by the rhetorical relation that connects the clauses. When the rhetorical relation does not specify a temporal relation that requires the imposition

of a final endpoint on an activity, either there is no final endpoint as in a generalizing context or the final endpoint is not accessible to other eventualities even though an activity occurs in a past context, which theoretically can impose a final endpoint on an activity. This implies that in Mandarin tense is a property of a (coherent) discourse, not of a single clause or sentence. Whether an activity has an accessible final endpoint is determined by the rhetorical relations. When the rhetorical relation requires a final endpoint, one is provided for an activity. The relative position of the final endpoint and the speech time, ST, in Reichenbach's (1947) term, or time of utterance, TU, in Klein's (1994) framework, is not determined until a coherent discourse, which can be part of a bigger discourse, is formed. This is why the final endpoint of an activity is always accessible to other eventualities when the activity is attached to another eventuality by *Narration* or *Explanation*, regardless of whether the activity occurs in a non-past context or a context past. When the rhetorical relation does not require imposing a final endpoint on an activity, the activity does not get one. This is why the final endpoint of an activity is not accessible (there is none!) when an activity is attached to another eventuality by *Background_T*, neither of which requires a final endpoint. When a coherent discourse is formed and the time for the discourse is determined to be in the past of the ST or TU, the activity certainly receives a terminative reading, but it is too late for the rest of the eventualities in the same discourse to access the final endpoint brought out by the 'tense' information because the temporal relations between the eventualities of this discourse have been determined long before the 'tense' information comes in.³³

To sum up, an activity provides its process to be a temporal background, unlike a telic event. This is because the accessible final endpoint of an activity is specified by rhetorical relations, instead of by the time when the discourse takes place or holds. This point implies that,

³³ This implication may suggest that the perfective *le* has an aspect-like semantics, instead of a tense-like semantics. Though the perfective *le* is classified as an aspect marker, two general approaches to its semantics have been proposed. One is T-SIT \prec TT, i.e., the perfective *le* presents an event that occurs before TT, e.g., Mangione and Li (1993), and the other T-SIT \subset TT, i.e., the perfective presents an event that is temporally included in TT, e.g. J. Lin (2003). The former is a tense-like semantics, while the latter is a standard aspect semantics. If tense is the property of a coherent discourse, then the latter semantics of the perfective *le* is preferred. This issue will not be pursued further here.

in Mandarin, tense is a property of a coherent discourse, rather than a single clause or sentence. The determination of the relative position between the time when the discourse takes place or holds on the one hand and the ST/TU on the other is delayed until a coherent discourse is formed. This is why the final endpoint imposed by the time of the discourse is not accessible to the other eventualities in the same discourse. This is also why a generalizing sentence describing an activity can be connected by *Narration*. A clause/sentence that is connected to the following one by *Narration* usually describes an event that has been completed or terminated. A generalizing sentence certainly does not describe such an event. When there is no information specifying otherwise and the topic constraint on *Narration* is obeyed, an activity is connected to the following clause by *Narration*, which in turn imposes a final endpoint on the activity. When a coherent discourse is formed, a final endpoint has been there to be accessed even though the final endpoint is not located before the ST, i.e., the event is not completed or terminated.

3.3.1.5 Summary and Discussion

The default rhetorical relation specified by activities is *Narration*. The narrative time of an activity can be advanced and a final endpoint can be imposed when rhetorical relations require so. This is why the final endpoint of an activity, when connected by *Narration* and *Explanation*, can be accessed. When rhetorical relations do not require the imposition of a natural final point, none is provided for an activity. This is why the process, rather than the final endpoint, of an activity is accessed when it is connected by *Background_T*.

The discussions in this subsection point out some problems of several studies, including those of J.-P. Chang (1998), J. Lin (2003, 2006), Smith and Erbaugh (2001, 2005) and Smith (1999). J.-P. Chang (1998: 146-151) proposes that an activity describes a habitual or general event without any aspect marker. However, as we can see from the examples provided in this subsection, this proposal is not true. An activity can describe a past event even though it does not go with any aspect marker. J. Lin (2003, 2006) proposes that the default viewpoint aspect of atelic events is durative or ongoing. However, J. Lin's generalization about atelic situations is not completely accurate for activities because an activity can behave like a telic event, which may be

Chapter III

completed or terminated and whose narrative time can be advanced. Smith and Erbaugh (2001, 2005) suggest that zero marked unbounded situations are located in the present. However, the examples discussed here suggest otherwise. An activity not presented by any aspect marker or temporal adverbial can either occur in the past or stay true all the time, serving as a generalizing sentence. Smith (1999) observes that a perfective activity in English can advance the narrative time. However, in Mandarin, an activity does not have to be perfective to advance the narrative time. Activities can be terminated and advance the narrative time as long as the rhetorical relations require them to do so.

The examples of activities discussed above also imply that, in Mandarin, tense is a property of a coherent discourse, rather than a single clause or sentence. This is why, even though a past context can impose a final endpoint on an activity, the endpoint is not necessarily accessible.

3.3.2 States

Two types of states are distinguished – stage-level states and individual-level states, e.g., by Carlson (1977), Chierchia (1995), Kratzer (1995), Pustejovsky (1995: 15), among others. Individual-level states describe permanent properties of individuals, while stage-level states are identified with non-permanent, temporary, and transient states. Yeh (1993) further suggests that stage-level states tend to undergo change but individual-level states do not. Wu (2003a, 2005a) proposes that a stage-level state has a starting point as its SigP, but an individual-level state does not. States are similar to activities in that neither of these two situation types has a natural final endpoint, whereas they are different in that activities usually have a final endpoint imposed in actual use, as implied by Klein, Li and Hendriks (2000), but states do not have to stop holding beyond the asserted time, a time similar to TT in Klein (1994), as noted in Dowty (1986: 49). Hence the default function of states is not to advance the narrative time. Instead, the default function of states should be a temporal background. The narrative time of a stage-level state is advanced when the context explicitly specifies so, because it tends to undergo change, but the narrative time of an individual-level state cannot be advanced because it does not undergo change. That is, in terms of *Narration*, stage-level states behave in a manner similar to an eventuality presented by the durative *zhe* and individual-level states behave like an event presented by the progressive *zai*. Other rhetorical

relations can connect states as long as the constraint on *Narration* of states is obeyed. The hypothesis is summarized as follows:

- (75) Hypothesis for the Role of States in Temporal Relations
- a. A state serves as a temporal background when there is no clue in the context indicating otherwise.
 - b. The time of a stage-level state can be advanced provided that the context explicitly says so. However, the time of an individual-level state cannot be advanced in any way.
 - c. A state does not have a process so any rhetorical relation that requires accessing a process does not apply to a state.
 - d. Other rhetorical relations can connect states to other situations as long as the temporal relations they indicate do not violate (75b-c).

3.3.2.1 Background_r

Stage-level states and individual-level states share two properties regardless of whether a state tends to undergo change or whether a state has a starting point. First, they do not have a natural final endpoint. Secondly, an asserted time interval or TT does not restrict states to hold only within the interval; instead, states may hold beyond the interval, as suggested in Dowty (1986). That is, the most obvious time a state can provide is the period of time when the state holds. Since a state, by default, can provide no other time but the period of time when the state holds, a state naturally serves as a temporal background when the context does not say otherwise.³⁴ See the following example.

³⁴ Dowty (1986: 48-52) tries to explain why a state can temporally overlap with another eventuality while still obeying the temporal discourse interpretation principle (TDIP). Dowty provides insightful arguments in this paper. He explains, in detail, how telic events advance the narrative time, obeying TDIP, and how atelic eventualities can continue beyond the asserted interval (or TT), according to the same principle. While Dowty's proposal about telic events is convincing and similar to the proposal argued in this book, his suggestion about atelic eventualities is inadequate in that he does not try to decide when an atelic eventuality involves temporal overlapping and when it involves temporal progression.

Chapter III

- (76) a. 賽則爾 擁有 此 琴 長達 十 年
Setzer yongyou ci qin changda shi nian
Setzer own this violin as long as ten year
'Setzer owned the violin for as long as ten years.'
- b. 在 全 世 界 各 地 的 近 千 場
zai quan shijie ge di de jin qian chang
at whole world each place DE nearly thousand CL
演奏會 都 用 此 琴
yanzouhui dou yong ci qin
concert all use this violin
'(He) used the violin n nearly 1000 concerts all around in the world.'
- c. 並 錄 製 了 不 少 CD 和 LD
bin luzhi le bushao CD he LD
and record Pfv many CD and LD
'And, the music he played with the violin was recorded on many CDs and LDs.'

In (76a), the predicate *yongyu* 'to own' is an individual-level state in Mandarin because it is compatible neither with *zhengzai* 'in the middle of' nor with the perfective *le*, as shown below. Incompatibility with *zhengzai* 'in the middle of' means that it can be either an achievement or a state. Incompatibility with the perfective *le* means that it is an individual-level state.

- (77) a. *他 正在 擁有 這 把 名 琴
*ta zhengzai yongyou zhe ba ming qin
he in the middle of own this CL famous violin
- b. *他 擁 有 了 這 把 名 琴
*ta yongyou le zhe ba ming qin
he own Pfv this CL famous violin

There is no cue phrase or other kind of information in the context showing the relation between (76b-c) and (76a). Therefore, the default function of states applies and specifies that (76b-c) are connected to (76a) by *Background_T*. Since the time a state provides is the interval it holds,

when a state serves as a temporal background, the temporal relation is overlapping. That is, (76b-c) temporally overlap (76a), which accords with a native speaker's intuition about the temporal relation in this passage.

The following is another example.

- (78) a. 在 演 化 中 一 種 生 物 絕 種
zai yanhua zhong yi zhong shengwu juezhong
in evolution in one kind living creature extinct
'In evolution, as one kind of living creatures becomes extinct.'
- b. 另 一 種 生 物 就 占 據 絕 種 的
ling yi zhong shengwu jiu zhangju juezhong de
another one kind living creature then occupy extinct DE
生 物 在 生 態 階 層 裏 的 位 置
shengwu zai shengtai jieceng li de weizhi
living creature at ecology hierarchy inside DE position
'another kind then occupies the position of the extinct kind in
the ecological hierarchy.'
- c. 像 恐 龍 絕 種 後
xiang konglong juezhong hou
like dinosaur extinct after
'For example, after the dinosaurs became extinct.'
- e. 哺 乳 類 演 化 出 許 多 物 種
burulei yanhuachu xuiduo wuzhong
mammals evolve into many species
'mammals evolved into many species.'
- d. 取 代 了 從 獵 食 類 恐 龍 到 草 食 類
qudai le cong lieshilei konglong dao caoshilei
replace Pfv from predator dinosaur to herbivorous
恐 龍 在 生 態 中 的 位 置
konglong zai shengtai zhong de weizhi
dinosaur at ecology in DE position
'(The different species of mammals) replaced the position of
predator dinosaurs and herbivorous ones in the ecology.'

Chapter III

In (78), *juezhong* ‘extinct’ is a state. There is no cue phrase or other information that specifies the relation among the clauses in (78). The default function of states apply and spells out that (78b) is connected to (78a) by *Background_T*. Since (78a) is a state, this rhetorical relation indicates temporal overlapping. Intuitively, we feel that the *occupation* event described by (78b) occurs at the time when the state described by (78a) holds. This is also an example of temporal overlapping.

In sum, since the time a state can provide is the interval when it holds, it serves as a temporal background when the context does not indicate otherwise. Although states and activities are both atelic, they are different in their default functions in temporal relations. An activity is telic when it is put into real use. This is because an activity needs to be performed by an agent and an animate agent cannot perform an activity forever due to all kinds of real world constraints, e.g., although *sleep* inherently can last forever, yet nobody in this world would consider it natural to do so. *To count natural numbers* does not have a natural final endpoint, either. However, anyone who did so would become bored and stop sooner or later. On the other hand, a state does not need an agent. It just holds and can hold forever. This is why activities and states, although both inherently atelic, identify different default rhetorical relations.

3.3.2.2 Narration

Some states allow the narrative time to be advanced, but an advancement of narrative time involving states is very different from one with events. As shown in the examples of *Narration* in the previous sections, when events are connected by *Narration*, the first event culminates, and then the second event follows the first one, and so on and so forth. A state is different from an activity in that a final endpoint can be imposed on an activity while a state can continue beyond the asserted interval. Because of this continuation property, the time of a state does not advance in the same way that the time of an event does. To advance the time of a state, the events that follow do not have to wait until the state stops holding to take place. Instead, it will do as long as the following events take place after the state has started. That is, for events, *Narration* indicates that the second eventuality occurs after the first event culminates, while for states, the second eventuality occurs after the state starts. The following examples illustrate this point.

- (79) a. 恐龍 絕種 才 有 哺乳類 演化 的
konglong juezhong cai you burulei yanhua de
dinosaur extinct not until have mammal evolve DE
空間
kongjian
space
‘There was no room for mammals to evolve until dinosaurs
became extinct.’
- b. 不然 哺乳類 的 祖先 還 活 在 陰暗 的 角落
buran burulei de zuxian hai huo zai yinan de jiaolu
otherwise mammal Poss ancestor still live at dark DE corner
裏
li
inside
‘Otherwise, the ancestors of mammals would still have lived
in dark corners.’

In (79a), there are two eventualities. *Cai* ‘not until’ indicates two eventualities occurring in a series (cf. Wu 2005a: 321 and Note 20). However, the creation of the room for mammals to survive does not wait until the end of the extinction of the dinosaurs. Instead, the room for mammals to evolve surfaced as soon as dinosaurs became extinct. That is, it is quite possible (and actually a fact) that the time when the room for mammals to evolve surfaced overlaps with the time of the state of dinosaurs being extinct. However, the temporal precedence of *Narration* remains. When a state is connected to the eventuality following, instead of preceding the whole state, the second eventuality temporally precedes the starting point of the first state.³⁵

³⁵ Wu (2005a) refers to a state with a starting point as stage-level and suggests that the starting point is why a state is compatible with the perfective *le*. Although *extinct* is generally considered as an individual-level state, in Mandarin *juezhong* ‘extinct’ is compatible with the perfective *le*, as in *konglong juezhong le* ‘dinosaurs became extinct’ and *konglong juezhong le henjiu* ‘dinosaurs have been extinct for a long time’. Wu (ibid) argues that the *le* after a state is the perfective *le*, not the sentential *le*. Therefore, *juezhong* ‘extinct’ has a starting point. I will not go further into the issue as to whether a state with a starting point should be classified as stage-level, given the likely disagreement about *juezhong* ‘extinct’. However, it should be clear that *juezhong* ‘extinct’ has a starting point, which is the key when states are involved with *Narration*.

Chapter III

The following is another example.

- (80) a. 當 國王 知道 有人 叛變 採取 行動
dang guowang zhidao you ren panbian caiqu xingdong
when king know have person rebel take action
的 時候
de shihou
DE time
'By the time the king knew that someone had started a rebel
and took action,'
- b. 已經 太 遲 了
yijing tai chi le
already too late Prec
'it was already too late.'

There are two eventualities in (80a) too. One is the state *know* and the other the event *caiqu xingdong* 'to take action'. In (79), *cai* is the cue phrase indicating *Narration*. In this example, the relation between *knowing about some rebel* and *taking action (about the rebel)* is the cue. Asher and Lascardies (2003: 200), following Sandström's (1993) ideas, propose that *occasion* is the information needed to infer *Narration*. An event α 'occasions' the second event β when "there's a plan or a 'natural event-sequence' such that events of the sort described by α lead to events of the sort described by β " (ibid). *Knowing about a rebel* and *taking action (against the rebel)* are a natural event-sequence. That is, there is an 'occasion' relation between *knowing about a rebel* and *taking action (against the rebel)*. And, therefore, the state is connected to the event by *Narration*. Again, the King did not wait until the end of his knowing about a rebel to take action. Instead, the King took action at the very beginning of the time of his knowing about the rebel. That is, *Narration* here indicates that the *take action* event temporally follows the starting point of the time of the King's knowing about the rebel, not the whole *knowing about the rebel* state. Since, for a state, *Narration* indicates temporal precedence of its starting point, states that do not have a starting point cannot be connected to the eventuality that follows by *Narration*. This prediction is borne out by the following examples.

- (81) a. 總統 很 重視 貧困 學童
 zongtong hen zhongshi pinkun xuetong
 President very take seriously poor school children
 無法 負擔 營養 午餐費 這件事
 wu fa fudang yingyang wucan fei zhe jian shi
 no way afford nutritious lunch fee this CL issue
 ‘The President took the issue that poor school children could not afford lunch seriously.’
- b. !然後/於是 交待 行政院 在 短期
 !ranhou/yushi³⁶ jiaodai xingzhengyuan zai duan qi
 then /therefore tell Executive Yuan at short time
 內 解決 這個問題
 nei jie jue zhe ge wenti
 within solve this CL problem
 ‘!Then/Therefore, (he) told the Executive Yuan to solve this problem within a short period of time.’

In this example, *zhongshi* ‘to take something seriously, to attach importance to something’ is a state without a starting point. A state has neither a process nor a natural final endpoint. A state without a starting point is incompatible with the perfective *le*, as argued in Wu (2005a).

Zhongshi ‘to take something seriously, to attach importance to something’ is a state because it is neither compatible with *zhengzai* ‘in the middle’ nor with completive phrases.³⁷ The predicate does not have

³⁶ *Yushi* ‘therefore’ is a cue phrase for *Explanation*. The temporal relations of *Explanation* for states are discussed in the next subsection and the next chapter.

³⁷ Completive phrases require a natural final endpoint, but are neutral in regard to whether there is any process before the natural final endpoint. Therefore, they can also go with achievements. For example,

- i. a. 他 三天內 就 贏得 五個演講 比賽的冠軍
 ta san tian nei jiu yingde wu ge yanjiang bisai de guanjun
 he three day in only win five CL speech contest DE championship
 ‘He won the championships of five speech contests in only three days.’

- b. 他 五分鐘 內 會 到 你 那兒
 ta wu fengzhong nei hui dao ni nar
 he five minute in will arrive you there
 ‘He will arrive at your place in five minutes.’

Chapter III

a starting point because it does not go with the perfective *le*. See the example below.

- (82) a. *總統 正在 重視 這 件 事
*zongtong zhengzai zhongshi zhe jian shi
President in the middle of take seriously this CL issue
- b. *總統 五 分 鐘 內 就 重視 這
*zongtong wu fengzhong nei jiu zhongshi zhe
President five minute in only take seriously this
件事
jian shi
CL issue
- c. *總統 重視 了 這 件 事
*zongtong zhongshi le zhe jian shi³⁸
President take seriously Pfv this CL issue

Since the predicate in (81a) is a state without a starting point, (81a) cannot be connected to (81b) by *Narration*. Please note that this incompatibility is due to the fact that the state does not have a starting point, not due to a lack of information indicating *Narration*. Even though the cue phrase *ranhou* ‘then’ is added to explicitly specify *Narration*, (81b) is still a bad continuation to (81a). In addition, (81a) and (81b) have an ‘occasion’ relationship because taking an issue seriously and asking the subordinates to solve the problem is a ‘natural event-sequence’. But, neither the cue phrase nor the ‘occasion’ relationship can help here. There is nothing in the state described by (81a) that (81b) can precede temporally, especially when a state can last beyond the asserted interval or TT.

To summarize, a state with a starting point can be connected, by *Narration*, to the eventuality that follows, while a state without a starting

If a situation has neither a process nor a natural final endpoint, it is a state.

³⁸ J.-H. Chang (2003) independently proposes that a stage-level state has an initial point and that this initial point is there for the adverbials *chabuduo/jihu* ‘almost’ to make reference to so that a stage-level state is compatible with these two adverbials. If we apply this test to *zhongshi* ‘to take something seriously, to attach importance to’, we can find that *zhongshi* does not have an initial point (i.e., starting point) and that is why this predicate is incompatible *chabudao/jihu* ‘almost’.

point cannot. Since the holding of a state is not restricted in the asserted time or TT, it is difficult for another eventuality to temporally follow a whole state. Therefore, for a state, *Narration* indicates that another event temporally follows its starting point. In this respect, states behave very differently from the imperfective aspects in Mandarin. The narrative time of an event presented by the progressive *zai* cannot be advanced, not because of the lack of a starting point, but because of the Imperfective Paradox and the instant reading of this aspect marker. The time of an eventuality presented by the durative *zhe* can be advanced when there is a completed event embedded under the eventuality that *zhe* presents. Another event temporally follows the whole eventuality presented by *zhe*, unlike states with starting points as discussed in this subsection. The difference between states and the imperfective aspects in *Narration* can be explained as follows. Smith (1997: 62) proposes that “Imperfective viewpoints focus on an interval that excludes endpoints.” Since endpoints are not included in the viewpoints of imperfective aspects, their differences in the interaction with *Narration* are not related to endpoints, in contrast to states as discussed above.

3.3.2.3 Explanation

Explanation also indicates temporal precedence. The example (71) in Section 3.3.1.3 has shown that the result does not temporally follow a whole state which serves as a reason and instead it will be sufficient if the result temporally follows the starting point of the state functioning as a reason. (71) is repeated below as (83).

- (83) a. 這 班 的 同 學 十 分 喜 歡 乾 淨
zhe ban de tongxue shifen xihuan ganjing
this class DE students very much like cleanliness
'The students of this class like cleanliness very much,'
- b. 又 都 很 早 到 學 校
you dou hen zao dao xuexiao
and all very early arrive school
'and, (they) all come to school very early,'

Chapter III

- c. 因此 他們 天天 打掃 教室
yinci tamen tiantian dasao jiaoshi
so they every day clean classroom
'so, they clean the classroom every day.'

Xihuan 'to like' in (83a) has a starting point. (83a-b) explains (83c). Although the *come to school very early* event culminates so that the *clean the classroom* event can take place, the state of *like cleanliness* does not have to stop holding. Just as in the examples of *Narration*, it is sufficient that the starting point of the *like cleanliness* state temporally precedes the *clean the classroom* event.

The following is another example.

- (84) a. 國王 秘密 召見 了 幾 名 心腹
guowang mimi zhaojian le ji ming xinfu
king secretly summon Pfv several CL loyal
將領
jiangling
general
'The king secretly summoned several loyal generals,'
- b. 令 其 糾集 十萬 軍隊
ling qi jiuji shiwan jundui
order they get together one hundred thousand troops
'(and he) ordered them to assemble one hundred thousand soldiers,'
- c. 因為 他 知道 有 人 要 謀反
yinwei ta zhidao you ren yao moufan
because he know there be person want revolt
'because he knew that someone wanted to start a revolt.'

Zhidao 'to know' is also a state with a starting point. *Yinwei* 'because' explicitly tells us that (84c) explains (84a-b). The state of the king's knowing about the mutiny does not have to stop holding for the *summon several loyal generals* event and the *assemble one hundred thousand soldiers* event to occur. Instead, it will do for these two events to follow the starting point of the *know about the revolt* state. It is not necessary for these two events to occur after the whole state.

A stage-level state can be a result. In this case, the reasons temporally precede the whole state. This is not contradictory because a stage-level state does have a starting point although it does not have a natural final endpoint. Hence, it is possible for an event to occur before a stage-level state because an event occurs before a whole state as long as it occurs before the starting point of the state, while it is impossible for an event to occur after a state, even a stage-level one, unless it is explicitly specified that the state has stopped holding. The example below can demonstrate this point.

- (85) a. 國王 知道 有 人 要 叛變
guowang zhidao you ren yao panbian
king know have person want revolt
'The king knew that someone wanted to start a revolt.'
- b. 因為 國王 愛 民 如 子
yinwei guowang ai ming ru zi
because king love people as son
'Because the king loved the people as his sons,'
- c. 深 受 人 民 愛 戴
shen shou renming aidai
deeply receive people love and support
'he was deeply loved and supported by the people,'
- d. 叛軍 中 有 人 向 他 告 密
panjun zhong you ren xiang ta kao mi
rebellious troops in have person toward he reveal secret
'(so) someone amongst the rebellious troops revealed the secret to him.'

In this example, *yinwei* 'because' explicitly points out that (85b-d) are the reasons of (85a). These three events all occur before the *know about the rebel* event. When a state serves as a result, the temporal relation between the reason(s) and the result is just like the cases of events. This is not surprising because events and stage-level states share one thing in common: they all have a starting point.

When an individual-level state serves as a reason, a different situation surfaces. An individual-level state does not have a starting point.

Chapter III

An individual-level state describes permanent properties, and hence tends to remain true all the time. An eventuality can follow neither the starting point of an individual-level state nor the state itself. Therefore, when an individual-level state serves as a reason, no temporal relation can be observed. See the following examples. Atemporal relations are discussed in detail in the next chapter.

- (86) a. 總統 很 重視 貧困 學童 無
zongtong hen zhongshi pinkun xuetong wu
President very take seriously poor school children no
法 負擔 營養 午餐 費 這 件 事
fa fudang yingyang wucan fei zhe jian shi
way afford nutritious lunch fee this CL issue
'The President took the issue that poor school children could
not afford lunch seriously.'
- b. 於是 交待 行政院 在 短 期 內
yushi jiaodai xingzhengyuan zai duan qi nei
therefore tell Executive Yuan at short time within
解決 這 個 問題
jiejue zhe ge wenti
solve this CL problem
'Therefore, (he) told the Executive Yuan to solve this problem
within a short period of time.'
- (87) a. 張 媽媽 很 有 公德心
zhang mama hen you gongdexin
Zhang mother very have civism
'Mrs. Zhang is very civic-minded.'
- b. 又 主動
you zhudong
and voluntary (and active)
'And, (she) is active in volunteering to do things.'

- c. 所以 她 常常 打掃 她 家 附近 的 街道
suoyi ta changchang dasao ta jia fujin de jiedao
so she often clean she home nearby DE street
'She often cleans the streets near her home.'

The examples of individual-level states in *Explanation* highlight the difference in temporal relations between *Narration* and *Explanation*. Although, for telic events and states with starting points, both rhetorical relations imply temporal precedence, there is a subtle difference between their requirements in regard to temporal relations. *Narration* strictly requires temporal precedence. It can be either a whole event or the starting point of a state that is followed temporally. If neither can be satisfied, *Narration* is impossible. *Explanation* does not require strict temporal precedence in the sense *Narration* does. In a causal relationship, the cause can never occur after (in the future of) the result. However, it is not the case that the cause must occur before (in the past of) the result. Certainly, a situation that occurs before another one can possibly cause the latter. This is the point at which *Explanation* indicates the same temporal relation as *Narration*. Nevertheless, a situation that holds all the time can also cause another situation. This is why an individual-level state can serve as a reason even though an individual-level state has neither a starting point nor a final endpoint to precede another situation. This is the point at which *Explanation* loses its similarity to *Narration* with respect to temporal relations.

An individual-level state does not have a starting point. Since *Explanation* needs a CAUSE relation (Asher and Lascarides 2003: 204-207), an individual-level state requires explicit indication of change of state to serve as a result. For example,

- (88) a. 陳 先生 因為 小 時候 過 過 苦 日子
chen xiansheng yinwei xiao shihou guo guo ku rizi
Chen Mr. because young time live Exp difficult day
'Mr. Chen lived a difficult life when he was young,'

- b. 所!(現在) 十分 重視 貧困 兒童 的
suyi !(xianzai) shifen zhongshi pinkun ertong de
so now much take-seriously poor children Poss
營養 午餐 問題
yingyang wucan wenti
nutritious lunch issue
'so (he) takes the issue of poor children's lunches very
seriously now.'

In (88b), *zhongshi* 'to take something seriously' is an individual-level state. The collocation of *yinwei* ... *suoyi* ... 'because ... so ...' clearly indicates that (88a) is the reason (or cause) and (88b) is the result. Here, *cengjing* 'ever' and *xianzai* 'now' form a contrast and this contrast implicitly reveals a change from not in the state of *zhongshi* 'to take something seriously' to in the state of *zhongshi*. This is why without *xianzai* 'now' the discourse is incoherent.

One might ask why an individual-level state has a change of state. Is it not the case that an individual-level state describes a permanent state? It is useful in this regard to distinguish between a state in the real world and how such state is encoded in natural language. Most of the states in the real world allow for the possibility of a change of state, i.e., it is possible for most of the states in the world to hold at one time but to not hold at a later time, or vice versa. However, when states are encoded in natural language, language users can choose whether to encode the change of state in the semantics of a state. If they decide to include the change of state in the semantics of a state, the state is used as a stage-level state. On the other hand, if language users choose not to include the change of state in the semantics of the state, the state is used as an individual-level state. However, natural language always allows the possibility to use verbs such as *biande* 'to become' to force a change of state reading on an individual-level state.

The following provide some examples. J.-H. Chang (2003: 99) discusses two individual-level states, *haoke* 'hospitable' and *pa* 'afraid'. Similar to Wu (2003a, 2005a), J.-H. Chang (2003) observes that individual-level states is not compatible with *le*³⁹ to indicate change of state but stage-level states are. But, though individual-level states cannot

³⁹ Please note that, in contrast to Wu (2003a, 2005a), that J.-H. Chang (2003) is neutral with respect to whether a state goes with the perfective *le* or the sentential *le*.

go with *le* to express a change of state, they can go with verbs such as *biande* ‘to become’ to have a change of state reading. See the following examples.

- (89) a. 經過 那 次 教訓 小李 變得 很 好客
 jingguo na ci jiaoxun xiaoli biande hen haoke
 experience that time lesson Xiaoli become very hospitable
 ‘After having experienced that lesson, Xiaoli became very hospitable.’
- b. 自從 被 蛇 咬 過 之後 美美 變得 很
 zicong bei she yao guo zhihou meimei biande hen
 since Pass snake bite Exp after Meimei become very
 怕 蛇
 pa she
 afraid snake
 ‘Meimei became very afraid of snakes since the time when she had been bitten by a snake.’

(89) supports the distinction between the states in the real world and how states are coded in natural language. States in the real world always allow for a change of state. However, for some unknown reason, humans choose not to code the change of state in the semantics of certain states, and these states are referred to as individual-level states. But, they still can denote a change of state as long as verbs that denote *become* are used to provide the change of state reading. Given the proposal that an individual-level state can denote a change of state with some outside help, it is not surprising that a contrast between past and present can add a change of state reading on an individual-level state, as in (88).

The following is another example. *Zidongzifa* ‘active in volunteering’ is also an individual-level state because it is not compatible with the perfective *le*, as in (91). In (90), there is no temporal contrast to bring out a change of state reading, and therefore, *biande* ‘to become’ is obligatory to add a change of state reading for the individual-level state *zidongzifa* ‘active in volunteering’ in (90b).

Chapter III

- (90) a. 他 曾經 因為 因循 怠惰 而 吃大虧
ta cengjing yiwei yinxun daiduo er chidakui
he ever because procrastinating lazy and suffer big losses
'Because he had suffered big losses for being lazy and
procrastinating,'
- b. 所以 !(變得) 十分 自動自發
soyi !(biande) shifen zidongzifa
so become very active in volunteering
'(he) became very active in volunteering.'
- (91) *他 自動自發 了
*ta zidongzifa le
he voluntary (and active) Pfv

Thus, when a state serves as a result, temporal precedence must be guaranteed. Otherwise, the CAUSE relation that indicates *Explanation* cannot be satisfied. A stage-level state has a starting point, which can be preceded temporally, while an individual-level state does not. For an individual-level state to serve as a result, outside help must be present to place a change of state reading on an individual-level state.

In sum, both types of states can serve as a reason for another situation and can be connected to the result(s) by *Explanation*. However, for states, *Explanation* implies more than the temporal precedence of an eventuality as a whole. When a stage-level state serves as a reason, *Explanation* implies that the result(s) temporally follows the starting point of the stative reason. When an individual-level state functions as a reason, *Explanation* does not manifest any temporal relation. This means that while *Narration* requires a strict sense of temporal precedence, *Explanation* does not.

Similarly, both types of states can serve as a result. A result must temporally follow the reason(s). A stage-level state has a starting point for the reason(s) to precede temporally. An individual-level has nothing to be preceded. Therefore, there must be some additional cues or verbs in the context to add a change of state reading on an individual-level state.

3.3.2.4 Elaboration_E

Elaboration_E means that more details are provided in regard to an event and access to the (internal) process of the event is required. However, a state does not have a process to be accessed. Therefore, a state cannot be elaborated on. Intuitively, this is quite natural. A state is homogenous and there is no detail to provide because every subinterval of a state is the same as the state itself, i.e., the subinterval property (cf. Dowty 1979).

However, a state can elaborate on an event. In this case, *Elaboration_E* still indicates temporal inclusion. Both individual-level and stage-level states can elaborate on another event. See the following examples.

- (92) a. 我 昨天 完成 了 鐵人三項
 wo zuotian wancheng le tierensanxianbisai
 I yesterday complete Pfv triathlon
 ‘I completed the triathlon yesterday.’
- b. 在 跑步 的 最後 一 公里 我 覺得 很 累 很 累
 zai paobu de zuihou yi gongli wo juede hen lei hen lei
 at run DE last one km I feel very tired very tired
 ‘During the last kilometer of the run, I felt very, very tired.’
- c. 但是 我 沒有 放棄
 danshi wo meiyou fangqi
 but I not quit
 ‘but, I did not quit.’

Wancheng ‘to complete’ is an achievement because it does not have a process and is incompatible with *zhengzai* ‘in the middle of’. *Paobu* ‘running’ is an action performed as part of a triathlon and this is a subtype relationship. Therefore, (92b-c) is connected to (92a) by *Elaboration_E*. As argued above, for an achievement, *Elaboration_E* accesses the preparatory process that leads to the single point in the temporal schema of an achievement. *Juede hen lei hen lei* ‘to feel very, very tired’ is a stage-level state since it does not describe a permanent property. Although it is unknown when this state stops holding, at least it is certain that the state holds during the preparatory process, i.e., before

Chapter III

the achievement, and most likely continues beyond the event time of the achievement. That is, when a state elaborates on an achievement, the achievement has to be a proper (temporal) part of the state.

- (93) a. 小 李 上 個 月 跑 完 了 一 百 公 里
xiaoli shang ge yue paowan le yi bai gongli
Xiaoli last CL month run-finish Pfv one hundred km
馬 拉 松
malasong
marathon
'Xiaoli finished the 50 km marathon last month.'
- b. 他 不 屈 不 撓
ta buqubunao
he persistent
'He was very persistent.'
- c. 咬 牙 苦 撐
yao ya kucheng
clench teeth continue with hardships
'(and) clenched his teeth and continued along against the hardships.'
- d. 終 於 跑 完 全 程
zhongyu paowan quan cheng
finally run-finish whole trip
'(He) finally finished the whole trip.'

This example is similar to the one above. *Paowan* 'to run-finish' is also an achievement because it is not compatible with *zhengzai* 'in the middle of'. (93-d) are subtypes of (93a). Again, it is the preparatory process of (93a) that is elaborated on. *Buqubunao* 'persistent' is individual-level because it describes a permanent property, just like *haoke* 'hospitable', *zidongzifa* 'active in volunteering', etc. Again, this state at least holds during the time of the process of the marathon, though it can be inferred that it continues beyond. Again, it can be observed that the individual-level state properly includes the achievement temporally.

The following is an example where accomplishments are elaborated on by a state.

- (94) a. 台灣 建 了 東 亞 最 長 的 雪 山 隧 道
taiwan jian le dong ya zui chang de xueshan suidao
Taiwan build Pfv east Asia most long DE Xueshan tunnel
'Taiwan built Xueshan (Snow Mountain) tunnel, the longest in
East Asia.'
- b. 雪 山 地 質 十 分 複 雜
xueshan dizi shifen fuza
Xueshan geology very complicated
'The geology of Xueshan is very complicated.'
- c. 工 程 人 員 百 折 不 撓 充 滿 勇 氣
gongcheng ren yuan baizhebunao chongman yongqi
construction personnel persistent full courage
'The construction personnel were persistent and full of
courage.'
- d. 還 是 克 服 困 難
haishi kefu kunnan
still conquer difficulty
'(so they were) still (able to) conquer the difficulties.'
- e. 完 成 了 此 項 隧 道 工 程 上 的
wancheng le ci xiang suidao gongcheng shang de
complete Pfv this CL tunnel construction on DE
壯 舉
zhuangju
magnificent achievement
'(And they) were able to complete this magnificent
achievement in tunnel construction.'

Jian dong ya zui chang de xueshan suidao 'to build Xueshan tunnel, the longest in east Asia' is an accomplishment because it has a process and a natural final endpoint. (94b-e) provide more details on the construction of the tunnel. In (94c), *baizhebunao* 'persistent' is individual-level while *chongman yongqi* 'full of courage' is stage-level. The evidence is that the former is not compatible with the perfective *le*, whereas the latter is, as shown below.

Chapter III

- (95) a. *他們 百折不撓 了
*tamen baizhebunao le
they persistent Pfv
- b. 他們 充滿 了 勇氣
tamen chongman le yongqi
they full Pfv course
'They are full of courage (now).'

Clearly, the time of these two states stretches beyond the both endpoints of the accomplishment described by (94a). The individual-level state is a permanent property and it naturally covers a period of time longer than the event time of the accomplishment. For the stage-level state, although it is unknown when the state starts, yet nothing in the context indicates a change of state that occurs during the process of the accomplishment. Hence, it can be naturally assumed that the stage-level state starts before the accomplishment. That is, the accomplishment is also a proper (temporal) part of these two states, just as in the case when an achievement is elaborated on by a state.

To sum up, a state cannot be elaborated on because *Elaboration_E* requires the access to a process, which a state does not have. However, a state can elaborate on an event. When a state elaborates on an event, the event is a proper temporal part of the state, in contrast to the case where an event elaborates on an event. This is because a state can stretch further beyond the asserted time (TT), while an event which is not presented by an imperfective marker culminates within TT. *Elaboration_E* indicates two opposite temporal relations, depending on the situation type of the elaborating clause/sentences.

3.3.2.5 Summary

The default function of states is *Background_T* because a state does not have a natural final endpoint and provides, as a temporal background, the time when it holds. A stage-level state can be connected to an eventuality following by *Narration* as long as an 'occasion' relation surfaces in the context. While *Narration* indicates temporal precedence of a whole event, in the case of states, *Narration* indicates temporal reference to the starting point. Therefore, an individual-level state cannot be connected by *Narration* because this kind of state does not have a

starting point to make reference to. Both kinds of states can serve as reasons. The examples of *Explanation* of states suggest that *Explanation* does not require a strict sense of temporal precedence that *Narration* needs. For a stage-level state to be a reason, its starting point temporally precedes the events serving as results. An individual-level state, although with no starting point, can exist longer than another eventuality and a longer existence is sufficient to cause another eventuality. A state cannot be elaborated on because it does not have a process. But, a state can elaborate on another event. When a state elaborates on an event, the event is a proper temporal part of the state.

3.4 CONCLUSION

This chapter examines how the temporal relations between clauses with no aspect markers in Mandarin are determined. I argue that the situation type of a predicate in a clause affects temporal relations via rhetorical relations. I demonstrate that although in certain respects events behave in a manner similar to the perfective *le* and that states function parallel to the imperfective markers, the four situation types have their own unique behaviors in temporal relations.

Both achievements and accomplishments indicate *Narration* when the context does not provide any clue as to rhetorical relations, just as in the case of the perfective *le*. However, unlike the studies reviewed in Chapter Two, achievements have a different behavior in terms of *Elaboration_E*. *Elaboration_E* requires accessing the internal process. An achievement does not have a process. Therefore, *Elaboration_E* can only access the preparatory process that leads to the single point in the temporal schema of an achievement. *Elaboration_E* does not have different behavior with respect to accomplishments because they have an internal process to be accessed. Other rhetorical relations can connect telic events as long as they do not specify a temporal relation violating the constraint on *Elaboration_E* and there are cues in the context specifying those rhetorical relations.

Atelic situations do not behave in parallel. Activities by default specify *Narration* because no event lasts forever when an activity is in real use. In terms of *Narration*, activities behave like a telic event. However, activities behave in a manner very different from telic events in terms of *Background_T*. The time telic events provide as a temporal background is the time after the events culminate. However, an activity

provides its process as a temporal background. That is, although rhetorical relations and a past context can impose a final endpoint on an activity, only the final endpoint imposed by rhetorical relations such as *Narration* and *Explanation* can be accessed by other eventualities in the same discourse, the final endpoint imposed by a past context cannot. This phenomenon may suggest that, in Mandarin, tense is actually a property of a coherent discourse, but not of a single clause or sentence.

The default function of a state is *Background_T*, just like the imperfective aspects. A stage-level state can be connected by *Narration* and under this circumstance *Narration* makes reference to the starting point of the stage-level state. This is why an individual-level state cannot be connected by *Narration* since it does not have a starting point to make reference to. Unlike the case in *Narration*, both types of states can serve as a reason and be connected by *Explanation*. While a stage-level state has a starting point to temporally precede the result(s), an individual-level state can last longer than the results and fulfill the CAUSE relationship to infer *Explanation*. That is, *Explanation* does not require a strict sense of temporal precedence that *Narration* needs. A state cannot be elaborated on because it is homogeneous and no details can be provided. However, a state can elaborate on an event. When an event is elaborated on by a state, the event is a proper temporal part of the state, unlike the situation where an event elaborates on an event.

This chapter presents three new findings with regards to temporal relations that are not discussed in previous research, such as Asher and Lascarides (2003), Wu (2004, 2005b, 2005d, 2006a, to appear), etc. First, *Elaboration_E* can access the preparatory process of an achievement that can be pragmatically inferred although not encoded in the semantics of the achievement. This observation allows *Elaboration_E* to indicate temporal precedence of an event, instead of temporal inclusion of an event. In addition, states have their own unique behavior with respect to *Elaboration_E*. States cannot be elaborated on, but they can elaborate on events. While an elaborating event is temporally included in the elaborated event, an elaborating state behaves the other way around, i.e., the elaborated event is a proper temporal part of an elaborating state. Secondly, *Narration* does not strictly specify temporal precedence of a whole situation. For a stage-level state, *Narration* makes reference to its starting point, rather than the whole state. Thirdly, while *Explanation* behaves similarly to *Narration*, *Explanation* does not require the strict temporal precedence that *Narration* cannot go without.

CHAPTER IV

ATEMPORAL RELATIONS: WHEN TEMPORAL RELATIONS DISAPPEAR

4.1 Introduction

Many previous studies focus on temporal relations and explore how temporal relations can be determined. For example, Tai (1985) discusses the iconicity between word order and temporal sequence in Mandarin sentences. Hu (1991: 81-87) also briefly discusses the relationship between word order and temporal sequence. Asher and Lascarides (2003:155-170) discuss how rhetorical relations determine temporal relations. Moeschler (2005) relies on contextual information and linguistic information to infer temporal relations. Wu (2004, 2005b, 2006a, to appear) discusses how the aspect markers affect temporal relations via rhetorical relations. Wu (2005d) conducts a pilot study of temporal relations of clauses with no aspect marker in Mandarin.

However, not all clauses (or sentences) in a coherent discourse show temporal relations among them. There are many examples where the clauses in a coherent passage do not show any temporal relation, as below.

- (96) a. 一 件 好 的 作 品 必 須 符 合 現 代 潮 流
yi jian hao de zuopin bixuyao fuhe xiandai chaoliu
one CL good DE work must match modern trend
'A good (artistic) work must match current trends.'

Chapter IV

- b. 更 須 具 有 簡 單 明 快 銳 利 創 意 的
geng xu juyou jiandan mingkuai reili chuangyi de
more must have simple clear-cut sharp creative DE
表 現 特 徵
biaoxian tezheng
presentation feature
'Even more, the presentation must contain features which are
simple, clear-cut, sharp and creative.'
- c. 最 重 要 的 是 情 感 要 融 入 其 中
zui zhongyao de shi qinggan yao rongru qizhong
most important DE be feelings must be included in
'Most importantly, feelings must be included in (the good
work).'
- d. 因 此 現 代 陶 藝 的 基 本 精 神 是
yinci xiandai taoyi de jiben jingshen shi
for this reason modern pottery DE basic spirit be
鼓 勵 創 作 反 對 模 仿 複 製 的
guli chuanguo fandui mofang fuzhi de
encourage creation oppose imitate copy Pre
'Therefore, the basic spirit of modern pottery is to encourage
creation, and to oppose imitation and copying.'

In this example, we can see that there is no temporal relation among the clauses. For example, one cannot tell whether *fuhe xiandai chaoliu* 'to match current trends' occurs before, after, or simultaneously with *juyou ... tezheng* 'to have certain features'. The same lack of temporal relations can be observed between (96b) and (96c), and between (96c) and (96d).

In this chapter, we explore when temporal relations disappear, i.e., atemporal relations between clauses with no aspect marker. From Asher and Lascarides (2003), a series of papers of Wu (2004, 2005b, 2006a, to appear), and the discussions in Chapter Three of this book, we can see that temporal relations are mostly determined by rhetorical relations although the semantics of aspect markers and of different situation types can affect temporal relations via rhetorical relations. Therefore, this chapter is organized according to the classification of rhetorical relations. I show that some rhetorical relations do not specify any temporal

relations and others lose their ability to specify temporal relations under certain circumstances. I also examine how eventualities of different situation types behave with respect to those rhetorical relations. Asher and Lascarides (2003: 208-209) suggest that *Parallel* and *Contrast* do not specify any particular temporal relation. However, these two rhetorical relations are not the only ones that do not have any specification of temporal relations. In this chapter, I discuss other rhetorical relations that do not specify any temporal relation.

The organization of this chapter is as follows. Section 4.2 discusses *Elaboration_{NP}*, elaboration on NP. Section 4.3 takes another look at *Explanation*. Section 4.4 deals with *Background_i*, informational background. Section 4.5 discusses what relation clauses have between them when there is no temporal relation. Section 4.6 concludes this chapter.

4.2. Elaboration_{NP}

In Chapter Three, I discussed *Elaboration_E*, elaboration on an eventuality. I found that the temporal relation indicated by *Elaboration_E* differs when different situation types of eventualities are involved. There is another kind of *Elaboration* distinguished in Wu (2003b: 284-288), that is, *Elaboration_{NP}*, elaboration on NP.⁴⁰ The information cue for *Elaboration_{NP}* is also a subtype relationship, but in this case it is a subtype relationship between an NP and other clauses. This type of *Elaboration* does not indicate temporal inclusion. As a matter of fact, *Elaboration_{NP}* does not indicate any temporal relation between the elaborated NP and the elaborating clauses, in contrast to what Asher and Lascarides (2003) says about *Elaboration*. See the following example.

⁴⁰ In Wu (2003b: 415), this type of *Elaboration* is referred to as *Elaboration_{obj}*, elaboration on objects. To avoid confusion between object as an entity and object as a grammatical function, this rhetorical relation is renamed as *Elaboration_{NP}* in this book.

Chapter IV

- (97) a. 科學家 在 海拔 三 千 公尺 的 高 山
kexuejia zai haiba san qian gongchi de gao shan
scientist at altitude three thousand meter DE high mountain
上 發現 一 種 青蛙
shang faxian yi zhong qingwa
on find one kind frog
'Scientists found a kind of frog living in high mountains of an
altitude of 3000 meters.'
- b. 該 種 青蛙 眼 紅 膚 白
gai zhong qingwa yan hong fu bai
that kind frog eye red skin white
'The eyes of that kind of frog are red and their skin is white.'
- c. 與 大部份 的 青蛙 不 同
yu dabufen de qingwa bu tong
with most DE frog not same
'They are different from most of the other kinds of frogs.'

(97b-c) are two of the many features of the kind of frogs discovered in the high mountains, and therefore are a subtype. But these two clauses are not a subtype of an eventuality. Instead, they are a subtype of the object in (97a), i.e., of the kind of frog found in high mountains of an altitude of 3000 meters. There is no temporal relation between (97a) and (97b-c). None of the temporal relations such as temporal precedence, inclusion or overlapping can be found. That is, *Elaboration_{NP}* does not specify any temporal relation.

However, the clauses connected by *Elaboration_{NP}* may have a temporal relation, as in the example below.

- (98) a. 泛 藍 整合 形成 一 個 由 下 而
fan lan zhenghe xingcheng yi ge you xia er
pan blue unification form one CL from bottom to
上 由 外 而 內 的 動 線
shang you wai er nei de dongxian
top from outside to inside DE direction of trend
'The unification of the pan-blue camp formed a bottom-up
and outside-in direction of a trend.'

- b. 馬英九 在 競選 黨 主席 時
ma yingjiu zai jingxuan dang zhuxi shi
Ma Yingjiu at campaign for party chair time
'When Ma Yingjiu was campaigning for the position of the
chairman of the KMT,'
- c. 高層 挺 王 金平 者 多
gaoceng ting wang jingping zhe duo
high support Wang Jingping people many
'most of the people in high positions supported Wang
Jingping.'
- d. 基層 卻 是 擁 馬
jiceng que shi yong ma
ordinary people but be support Ma
'But, the ordinary people supported Ma.'
- e. 已 可 見 到 這 條 動 線
yi ke jiandao zhe tiao dongxian
already can see this CL direction of trend
'This direction of the trend can already be seen.'

In this example, (98b-e) elaborate on *dongxian* 'direction of the trend' in (98a). They provide an example for the bottom-up and outside-in direction of the trend described in (98a). Here (98a) must occur before (98b-e) because the direction of the bottom-up and outside-in movement must take shape before it can be seen. So, when do the clauses connected by *Elaboration_{NP}* have a temporal relation among them and when do they not? What kind of temporal relation will surface when the clauses exhibit a temporal relation? We discuss these two questions respectively in the following subsections.

4.2.1 Generalizing Sentences – Atemporal Relations of *Elaboration_{NP}*

If we examine (97) and (98), we can find the difference between these two examples. (97b-c) are generalizing sentences. They describe general properties of a kind of frog. The truth values of these two clauses do not depend on a specific time or location. Instead, they are true at all times. On the other hand, all of the clauses in (98) describe specific

Chapter IV

events, which occur at a specific time and location. Smith (2003: 24) suggests that generalizing sentences describe a pattern, instead of a particular event. She (ibid: 25) also suggests that generalizing sentences are not organized temporally. In Chapter Three, I argue that generalizing clauses (sentences) can be temporally organized although they may be temporally independent of the context where they occur. *Elaboration_{NP}* is one of the circumstances where generalizing sentences (clauses) induce atemporal relations.

Generalizing sentences do not have a specific event time. *Elaboration_{NP}* does not require an access of the internal process of an event because what is elaborated on is an NP, rather than an event. Given that a generalizing sentence does not have a specific event time and that *Elaboration_{NP}* does not require the accessing of any process, when one of the NPs in a generalizing clause is elaborated on, there is no time for the elaborating clauses to refer to and therefore no temporal relation can be observed. When a generalizing clause elaborates on one of the NPs in a regular clause, the event time of the event described by the regular clause is not accessed because it is *Elaboration_{NP}*, and the event time of the elaborated event cannot be located relative to the time of the generalizing clause because a generalizing clause does not have a specific event time. Again, no temporal relation can be observed.

In regard to (97) and as to whether or not the reasoning above applies to this example, (97b-c) are generalizing clauses because they describe the general properties of a frog species. Since these two clauses elaborate on the object NP in (97a), they are not related to the *find a kind of frog* event. (97a) is interpreted as a completed event because *faxian yi zhong qingwa* 'to find a kind of frog' is an achievement and a telic event tends to be interpreted as completed, as discussed in J. Lin (2003, 2006), Smith and Erbaugh (2001, 2005), etc. Even though (97a) describes a completed event, the completed event cannot be temporally related to anything because the clauses following do not provide any time for it to anchor to.

The following is an example where the elaborated clause is a generalizing clause.

- (99) a. 張先生的建設公司每年只
zhang xiansheng de jianshe gongsi mei nian zhi
Zhang Mr. Poss construction company every year only
蓋三四棟房子
gai san si dong fangzi
build three four CL house
'Mr. Chang's construction company builds only three or four
houses every year.'
- b. 去年那批品質甚佳
qu nian na pi pinzhi sheng jia
last year that bunch quality very good
'The cases that were built last year were of very good quality.'
- c. 賣得非常好
mai de feichang hao
sell DE very good
'They sold very well.'
- d. 今年的很多人在等
jin nian de hen duo ren zai deng
this year DE very many people Prg wait
'Many people are waiting for those which will be built this
year.'

(99a) describes a pattern and is a generalizing sentence. (99b) elaborates on the object NP in (99a) and is attached to (99a) by *Elaboration*_{NP}. Although (99b) describes a past event, it does not access the internal process of (99a) because that is not what *Elaboration*_{NP} does, and neither can it be positioned relative to the time of (99a) because (99a) does not provide a specific time. Therefore, no temporal relation between (99a) and (99b) can be observed.

The reasoning above predicts that when both the elaborated clause and the elaborating clause(s) are generalizing clauses, the passage does not have a specific time and naturally no temporal relation surfaces. This prediction is borne out by the following example.

Chapter IV

- (100) a. 黃 易 每 兩 三 年 寫 一 套 武 俠
huang yi mei liang san nian xie yi tao wuxia
Huang Yi every two three year write one set martial arts
小說
xiaoshuo
novel
'Huang Yi writes a set of martial arts novels every two or three years.'
- b. 每 套 小 說 都 會 談 到 一 些 形 而 上
mei tao xiaoshuo dou hui taidao yixie xingershang
every set novel all will refer to certain metaphysical
的 概 念
de gainian
DE concept
'Every set of novels will refer to certain metaphysical concepts.'

(100a) describes a pattern of a novelist's writing style. (100b) is also a generalizing sentence because it is also a pattern of the novelist's writing style. (100b) is attached by (100a) by *Elaboration_{NP}* because (100b) provides some details about the object NP in (100a). Because the rhetorical relation that connects these two sentences does not indicate any temporal relation and these two sentences do not provide any specific time for each other to refer to, logically there is no temporal relation between these two sentences. This inference matches a native speaker's intuition about this short passage.

In a word, *Elaboration_{NP}* does not require the access to any event and therefore does not specify any temporal relation. When either the elaborated sentence (clause) or the elaborating sentences (clauses), or both are generalizing clauses, no temporal relation is observed because generalizing sentences (clauses) do not provide a specific time for other clauses to make reference to.

4.2.2 When Temporal Relations Surface

Section 4.2.1 argues that no temporal relation surfaces when a generalizing sentence is involved with *Elaboration_{NP}* because a generalizing sentence does not provide a particular time. To put it

another way, a temporal relation will surface if a specific time is provided, even though the clauses are connected by *Elaboration_{NP}*.

This generalization is supported by (98). Although the passage does not contain any temporal adverbial to indicate specific time, (98e) reveals the temporal sequence. Nothing can be seen unless the event appears first. In this example, the direction of the trend cannot be observed unless it is formed first. Therefore, (98a) must temporally precede (98b-e). However, this temporal relation is not related to the rhetorical relation connecting (98b-e) to (98a). This temporal relation is totally dependent on the natural sequence where an event or phenomenon must surface first before it can be seen.

In addition to the natural sequence between events, temporal adverbials can induce temporal relations even though the clauses in a passage are connected by *Elaboration_{NP}*. See the example below.

- (101) a. 梁 建鋒 所 使用 的 小 提 琴 係 由 奇 美 文 化
 liang jianfeng suo shiyong de xiaotiqin xi you qimei wenhua
 Lian Jianfeng use Rel violin be from Qimei culture
 基 金 會 所 提 供 的 1738 年 製
 jijinhui suo tigong de yiqisansi nian zhi
 foundation provide Rel 1738 year made
 名 琴 山 多 賽 拉 芬
 ming qin shanduo sailafen
 famous violin Sando Selifen
 ‘The violin used by Liang Jianfeng is a famous Sando Selifen
 violin made in 1738 and is provided by the Qimei Cultural
 Foundation.’
- b. 賽 拉 芬 1665 年 出 生 於 義 大 利 北 部 的
 sailafen yiliuliuwu nian chusheng yu yidali bei bu de
 Selifen 1665 year be born at Italy north part DE
 烏 黛 因
 Udine
 Udine
 ‘Selifen was born in Udine, the northern part of Italy, in
 1665.’

This example above also involves *Elabroation_{NP}*. (101b) provides more details about the violin-maker. This rhetorical relation does not

Chapter IV

specify any temporal relation, but, a native speaker's intuition tells us that (101b) occurs long before (101a). This intuition comes from other information in the context, rather than the rhetorical relation. The excerpt above is taken from an article which promotes a concert where Liang will perform with a famous violin made by Selifen. Since the concert takes place in the present day and the maker of the violin was born in the 17th century, it is quite natural that the event describing the place and time of the birth of the violin-maker occurs before the description about the performer in the concert in the present day. But, obviously, this temporal relation is not related to *Elaboration*_{NP}, but to the information provided by the clauses in the context.

In addition to temporal precedence as the two examples above demonstrate, temporal inclusion is also possible, as long as the situation types of the clauses involved allow for this temporal relation. For example,

- (102) a. 賽拉芬 一 生 致力於 製造 小提琴
sailafen yi sheng zhiliyu zhizao xiaotiqin
Selifen one life devote to make violin
'Selifen devoted his life to making violins.'
- b. 賽拉芬 1665 年 出生 於義大利 北 部 的
sailafen yiliuliuwu nian chusheng yu yidali bei bu de
Selifen 1665 year be born at Italy north part DE
烏 黛 因
Udine
Udine
'Selifen was born in Udine, the northern part of Italy, in 1665.'
- c. 年 輕 時 他 熱愛 提琴 製作
nianqing shi ta reai tiqin zhizuo
young time he love very much violin making
'He loved making violins very much when he was young.'

- d. 因此 前往 克里蒙那 投靠
yinci qianwang kelimona tokao
so go to Cremona seek help from and stay with
尼可拉 亞曼第
nikela amadi
Nichola Amadi
'So, (he) went to Cremona to seek help from and stay with
Nichola Amadi.'

This example shows temporal inclusion. (102b-d) are temporally included in (102a). But, this temporal relation has nothing to do with the rhetorical relation that connects (102b-d) to (102a) because the three clauses provide more details about the subject of (102a) and hence are connected to (102a) by *Elaboration_{NP}*. The temporal inclusion in this example, again, comes from the information provided by the clauses. (102a) is a state, which describes what Selifen devoted his life to, i.e., the time provided by (102a) is the life time of Selifen. (102b-d) are descriptions of part of Selifen's life and therefore the events described by (102b-d) are temporally included in (102a).

In sum, although there are many possibilities for the temporal relations among clauses connected by *Elaboration_{NP}*, these temporal relations are not determined by the rhetorical relation. Instead, other information in the context, e.g., the natural sequence between events, temporal adverbials, situation types, etc, help here to determine the temporal relations.

4.2.3 Summary

The discussions in these two subsections above show that *Elaboration_{NP}* is underspecified with respect to temporal relations and is compatible with any temporal relation. When generalizing sentences are involved, no temporal relation can be observed. When there is explicit information in the context, the temporal relation is determined by the information.

4.3 Explanation

Asher and Lascarides (2003: 160) observe that *Explanation* does not necessarily indicate temporal precedence and propose that α cannot temporally precede β if β explains α and that temporal precedence is guaranteed when β is an event. I have argued against this proposal in Section 3.3.2.3, where I demonstrated that for the explaining clause to be an event is not the only possibility for temporal precedence to surface and that the temporal precedence induced by *Explanation* does not have to involve the whole situation. In this section, I would like to modify the position I held in Section 3.3.2.3 and argue that for the explaining clause to be an event does not guarantee temporal precedence at all. See the example below.

- (103) a. 現代 陶藝 的 表現 方式 也 隨著
xiandai taoyi de biao xian fangshi ye suizhe
modern pottery DE presentation method also along with
藝術 思潮 的 演進 不斷 推陳出新
yishu sichao de yanjin buduan tuichenchuxin
art trend of thought DE progress continuously improve
'The method of the presentation of modern pottery also
continuously improves along with the progress of the trends
in artistic thinking.'
- b. 因此 每個 國家 的 陶藝 創作 更
yinci mei ge guojia de taoyi chuanguo geng
for this reason every CL country DE pottery creation even
依 時間 地域 的 不同 呈現
yi shijian diyu de butong chengxian
along with time location DE difference manifest
百花齊放 的 熱鬧 風格
baihuazhanfang de renao fengge
flourishing DE thriving style
'For this reason, the creation of pottery in every country
manifests a flourishing and thriving style depending on the
differences in time and location.'

(103a) describes an event because the adverbial *buduan* 'continuously' can modify an event only and cannot modify a state. This

behavior of *budaun* ‘continuously’ can be demonstrated by the following example.

- (104) a. *他 不斷 知道 小明 喜歡 他
 *ta buduan zhidao xiaoming xihuan ta
 he continuously know Xiaoming like he
- b. 他 不斷 重覆 同 一 句 話
 ta buduan chongfu tong yi ju hua
 he continuously repeat same one CL sentence
 ‘He repeated the same sentence continuously.’

The cue phrase *yinci* ‘for this reason’ in (103b) explicitly indicates that (103b) is connected to (103a) by *Explanation*. The explaining clause (103a) is an event, and, according to Asher and Lascarides (2003: 16), (103a) should occur before (103b). However, this inference does not match a native speaker’s intuition about this passage. Actually, no temporal relation can be observed in (103). This is because (103a) is a generalizing sentence even though it is an event. A generalizing sentence does not describe a specific time and nor does it provides time for other events to make reference to. Therefore, no temporal relation surfaces.

The two clauses in (103) are both generalizing clauses. The following is an example where the reason is a generalizing clause.

- (105) a. 那 家 麵包店 每 天 烘 五 百 個
 na jia mianbaodian mei tian hong wu bai ge
 that CL bakery every day bake five hundred CL
 麵包
 mianbao
 bread
 ‘That bakery bakes 500 rolls of bread every day.’
- b. 下 午 四 點 半 開 賣
 xiawu si dian ban kai mai
 afternoon four o’clock half start sell
 ‘They start to sell the freshly baked bread at 4:30 in the afternoon.’

Chapter IV

- c. 所以 昨天 下午 我 四 點 半 就 去 買
suyi zuotian xiawu wo si dan ban jiu qu mai
so yesterday afternoon I our o'clock half then go buy
'so, at 4:30 yesterday afternoon I went to buy some bread.'
- d. 但是 店 卻 沒 開
danshi dian que mei kai
but store surprisingly no open
'But the store was not open!'
- e. 實在 很 討 厭
shizai hen taoyan
truly very annoying
'It was annoying!'

(105a-b) are two events. They are also generalizing clauses because they describe the routine of a bakery. *Suoyi* 'so' in (105c) clearly indicates that (105a-b) explains (105c). But, again, no temporal relation is observed between the reasons and the result. The reasons here were true in the past, are true now and will be true in the future until the bakery closes for good. On the other hand, the result is a specific event that occurred in the past. We cannot say that the result occurs before the reason since the result is a past event but the reasons remain true at the present time. This temporal relation violates the cause-effect relationship of *Explanation*. Neither can we say that the reasons temporally precede the result because the reasons remain true all the time. That is, once the reason in *Explanation* is a generalizing clause, no temporal relation can be observed, even though the reason is an event.

An individual-level state is one subclass of a situation type similar to a generalizing sentence (clause) in that they hold at all times. An individual-level state describes a permanent property and is a kind of state that holds at all times, similar to a generalizing sentence (clause). Hence, when an individual-level state serves as a reason, no temporal relation appears between the stative reason and the result(s). See the example below.

- (106) a. 氫氣球 相當 危險
qingqiqiu xiangdang weixian
Hydrogen balloon quite dangerous
'Hydrogen balloons are quite dangerous.'
- b. 該 氣體十分 不 穩定
gai qiti shifen bu wending
that air very no stable
'Hydrogen is very unstable.'
- c. 很 容易 爆炸
hen rongyi baozha
very easy explode
'It explodes easily.'
- d. 因此 德國 飛船 興登堡 號 發生 大
yinci deguo feichuang xingdengbao hao fasheng da
for this reason German airship Hindenburg name happen big
爆炸
baozha
explosion
'For this reason, the German airship Hindenburg exploded.'
- e. 氫氣 飛船 也 因而 廢棄
qingqi feichuang ye yiner feiqi
hydrogen airship also for this reason abandon
大半
daban
more than half
'For the same reason, more than half of the hydrogen airships
were abandoned.'

In the example above, (106a-c) are the descriptions of the properties of hydrogen and they are all individual-level states. The explosion of the airship Hindenburg and the abandonment of the hydrogen airships all happened in the early twentieth century. *Yinci* 'for this reason' in (106d) and *yiner* 'for this reason' in (106e) both indicate that (106a-c) explain (106d) and (106e). There is no obvious temporal relation between the explaining eventualities and the explained events. (106a-c) were true

Chapter IV

before the events described by (106d-e), were true when the events took place, and remain true after the events. Therefore, it is difficult to determine the temporal position of (106d-e) relative to (106a-c). The discussion above is the reason why no temporal relation can be sensed between (106a-c) and (106d-e).

When both the reason(s) and the result(s) describe general properties, no temporal relation can be observed either, as discussed above. The following is an example where the reason is an individual-level state and the result is a generalizing sentence.

- (107) a. 張 媽媽 很 有 公德心
zhang mama hen you gongdexin
Zhang mother very have civism
'Mrs. Zhang is very civic-minded,'
- b. 又 主動
you zhudong
and active in volunteering
'And, (she) is active in volunteering,'
- c. 所以 她 常常 打掃 她 家 附近 的 街道
suoyi ta changchang dasao ta jia fujin de jiedao
so she often clean she home nearby DE street
'(so) she often cleans the streets near her home.'

The two states in (107a) and (107b) are both individual-level states. (107c) is a generalizing sentence because it describes a routine of the subject.⁴¹ The cue phrase *suoyi* 'so' in (107c) specifies that (107c) is attached to (107a-b) by *Explanation*. Since both the reason and the result hold at all times, one cannot be temporally positioned relative to the other. No temporal relation can be sensed here.

In sum, *Explanation* does not have to specify a temporal relation as proposed in Asher and Lascarides (2003: 160). The reason being an event does not guarantee temporal precedence, again in contrast to the suggestion of Asher and Lascarides' (ibid). When a generalizing sentence or an individual-level state, both of which describe permanent

⁴¹ Adverbials of frequency such as *changchang* 'often' in this example also help to determine that the sentence is a generalizing sentence.

properties and hold at all times, serves as the reason, no temporal relation can be observed. Although generalizing sentences play a similar role in atemporal relations in cases of *Elaboration_{NP}* and *Explanation*, *Elaboration_{NP}* is underspecified in terms of temporal relations, whereas *Explanation* loses its ability to specify temporal relations.

4.4 Background_I

In Chapter Three, I discussed *Background_T*, temporal background. A telic event provides the time after the event as temporal background, whereas an atelic eventuality offers the time of its process. Wu (2006a) discusses another kind of *Background* indicated by the experiential *guo*. *Background_I* is informational background. When a clause serves as informational background, it serves a base from which an inference can be made. Wu (ibid) proposes that an event serving as informational background occurred before an event functioning as an inference. See the following example as discussed in Wu (ibid).

- (108) a. 我 倆 一 起 經 歷 過 無 數 危 難
 wo liang yiqi jingli guo wushu weinan
 I both together experience Exp countless danger
 ‘We experienced countless dangers together before.’
- b. 這 次 或 許 也 能 逃 脫
 zhe ci huoxu ye neng taotuo
 this time maybe also can escape
 ‘Maybe, this time, (we) will also be able to escape.’

(108b) is attached to (108a) by *Background_I*. The inference (108b) is made based on the premise (108a). (108a) occurs before (108b). This is not surprising at all because *guo* is a perfective marker and presents a terminated or completed eventuality.

Although this proposal works for an eventuality presented by the experiential *guo*, *Background_I* does not necessarily indicate temporal precedence. Again, when the informational background is a generalizing sentence, then no temporal relation can be found. See the example below.

Chapter IV

- (109) a. 十 大 通緝 要犯 黑仔 常常 偷偷 回
shi da tongqi yaofan heizai changchang toutou hui
ten big wanted fugitive Heizai often in stealth return
家 探望 父母
jia tanwang fumu
home visit parents
'Heizai, one of the ten most wanted fugitives, often steals
home to visit his parents.'
- b. 最近 可能 又 會 回來
zuijing keneng you hui huilai
recently possible again will come back
'He may come back again soon.'
- c. 據 此 警方 在 他家 附近 部署 人馬
ju ci jingfang zai ta jia fujin bushu renma
based on this police at he home nearby deploy people
'Based on this piece of information, the police deployed many
officers near his home.'
- d. 希望 能 一舉成擒
xiwang neng yijuchengqin
hope can catch
'(and they) hope to catch him through this undertaking.'

(109a) describes a routine of Heizai and is a generalizing sentence. Since (109a) is a generalizing sentence, it does not describe a specific time, and instead it holds at all times. As discussed in Section 4.3, such a sentence provides no specific time for other eventualities to make reference to. (109b) is an inference made based on the premise (109a). Obviously, there is no temporal relation between (109a) and (109b).

The following is another example.

- (110) a. 龍骨突 和 叉骨 一樣 在 飛行 上 都
longgutū he chāgū yīyàng zài fēixíng shàng dōu
keel and wishbone alike at flight on both
明顯 具有 關鍵 重要性
míngxiǎn jùyǒu guānjiàn zhòngyǎoxíng
obviously have key importance
'Keels and wishbones alike both have obvious key importance
for flight.'
- b. 因此 現生 飛行 鳥類 都 擁有 此
yīncǐ xiànsēng fēixíng niǎolèi dōu yōngyǒu cǐ
so modern flying bird all have this
項 構造
xiàng gòuzào
CL structure
'so, modern flying birds all have this structure.'
- c. 不過 這 項 骨骼 外型 不見得 是 為
bùguò zhè xiè gǔgé wàixíng bùjiānde shì wéi
but this PL bone shape not necessarily be for
飛行 而 發展 的
fēixíng ér fāngzhǎng de
flight and develop Prc
'But, the shapes of these bones did not necessarily develop for
flight.'
- d. 蝙蝠 會 飛 卻 沒 有 這些 構造
biānfú huì fēi què méi yǒu zhèxiē gòuzào
bat can fly but no have this PL structure
'Bats can fly, but they do not have these structures.'

- e. 其中 奧妙 必然 在於 鳥類 所採取 的
qizhong aomiao biran zaiyu niaolei suo caiyong de
among secret definitely lie in bird adopt Rel
某 種 獨特 飛行 方式
mou zhong dute feixing fangshi
some kind unique flight method
'The secret in (the difference) definitely lies in some kind of
unique flight method adopted by birds.'

(110a-d) are all generalizing sentences because they describe a certain anatomical structure of birds and its relationship with flight. The information provided by these sentences serves as a premise, based on which (110e) is made. Again, no temporal relation can be observed here.

To sum up, *Background_I* does not specify any particular temporal relation, in contrast to Wu's (2006a) proposal. Wu (ibid) suggests that this rhetorical relation indicates temporal precedence because he considers the effect of the experiential *guo*. An eventuality presented by the experiential *guo* occurs in some indefinite past, and it temporally precedes other eventualities when it functions as a premise. However, when the eventuality that serves as a premise does not provide any specific time, such as generalizing sentences, *Background_I* does not indicate any temporal relation.

4.5 What Remains When Temporal Relations Disappear

One may be wondering what relation the sentences in the discourses discussed in this chapter have if there is no temporal relation between them. The answer is rhetorical relations. Asher and Lascarides (2003), and Wu (2003b, 2004, 2005b, 2006a, and to appear) all show that temporal relations are one of the by-products of rhetorical relations. This chapter shows that atemporal relation is also one of the by-products of rhetorical relations. However, regardless of whether there is a temporal relation or not, the sentences (or clauses) in a discourse are always related to each other in terms of rhetorical functions.

For example, (97b-c) are connected to (97a) by *Elaboration_{NP}*. Even though they do not show any temporal relation, (97b-c) provide details on the object NP in (97a). That is, the relation between (97b-c) and (97a) is elaboration.

Similarly, (105a-b) do not have any temporal relation with (105c-e). Nevertheless, they are still related. (105a-b) is the reason why the speaker went to the bakery at 4pm yesterday. That is, (105a-b) explains (105c-e).

To sum up, temporal or atemporal relation is an inference from rhetorical relations. No matter whether there is a temporal relation or not, a sentence (or clause) always has a certain rhetorical function on another sentence (or clause) attached to it.

4.6 Conclusion

This chapter has examined under what circumstances temporal relations do not surface. Asher and Lascarides (2003: 208-209) suggest that *Parallel* and *Contrast* do not specify any specific temporal relation. However, this observation is inadequate. I examined three more rhetorical relations that do not indicate any specific temporal relation. They are *Elaboration_{NP}*, *Explanation* and *Background_I*. I argued that *Elaboration_{NP}* and *Background_I* do not specify any temporal relation and that any temporal relation that surfaces when the clauses are connected by *Elaboration_{NP}* or *Background_I* is due to the times provided by the clauses, not to their rhetorical relation. *Explanation* is a little different. Instead of specifying no temporal relation, *Explanation* specifies temporal precedence. This temporal relation follows naturally from the function and the cue information for *Explanation*. Asher and Lascarides (2003: 204-207) suggest that a CAUSE relation is the cue information to infer *Explanation*. Intuitively, a cause occurs before a result, and at least a result does not occur before a reason. However, as argued in this chapter, when *Explanation* involves generalizing sentences (clauses), the rhetorical relation loses its ability to specify any temporal relation because generalizing sentences do not provide any time to refer to.

The results discussed in this chapter seem to support Smith's (2003: 25) proposal that generalizing sentences are not temporally organized since the three rhetorical relations examined in this chapter do not specify any temporal relation when they involve generalizing sentences. However, in Section 3.3.1.1, I have argued that generalizing sentences (clauses) can be temporally organized when the sentences are grouped together to form a 'generalizing discourse', which means that the whole discourse describes a pattern that consists of several steps, but the discourse does not describe any sequence of specific events.

Chapter IV

The findings of this chapter also provide some interesting implications in regard to Smith's (2003) theory about discourse modes. Smith (2003: 1) proposes that "a passage of text with certain features realizes a particular 'Discourse Mode'." She identifies five modes: Narrative, Description, Report, Information, and Argument, among which the Information mode brings General Statives, consisting of generics and generalizing sentences, into the discourse (Smith 2003: 32-33). She (ibid) further suggests that the Information mode is timeless.

The ideas and functions of Discourse Modes in Smith (2003) are very similar to those of rhetorical relations in SDRT (Asher and Lascarides 2003). Discourse modes and rhetorical relations both connect the clauses (sentences) in a coherent discourse, although in SDRT every rhetorical relation connects two clauses (sentences) whereas a discourse mode can connect more than two clauses (sentences). They both either indicate a certain type of temporal relation or do not specify any temporal relation, although rhetorical relations in SDRT have more functions.

Although discourse modes and rhetorical relations have similar functions, the findings of this chapter may raise some questions about Smith's (2003) ideas about generalizing sentences and the Information mode on the one hand and atemporal relations on the other. The discussions in this chapter clearly show that generalizing sentences can occur in more contexts than just in one that provides information. Generalizing sentences (clauses) can be elaborated on and serve as a reason or as a premise, all of which do more than just providing information. The Information mode alone does not cover so many different rhetorical functions of generalizing sentences (clauses). In addition, although generalizing sentences can be temporally independent of other eventualities in the same discourse, they can also be temporally related to each other when they are grouped together and form a 'generalizing discourse'. Generalizing sentences do not describe eventualities anchored to a specific time, but the generalizing sentences in a 'generalizing discourse' may temporally depend on each other.

CHAPTER V
MODELING (A)TEMPORAL RELATIONS IN MANDARIN

5.1 Introduction

In Chapter Three, I argued that situation types specify their own default rhetorical relations, which in turn spell out a temporal relation, and that situation types place their own constraints on rhetorical relations. In Chapter Four, I examined three rhetorical relations not discussed in Asher and Lascarides (2003) which do not specify specific temporal relations. I found that generalizing sentences play a crucial role in atemporal relations, similar to Smith's (2003) proposal, although the relationship between generalizing sentences and the Information mode suggested by Smith (2003) does not cover the whole picture. In this chapter, I propose new axioms and meaning postulates based on the findings in Chapters Three and Four, and demonstrate how those new axioms and meaning postulates can assist SDRT to correctly derive the desired (a)temporal relations.

This chapter is organized as follows. In Section 5.2, I propose new axioms to infer rhetorical relations and meaning postulates that specify (a)temporal relations, based on the findings about the functions of situation types and generalizing sentences. In Section 5.3, I demonstrate how these axioms and meaning postulates can be incorporated into SDRT and accurately derive the desired (a)temporal relations. Section 5.4 concludes this chapter.

5.2 How to Infer Rhetorical Relations and Temporal Relations

In Chapter Three, I compared telic events to the perfective *le* and atelic eventualities to the imperfective aspects. In addition to the similarities, the four situation types have their own unique behaviors in temporal relations.

Both achievements and accomplishments indicate *Narration* when the context does not provide any clue as to rhetorical relations, just like the perfective *le*. However, unlike the studies reviewed in Chapter Two, achievements have a different behavior in terms of *Elaboration_E*. *Elaboration_E* requires accessing the internal process. An achievement does not have a process. Therefore, *Elaboration_E* can only access the preparatory process that leads to the single point in the temporal schema of an achievement. *Elaboration_E* does not have different behavior with respect to accomplishments because they have an internal process to be accessed. Other rhetorical relations can connect events as long as they do not specify a temporal relation violating the constraint on *Elaboration_E* and there are cues in the context that specify such rhetorical relations.

Atelic situations do not behave in parallel. Activities by default specify *Narration* because no activity lasts forever when it is in real use. In terms of *Narration*, activities behave like a telic event. However, activities behave very differently from telic events in terms of *Background_T*. The time telic events provide as a temporal background is the time after the events have culminated. However, an activity provides its process as a temporal background. That is, although rhetorical relations and a past context can impose a final endpoint on an activity, only the final endpoint imposed by rhetorical relations such as *Narration* and *Explanation* can be accessed by other eventualities in the same discourse, but one imposed by a past context cannot. This phenomenon may suggest that, in Mandarin, tense is actually a property of a coherent discourse, but not of a single clause or sentence.

The default function of a state is *Background_T*, just like the imperfective aspects. A stage-level state can be connected by *Narration* and under this circumstance *Narration* makes reference to the starting point of the stage-level state. An individual-level state cannot be connected by *Narration* because it does not have a starting point to make reference to. Unlike the case in *Narration*, both types of states can serve as a reason and can be connected by *Explanation*. While a stage-level state has a starting point that temporally precedes the result(s), an individual-level state can last longer than the results and fulfill the CAUSE relationship to infer *Explanation*. That is, *Explanation* does not require a strict sense of temporal precedence that *Narration* needs. A state cannot be elaborated on because it is homogeneous and no details can be provided. However, a state can elaborate on an event. When an

event is elaborated on by a state, the event is a proper temporal part of the state, unlike the situation where an event elaborates on an event.

In Chapter Four, I examined three rhetorical relations not discussed in Asher and Lascarides (2003) that do not specify temporal relations – *Elaboration_{NP}*, *Explanation* and *Background_I*. I argued that *Elaboration_{NP}* and *Background_I* do not specify any temporal relation and that any temporal relation that surfaces when the sentences (or clauses) are connected by *Elaboration_{NP}* or *Background_I* is due to the times provided by the sentences (or clauses), not the rhetorical relation. *Explanation* is a little different. Instead of specifying no temporal relation, *Explanation* does specify temporal precedence. This temporal relation follows naturally from the function and the cue information for *Explanation*. Asher and Lascarides (2003: 204-207) suggest that a CAUSE relation is the cue information to infer *Explanation*. Intuitively, a cause occurs before a result, and, at least, a result does not occur before a reason. However, as argued in Chapter Four, when *Explanation* involves generalizing sentences (clauses), the rhetorical relation loses its ability to specify any temporal relation.

Because each situation type specifies a default rhetorical relation, I propose the following axioms to infer a default rhetorical relation from a situation type:

- (111) Axioms for situation types
- a. $(?(\alpha, \beta, \lambda) \wedge P(\dots, e)(\alpha) \wedge \text{telic}(e)) > \text{Narration}(\alpha, \beta, \lambda)$
 - b. $(?(\alpha, \beta, \lambda) \wedge P(\dots, e)(\alpha) \wedge \text{activity}(e)) > \text{Narration}(\alpha, \beta, \lambda)$
 - c. $(?(\alpha, \beta, \lambda) \wedge P(\dots, e)(\alpha) \wedge \text{state}(e)) > \text{Background}_T(\beta, \alpha, \lambda)$

The axioms in (111) capture the default functions of different situation types. The notations need some explanation. $?(\alpha, \beta, \lambda)$ means that a clause (or sentence) labeled as α is connected the following clause (or sentence) labeled as β to form a short discourse labeled as λ and that α is connected to β by an underspecified rhetorical relation, represented as a question mark. $P(\dots, e)(\alpha)$ means that α marks a clause (or sentence) that contains a predicate P , which takes a number of arguments, represented as the dots, and an eventuality argument e . $\text{telic}(e)$ means that e is telic. Similarly, $\text{activity}(e)$ means that e is an activity and $\text{state}(e)$ represents that e is a state. The greater than sign $>$ represents default inference, which means that the axioms above can be overridden.

Now, I can explain what the axioms in (111) mean. (111a) says that if α is connected to β by an underspecified rhetorical relation, and the eventuality described by α is telic, then by default the underspecified rhetorical relation is resolved to *Narration*.

Likewise, (111b) says that if α is connected to β by an underspecified rhetorical relation, and the eventuality described by α is an activity, then by default the underspecified rhetorical relation is resolved to *Narration*.

Along the same lines, (111c) says that if α is attached to the following clause β by an unknown rhetorical relation and the eventuality described by α is a state, then α serves as a temporal background for β . *Background_T*(β, α, λ) means that the temporal background of β is α and the small discourse consisting of α and β is labeled as λ .

Each situation type place its own constraint on rhetorical relations. Such constraints are formalized as follows.

- (112) Constraints on rhetorical relations
- a. $(?(\alpha, \beta, \lambda) \wedge P(\dots, e)(\alpha) \wedge \text{part_of}(e_\beta, e_\alpha) \wedge \text{accomplishment}(e)) \rightarrow \text{Elaboration}_E(\alpha, \beta, \lambda)$
 - b. $(\text{Narration}(\alpha, \beta, \lambda) \wedge P(\dots, e)(\alpha) \wedge \text{state}(e)) \rightarrow \text{stage-level}(e)$
 - c. $(\text{Elaboration}_E(\alpha, \beta, \lambda) \wedge P(\dots, e)(\alpha)) \rightarrow \neg \text{state}(e)$

(112a) states that if α is attached to β to form λ by an unknown rhetorical relation, the eventuality described by β is a temporal part of the eventuality described by α , and the eventuality described by the clause (sentence) labeled as α is an accomplishment, then this unknown rhetorical relation must be *Elaboration_E*. (112a) formalizes the generalization that the internal process of an accomplishment cannot be accessed unless the accomplishment is elaborated on. Please note that in this constraint and the others in (112), the inference is monotonic, that is, those constraints have to be obeyed and cannot be violated.

(112b) is the formalization of the constraint on *Narration* of states. When α is connected to β by *Narration* to form a discourse λ and the eventuality described by the clause (sentence) labeled as α is a state, then it must be a stage-level state. That is, only the time of the starting point of a stage-level state can be referred to.

(112c) formalizes the constraint on *Elaboration_E* of states. If α is connected to β by *Elaboration_E* to form a discourse λ and the clause (sentence) labeled as α contains a predicate P , which takes a certain

number of arguments and an eventuality argument e , then e cannot be a state. (2c) formalizes the generalization that a state cannot be elaborated on.

The last step of formalization requires meaning postulates of rhetorical relations to infer temporal relations.

- (113) Meaning postulates for temporal relations
- a. Narration for events
 $\Phi_{Narration(\alpha, \beta)} \Rightarrow (\text{event}(e_\alpha) \rightarrow \text{overlap}(\text{prestate}(e_\beta), \text{ADV}(\text{poststate}(e_\alpha))))^{42}$
 - b. Narration for stage-level states
 $\Phi_{Narration(\alpha, \beta)} \Rightarrow (\text{stage-level}(e_\alpha) \rightarrow (\text{SigP}(e) \prec t \wedge \text{overlap}(\text{prestate}(e_\beta), \text{ADV}(t))))$
 - c. Elaboration_E for achievements
 $\Phi_{Elaboration_E(\alpha, \beta)} \Rightarrow (\text{achievement}(e_\alpha) \rightarrow (\text{occasion}(e_\alpha, e_\beta) \wedge \text{part_of}(e_\beta, e_\alpha)))$
 - d. Elaboration_E for states
 $\Phi_{Elaboration_E(\alpha, \beta)} \Rightarrow (\text{state}(e_\alpha) \rightarrow (\text{part_of}(e_\alpha, e_\beta)))$
 - e. Background_T for activities
 $\Phi_{Background_T(\alpha, \beta)} \Rightarrow (\text{activity}(e_\alpha) \rightarrow \text{overlap}(e_\beta, e_\alpha))$
 - f. Explanation for states
 $\Phi_{Explanation(\alpha, \beta)} \Rightarrow (\text{stage-level}(e_\alpha) \rightarrow (\text{SigP}(e_\alpha) \prec t \wedge \text{overlap}(\text{prestate}(e_\beta), \text{ADV}(t))))$
 $\Phi_{Explanation(\alpha, \beta)} \Rightarrow (\text{individual-level}(e_\alpha) \rightarrow \neg(e_\beta \prec e_\alpha))$

The meaning postulates in (113) are not discussed in previous works, such as Asher and Lascarides (2003), Wu (2003b, 2004, 2005b, 2006a, to appear), etc. (113a) takes care of the temporal relation indicated by *Narration*(α , β) where α is an event. It says that if β is connected to α by *Narration* and α is an event, then the time of the post-tstate of the event described by the clause labeled as α overlaps with the time, modified by an adverbial, of the pre-state of the event described by the clause labeled as β . The ADV in the meaning postulate is to take care of situations where the second event does not occur immediately after the first event. For example, in *John went home two hours after his*

⁴² This meaning postulate and the one below are revised versions stated in Asher and Lascarides (2003: 163). The revision is motivated because Asher and Lascarides (ibid) fail to note that an event and a stage-level state behave a little differently with respect to *Narration*.

classes were over, the *go home* event does not occur immediately after the classes were over; instead, it occurs two hours after the classes were over.

(113b) accounts for the case where a stage-level state is connected to the following clause by *Narration*. If β is connected to α by *Narration* and the eventuality described by the clause labeled as α is a stage-level state, then the time of the pre-state of the eventuality described by the clause labeled as β overlaps with the time, modified by an adverbial, after the SigP of the eventuality described by the clause labeled as α .

(113c) accounts for the case where an achievement is elaborated on. We find that it is the preparatory process that is accessed when an achievement is elaborated on. This preparatory process is formalized as the *occasion* relationship. *occasion*(α , β) basically means that “there is a plan or a ‘natural event-sequence’ such that events of the sort described by α lead to events of the sort described by β .” (Asher and Lascarides 2003: 200) The preparatory process and the achievement to which the process leads fit this definition. When a clause labeled as β elaborates on a clause labeled as α and the eventuality described by the clause marked as α is an achievement, then the elaborating clause marked as β is a temporal part of an event marked as δ , which ‘occasions’ the event marked as α .

(113d) accounts for the temporal relation when a state elaborates on another event. When the elaboration of α is β , i.e., β elaborates on α and β is a state, then the event labeled as α is a temporal part of the state labeled as β .

(113e) accounts for the temporal relation of *Background_T* involving activities. When α serves as a temporal background for β and α is an activity, then β temporally overlaps α . This meaning postulate distinguishes activities from telic events with respect to *Background_T*.

(113f) accounts for the temporal relation of *Explanation* involving states. The first clause says that when α is connected to β by *Explanation* and α is a stage-level state, then the time of the post-state of the event described by the clause labeled as α overlaps with the time, modified by an adverbial, after the SigP of the stage-level state described by the clause labeled as β .

The second clause says that when α is connected to β by *Explanation* and α is an individual-level state, then the eventuality described by the clause marked as β cannot temporally precede the individual-level state.

Next, we need the meaning postulates for *Elaboration*_{NP}, *Background*_I, and *Explanation* involving generalizing sentences or individual-level states because these rhetorical relations either do not specify temporal relations or lose their ability to specify a particular temporal relation.

(114) Meaning Postulates for atemporal relations

- a. $\Phi_{Elaboration_{NP}(e, \alpha)} > \emptyset$
- b. $\Phi_{Background_I}(e, \alpha) > \emptyset$
- c. $\Phi_{Explanation}(e, \alpha) \Rightarrow$
 $((\text{generalizing}(\alpha) \vee \text{individual-level}(e)) \rightarrow \emptyset)$

The meaning postulates in (114) are easy to understand. (114a) says that if β NP-elaborates on α then by default no temporal relation can be inferred. (114b) says that α serves as informational background for β then by default no temporal relation can be observed. Please note that these two inferences for atemporal relations are non-monotonic because explicit information in the context, such as temporal adverbials, can override the lack of temporal relations indicated by these two rhetorical relations.

Unlike (114a-b), (114c) is monotonic and cannot be overridden. It says that when β explains α , no temporal relation can be sensed if α is either a generalizing sentence or an individual-level state. This meaning postulate is not a default inference because this inference must hold if the conditions on the explained eventuality are obeyed.

5.3 Semantic Derivations

SDRT derives the SDRS for a discourse in the following steps. First, all clauses (sentences) in the discourse are translated into glue logic formulae. Secondly, each clause has to find its appropriate attachment site. Third, all underspecified information, including rhetorical relations, and the antecedents to anaphors, etc, are resolved and the SDRS for the discourse is constructed. Finally, the rhetorical relations in the SDRS are interpreted by the Satisfaction Schema.

In this section, I apply the axioms and meaning postulates proposed in the last section and SDRT to the examples discussed in the previous chapters to derive the desired temporal relations and to block unwanted ones.

The following is the first example of where a telic event carries out its default function. The example is taken from Chapter Three and repeated below.

- (115) a. 所長 郭 豐木 率 員警 趕赴 現場
 suozhang guo fengmu shuai yuanjing ganfu xianchang
 Lieutenant Guo Fengmu lead police officers rush to spot
 ‘Lieutenant Guo Fengmu rushed with his officers to the scene
 (of the rockfall).’
- b. 用 擔架 將 三 名 重 傷 遊客 抬至
 yong danjia jiang san ming zhong shang youke taizhi
 use stretcher Disp three CL heavily injured tourist carry to
 公路 旁
 gonglu pang
 road beside
 ‘(They) carried badly injured tourists to the road by stretcher.’
- c. 由 趕來 的 救護車 送 醫 急救
 you ganlai de jiuहुche song yi jiji
 by rush Rel ambulance send hospital ER
 ‘(The victims) were taken to the emergency room by
 ambulances that had rushed there.’

The first step is to translate the clauses above into glue logic formulae. The glue logic formulae for the clauses above are as follows:

- (116) a. π_1 : Lieutenant_Guo'(x)⁴³ \wedge police'(y) \wedge lead'(x, y) \wedge spot'(x)
 \wedge rush_to'(x \oplus y, z)
- b. π_2 : tourists'(u) \wedge injured'(u) \wedge road_side'(v)
 \wedge carry_to'(s, u, v) \wedge s = ?
 $R_{12}(\pi_1, \pi_2) \vee R_{02}(\pi_0, \pi_2) \vee R_{123}(\pi_1, \pi_{23})$

⁴³ To simplify the formalism in the glue logic, the semantics of some elements are not fully represented. For example, job titles and proper names are represented this way. Tense information is not represented. The semantics of aspect markers are not fully represented either. Some information in the context that is irrelevant to the main issue here is not translated into the formulae. The simplification is to make the formal parts more easily intelligible and to facilitate understanding the essence of SDRT. The readers' attention is directed to how (a)temporal relations are derived or blocked.

$$\begin{aligned} \text{c. } \pi_3: & ER'(q) \wedge \text{sent_to}'(p, q) \wedge p = ? \\ & R_{23}(\pi_2, \pi_3) \vee R_{13}(\pi_1, \pi_3) \vee R_{03}(\pi_0, \pi_3) \end{aligned}$$

The three clauses in (115) are translated into the three glue logic formulae in (116). Each formula is labeled by π_i , $1 \leq i \leq 3$. In (116a), $x \oplus y$ is a sum individual, which means that the subject of *rush to* is a sum of x and y , i.e., the sum of the lieutenant and the police officers.

In (116b), $s = ?$ represents an unresolved anaphor, that is, the antecedent to the anaphor subject of *to carry something to somewhere* is unknown. When the second clause comes into the discourse, it has two available attachment sites, i.e., the first clause π_1 or the top level of this discourse π_0 . However, π_2 cannot be attached to π_0 because the underspecified anaphor in π_2 cannot find an antecedent if it is attached to the top level of the discourse. Therefore, π_2 is attached to π_1 by a rhetorical relation R_{12} . There is no cue phrase of any kind in π_1 to indicate a rhetorical relation, but *ganfun xianchang* ‘to rush to the spot’ is an accomplishment. Hence, the underspecified rhetorical relation R_{12} is resolved to *Narration*, based on the default specification of telic events. Since π_2 is attached to π_1 , the possible candidates for the antecedent to s , the subject of *taizhi lupang* ‘to carry something/some to the side of the road’ include: the lieutenant, the police, the sum individual of the lieutenant and the police. The scenario tells us that the most likely antecedent is the sum individual. That is, s is resolved to the sum individual.

When the third clause comes into this discourse, it has three available attachment sites: π_1 , π_2 , and π_0 , represented by the disjunction $R_{23}(\pi_2, \pi_3) \vee R_{13}(\pi_1, \pi_3) \vee R_{03}(\pi_0, \pi_3)$. If π_3 is attached to π_1 , then the subject of *to be sent to the ER* will be the lieutenant, the police or the sum individual of both. This anaphora resolution does not fit the context here and therefore this attachment violates the Maximal Discourse Coherence (Asher and Lascarides 2003: 230-235). If π_3 is attached to π_0 , then the underspecified anaphor cannot find an antecedent. Therefore, π_3 has to be attached to π_2 . Again, there is no cue phrase of any kind in π_2 . However, the predicate in π_2 *taizhi gonglu pang* ‘to carry someone to the side of the road’ is an achievement. The default function of telic events applies. R_{23} is resolved to *Narration*. Since π_3 is attached to π_2 , there are two candidates for the antecedent to p : the sum individual of the lieutenant and the police, and the injured tourists. In this context, p is resolved to injured tourists. Since π_2 has to be connected to π_3 first, π_2 is

$\pi_1 \pi_{23} \pi_2$: tourists'(u) \wedge injured'(u) \wedge road_side'(v) \wedge
 π_1 : Lieutenant_Guo'(x) \wedge police'(y) \wedge lead'(x, y) \wedge
 π_3 : ER'(q) \wedge sent_to'(p, q) \wedge p = ?/p = s

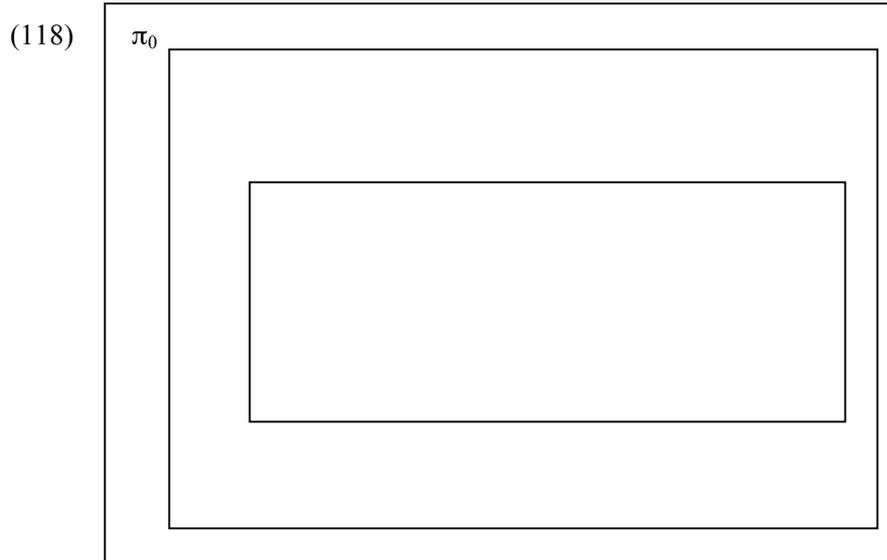
π_0 :
 π_{23} : Narration(π_2, π_3)

Chapter V

Narration(π_1, π_{23})

not connected to π_1 directly. Instead, π_2 and π_3 form a chunk π_{23} , which in turn is attached to π_1 . Now all the underspecified information in (6) is resolved and (116) is repeated below as (117) with all information specified, and, the SDRS for (115) constructed based on (117) is given in (118).

- (117) a. π_1 : Lieutenant_Guo'(x) \wedge police'(y) \wedge lead'(x, y) \wedge spot'(x) \wedge
 rush_to'(x \oplus y, z)
 b. π_2 : tourists'(u) \wedge injured'(u) \wedge road_side'(v)
 \wedge carry_to'(s, u, v) \wedge s = ?/s = x \oplus y
 $R_{123}(\pi_1, \pi_{23})/\text{Narration}(\pi_1, \pi_{23})$
 c. π_3 : ER'(q) \wedge sent_to'(p, q) \wedge p = ?/p = s
 $R_{23}(\pi_2, \pi_3)/\text{Narration}(\pi_2, \pi_3)$



Now, the rhetorical relation can be interpreted in the Satisfaction Schema for Veridical Rhetorical Relations. The Satisfaction Schema for the two occurrences of *Narration* are given below.

- (119) a. $(w, f) [Narration(\pi_1, \pi_{23})]_M(w', g)$ iff
 $(w, f) [K_{e_2} \wedge K_{e_1} \wedge \phi_{Narration(e_1, e_2)}]_M(w', g)$
 b. $(w, f) [Narration(\pi_2, \pi_3)]_M(w', g)$ iff
 $(w, f) [K_{e_3} \wedge K_{e_2} \wedge \phi_{Narration(e_2, e_3)}]_M(w', g)$

In order to interpret ϕ , we need the meaning postulate for *Narration* (113a) because π_1 and π_2 are both events. The meaning postulate says that the pre-state of e_{e_2} overlaps the post-state of e_{e_1} for (119a) and that the pre-state of e_{e_3} overlaps the post-state of e_{e_2} for (119b). That is, the event labeled as π_3 occurs before the chunk, π_{23} , consisting of π_2 and π_3 . The event labeled π_2 occurs before the one labeled as π_3 . Since π_1 occurs before π_{23} , π_1 occurs before π_2 , which in turn occurs before π_3 . This inference accords with a native speaker's intuition about the temporal relation of this passage.

The following is an example where a telic event is elaborated on.

- (120) a. 林義傑 終於 抵達 這次 超級 馬拉松 的
 lin yijie zhongyu dida zhi ci chaoji malasong de
 Lin Yijie finally arrive this time super marathon DE
 終點
 zhongdian
 end
 'Lin Yijie finally reached the end of the super marathon.'
- b. 他 經歷 了 許多的 困難
 ta jingli le xuduo de kunnan
 he experience Pfv many DE difficulty
 'He had experienced many difficulties.'
- c. 他 被 毒 蚊 叮 了 兩次
 ta bei du wen ding le liang ci
 he Pass poisonous mosquito bite Pfv two time
 'He had been bitten by poisonous mosquitoes twice.'
- d. 好幾次 差點 被 毒 蛇 攻擊
 haoji ci chadian bei du she gongji
 several time almost Pass poisonous snake attack
 '(He) had been almost attacked by poisonous snakes several times.'

- e. 最後 腳 又 抽筋
 zuihou jiao you choujin
 finally leg also cramped
 ‘Finally, he also got cramp in his legs.’
- f. 但是 他 都 咬 牙 撐 過 來 了
 danshi ta dou yao ya chengguolai le
 but he all clench teeth make it through to the end Proc
 ‘But, he had clenched his teeth to endure the difficulties and made it through to the end.’

In this example, (120b) elaborates on (120a) because the subtype relationship between *to experience many difficulties* and *to arrive at the finish of the super marathon*. In turn, (120c-e) elaborate on (120b) because of the subtype relationship between *many difficulties* and those events described by (120c-e). The clauses in (120) are translated into glue logic formulae as below.

- (121) π_1 : Yijie_Lin'(x) \wedge super_marathon'(y) \wedge finish'(z) \wedge of(z, y)
 \wedge arrive_at'(x, z)
 π_2 : difficulty'(u) \wedge many'(u) \wedge experience'(v, u) \wedge v = ?
 π_3 : mosquito'(s) \wedge poisonous'(s) \wedge bite'(s, t, e) \wedge twice(e) \wedge t = ?
 π_4 : snake'(o) \wedge poisonous'(o) \wedge attack'(o, p, e') \wedge almost'(e')⁴⁴
 \wedge several_times(e') \wedge p = ?
 π_5 : legs'(q) \wedge cramped'(q) \wedge of(q, r) \wedge r = ?

The glue logic formulae above is different from the one in (117) is that (121) does not include underspecified information of rhetorical relations. This is because this discourse contains more cases where the clauses that come into the discourse later form chunks first and then the chunks are attached to the clauses that come into the discourse earlier. Asher and Lascarides (2003: 226) propose that coherence can vary in quality. The attachment of a clause to another must maximize discourse coherence, for example, when a clause has more than one available attachment site, it has to be attached to the one that will solve the most underspecified information and capture the relationships among more

⁴⁴ Again, this is a simplification. See Amaral (2006) for the semantics of *almost*.

clauses. The following example is discussed in Asher and Lascarides (2003: 223-230).

- (122) a. π_1 : Max experienced a lovely evening last night.
b. π_2 : He had a fantastic meal.
c. π_3 : He ate salmon.
d. π_4 : He devoured lots of cheese.
e. π_5 : He won a dancing competition.

I will not go over the whole discourse, but will move directly to the relevant part. When π_2 comes into the discourse, it has two available attachment sites: π_0 and π_1 . If π_2 is attached to π_0 , then its pronoun subject cannot find an antecedent because π_0 does not contain any candidate. However, if it is attached to π_1 , the NP subject of π_1 can serve as the antecedent. In addition, π_2 is a subtype of π_1 and therefore π_2 is attached to π_1 by *Elaboration*.⁴⁵

When π_3 comes in, it has three available attachment sites: π_0 , π_1 and π_2 . For the same reason as π_2 , π_3 cannot be attached to π_0 . While π_3 can be attached to either π_2 or π_1 , its attachment to π_2 makes the discourse more coherent than to π_1 . If π_3 is attached to π_1 , then the subtype relationship between π_2 and π_3 is not captured. So, the previous attachment of π_2 to π_1 is discarded. Instead, π_3 is attached to π_2 by *Elaboration* first to form a chunk π_{23} , and then π_{23} is attached to π_1 by *Elaboration*.

When π_4 comes in, the same process is followed. π_4 has four attachment sites: π_0 , π_1 , π_2 and π_3 . π_4 cannot be attached to π_0 for the same reason discussed above. If π_4 is attached to π_2 or π_3 , although *Elaboration* can allow for the attachment, yet the temporal relation between π_3 and π_4 is not captured, and so the previous attachment of π_3 to π_2 must be discarded. Rather, π_4 is attached to π_3 by *Narration* to form a chunk π_{34} , which in turn is attached to π_2 by *Elaboration* to form a chunk π_{234} .

The same ‘discard’ procedure can be found when the SDRS for (120) is being constructed. Now, I will return to the SDRS construction process of (120).

⁴⁵ Please recall that Asher and Lascarides (2003) do not distinguish two types of *Elaboration*.

(120a) is translated as (121a). When (120b) comes into the discourse, it has two available attachment sites, i.e., π_1 and π_0 . π_2 cannot be attached to π_0 because the underspecified anaphor in π_2 cannot find an antecedent. Therefore, it is attached to π_1 by an underspecified rhetorical relation. Since there is a subtype relation between two events, R_{12} is resolved to *Elaboration_E*. Since π_2 is attached to π_1 , the antecedent to v should be in π_1 . The only possible antecedent in π_1 that can serve as the subject of *to experience* is x . Therefore, v is resolved to x .

When (120c) comes into the discourse, it has three available attachment sites: π_1 , π_2 and π_0 . If it is attached to π_0 , then the underspecified anaphor in π_3 cannot find an antecedent. If it is attached to π_1 , then its subtype relation with π_2 is not captured, which violates MDC (Asher and Lascarides 2003: 230-238). Therefore, it has to be attached to π_3 . In addition, R_{23} is resolved to *Elaboration_{NP}* because the subtype relationship between π_3 and the NP object in π_2 . Since π_3 is attached to π_2 , the antecedent to t must be in π_2 . The only possible antecedent is v because a difficulty cannot be bitten. That is, t is resolved to v .

When (120d) comes into the discourse, it has four available attachment sites: π_0 , π_1 , π_2 , and π_3 . If it is attached to π_0 , then the underspecified anaphor in π_4 cannot find an antecedent. If it is attached to π_1 , then its subtype relation with π_2 is not captured. If π_4 is attached to π_2 , then the parallel relation between π_3 and π_4 is not captured. π_3 and π_4 are connected by *Parallel* because they are structurally and semantically parallel. So, R_{34} is resolved to *Parallel*. If π_4 is attached to π_3 to form a small chunk called π_{34} , then we need to reconsider the attachment of π_3 to π_2 . Now that π_4 is attached to π_3 to form π_{34} , then π_3 alone cannot be attached π_2 ; instead, π_{34} is attached to π_2 by *Elaboration_{NP}* because of the subtype relationship between the events described by π_3 and π_4 and the NP object in π_2 . According to MDC, the relationship between π_3 and π_4 must be recognized. This is why the attachment of π_{34} consisting of π_3 and π_4 to π_2 is preferable over the attachments of π_3 and π_4 respectively to π_2 .

When π_5 comes into this discourse, it has six attachment sites: π_0 , π_1 , π_2 , π_3 , π_4 , and π_{34} . It cannot be attached to π_0 because the underspecified anaphor in π_5 cannot find an antecedent. If it is attached to π_2 , then it loses its temporal relation with respect to π_3 and π_4 indicated by the cue phrase *zuihou* ‘finally’. Therefore, MDC helps to decide that π_5 is attached to π_{34} , which consists of π_3 and π_4 . The cue phrase *zhihou*

‘finally’ specifies that R_{345} is resolved to *Narration*. The underspecified anaphor r is resolved to p .

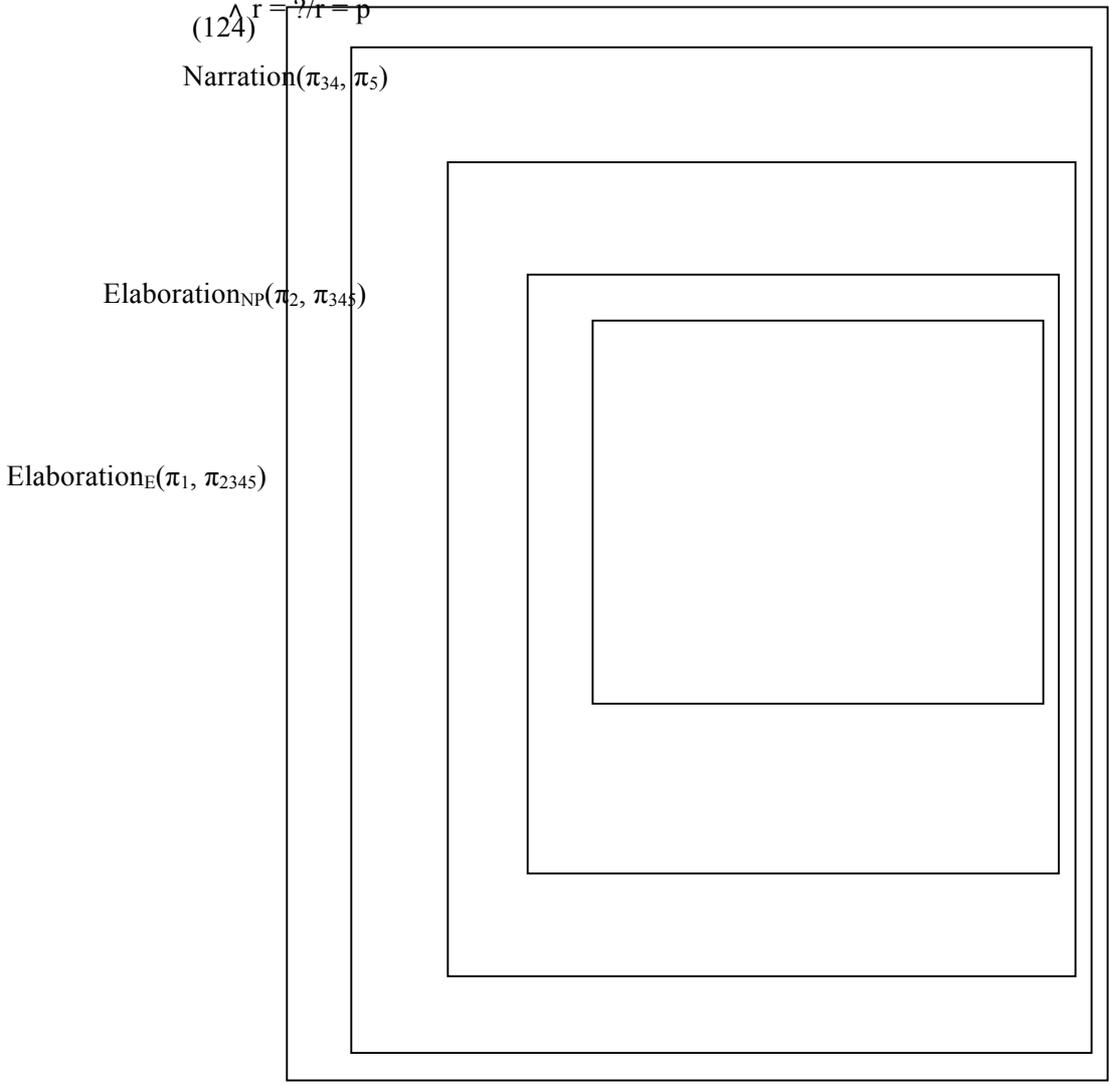
The fully specified glue logic formulae are given in (123) and the SDRS for (120), constructed based on the glue logic formulae, is given in (124).

- (123) a. π_1 : Yijie_Lin'(x) \wedge super_marathon'(y) \wedge finish'(z) \wedge of(z, y)
 \wedge arrive_at'(x, z)
- π_2 : difficulty'(u) \wedge many'(u) \wedge experience'(v, u) \wedge v = ?/v = x
 $R_{2345}(\pi_1, \pi_{2345})/Elaboration_E(\pi_1, \pi_{2345})$
- π_3 : mosquito'(s) \wedge poisonous'(s) \wedge bite'(s, t, e) \wedge twice(e)
 \wedge t = ?/t = v
 $R_{2345}(\pi_2, \pi_{345})/Elaboration_{NP}(\pi_2, \pi_{345})$
- π_4 : snake'(o) \wedge poisonous'(o) \wedge attack'(o, p, e') \wedge almost'(e')
 \wedge several_times(e') \wedge p = ?/p = t
 $R_{34}(\pi_3, \pi_4)/Parallel(\pi_3, \pi_4)$
- π_5 : legs'(q) \wedge get_cramp'(q) \wedge of(q, r) \wedge r = ?/r = p
 $R_{345}(\pi_{34}, \pi_5)/Narration(\pi_{34}, \pi_5)$

π_0 π_1 : Yijie Lin (x) \wedge super_marathon'(y)
 \wedge finish (z) \wedge of(z, y) \wedge arrive_at'(x, z)
 \wedge experience'(v) \wedge ?/v = e' \wedge twice(e)
 \wedge t = ?/t = v
 π_{2345} : π_{345} : π_4 : snake'(o) \wedge poisonous'(o) \wedge
 attack'(o, p, e') \wedge almost'(e')
 \wedge several_times(e')
 \wedge p = ?/p = t

Parallel(π_3, π_4)
 Chapter V

π_5 : legs'(q) \wedge get_cramp'(q) \wedge of(q, r)
 \wedge r = ?/r = p
 (124)



Now, the rhetorical relations in (124) can be interpreted in the Satisfaction Schema, as below.

- (125) a. $(w, f) [Elaboration_E(\pi_1, \pi_{2345})]_M(w', g)$ iff
 $(w, f) [K_{\pi_1} \wedge K_{\pi_{2345}} \wedge \phi_{Elaboration_E(\pi_1, \pi_{2345})}]_M(w', g)$
 b. $(w, f) [Elaboration_{NP}(\pi_2, \pi_{345})]_M(w', g)$ iff
 $(w, f) [K_{\pi_2} \wedge K_{\pi_{345}} \wedge \phi_{Elaboration_{NP}(\pi_2, \pi_{345})}]_M(w', g)$
 c. $(w, f) [Parallel(\pi_3, \pi_4)]_M(w', g)$ iff
 $(w, f) [K_{\pi_3} \wedge K_{\pi_4} \wedge \phi_{Parallel(\pi_3, \pi_4)}]_M(w', g)$
 d. $(w, f) [Narration(\pi_{34}, \pi_5)]_M(w', g)$ iff
 $(w, f) [K_{\pi_{34}} \wedge K_{\pi_5} \wedge \phi_{Narration(\pi_{34}, \pi_5)}]_M(w', g)$

(125a) is a regular event elaboration, which indicates temporal inclusion. Therefore, the events described by π_{2345} are temporally included in the event described by π_1 . (125b) is an NP elaboration. The meaning postulate (114a) predicts that by default there is no temporal relation. (125c) is a parallel, which does not specify any temporal relation, either. That is, it is unknown how the event described by π_3 and the one by π_4 are temporally organized. (125d) is a narration, which specifies that π_5 occurs after π_3 and π_4 . The temporal (and atemporal) relations inferred from the rhetorical relations for (120) accords with a native speaker's intuition about this discourse.

The example above demonstrates how *Elaboration_E* predicts temporal inclusion for telic events and how *Elaboration_{NP}* implies atemporal relation. The following are examples involving activities.

- (126) a. 明明 昨天 很 乖
 mingming zuotian hen guai
 Mingming yesterday very good
 'Mingming behaved very well yesterday.'
- b. 他 一 下 課 回 家
 ta yi xia ke hui jia
 he as soon as leave school return home
 'As soon as he had returned home after school,'
- c. 就 乖乖 寫 回家功課
 jiu guaiguai xie huijiagongke
 then obediently write homework
 'he did his homework obediently.'

Chapter V

- d. 整理 房間
zhengli fangjian
tidy up room
'(And then he) tidied up his room.'
- e. 然後 吃飯
ranhou chifan
then eat meal
'Then, (he) ate some food.'
- f. 一點 都 不 需要 我 操心
yidian dou bu xuyao wo caoxin
at all all no need I worry
'I did not have to worry about him at all.'

The clauses in (126) are translated into glue logic formulae as below.

- (127) a. π_1 : $\text{mingming}'(x) \wedge \text{behave-well}'(x)$
b. π_2 : $\text{return_home}'(y) \wedge y = ?$
c. π_3 : $\text{homework}'(o) \wedge \text{do}'(p, o) \wedge p = ?$
d. π_4 : $\text{room}'(z) \wedge \text{of}(z, u) \wedge \text{tidy_up}'(u, z) \wedge u = ?$
e. π_5 : $\text{meal}'(q) \wedge \text{eat}'(r, q) \wedge r = ?$

This example also involves the case where the clauses that come later form a chunk, which in turn is attached to the clauses that has come earlier. When π_2 comes into this discourse, it has two available attachment sites: π_0 and π_1 . However, π_2 cannot be attached to either one because the cue phrase *yi ... jiu ...* 'as soon as ...' specifies that it has to be attached to the clause following by *Narration*. Therefore, π_3 is attached to π_2 by *Narration*. When π_4 comes in, it has four available attachment sites: π_0 , π_1 , π_2 and π_3 . It cannot be attached to π_0 because of the underspecified anaphor. If it is attached to π_1 or π_2 , then the temporal sequence between π_3 and π_4 is lost. Therefore, π_3 is attached to π_4 . But, by which rhetorical relation? There is no cue phrase in the context. We need to look at the situation type of π_3 . As argued in Chapter 3, π_3 is an activity. The axiom for activities (111b) applies and specifies that π_3 is attached to π_2 by *Narration*. When π_5 comes in, there is no cue in the context either. Since π_4 is also an activity, (111b) applies again and π_5 is attached to π_4 by *Narration*. That is, in this discourse, π_5 is attached to π_4

by *Narration* to form π_{45} , which in turn is attached to π_3 by *Narration* to form π_{345} , which, again, is attached to π_2 by *Narration* to form π_{2345} . Finally, the large chunk π_{2345} is attached to π_1 by *Elaboration_E* because of the subtype relationship between the events described by π_2 to π_5 and π_1 .

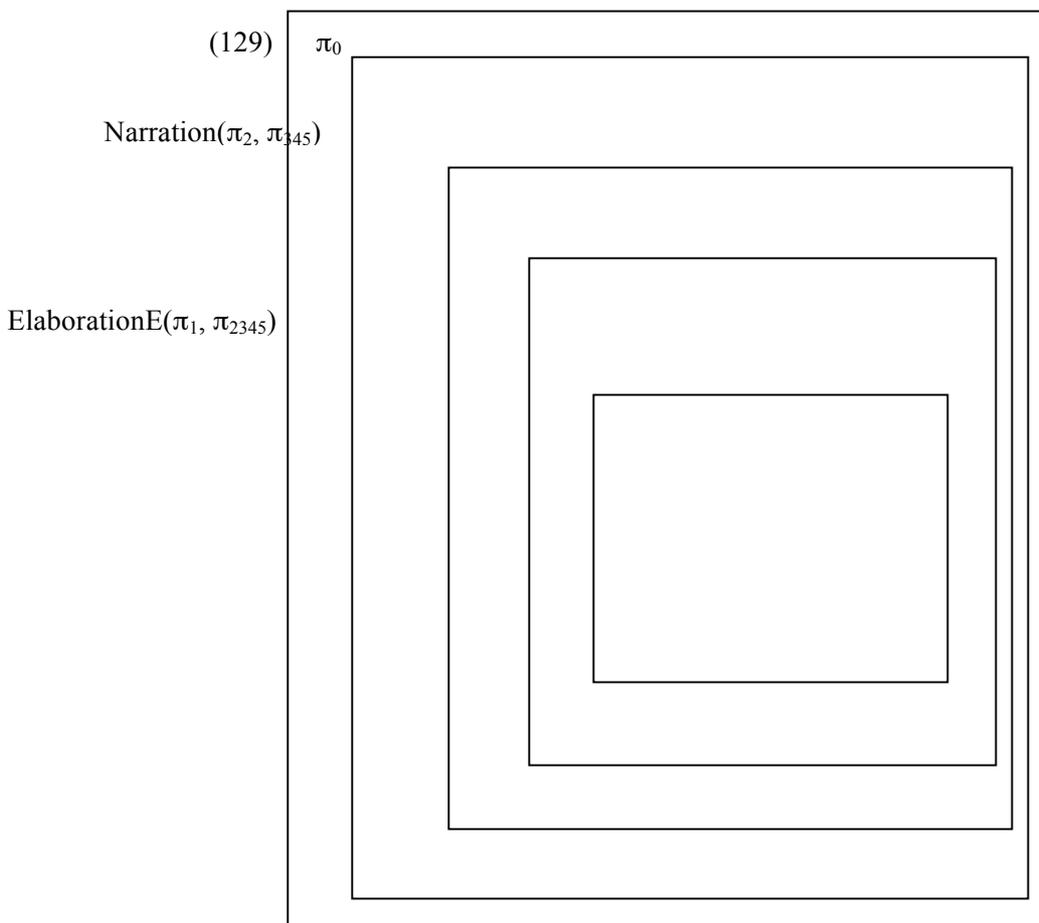
The fully specified glue logic formulae are given in (128) and the SDRS for (126) is given in (129).

- (128) a. π_1 : $\text{mingming}'(x) \wedge \text{behave-well}'(x)$
 b. π_2 : $\text{return_home}'(y) \wedge y = ? / y = x$
 $\text{Elaboration}_E(\pi_1, \pi_{2345})$
 c. π_3 : $\text{homework}'(o) \wedge \text{do}'(p, o) \wedge p = ? / p = x$
 $\text{Narration}(\pi_2, \pi_{345})$
 d. π_4 : $\text{room}'(z) \wedge \text{of}(z, u) \wedge \text{tidy_up}'(u, z) \wedge u = ? / u = p$
 $\text{Narration}(\pi_3, \pi_{45})$
 e. π_5 : $\text{meal}'(q) \wedge \text{eat}'(r, q) \wedge r = ? / r = u$
 $\text{Narration}(\pi_4, \pi_5)$

π_1 π_{2345} π_2 π_{345} π_3 π_4 π_5 q u r z
 π_2 : return home'(q) \wedge do'(p, q)
 π_1 : mingming (x) \wedge behave-well (x)
 π_0 : π_{2345} : π_{345} : \wedge u = ? / u = p
 π_{45} : π_5 : meal'(q) \wedge eat'(r, q)
 \wedge r = ? / r = u
 Narration(π_4 , π_5)

Chapter V

Narration(π_3 , π_{45})



In (126), π_2 to π_5 are attached to each other by *Narration* and this means that π_2 occurs before π_3 , which in turn occurs before π_4 , which finally takes place before π_5 . The big chunk π_{2345} is attached to π_1 by *Elaboration_E*, which means that the series of events from π_2 to π_5 are temporally included in π_1 . The inferred temporal relations account for a native speaker's intuition about this discourse.

Activities behave differently from telic events with respect to *Background_T*. The following is one example.

- (130) a. 走 在 林 間 小 徑
zou zai lin jian xiao jing
walk on woods in small trail
'(When you) walk along the small trail in the woods.'
- b. 清亮 的 鳥語 不時 在 耳 邊 響起
chingliang de niaoyu bushi zai er bian xiangqi
clear and loud DE bird song continuous at ear side be heard
'The sound of birds singing clearly and loudly can be heard continuously.'
- c. 不時 看見 許多 小鳥 從 頭頂 飛過
bushi kanjian xuduo xiaoniao cong touding feiguo
often see many bird from head-top fly-pass
'Many birds can often be seen flying over (your) head.'
- d. 偌大 的 水池 中 還 有 綠頭鴨
nuoda de shuichi zhong hai you lütouya
big DE pool in also have green-head duck
三五成群 嬉戲 著
sanwuchengqun xixi zhe
in group play Dur
'In the big pool there are green-headed ducks playing in groups.'
- e. 讓 人 彷彿 置身 室外桃源
rang ren fangfu zhishen shiwaitaoyuan
make people feel like locate in beautiful heaven-like place
的 感覺
de ganjue
DE feeling
'(all of these) make people feel like they are in a beautiful heavenly place.'

The sentences in (130) can be translated into glue logic formulae as below.

Chapter V

- (131) a. π_1 : trail'(x) \wedge small'(x) \wedge walk_on'(you', x)
 b. π_2 : bird_song'(y) \wedge loud(y) \wedge clear(y) \wedge hear'(z, y) \wedge z = ?
 c. π_3 : bird'(o) \wedge see'(p, o) \wedge p = ?
 d. π_4 : pool'(q) \wedge big'(q) \wedge duck'(r) \wedge play_in'(r, q)

In this example, π_4 is attached to π_3 by *Parallel* to form π_{34} , which in turn is attached to π_2 by *Parallel* to form a chunk π_{234} . They are attached by *Parallel* because they are structurally parallel and they all describe the things observed on the trail. Then π_{234} is attached to π_1 by *Background_T*, as argued in Chapter Three. The fully specified glue logic formulae are given in (132) and the SDRS in (133).

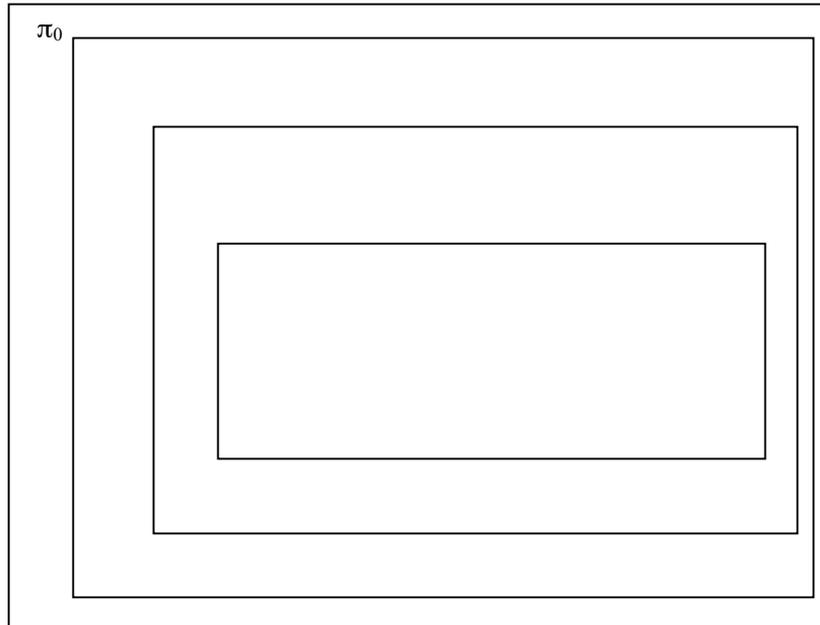
- (132) a. π_1 : trail'(x) \wedge small'(x) \wedge walk_on'(you', x)
 b. π_2 : bird_song'(y) \wedge loud(y) \wedge clear(y) \wedge hear'(z, y)
 \wedge z = ? / z = you'
 Background_T(π_1 , π_{234})
 c. π_3 : bird'(o) \wedge see'(p, o) \wedge p = ? / p = z
 Parallel(π_2 , π_{34})
 d. π_4 : pool'(q) \wedge big'(q) \wedge duck'(r) \wedge play_in'(r, q)
 Parallel(π_3 , π_4)

π_1 π_{234} π_2 π_3 π_4 Y Z r q
 π_1 : $\text{train}(x) \wedge \text{small}(x) \wedge \text{walk_on}(y) \wedge \text{bar}(y) \wedge \text{R} = z$
 π_0 : $\text{hear}(z, q) \wedge \text{play_in}(r, q)$
 π_{234} : π_{34} : $\text{Parallel}(\pi_3, \pi_4)$

Parallel(π_2, π_{34})

Modeling (A)temporal Relations

Background_T(π_1, π_{234})



Parallel does not specify any temporal relation. Background_T is interpreted in the Satisfaction Schema:

$$(134) \quad (w, f) \llbracket \text{Background}_T(\pi_{234}, \pi_1) \rrbracket_M(w', g) \text{ iff} \\ (w, f) \llbracket K_{\pi_1} \wedge K_{\pi_{234}} \wedge \phi_{\text{Background}_T(\pi_{234}, \pi_1)} \rrbracket_M(w', g)$$

The meaning postulate (113d) says that temporal overlapping is evoked when an activity serves as temporal background. Therefore, the event described by π_1 temporally includes the events described by π_2 to π_4 . This inference accords with a native speaker's intuition about this discourse.

Finally, the following are three examples of states. One example demonstrates the default function of states and the other two illustrate the difference between individual-level states and stage-level states with respect to *Narration*.

π_0 : π_1 : setzer'(x) \wedge this_violin'(y) \wedge own'(x, y)
 π_2 : concert'(z) \wedge nearly_1000'(z) \wedge use'(o, p, in(z))

Background_T(π_2 , π_1)

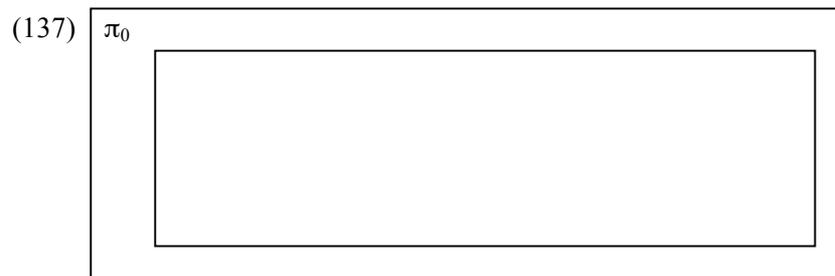
Chapter V

- (135) a. 賽則爾 擁有 此 琴 長達 十 年
 Setzer yongyou ci qin changda shi nian
 Setzer own this violin as long as ten year
 'Setzer owned the violin for as long as ten years.'
- b. 在 全 世 界 各 地 的 近 千 場
 zai quan shijie ge di de jin qian chang
 at whole world each place DE nearly thousand CL
 演奏會 都 用 此 琴
 yanzouhui dou yong ci qin
 concert all use this violin
 '(He) used the violin n nearly 1000 concerts everywhere in the world.'

This is a shortened version of one of the examples of *Background_T* of states discussed in Chapter Three. The clauses can be translated into glue logic formulae as below.

- (136) a. π_1 : setzer'(x) \wedge this_violin'(y) \wedge own'(x, y)
 b. π_2 : concert'(z) \wedge nearly_1000'(z) \wedge use'(o, p, in(z))
 \wedge o = ? \wedge p = ?

There is no cue in the context to specify which rhetorical relation connects π_2 to π_1 . The axiom (1c) applies and specifies that π_2 is attached to π_1 by *Background_T*. *o* is resolved to *x* and *p* is resolved to *y*. The SDRS for this discourse is given in (137). *Background_T* is interpreted in the Satisfaction Schema in (138).



- (138) (w, f) [*Background_T*(π_2 , π_1)]_M(w', g) iff

$$(w, f) \llbracket K_{\pi_1} \wedge K_{\pi_2} \wedge \phi_{\text{Background}_T(\pi_2, \pi_1)} \rrbracket_M (w', g)$$

In this case, *Background_T* specifies its regular temporal relation – temporal overlapping. That is, the state described by π_1 temporally overlaps the event described by π_2 . This is an accurate inference and accords with a native speaker’s intuition about this short passage.

The next example is one where a stage-level state is involved with *Narration*.

- (138) a. 當 國王 知道 有人 叛變 採取 行動
dang guowang zhidao you ren panbian caiqu xingdong
when king know have person rebel take action
的 時候
de shihou
DE time
‘By the time the king knew that someone had started a mutiny
and took action,’
- b. 已經 太 遲 了
yijing tai chi le
already too late Prc
‘it was already too late.’

The pertinent sentence here is (139a). (139a) contains two eventualities: the king knew about some mutiny and the king took action. The two clauses describing these two eventualities are translated into the glue logic formulae as in (140). The ‘occasion’ relationship between *know about a mutiny* and *take action* specifies that these two clauses are connected by *Narration*.⁴⁶

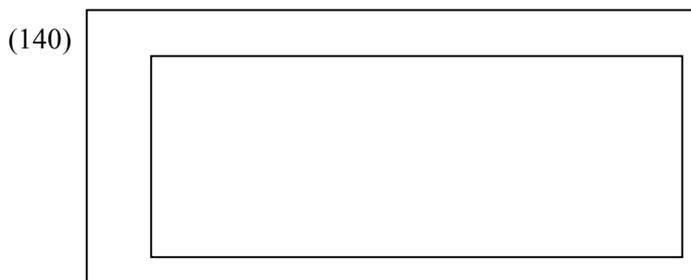
- (139) π_1 : king’(x) \wedge mutiny’(y) \wedge know’(x, y)
 π_2 : action’(u) \wedge take’(v, u) \wedge v = ?/v = x
Narration(π_1, π_2)

⁴⁶ These two clauses, then, serve as a temporal background, as indicated by the cue phrase *dang...de shihou* ‘when’. To simplify the demonstration, this part is omitted from the process of the construction of the SDRS for (139).

⁴⁰ $\pi_1 \pi_2 x y u v$
 π_1 : king'(x) \wedge mutiny'(y) \wedge know'(x, y)
 π_2 : action'(u) \wedge take'(v, u) $\wedge v = ?/v = x$

Narration(π_1, π_2)

Chapter V



Since π_1 is a stage-level state, when Narration(π_1, π_2) is interpreted in the Satisfaction Schema, the meaning postulate (113b) predicts that the prestate of the event described by π_2 temporally overlaps the time after the SigP of the state marked as π_1 . This inference also correctly describes the temporal relation between these two eventualities.

The last example is one where an individual-level state is involved with *Narration*. The example shows how the meaning postulates and SDRT can rule out the possibility that the time of an individual-level state is advanced.

- (141) a. 總統 很 重視 貧困 學童
 zongtong hen zhongshi pinkun xuetong
 President very take seriously poor school children
 無法 負擔 營養 午餐費 這件事
 wu fa fudang yingyang wucan fei zhe jian shi
 no way afford nutritious lunch fee this CL issue
 'The President took the issue that poor school children could not afford lunch seriously.'
- b. 然後 交待 行政院 在 短期
 !ranhou jiaodai xingzhengyuan zai duan qi
 then tell Executive Yuan at short time
 內 解決 這個問題
 nei jie jue zhe ge wenti
 within solve this CL problem
 '!Then/Therefore, (he) told the Executive Yuan to solve this problem within a short period of time.'

π_1 π_2 π_3 u v p q
 π_1 : issue'(x) \wedge president'(y) \wedge take_seriously'(y, x) = y
 π_2 : executive_yuan'(u) \wedge tell'(v, u) \wedge $v = ? / v = y$
 π_3 : problem'(p) \wedge solve'(q, p) \wedge $p = x \wedge q = ? / q = u$
 π_{23} :
 Elaboration(π_2, π_3).

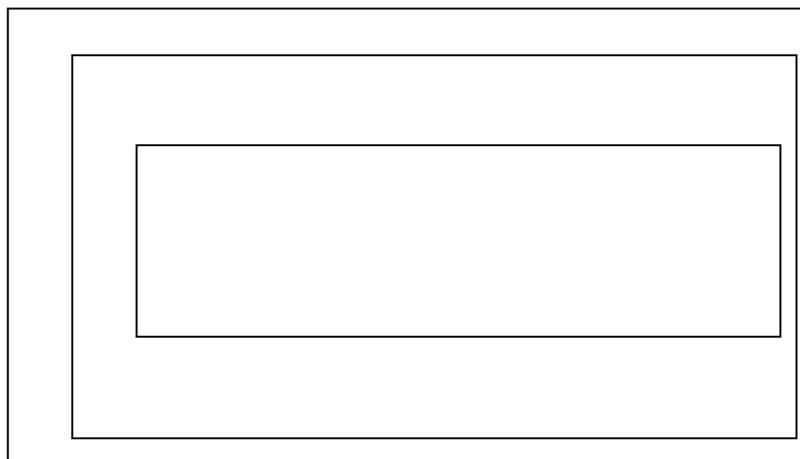
Narration(π_1, π_{23})

Modeling (A)temporal Relations

To simplify the glue logic formulae, only the most relevant information in the example above is translated. The cue phrase *ranhou* 'then' specifically tells us that these two clauses are connected by *Narration*. Asher and Lascarides (2003: 283-287) propose that a clausal complement is connected to the clause that contains the verb taking the clausal complement by *Elaboration*. Therefore, we have fully specified glue logic formulae as (143), and the SDRS as (144).

- (142) a. π_1 : issue'(x) \wedge president'(y) \wedge take_seriously'(y, x)
 b. π_2 : executive_yuan'(u) \wedge tell'(v, u) \wedge $v = ? / v = y$
 Narration(π_1, π_{23})
 c. π_3 : problem'(p) \wedge solve'(q, p) \wedge $p = x \wedge q = ? / q = u$
 Elaboration(π_2, π_3)

(143)



There are two reasons that rule out the possibility that (142) is a coherent discourse. First, the constraint (112b) is violated. This constraint stipulates that if a state is connected to the following clause by *Narration*, the state must be stage-level. Secondly, when Narration(π_1, π_{23}) is interpreted in the Satisfaction Schema, no meaning postulate can be found for an individual-level state involving *Narration*. Therefore, the temporal relation between π_1 and π_2 cannot be determined. This indetermination is why (143) is incoherent. Please note that the indetermination of a temporal relation is different from the specification

of no temporal relation. The meaning postulates in (114) specify no temporal relations. When two clauses are connected by a rhetorical relation that specifies no temporal relations, these two clauses are not temporally organized, and an atemporal relation is one type of relationship between clauses. However, when the temporal relation between two clauses cannot be determined, the relationship between these two clauses is unknown. To put it another way, we do not know why these two clauses are put together. The clauses in a coherent discourse must be related to each other. Two unrelated clauses cannot make a coherent discourse.

Finally, the following is an one example where the default atemporal relation is overridden. We have argued in Chapter Four that explicit temporal information in a discourse can override the default atemporal relation. The example below illustrates this point.

- (144) a. 梁 建鋒 所 使用 的 小 提 琴 係 由 奇 美 文 化
liang jianfeng suo shiyong de xiaotiqin xi you qimei wenhua
Liang Jianfeng use Rel violin be from Qimei culture
基 金 會 所 提 供 的 1738 年 製 名
jijinhui suo tigong de yiqisansi nian zhi ming
foundation provide Rel 1738 year made famous
琴 山 多 賽 拉 芬
qin shanduo sailafen
violin Sando Selifen
'The violin used by Jianfeng Liang is a famous Sando Selifen
violin made in 1738 and is provided by the Qimei Cultural
Foundation.'
- b. 賽 拉 芬 1665 年 出 生 於 義 大 利 北 部 的
sailafen yiliuliuwu nian chusheng yu yidali bei bu de
Selifen 1665 year be born at Italy north part DE
烏 黛 因
Udine
Udine
'Selifen was born in Udine, the northern part of Italy, in
1665.'

This is an example of *Elaboration_{NP}*, where the violin-maker mentioned in (145a) is elaborated on. Although this rhetorical relation

$\pi_1 \pi_2 x y z w e e'$

$\pi_1: \text{jianfeng_liang}'(x) \wedge \text{violin}'(y) \wedge \text{selifen}(z) \wedge \text{use}(x, y, e)$

$\wedge \text{make}'(z, y) \wedge \text{ST} < e$

$\pi_2: \text{selifen}'(z) \wedge \text{italy}'(w) \wedge \text{born_in}(z, w, e') \wedge 1665(e')$

$\text{Elaboration}_{\text{NP}}(\pi_1, \pi_2)$

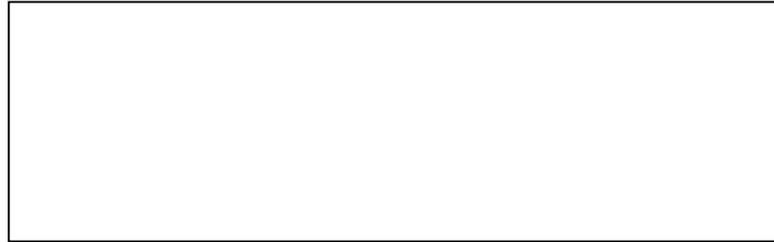
Modeling (A)temporal Relations

does not specify any particular rhetorical relation, two pieces of temporal information are provided in the discourse. The first is that this excerpt is from an advertisement for a violin performance. Therefore, the time of (145a) is in future of the speech time. The second one is that the birth year of the violin maker is given as 1665, which is obviously in a distant past. The contrast between these two times indicates a temporal relation, which can override the atemporal relation indicated by *Elaboration*_{NP}.

The simplified version of the glue logic formulae for (145) is as (146) and the SDRS for this small passage is as (147).

- (145) a. $\pi_1: \text{jianfeng_liang}'(x) \wedge \text{violin}'(y) \wedge \text{selifen}(z) \wedge \text{use}(x, y, e)$
 $\wedge \text{make}'(z, y) \wedge \text{ST} < e$
b. $\pi_2: \text{selifen}'(z) \wedge \text{italy}'(w) \wedge \text{born_in}(z, w, e') \wedge 1665(e')$
 $\text{Elaboration}_{\text{NP}}(\pi_1, \pi_2)$

(146)



When $\text{Elaboration}_{\text{NP}}(\pi_1, \pi_2)$ is interpreted in the Satisfaction Schema, the meaning postulate (114a) stipulates that by default no temporal relation exists between π_1 and π_2 . However, the event time of π_1 is in the future of the speech time (ST), which in turn is in the 'future' of the Year 1665, in a sense. Therefore, the temporal information indicated in this discourse overrides the atemporal relation specified by *Elaboration*_{NP} and specifies a temporal relation.

In this section, I demonstrated how the axioms in (111), the constraints in (112) and the meaning postulates in (113) and in (114) can work in SDRT to infer correct temporal and atemporal relations, and rule out incoherent discourses.

5.4 Conclusion

Given the discussions of temporal and atemporal relations in Chapters Three and Four, I provide an SDRT account to infer those

Chapter V

relations. First, I proposed three axioms, based on which the default rhetorical relations for different situation types can be inferred. Then, I proposed three constraints, which stipulate under what circumstances certain rhetorical relations must or must not show up. Next, I proposed five meaning postulates to capture the temporal relations discussed in the previous two chapters. Finally, I proposed three meaning postulates for atemporal relations.

With the axioms, constraints, meaning postulates ready, I demonstrated how SDRT can correctly predict the temporal or atemporal relations and rule out incoherent discourses. In essence, the axioms provide default rhetorical relations, the meaning postulates help to determine temporal or atemporal relations when rhetorical relations are interpreted in the Satisfaction Schema, and the constraints function to filter out the cases where rhetorical relations specify temporal relations contradictory to the semantics of certain situation types.

CHAPTER VI CONCLUDING REMARKS

6.1 Summarizing

In this book, I establish that in Mandarin temporal adverbials determine temporal relations, and that rhetorical relations take over the duty of deciding temporal relations when there is no temporal adverbial or aspect marker in the context. I argue in Wu (2004, 2005b, 2006a, to appear) that aspect markers in Mandarin affect temporal relations via rhetorical relations by either specifying a default rhetorical relation or setting a constraint on rhetorical relations. In this book, I argue that, when there is no aspect marker, situation types also influence temporal relations via rhetorical relations. While telic events behave similar to the perfective *le* and atelic eventualities to the imperfective aspects, situation types manifest significant differences.

Both achievements and accomplishments indicate *Narration* when the context does not provide any clue as to rhetorical relations, just like the perfective *le*. However, unlike the studies reviewed in Chapter Two, achievements have a different behavior in terms of *Elaboration_E*. *Elaboration_E* requires accessing the internal process. An achievement does not have a process. Therefore, *Elaboration_E* can only access the preparatory process that leads to the single point in the temporal schema of an achievement. *Elaboration_E* does not have different behavior with respect to accomplishments because they have an internal process to be accessed. Other rhetorical relations can connect events in as much as they do not specify a temporal relation violating the constraint on *Elaboration_E* and there are cues in the context specifying those rhetorical relations.

Atelic situations do not behave in parallel. Activities by default specify *Narration* because no activity lasts forever when it is in use. In terms of *Narration*, activities behave like a telic event. However, activities behave very differently from telic events in terms of *Background_T*. The time telic events provide as temporal background is

the time after the events culminate. However, an activity provides its process as temporal background. That is, although rhetorical relations and a past context can impose a final endpoint on an activity, only the final endpoint imposed by rhetorical relations such as *Narration* and *Explanation* can be accessed by other eventualities in the same discourse, but a final endpoint imposed by a past context cannot. This phenomenon may suggest that, in Mandarin, tense is actually a property of a coherent discourse, but not of a single clause or sentence.

The default function of a state is *Background_T*, just like the imperfective aspects. A stage-level state can be connected by *Narration* and under this circumstance *Narration* makes reference to the starting point of the stage-level state. An individual-level state cannot be connected by *Narration* since it does not have a starting point to make reference to. Unlike the case in *Narration*, both types of states can serve as a reason and can be connected by *Explanation*. While a stage-level state has a starting point that can temporally precede the result(s), an individual-level state can last longer than the results and fulfill the CAUSE relationship to infer *Explanation*. That is, *Explanation* does not require the strict sense of temporal precedence that *Narration* needs. A state cannot be elaborated on because it is homogeneous and no details can be provided. However, a state can elaborate on an event. When an event is elaborated on by a state, the event is a proper temporal part of the state, unlike the situation where an event elaborates on an event.

In addition to the interaction between situation types on the one hand and rhetorical relations and temporal relations on the other, with respect to the kind of temporal relations indicated by rhetorical relations, I report three new findings, which are not discussed in the previous works, such as Asher and Lascarides (2003), Wu (2004, 2005d, 2005b, 2006a, to appear), etc.

First, *Elaboration_E* can access the preparatory process of an achievement that can be pragmatically inferred although it is not encoded in the semantics of an achievement. This observation allows *Elaboration_E* to temporally precede an event, instead of temporally including an event. In addition, states have their own unique behavior in *Elaboration_E*. States cannot be elaborated on, but they can elaborate on events. While an elaborating event is temporally included in the elaborated event, an elaborating state behaves the other way around, i.e., the elaborated event is a proper temporal part of an elaborating state. Secondly, *Narration* does not strictly specify temporal precedence of a

whole eventuality. For a stage-level state, *Narration* makes reference to its starting point, rather than the whole state. Thirdly, although *Explanation* behaves similarly to *Narration*, *Explanation* does not require a strict temporal precedence that *Narration* cannot go without.

As for atemporal relations, in addition to *Parallel* and *Contrast* proposed in Asher and Lascarides (2003: 208-209), I propose three more rhetorical relations that do not indicate any specific temporal relation. They are *Elaboration_{NP}*, *Explanation* and *Background_I*. I argue that *Elaboration_{NP}* and *Background_I* do not specify any temporal relation and that any temporal relation that surfaces when the clauses are connected by *Elaboration_{NP}* or *Background_I* is due to the times provided in the context, not the rhetorical relation. *Explanation* is a little different. Instead of specifying no temporal relation, *Explanation* specifies temporal precedence. This temporal relation follows naturally from the function and the cue information for *Explanation*. Asher and Lascarides (2003: 204-207) suggest that a CAUSE relation is the cue information to infer *Explanation*. Intuitively, a cause occurs before a result, and at least a result does not occur before a reason. However, as argued in Chapter Four, when *Explanation* involves generalizing sentences (clauses), the rhetorical relation loses its ability to specify any temporal relation.

The discussion about atemporal relations seem to support Smith's (2003: 25) proposal that generalizing sentences are not temporarily organized since the three rhetorical relations examined in Chapter Four do not specify any temporal relation when they involve generalizing sentences. However, in Section 3.3.1.1, I have argued that generalizing sentences (clauses) can be temporally organized when the sentences are grouped together to form a 'generalizing discourse', which means that the whole discourse describes a pattern that consists of several steps, but not any sequence of specific events.

6.2 Implications of the Study

The implications of this present study fall within two areas. The first area is in regard to a revision of the discussion in previous studies on temporal inference and anchorage, including Chang (1998), J. Lin (2003, 2006), Smith (1999), and Smith and Erbaugh (2001, 2005).

Chang (1998: 146-151) proposes that an activity describes a habitual or general event without any aspect marker. However, we can see from this book that this proposal is not true. An activity can describe a past

Chapter VI

event even although it does not go with any aspect marker. J. Lin (2003, 2006) proposes that the default viewpoint aspect of atelic events is durative or ongoing. This is not completely accurate for activities because an activity can behave like a telic event, which culminates and whose narrative time can be advanced. Smith and Erbaugh (2001, 2005) suggest that zero marked atelic situations are located in the present. However, activities are not necessarily located in the present. Zero marked activities can be located in the past. Smith (1999) observes that a perfective activity in English can advance the narrative time. Nevertheless, in Mandarin an activity does not have to be perfective to advance the narrative time. Activities can be terminated and advance the narrative time as long as the rhetorical relations require so.

The chapter concerning atemporal relations also has some implications in regard to Smith's (2003) ideas about generalizing sentences and the Information mode and also about atemporal relations. The discussions in this book clearly show that generalizing sentences can occur in more contexts than just the one that provides information. Generalizing sentences (clauses) can be elaborated on and serve as a reason or as a premise, all of which do more than just providing information. The Information mode alone does not cover so many different rhetorical functions of generalizing sentences (clauses).

In addition, though generalizing sentences can be temporally independent of other eventualities in the same discourse, they can also be temporally related to each other when they are grouped together and form a 'generalizing' discourse. Generalizing sentences do not describe eventualities anchored to a specific time, but the generalizing sentences in a generalizing discourse may temporally depend on each other.

The second area is in regard to 'tense' in Mandarin. In languages such as English, tense is a property of the main verb in a finite sentence or clause. However, the discussion of activities in this book implies that, in Mandarin, tense is a property of a coherent discourse, rather than a single clause or sentence. This is why, even though a past context can impose a final endpoint on an activity, the endpoint is not accessible.

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