Temporal Construals of Bare Predicates in Mandarin Chinese

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Temporal Construals of Bare Predicates

in Mandarin Chinese

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Promotors (Nantes):	Prof. dr. Hamida Demirdache Prof. dr. Orin Percus
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Overige leden:	Prof. dr. Brenda Laca Prof. dr. Lisa Matthewson Prof. dr. Wei-Tien Dylan Tsai Prof. dr. Henk Verkuyl

To my parents

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Abbreviations

1	first person
2	second person
3	third person
BP	bare predicate
CL	classifier
CL.PL	classifier for plurals
COMP	complementizer
CONJ	conjunctive subject
D	determiner
DET	determiner
DIR	directive transitivizer
DOU	distributive marker *dōu*
DUR	durative
ET	event time
FIN.LE	sentence final le
FUT	future
IMP	imperfective
INTR	intransitive
MOD	modal
NEG	negation (negative marker)
NOM	nominative case
NONFUT	nonfuture

OBL	oblique case
PAR	participial
PASSIV	passivizer
PAST	past tense
PERF	perfective (marker)
PL	plural
PP	prepositional phrase
PREP	preposition
PRES	present
PROG	progressive
PSV	passivizer
RT	reference time
SG	singular
SUBJ/SUJ	subject
TT	topic time
UT	utterance time
EXP	experiential marker

Chapter 1 Introduction

This thesis presents a study of the temporal interpretation of bare predicates (BPs) in Mandarin. By "bare predicates", we refer to predicates without any overt aspectual marker or particle that might contribute to the temporal interpretation of the sentence. It also aims to contribute to the study of sentences with BPs in general.

1.1 The motivations of this study

Mandarin is traditionally considered as a "tenseless" language (Li & Thompson 1981, Gōng 1991, Klein, Li & Hendriks 2000, Mei 2002, Lin 2006 among others), since it lacks the morphologically expressed tense that we find in "tensed" languages, such as English.[1]

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[1] Here is a nice sample of an overview of "tenseless" statements for Mandarin from Sybesma (2007:580):
" ... there is no inflectional morphology to express tense ..." (Klein, Li, and Hendriks 2000:723); "Mandarin has no markers for tense" (Li and Thompson 1981:13); "The temporal status of an event in Chinese is mainly indicated by time words or expressions" (Tiee 1986:90); "Tense is not a feature of Chinese grammar. An act or event is located in time by time words or context, not by the form of the verb" (Ramsey 1989:76); "The position of TT [topic time] on the time line ... must be marked by adverbials or left to the context" (Klein, Li, and Hendriks 2000:753); "[Mandarin] Chinese has no grammaticalized means to restrict TT [topic time] to some particular time span in relation to TU [time of utterance]" (Klein 1994:124); Chinese belongs to the type of languages that show "no formal distinction of the tenses in their verbs" (Mei 2002:46); "Chinese is a nontensed language" for several reasons, one being that "the verbal system of Chinese [has] no obligatory morphological marking of a past/non-past distinction" (Hu, Pan, and Xu 2001:1120); "Modern Chinese ... does not have the grammatical category of tense" (Gōng 1991:252); "Chinese ... is an aspect and not a tense language. ... The plotting of action along some sort of time axis ... is not a feature of Chinese" (Norman 1988:163); "[Chinese] utilizes various factors such as the information provided by

The *tensed* / *tenseless* contrast is exemplified with (1) and (2). (1a), which is a present-tensed sentence in English, describes a *present* eventuality[2]; that is, it states that Lily's happiness holds at the moment of the utterance. In contrast, (1b), which is past-tensed, describes a *past* eventuality, that is, Lily's happiness holds at a time (the day before the day of the utterance) prior to the utterance time (UT).

(1) a. Lily *is* very happy.

b. Lily *was* very happy yesterday.

The difference in morphological tense between (1a) and (1b) is lost in Mandarin, where both the present ((2a)) and the past ((2b)) eventualities of Lili's happiness are expressed by the sentence with *no* morphological tense marking, *Lìli hěn gāoxìng* 'Lili very happy'.

(2) a. Lìli hěn gāoxìng.
Lili very happy
'Lili is very happy.'

b. Zuótiān Lìli hěn gāoxìng.
yesterday Lili very happy
'Lili was very happy yesterday.

In contrast with the absence of morphological tense, Mandarin grammatical system has a variety of aspectual markers, which provide information on the perspective on the eventuality described by a predicate or a sentence.

Take (3) for instance. (3a) and (3b) have the same VP *kàn zhèiběn xiǎoshuō* "read this novel", which is modified by different aspectual markers, resulting in different aspectual interpretations. With the perfective marker *le*, (3a) describes a reading event prior to the UT, whereas with the progressive marker *zhèngzài*, (3b) describes an ongoing reading event at the UT. The English counterparts of (3) are given in (4). Notice that the Mandarin sentence in (3a) has overt

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default aspect, the tense-aspect particles, and pragmatic reasoning to determine the temporal interpretation of sentences'' (Lin, 2006:1)."

[2] We use the term "eventuality" to cover both states and events (Bach 1981).

aspect, but lacks overt tense; whereas its English counterpart (4a) has overt tense, but lacks overt aspect.

(3) a. Wǒ shàng-zhōu kàn *le* zhèi-běn xiǎoshuō.
1SG last-week look PERF this-CL novel
'I read this novel last week.'

b. Wǒ shàng-zhōu *zhèngzài* kàn zhèi-běn xiǎoshuō.
1SG last-week PROG look this-CL novel
'I was reading this novel last week.'

(4) a. I read this novel last week.

b. I was reading this novel last week.

The distribution of aspectual markers such as the perfective *le*, the sentence final *le*, the experiential marker *guo*, the progressive *(zhèng)zài* and the durative *zhe*, have been studied by many scholars: Chao (1968), Li & Thompson (1981), Smith (1991), Klein, Li, & Hendriks (2000) and Lin (2006), among others. However, predicates in their bare forms, that is, without any aspectual marking, are to our knowledge comparatively less studied (Smith & Erbaugh (2005), Lin (2006) and Klein & Li (2002)).

The reason why previous studies attach great importance to aspectual markers (compared to bare predicates) lies probably in their predominant presence in Mandarin sentences and the important role they play in the temporal/aspectual interpretation of these sentences. Tang & Lee (2000) notes an incompleteness effects in sentences with no aspectual marking. Tsai (2008) further points out that the incompleteness effects can be eradicated by a conjunction, as examplified by (5a-b), and the same effects are observed in some aspectually marked sentences, such as (6a). With the durative marker *zhe*, (6a) is ill-formed and the conjuction can save it from illformedness, as shown in (6b).

(5) a. *Akiù ná shū.
Akiu take book

b. Akiù ná shū, wǒ ná qīkān
Akiu take book 1SG take journal
'Akiu takes books, and I journals.'

(6) a.*Akiù kàn-zhe diànshì.
Akiu watch-DUR TV

b. Akiù yìbiān kàn-zhe diànshì,
Akiu on.the.one.hand watch-dur TV
yìbiān xiě-zhe bàogào.
on.the.other write-DUR report
'Akiu is watching TV and writing the report at the same time.'

In Chapter 3 of this thesis, we show that Mandarin root clauses with eventive predicates yielding episodic readings *must be overtly marked for aspect*.

That episodic readings of eventive predicates are licensed by overt aspect concerns Mandarin *root clauses*.[3] In embedded clauses, however, episodic readings *can* be obtained with *no* aspectual marking. In particular, Sun (2015) points out that aspectually unmarked relative clauses allow episodic readings, as exemplified by (7). The relativized NP containing a *bare* eventive predicate *tiào bāléiwǔ* 'dance ballet' can receive temporally free episodic readings; that is, it could be used to refer to a *particular* past, present or future dancing event, contrary to (8), the root clause with the same bare predicate. Uttered out of the blue, (8) only allows a generic reading, according to which the girl in question is a ballet dancer.[4]

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[3] This generalization can probably carry to *finite* complement clauses. Since the finite/non-finite distinction and the properties of BPs in embedded clauses are well beyond the scope of this thesis, we leave this issue for further research.

[4] The future reading is acceptable in a scenario where (8) is a part of a conversation about a planned future event, such as the case in (i). (*Imagine that A and B are backstage, talking about a show that is starting in an hour*.)

(i) A: Nǐ zhī-bu-zhīdào yíhuìr shéi tiào bāléiwǔ?
2SG know-NEG-know in.a.moment who dance ballet
'Do you know who will dance ballet in a moment?"
B: Nà-ge nǚhái tiào bāléiwǔ.
that-CL girl dance ballet.
'That girl will dance ballet.'

(7) Mǎlì pāishè-guo [$_{NP}$ tiào bāléiwǔ de nǚhái].
Mali film-EXP dance ballet DE[5] girl.
'Mali filmed a / the girl who dances ballet.'
'Mali filmed a / the girl who is dancing / danced / will dance ballet.'

(8) Nà-ge nǚhái tiào bāléiwǔ.
that-CL girl dance ballet.
'That girl dances ballet.'
* 'That girl is dancing / danced ballet.'
?? 'That girl will dance ballet.'

Sun (2015:76)

This thesis focuses on bare predicates in root clauses. We set aside here the temporal interpretation of bare predicates in subordinate clauses (complement clauses, relative clauses, adjunct clauses, etc.). The reader is invited to consult Sun (2015) for discussion of the temporal construals of bare predicates in relative clauses, and Lin (2003, 2006) for discussion of temporal reference in subordinate clauses.[6]

In both A and B's utterance above, the bare predicate *tiào bāléiwǔ* 'dance ballet" allows a future reading. This seems to challenge the hypothesis that episodic construals of eventive predicates are allowed by overt aspect. We discuss future construals of bare predicates in Chapter 5, where we argue that the apparently "episodic" future readings of bare sentences involve a modal component, and these bare sentences assert a present or past *plan* for a future event, rather than a future event. (See Copley 2008b)

[5] "De" is a particle of modification. It could be a genitive or an associative marker.

[6] In particular, Sun (2015) investigates the correlations between temporal readings of relative clauses (RCs) and the interpretation of their embedding Noun Phrases (NPs) in Mandarin. It is pointed out there that while eventive BPs only allow generic readings in root clauses, they *also allow episodic readings* in RCs. Evidence is provided against a "scope analysis" (Ladusaw, 1977; Ogihara, 1996; Stowell, 1993 & 2007, Abusch 1988), which has been proposed to account for temporally independent interpretations of relative clauses in English. Sun (2015) argues that the interpretations of sentences with

Note that it is not a characteristic of all morphologically tenseless languages to overtly mark aspect in licensing episodic readings for eventive predicates. Bare eventive predicates allow *episodic past* readings in both Capeverdean ((9a)) and Haitian Creole ((9b)), and they yield either *episodic present* or *past* readings in St'át'imcets ((10a)) and Sḵwx̱wú7mesh ((10b)).

(9) a. Djon kanta.
Djon sing
'Djon sang.'

Capeverdean (Pratas & Hyams 2010:379)

b. Pyè vann bèf yo.
Pyè sell cattle DET
'Pyè sold the cattle.'

Haitian Creole (Déchaine 1991:37)

(10) a. sáy'sez'-lhkan.
play-1SG.SUBJ
'I played.' / 'I am playing.'

St'át'imcets (Matthewson 2006:676)

b. chen xay-m.
1SUBJ.SG laugh-INTR
'I laughed.' / 'I am laughing.'

Sḵwx̱wú7mesh (Bar-el 2005:123)

What is special in the languages cited in (9) and (10) is that they have a system that permits the bare form of eventive predicates to form felicitous sentences yielding episodic events. There are debates in the

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"independently" temporally construed RCs in Mandarin suggest that the embedding NP does not scope out of the matrix VP, but rather remains *in-situ*. Consequently, a non-scope analysis better accounts for temporal construals of Mandarin RCs.
A careful analysis of the temporal interpretation across subordinate clauses in Mandarin, however, remains beyond the scope of this thesis. Given the widespread variation in the properties of bare predicates across embedded clauses (as compared to root clauses), we leave these issues open here for future investigation.

literature on the temporal interpretations of BPs in these morphologically tenseless languages, where BPs yield episodic readings.

In contrast, the temporal interpretation of BPs in Mandarin is less discussed, probably due to the ill-formedness of many sentences like (11a) and (11b) in the absence of aspectual marking. The bare eventive predicates *dǎo* 'fall' and *huà yì-fú huàr* 'draw a picture' cannot have their temporal reference fixed by a temporal adverbial alone. An overt aspect is required.

(11) a. Shàngzhōu nèi-kē shù dǎo *(le).
last.week that-CL tree fall PERF
'That tree fell down last week.'

b. Wǒ jiàndào Lìchuān de shíhou, tā
1SG see Lichuan DE moment 3SG
*(zhèngzài) huà yì-fú huàr.
PROG draw one-CL drawing.
'When I saw Lichuan, she was drawing a picture.'

Notice that (11a) and (11b) are ill-formed in the absence of overt aspect, in contrast to (2a) and (2b), which are perfectly grammatical without aspect. Although the illformedness of sentences like (11a, b) has been observed and studied by reserchers such as Tang & Lee (2000) et Tsai (2008), the contrast between these ill-formed bare sentences and the well-formed bare sentences like (2a, b) has never been the focus of the previous studies to our knowledge. However, an analysis of temporal interpretation in Mandarin should be able to explain the contrast between (11) and (2); in other words, the illformedness of the bare form of (11) and the derivation of the temporal interpretation of sentences like (2).

The current study contributes to filling this cap by systematically examining sentences containing BPs. We would like to emphasize that the properties of *bare predicates*, that is, aspectually unmarked predicates, are important for our understanding of the contrast between (11) and (2), of how the meaning of a sentence *without* overt aspect is derived and of how aspectual markers contribute to the meaning of a sentence *with* overt aspect.

Concretely, this thesis investigates the temporal interpretation of *root clauses* with BPs. We show that:

i) Root clauses with stative BPs describe states and those with eventive BPs yield generic construals.

ii) All stative predicates can appear without aspect.

iii) Eventive predicates that appear without overt aspect cannot have their temporal reference fixed by an adverb alone.

These observations, which have been made before by scholars such as Tang & Lee (2000), Tsai (2008), Klein et al. (2000) among others, follow from the hypotheses that:

H1. Stative and eventive BPs are of different semantic types (Katz 1995, 2003; Kratzer 1998). Stative BPs, which are properties of times, can combine directly with a time, while eventive BPs, which are predicates of events, combine with a time through the mediation of an aspect or a Q operator.

H2. Aspect must be overtly marked in Mandarin.

It is important to mention that the issue of how to derive the temporal interpretation of aspectually unmarked sentences in Mandarin has been addressed by scholars like Smith & Erbaugh (2005), Smith (2008), Lin (2006). They attribute the different temporal interpretations of bare sentences to different "Vendlerian classes" (Vendler 1967) and the "*telic* / *atelic* split" of the predicates, thus predicting *states* and *activities* to have the same default ongoing interpretation, *accomplishments* and *achievements* to yield past readings[7]. Their proposals are inspired by the analysis of Bohnemeyer & Swift (2004), which is very popular in the literature on temporal interpretation of aspectually unmarked sentences. However, there are empirical problems with their arguments, which will be discussed in Chapter 3.

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[7] Based on the lexical aspect of the predicate, Vendler (1967) distinguishes four classes: *states, activities*, *accomplishments* and *achievements*. Chapter 2 (Section 2.2.1) will discuss lexical aspect in more detail.

1.2 Tense *vs.* tenselessness

It is a hotly debated issue whether a language that lacks overt tense morphology can also have "tense". One of the main sources of the disagreement among scholars lies in the definition of "tense".

The most classic criterion for judging whether a language is morphologically tensed or not is to see whether its grammatical system does or does not have a phonologically realized "tense" morpheme, which temporally locates the Reference Time (RT)[8] of an eventuality with respect to the UT. This is the view that we just presented in Section 1.1. The phonologically realized tense is commonly referred to as *morphological tense*.

Languages like English appear to have a past tense morpheme *-ed*, while languages like Korean appear to have a present tense morpheme *–nun*. Under this definition, Korean and Indo-European languages such as English and French are "tensed" languages, in contrast to Capeverdean, Haitian Creole, St'át'imcets and Mandarin, which are considered as "tenseless languages".

Aside from defining tense based on the phonologically realized tense morpheme, there are other ways to define it, e.g. *syntactic tense* and *semantic tense*. These two definitions are closely related to but very different from *morphological tense* discussed so far. A brief explanation of these two definitions are stated below, and a more detailed discussion can be found in Chapter 5:

Syntactic tense: A language has syntactic tense, if it has a TP projection in the syntax that serves to temporally locate events with respect to UT. Consequently, a language is syntactically tenseless if it has no TP projection.

Semantic tense: A language has semantic tense, if it has a head introducing an element that semantically relates the RT of eventualities to the UT. Therefore, a language is semantically tenseless if this element, which is subject to indexical conditions, is absent (cf. Deal 2010:1).

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[8] "Reference time" refers to a time span about which a sentence makes assertion. See Chapter 2, Section 2.2.3 for more discussion.

Clarifying different definitions of "tense" is important for the current study for the following reasons: firstly, an analysis that aims to capture the temporal interpretation of bare sentences in Mandarin, a language with no morphological tense, would probably have to make assumptions about whether or not it has *syntactic* and/or *semantic tense*; secondly, it helps us to understand the (*tensed* or *tenseless*) analyses of temporal construals in morphologically tenseless languages.

Given these different definitions of tense, whether or not there is tense in a language might depend on the definition one has in mind. Whether or not it makes sense to adopt a *syntactically* tensed or tenseless analysis for morphologically tenseless languages is a hotly debated issue cross-linguistically. Both Shaer (2003) and Bittner (2005) defend a syntactic tenseless treatment of West Greenlandic, arguing that it lacks a tense node encoding the relations between reference time and utterance time. Tonhauser (2011) adopts a tenseless treatment for Paraguayan Guarani. Lin (2006) argues against having an empty inflectional node in Mandarin. For him, there is no syntactic TP projection in Mandarin and the temporal interpretation is derived from default viewpoint aspect, the overt aspect and pragmatics. Researchers like Matthewson (2006) and Sybesma (2007) on the other hand defend a tensed analysis for St'át'imcets and Mandarin. According to Matthewson (2006), St'át'imcets has a covert tense, TENSE, which restricts the reference time of an eventuality to non-future times. Sybesma (2007) claims that Mandarin has a syntactic T projection. He argues (following Matthewson (2002)) that the temporal interpretation of a Mandarin sentence can only be manipulated using linguistic means, not on the basis of pragmatics or other non-linguistic information.

We return to the discussion on tense *vs*. tenselessness in Chapter 5 with more detailed illustration of the different proposals mentioned above. With respect to the "future" construals of sentences with BPs, we further argue there that Mandarin has a morphologically null tense, NONFUT, which restricts the temporal reference of bare root clauses to non-future times. The "future" construals of bare sentences are derived from a covert modal component involving a *non-future plan* for the eventuality described by the proposition (Copley 2008b).

1.3 Overview of this thesis

The remainder of the thesis is organized as follows:

Chapter 2 introduces the theoretical background on tense and aspect underlying the proposals developed in this thesis by briefly reviewing two approaches to tense semantics -*tense logic* semantics and the *referential* approach to tense-, highlighting issues such as the notion of lexical *vs*. grammatical aspect, or tense/aspect interactions. We present the event semantics framework of Katz (2003) and Kratzer (1998), based on which one of the core hypotheses of this thesis is built.

Chapter 3 begins the investigation of temporal construals of Mandarin bare sentences by examining predicates of different Vendlerian classes, yielding to a contrast between *stative* and *eventive* predicates: all stative predicates can appear without aspect, yielding stative readings; whereas eventive predicates require overt aspect to allow episodic readings; and bare eventive predicates only yield generic readings. This contrast is then explained by the hypothesis about the different argument structures of *stative* vs. *eventive* predicates. This chapter then provides evidence against some alternative analyses of temporal interpretation of bare predicates in Mandarin and discusses some apparent counterexamples to the argument structure analysis.

Chapter 4 looks at sentences with bare eventive predicates yielding *generic* construals. After an overview of theoretical accounts of genericity -*quantificational*, *aspectual* and *modal* approaches-, this chapter argues for a quantificational treatment of generic sentences, which attributes the generic construals of sentences with bare eventive predicates to overt quantificational adverbs or the covert Q-operator.

Chapter 5 deals with the "future" construals of bare sentences by investigating the interaction of bare predicates and time adverbs, which shows that future time adverbs, unlike past and present time adverbs, cannot fix the temporal reference of bare sentences by themselves, an observation that challenges the initial analysis. This chapter then argues for a tensed treatment of Mandarin (a covert tense NONFUT restricting the temporal reference of bare sentences to non-future times), supported by empirical evidence. The striking similarity

between Mandarin bare future sentences and *futurate* sentences in English and French leads to the conclusion that the future construals in both morphologically tensed and tenseless languages result from the same semantic component, a modal ingredient involving a *plan*. Mandarin differs from English/French in that Mandarin bare future sentences asserts not a *present*, but a *non-future* plan.

Chapter 6 concludes the thesis by recapitulating the generalizations uncovered on the basis of the data presented in the previous chapters. It shows how these generalizations are captured by the set of hypotheses put forward. We then propose new perspectives for future research by drawing particular attention to variation in temporal interpretation across tenseless languages, as well as across *embedded* clauses in Mandarin itself. These insights extend beyond Mandarin to other tenseless languages, and crucially also to tensed languages, raising new empirical generalizations, puzzles and questions for future theoretical and typological research to empirically assess and answer.

Chapter 2 Tense semantics

This chapter reviews the theoretical background on tense and aspect.

In Section 2.1, we first examine two analyses of the semantics of tense - the traditional *tense logic semantics* introduced by Prior (1957, 1967) and later adopted by Montague (1973), and the *referential approach* developed by Partee (1973) and Heim (1994) - then we explain the advantage of a tense semantics based on intervals. Our analysis of the temporal interpretation of bare predicates in Mandarin (Chapter 3) will adopt a referential approach to tense.

In Section 2.2 we introduce two relevant notions of aspect: lexical aspect or *aktionsart* referred to as *situation aspect* (Smith 1991) and grammatical aspect referred to as *viewpoint aspect* (Comrie 1976, Smith 1991). Concerning situation aspect, we give an overview of Vendler's aspectual classification of predicates based on their syntactic and semantic properties, and we review tests to distinguish them and the limitations of these tests. Viewpoint aspect as presented in Section 2.2.2 concerns the temporal perspective of the speaker on the described eventuality. In particular, the distinction between perfective and imperfective aspect follows from how the described eventuality relates to a time, the "reference time", a notion proposed by Reichenbach (1947) and developed by Klein (1994) under the name of "topic time". The theories Reichenbach and Klein (1994) on tense and aspect have inspired a number of theoretical accounts for tense and aspect, including Kratzer (1998) and Katz (2003) that lay the theoretical foundations of our account of the temporal interpretation of bare predicates in Mandarin.

Section 2.3 presents the event semantics largely used in recent literature on tense and aspect. The analysis that we adopt to account for the contrast between temporal interpretations of stative BPs *vs*. eventive BPs in Mandarin is on the basis of the event semantics. Stative predicates differ from eventive predicates in their argument structure: stative predicates lack the "event argument" that eventive predicates have.

Section 2.4 recapitulates the notation used in this thesis.

2.1 Tense

In this section, we introduce two theoretical frameworks for analyses of tense: *tense logic semantics* and the *referential approach* to tense. We will discuss the limits of tense logic treatments, and we will give reasons for abandoning an approach based on tense logic in favor of the referential approach. We will adopt a version of the referential approach in our analysis of temporal interpretations of bare predicates in Mandarin.

2.1.1 The ontology of time

Concerning how to conceptualize time, there are two opposing views: time is either *discrete* or *continuous*. Both views suppose that there is a time line that is made up of linearly ordered moments. That is, for any moments m_1, m_2, either m_1 precedes m_2 ($m_1 < m_2$) or m_1 follows m_2 ($m_2 < m_1$) or m_1 and m_2 are identical ($m_1 = m_2$). The views differ in that, on the *continuous* view but not on the *discrete* view, time is *dense* and these moments thus behave like real numbers (Klein 2009). The density of the time line is defined in (1), where M is the set of moments (see also von Stechow 2009):

(1) $\forall m, m'' \in M\ [m<m'' \rightarrow \exists m'[m<m'<m'']]$

We take the position that time is continuous.

2.1.2 Tense logic semantics

One of the classic treatments of tense is the tense logic approach, introduced by Prior (1957, 1967), and adopted by Kamp (1971) and Montague (1974) in their analysis of tense in natural language.

Being an extension of propositional logic, tense logic makes the following assumptions: the denotation of a sentence is obtained from an interpretation function, which is time-dependent. The basic idea is that sentences may contain sentential operators ("semantic tenses") that shift the index at which a sentence is interpreted. Past tense (PAST) moves the index to the past and future tense (FUT) moves the index to the future. The semantics of the past tense (PAST) and the future tense (FUT) are given in (2) below, where *t* is a temporal index:

(2) For any sentence ϕ,
$[\![\text{PAST}\phi]\!]^t = 1$ iff there is a time t' such that t' < t and $[\![\phi]\!]^{t'} = 1$
$[\![\text{FUT}\phi]\!]^t = 1$ iff there is a time t' such that t < t' and $[\![\phi]\!]^{t'} = 1$

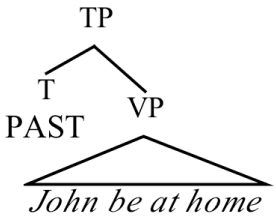
Since tense logic considers time as moments, the term "time" used in (2) should actually be understood as "moment".

According to the approach based on tense logic, natural language sentences have structures that include these operators, and these structures are evaluated at the utterance time. To say that a sentence is true is to say that its structure evaluated at the utterance time yields the value 1. A past tensed sentence like (3) would thus have a structure as in (7) and be interpreted as in (4):

(3) John was at home.

(4) $[\![\text{PAST John be at home}]\!]^t = 1$ iff there is a time *t'* such that $t' < t$ and such that John is at home at *t'*

(5)



A future tensed sentence like (6) has an analogous structure with FUT and the truth conditions given in (7):

(6) John will be at home.

(7) $[\![\text{FUT John be at home}]\!]^t = 1$ iff there is a time *t'* such that $t < t'$ and such that John is at home at *t'*

On this approach, only past and future tenses are assumed to contribute something to the truth conditions of a sentence. If present tense reflects the presence of a sentential operator at all, then it is one with a semantics that makes it vacuous, cf. (9).

(8) John is at home.

(9) $[\![$PRES John be at home$]\!]^t = 1$ iff John is at home at *t*

Some problems with this approach to tense based on tense logic have been pointed out by Dowty (1982), Galton (1984) and Partee (1984). Galton (1984) argues that the tense logic approach can be used to analyze sentences describing a state, but not sentences describing an event. Dowty (1982) provides a classic argument showing that this kind of analysis makes wrong predictions about the temporal readings of sentences with a time adverbial *yesterday*, like in (10):

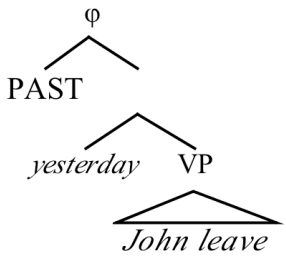
(10) John left yesterday.

If we treat the temporal adverb *yesterday* as a sentential operator just like tense, it will shift the temporal reference to a time that is included in the day before the utterance time, as shown in (11).

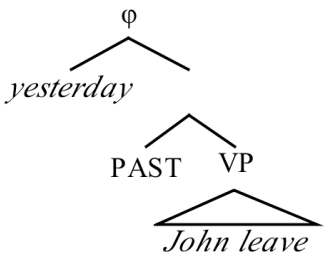
(11) $[\![$yesterday $\phi]\!]^t = 1$ iff there is a time t' such that t' is on the day before the day including t and such that $[\![\phi]\!]^{t'} = 1$

Thus a past tensed sentence containing an adverb *yesterday* should contain two operators: PAST and *yesterday*. The sentence in (10) will have two possible syntactic structures depending which operator (PAST or *yesterday*) takes wide scope:

(12)



(13)



When PAST scopes over *yesterday*, which is the case in (12), (10) should mean that the time of John's leaving is on the day before a time preceding the utterance time. When *yesterday* scopes over PAST, as illustrated in (13), the sentence should mean that John left at a time that precedes the day before the day including the utterance time. Neither of these two readings corresponds to the meaning of (10): the proposition *John left yesterday* means that there is a time *t* before the utterance time such that *t* is on the day before the day of the utterance and such that John's leaving is at *t*. Dowty then concludes that the Priorian analysis cannot capture the meaning of a sentence with a past time adverbial.

Another problem with the tense logic-inspired approach is pointed out by Partee (1984) with the example in (14):

(14) I didn't turn off the stove.

Following the denotation of the past tense given in (2) above, (14) should have two possible interpretations, depending on whether sentential negation NEG scopes above or below PAST: one according to which there is no time in the past at which I turned off the stove ('*I never turned off the stove in my life*') and another according to which there is (at least) a time before the speech time, at which I didn't turn off the stove. The truth conditions of the two readings are given in (15a-b).

(15) a. $[\![$ NEG [PAST [I turn off the stove]] $]\!]^t = 1$
iff $\neg \exists t'[\ t' < t \ \&\ [\![$ I turn off the stove $]\!]^t = 1\ ]$

b. ⟦[PAST [NEG [I turn off the stove]] ⟧^{t} = 1
iff ∃t'[t' < t & ⟦ I turn off the stove ⟧^{t} = 0]

Adapted from Kusumoto (1999:32)

(15b) is always true for a normal person who didn't spend all his time turning off the stove. Neither (15a) nor (15b) is the real meaning of (14) in the following scenario: imagine that (14) is uttered in a car halfway down the turnpike, and it means that in a *particular* time *interval* in the past (the interval during which I was making preparations to leave for example), I didn't turn off the stove. Thus, the Priorian system makes wrong predictions for the interpretation of (14).

Partee then suggests, as we show in the next section, that tenses are analogous to pronouns: both have referential, anaphoric and binding uses. Partee takes the analogy seriously and suggests that the interpretation of tenses works in just the same way as the interpretation of pronouns, and in particular that tenses are variables which may be bound or free – variables over times. Her treatment has become known as the 'referential treatment of tense'.

2.1.3 Referential approaches

The problem raised by Partee (1984) with a Priorian analysis of tense leads to a referential treatment of tense (Enç 1986, Heim 1994, Kratzer 1998): tenses are variables over times, and verbs take tenses as arguments.

The verb *love*, for instance, takes three arguments: an agent, a patient and a time, as shown in (17).[9] The logical form of a sentence like *John loved Mary* is represented in (18), where past tense PAST

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[9] We will imagine in the traditional way that the world is provided as a parameter of evaluation and that sentences are always evaluated with respect to the actual world. But we will generally omit the world parameter when specifying semantic values, and we will only mention the world of evaluation when it is relevant. The parameters of evaluation that we will write systematically are the assignment parameter and the context parameter.

bears an index *i* and refers to a particular time interval that must precede the utterance time.

(16) John loved Mary.

(17) $[\![\text{love}]\!]^{g,c} = \lambda y.\lambda x.\lambda t.$ x loves y at t

(18) $[\![\text{PAST}_i\ [\text{John love Mary}]\ ]\!]^{g,c}$
$= [\![\text{love}]\!]^{g,c}\ ([\![\text{Mary}]\!]^{g,c})\ ([\![\text{John}]\!]^{g,c})\ ([\![\text{PAST}_i]\!]^{g,c})$

Note that we have here adopted a view on which semantic evaluation is with respect to a *variable assignment* (g), as well as a *context* (c) that has among its features a temporal component t_c. The idea is that sentences get evaluated with respect to a variable assignment that has salient objects in its range and with respect to a context whose temporal component is the utterance time; moreover, we don't use a sentence unless it is clear that its semantic value is defined. (And again, to say that a sentence is true is to say that its semantic value is 1.) The past tense PAST in (18) carries an index *i,* just like a pronoun *she* in (19) below, and both receive their values via the assignment:

(19) She_i lives in Nantes.

Reflecting the fact that (19) is felicitous only if the individual referred to by she_i is female, the semantic value of she_i is given in (20):

(20) $[\![\text{she}_i]\!]^{g,c}$ is defined only if g(i) is female, in which case
$[\![\text{she}_i]\!]^{g,c} = g(i)$

(20) says that the semantic value of she_i with respect to an assignment *g* (and a context *c*) is defined only if the individual assigned to the index *i*, that is, *g(i),* is female. If this is the case, *g(i)* is the semantic value of she_i. In a similar way, tenses can be seen as variables with built-in restrictions on their possible values.[10] The lexical entries of

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[10] Adherents of the view of pronouns here often assume a more articulated picture on which pronouns are put together out of a number of different syntactic ingredients: a variable (the *i* here) and features (like the gender feature) that constrain the value of the variable and determine the pronoun's pronunciation. (See Heim and Kratzer 1998.) It is thus natural to articulate the referential approach to tense in the same way, distinguishing the time variable itself from features that

the past tense ($PAST_i$) and present tense ($PRES_i$) are given in (21) (Heim 1994):

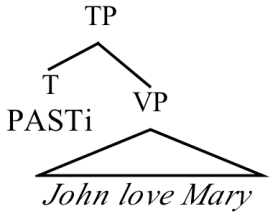
(21) a. $[\![PAST_i]\!]^{g,c}$ is defined only if $g(i) < t_c$, in which case $[\![PAST_i]\!]^{g,c} = g(i)$

b. $[\![PRES_i]\!]^{g,c}$ is defined only if $g(i) = t_c$, in which case $[\![PRES_i]\!]^{g,c} = g(i)$

The past tense $PAST_i$ in (21a) is a time variable. Its semantic value with respect to an assignment *g* and a context *c* is defined only if the value assigned to the index *i*, *g(i)*, precedes the time component t_c of the context (which will generally correspond to the moment of utterance). If this is the case, its value is *g(i)*. The present tense $PRES_i$ is defined only if the value assigned to the index *i*, *g(i)*, is identical to t_c, and if its semantic value is defined, $PRES_i$ gives the value *g(i)*.

The syntactic structure of a past tensed sentence *John loved Mary* will be as in (22) and its semantic value is given in (23):

(22)



(23) $[\![PAST_i$ [John love Mary] $]\!]^{g,c}$ is defined only if $g(i) < t_c$.
Where defined, $[\![PAST_i$ [John love Mary] $]\!]^{g,c} = 1$ iff John loves Mary at g(i), 0 otherwise.

Now, reconsider Partee's example mentioned in (14), repeated here as (24):

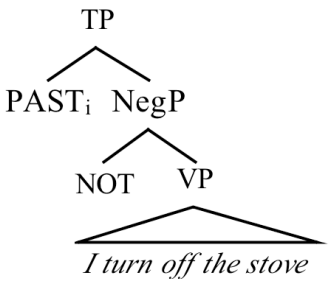
(24) I didn't turn off the stove.

---

constrain the variable itself and that determine a past tense or present tense pronunciation. This is the position I will take in Chapter 5.

(24) means that in a specific past time *interval*, the speaker didn't turn off the stove. Note first that if this intuition is correct, something must be added to the tense logic approach, since only time *points* but not time *intervals* are relevant to temporal interpretation on a tense logic approach, a point to which we return in the next section. Second, recall from our discussion in the previous section: without additional assumptions, an existential approach fails to capture the meaning of Partee's sentence. On a referential treatment of tense, (24) will have the syntactic structure as in (25); the lexical entries are given in (26) and the detailed calculation in (27) below. Crucially, on this formulation we have variables over time *intervals* and not merely moments, and similarly an expression like *turn off the stove* selects for an argument that is a time interval and not merely a moment.[11]

(25)



(26)

a. $[\![\text{PAST}_i]\!]^{g,c} = g(i)$ only if $g(i) < t_c$, undefined otherwise

b. $[\![\text{NOT}_i]\!]^{g,c} = \lambda P.\lambda t.P(t)=0$

c. $[\![_{VP}\text{I turn off the stove}]\!]^{g,c} = \lambda t.$ the speaker in *c* turns off the stove in t

(27)

a. $[\![_{NegP}\text{ NOT [I turn off the stove] }]\!]^{g,c} = \lambda t.$ it's not the case that the speaker in *c* turns off the stove in t

---

[11] Intervals are sets of moments, and, when we write "$g(i) < t_c$" here, this is a shorthand to say that every moment in the interval g(i) precedes t_c.

b. $[\![_{TP}\ PAST_i\ [\ NOT\ [I\ turn\ off\ the\ stove]]\ ]\!]^{g,c}$ = is defined only if $g(i) < t_c$.
Where defined, $[\![TP]\!]^{g,c}$ = 1 iff it's not the case that the speaker in *c* turns off the stove in g(i), 0 otherwise.

The last line in (27) says the following: the semantic value of the proposition *I didn't turn off the stove* with respect to an assignment *g* and a context *c* is defined only if the value of $PAST_i$, *g(i)*, precedes t_c. When this condition is met, the semantic value is 1 if and only if it's not the case that the speaker turns off the stove *within* that interval *g(i)*. The definedness condition means that a speaker will only use the sentence when some past time interval is salient, and the rest means that in that case he will express something true if and only if it's not the case that the speaker turns off the stove *within* that interval. Thus the derivation in (27) correctly captures the meaning of Partee's example, on the assumption that past tense is a variable over time *intervals*, but not moments of time, as is originally assumed by the tense logic treatment. The semantics based on intervals will be developed in Section 2.1.4; where we explain in detail what motivates the interval semantics and how it accounts for data that are problematic for tense logic semantics.

2.1.4 Interval semantics

On a tense logic approach, sentences are evaluated at moments of time. Bennett and Partee (1978) (henceforth B&P) argue that this position is not always tenable. Some sentences are rather evaluated at intervals of time. Time intervals are "convex" by definition, that is, any moment *m* between two moments m_1 and m_2 that are in an interval *I* ($m_1<m<m_2$) is also in *I*.

B&P argue against the treatment of present perfect in English on a tense logic approach (Montague 1973). They show that it would predict the same truth conditions for the simple past sentence in (28a) and the present perfect sentence in (28b): (28a) and (28b) are true if there is a past time point at which *John visits Rome* is true.

(28) a. John has visited Rome.
b. John visited Rome.

However, the present perfect is different from the simple past: present perfect involves an implicit time interval (reference time) that starts in the past and extends to the moment of utterance, explaining why (29a) but not (29b) is acceptable.

(29) a. John has walked today.
b. *John has walked yesterday.

Another criticism of the tense logic assumption that the semantics of tense involves moments rather than intervals is based on Montague's treatment of the progressive (Montague 1973). B&P point out that on Montague's analysis, a progressive sentence like (30) is true at a moment *m* if and only if there exists an open interval *I*, such that $m \in I$ and for all moments *m'* in *I*, *John leaves* is true at *m'*. Suppose that *m* is the utterance time. Since *I* is an open interval, its members *m'* can either precede or follow *m*. Therefore, *John leaves* is true at some moment in the past.

(30) John is leaving.

(31) John has left.

Given Montague's analysis of the present perfect, (31) is true if there is a moment *m* in the past at which *John leaves* is true. Thus, (30) is predicted to entail (31), which is obviously not correct.

B&P propose a temporal treatment of sentences based on intervals instead of moments of time. A progressive sentence such as (32) is true at a time *m* if and only if *m* is a moment, there is an interval *I* such that $m \in I$, *m* is not the endpoint for *I*, and *John builds a house* is true throughout *I*.

(32) John is building a house.

Under B&P's approach, only simple present sentences can be true in an interval of time, all other sentences can only be true at a moment of time.

To explain why (33) entails (34), while (30) does not entail (31), B&P propose that verb phrases like *John walk* but not verb phrases like *John leave* have the "subinterval property", as defined in (35) below:

(33) John is walking.

(34) John has walked.

(35) *P* has the subinterval property: P(t) ↔ (∀t'⊆ t) P(t').

That P has the subinterval property means that if *P* is true for the duration of *t*, then *P* is true at any subinterval of *t*. We can then explain the entailment from (33) to (34): if (33) is true at the moment of utterance *m*, the progressive tells us that there exists an open interval *I* such that $m \in I$, and such that *John walks* is true at *I*. Given the subinterval property of the predicate, that *John walks* is true at *I* implies that *John walks* is true at an interval *I'* such that $I' \subseteq I$ and that *I'* has the utterance time *m* as the final point. This is exactly the truth condition of the present perfect sentence in (34): that *John walks* is true at a time interval that starts at a past time point and extends to the moment of the utterance. That's how B&P predict the inference from (33) to (34).

In contrast, the verb phrase *leave* in (30) and (31) does not have the subinterval property, explaining why (30) does not entail (31).

Note that the interval semantics is motivated by the temporal interpretation of predicates of different aspectual classes: the "subinterval property" for instance, inspired a number of semantic analyses of aspectual classes. We turn to aspect in the next section. In particular, we review in Section 2.2.1 the well-adopted Vendlerian classification of predicates: *states*, *activities*, *accomplishments* and *achievements*. *States* and *activities* have the "subinterval property", while *accomplishments* and *achievements* don't.

2.2 Aspect

Traditionally, the term "aspect" is used to describe two different kinds of phenomena, known as *situation aspect* and *viewpoint aspect* (Dahl 1981, Smith 1991, Olsen 1997 a.o.). *Situation aspect* refers to the inherent temporal contour of the type of eventuality described by the predicate. By contrast, *viewpoint aspect* has to do with a perspective on the event that a predicate is used to describe. Cross-linguistically, *viewpoint aspect* if often overtly expressed by grammatical

morphemes, while *situation aspect* is typically anchored in the lexical meaning and thus not overtly marked by grammatical morphemes.[12]

2.2.1 Lexical aspect: Vendler's classification

Lexical aspect, also known as "situation aspect" or "Aktionsart", is directly related to the types of situation described by a predicate. In the literature, the classification of predicates is largely based on parameters such as telicity, dynamicity, and durativity of the situation. Morphologically, situation aspect is unmarked. We present in this section Vendler's four-way classification, some tests that permit us to distinguish them and the limits of these tests.

The idea of classifying predicates according to their meanings and temporal properties is due to philosophers such as Ryle (1949) and Vendler (1957). The classification adopted by most linguists is probably Vendler's four verbal classes: *states*, *activities*, *accomplishments* and *achievements*. Table 1 below lists some examples of predicates according to Vendler's classification:

States	**Activities**	**Accomplishments**	**Achievements**
know	*run*	*build a house*	*notice*
believe	*play tennis*	*draw a circle*	*die*
love	*sing*	*run 200 meters*	*win*
be happy	*push a cart*	*paint a picture*	*fall*

Table 1 Examples of Vendler verb classes

"States" are predicates describing non-dynamic eventualities that do not have a natural endpoint, such as *know*, *believe* or *be happy*. "Activities" are predicates describing dynamic eventualities and do not have a natural endpoint, such as *run*, *play tennis*. Accomplishment predicates refer to non-instantaneous dynamic events with an inherent

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[12] Note that there are also languages exhibiting specific morphology that modifies or specifies situation aspect: both in German and some Slavic languages, there seems to be verbal prefixes modifying the situation aspect.
Thanks to Brenda Laca and Lisa Matthewson for bringing to my attention the morphologically marked situation aspect.

culmination and therefore have a natural endpoint, such as *build a house*. Achievement predicates describe telic instantaneous events that culminate, such as *recognize* or *find*.

To understand the notion of the "natural endpoint" for an eventuality, we could imagine that someone *runs* or *believes in something* forever and that one can *stop running* but normally not *finish running*. In contrast, the event of "building a house" is generally conceived to have an end, thus one can *finish building a house.* If the moment at which one put the last brick signifies that the house building is completed, then that moment can be considered as the endpoint of the whole event described by *build a house.* This is what distinguishes predicates like *build a house* from predicates like *run*: the former but not the latter is used to describe an event with a natural endpoint.

Although Vendler talks about "verb" classes, the properties associated with different classes, as we have just seen, concern the whole VP rather than the verb in isolation. In particular, some verbs, which are "activity verbs" on their own, yield accomplishments when they combine with an object whose condition over time serves to measure out the development of the event (*eat an apple* or *mow the lawn*) or a prepositional phrase, describing the *telos* (goal) of the event. Take *walk* and *walk to school* for instance. The verb *walk* is classified as an activity when it stands alone, because the action of *walking* does not necessarily involve culmination, while *walk to the store* is considered as an accomplishment VP, since the action of walking to the store leads to a natural endpoint, the arrival point (the store). The presence / absence of a phrase modifying the verb can thus change the category of the VP. (See Verkuyl 1993 and Rosen 1999 for discussion.)

To distinguish Vendlerian verb classes, we can use several tests such as the progressive test, the *for*-adverbial test and the implication test. These tests are indicative rather than criterial.

Progressive test

While activities and accomplishments are compatible with the progressive, most states and achievements are not:

(36) a. *John is knowing Mary. → state

b. Mary is dancing. → activity

c. Max is building a house. → accomplishment

d.*Paul is recognizing his brother. → achievement

The progressive test divides the four classes into two groups: *activities* and *accomplishments* on the one hand, *states* and *achievements* on the other hand. Note that some states in their progressive form are acceptable but convey a special meaning (See Rothstein (2004)). Take (37) below for instance. It means that Peter is acting purposely as if he were stupid or he is just engaging in stupid behavior.

(37) Peter is being stupid.

There are also achievements compatible with the progressive, where the use of the progressive serves to indicate a preparatory stage of the instantaneous event described by the predicate. (38) below means that John's reaching the top is imminent.

(38) John is reaching the top.

Entailment test

The entailment test is related to the progressive test. The idea is as follows: although both activities and accomplishments are compatible with progressive aspect, they do not have the same kinds of entailments. Compare (39) with (40):

(39) a. John is swimming.
b. John has swum.

(40) a. John is building a house.
b. John has built a house.

If John is swimming, then John must have swum. Since (39a) entails (39b), we can conclude that *swim* is an activity. On the contrary, *John is building a house* in (40a) does not entail that he has built a house in (40b). Thus we can conclude that the VP *build a house* is an accomplishment.

The inference patterns above are also referred to as the "Imperfective Paradox" (Dowty 1979). It is a criterion often used crosslinguistically to determiner whether a predicate is *telic* – that is,

whether it describes a process having a natural endpoint.[13] The progressive form of a *telic* predicate, such as *build a house* in (40a) entails at most the partial realization of the event described by *build a house*, and these subparts of the event cannot be described as a complete event of building a house. Since the perfect form of the same telic predicate ((40b)) conveys the realization of the entire event of John building a house, (40a) does not entail (40b). In contrast, the imperfective form of an *atelic* predicate like *swim* in (39a) entails the realization of subparts of a whole bigger event characterized as swimming, and the realized subparts are themselves "smaller" events of swimming. This is why (39a) entails the sentence with perfective aspect in (39b), which conveys the realization of swimming events (see also Bohnemeyer & Swift 2004).

The entailment test correlates with the "subinterval property" discussed in Section 2.1.4 (Bennett & Partee 1978). Activities, which pass the entailment test, give rise to properties of times that have the subinterval property, while accomplishments, which fail the entailment test, do not (see our earlier discussion of interval semantics).

Note that whether activities have the subinterval property is a debated issue in the literature. Since for an activity to realize (to be defined as activity), there should be a minimal duration of the process (see Dowty 1986, Rothstein 2004 and Reis Silva & Matthewson 2007 for discussion).

For-adverbial test

Another test that is standardly used in the literature is the *for*-adverbial test: verb classes are sensitive to the type of adverbials that modify them. States (41a) and activities (41b) are compatible with *for*-adverbials but not *in*-adverbials, while accomplishments (42a) and

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[13] A predicate is *telic* if it describes an eventuality that is, according to Rothstein (2004:7), a movement "towards an endpoint where the properties of the endpoint are determined by the description of the event". An *atelic* predicate describes an eventuality that, "once started…can go on indefinitely, since the nature of the eventuality itself does not determine its endpoint". See also Depraetere (1995) for discussion.

achievements (42b) can combine with *in*-adverbials but not *for*-adverbials.

(41) a. Mary was sick for/*in three days.

b. Mary walked for/*in an hour.

(42) a. John wrote a letter in/*for ten minutes.

b. John reached the top in/*for five minutes.

The *for*-adverbial test is also known as the test of "telicity". States and activities, which are compatible with a *for*-adverbial, describe a kind of situation that lacks an inherent endpoint (see also footnote 10). They are thus *atelic*. In contrast, accomplishments and achievements, which are incompatible with a *for*-adverbial, are *telic*. They describe a process having a natural endpoint, the culmination of the described process. As we noted, a number of verbs like *eat* can be used to describe either an activity of eating or a process that culminates such as *eat a cake*. What is crucial here is when a VP containing the verb *eat* is compatible with a *for*-adverbial, as the case in (43a), we focus on the "activity" of *eating*, even if the object *his cake* is present. Conversely, (43b) is acceptable because *eat* can be used to talk about an eating process as a whole. (43b) could mean something like *Max ate his meal in ten minutes*.

(43) a. Max ate his cake for ten minutes.

b. Max ate in ten minutes.

Table 2 synthesizes the correlation between verb classes and the test mentioned above:

	Progressive	Entailment	*for*-adverbial
States	*	-	√
Activities	√	√	√
Accomplishments	√	*	*
Achievement	*/ ?	-	*

Table 2 Tests for Vendlerian verb classes

In the literature, there are also arguments for distinguishing a fifth verb class, *semelfactives*, from the four Vendlerian classes we just discussed. Smith (1991) and Verkuyl (1993) use this term to refer to dynamic events that occur very quickly and with no result state. Typical examples are *knock at the door*, *cough*, and *blink*. A semelfactive describes a (near-)instantaneous event, such as an event of someone knocking at the door *once*. Since the event is extremely brief, one might expect a sentence with a semelfactive predicate not be compatible with a durative adverbial, predicting a sentence like in (44) to be ungrammatical. (44) is however perfectly fine, but it means that a sequence of the knocking events and not a single knocking by John has lasted for two minutes. The *for*-adverbial modifies not a single instantaneous event but a sequence of events, itself having duration. Smith (1991) points out that most of the time the event described by a semelfactive predicate occurs in "repetitive sequences". A sequence of multiple events behaves very much like an event described by an activity predicate, that is, they are dynamic events with duration and with no culmination, explaining why semelfactives are compatible with *for*-adverbials ((44)) and the progressive form ((45)), just like activities.

(44) John knocked at the door for two minutes.

(45) Someone is knocking at the door.

What distinguishes semelfactives from activities is their duration: semelfactives describe punctual events that can occur only once and have a very brief duration, such as *blink (once)* and *knock at the door*

(once), while activities describe events having a larger minimal duration, such as *walk*. The minimal duration of an action characterized by *walk* is the time that it takes to complete one step.[14] Semelfactives are different from achievements because they describe events with no resulting states, while achievements report culminating events.

We will not go further here into details about the semantic properties of semelfactives, although we will refer to this class again in Chapter 3 when we discuss the framework that Smith and Erbaugh (2005) adopt in their analysis of time in Mandarin. All the tests we have discussed so far are English-specific. For discussion about the cross-linguistic variation of Aktionsart, see Bar-el (2005).

2.2.2 Grammatical Aspect

Grammatical aspect, also called "viewpoint aspect", is concerned with perspectives on an event. With perfective aspect, we consider an event as a whole, and thus perfective aspect provides an external perspective on the event; with imperfective aspect, we focus on an inner stage of an event, and thus imperfective aspect provides an internal perspective on the event. (Comrie 1976) Languages vary as to whether or not they morphologically mark viewpoint aspect: French and Mandarin overtly mark imperfective and perfective viewpoint aspect, while Finnish and Icelandic do not (Smith 1991).

Aspect has been conceived in terms of the notion of *reference time* introduced by Reichenbach (1947) and discussed by Klein (1994) (who uses the name "topic time"). Reference time conveys a temporal perspective from which "the speaker invites his audience to consider the event" (Taylor 1977:203). Take the past perfect in English for instance:

(46) John had left.

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[14] The contrast between semelfactives and activities in terms of event duration is not absolute in the sense that events like *knocking at the door* or *blinking* also take time, though very little time relative to events like *walk* (take a step).

According to Reichenbach, in using (46), we situate an *event time* – the time of John's leaving – with respect to two other times, the *speech time* and a *reference time*. The use of past perfect in (46) indicates both that the event time precedes the reference time and that the reference time precedes the speech time. Klein attributes this to two different ingredients, past tense and perfect aspect: past tense orders the reference time before the speech time and perfect aspect locates the event time before the reference time. Generally speaking, Klein proposes that tense relates reference time to utterance time and aspect relates event time to reference time. Klein sees the reference time as a particular time span about which a sentence makes an assertion. Table 3 below recapitulates the three time spans in the tense-aspect theory of Reichenbach and Klein.

Utterance time (UT) / Speech time	Time of speech
Eventuality time (ET)	Time of the situation
Reference time (RT) / Topic time (TT)	Time about which something is asserted

Table 3 Three time spans in Reichenbach (1947) & Klein (1994)

A reference time can also be explicit. Consider (47):

(47) At 2 pm, Susan was sleeping.

(47) conveys that the event of Susan sleeping is ongoing at a past time point, "2 pm". The event time is Susan's sleeping time and the reference time is "2 pm". The past tense carried by the auxiliary *was* orders the reference time and the speech time: "2 pm" should precede the speech time. Progressive aspect relates the reference time to the event time: "2 pm" is temporally included within the time of Susan sleeping.

Adopting this perspective, we can see imperfective and perfective viewpoint aspects as differing in terms of interaction with the reference time. Basically, with imperfective aspect, the time of the event described by the predicate includes the reference time and the intersection of the two time intervals does not contain the endpoint of

the event, as shown in the schema in (48); by contrast, perfective aspect requires the event time to be included within the reference time, as shown in (49).

(48) Imperfective:

-----[$_{ET}$——— | $_{RT}$////// | ———]------->

(49) Perfective:

----- | $_{RT}$////////[$_{ET}$//////]////////// | -------->

2.3 Event semantics and stative /eventive contrast

This section reviews event semantics, a framework largely used in recent literature on tense and aspect. The analysis that we adopt to account for the temporal interpretations of bare predicates in Mandarin, the *argument structure analysis* developed by Katz (1995, 2003), is based on an event semantics. The basic idea is that stative predicates differ from eventive predicates in their argument structure: stative predicates lack the "event argument" that eventive predicates have.

2.3.1 Event semantics

The proposal of an extra event argument for eventive predicates is due to Davidson (1967). He argues that in a sentence like *John did it slowly, deliberately…*, the anaphoric pronoun *it* refers not to an individual but to an "action"; and what the adverbials *slowly* and *deliberately* modify is that action. Thus, it is natural to presume entities of this type when we use a sentence to talk about an "action" (Davidson 1967:37-40). What can be seen from the inference is that an eventive verb like *kiss* is a predicate taking three arguments: a patient, an agent and an event, as shown in (50):

(50) $[\![\text{kiss}]\!]^{g,c} = \lambda x.\lambda y.\lambda e.$ KISS (e, y, x)[15]

The VP in the sentence *John kissed Mary* denotes a set of events of John kissing Mary. Assuming that the lexical entries for *John* and

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[15] "KISS (e, y, x)" here is shorthand for "e is an event of y kissing x"

Mary are as indicated in (51), the semantic value for the VP will be like in (52):

(51) $[\![\text{John}]\!]^{g,c} = J$
$[\![\text{Mary}]\!]^{g,c} = M$

(52) $[\![\text{VP John kiss Mary}]\!]^{g,c} = \lambda e.\ \text{KISS}\ (e, J, M)$

2.3.2 Stative/eventive contrast

Davidson's idea concerning the event argument of eventive verbs inspired many scholars such as Galton (1984), Sandström (1993) and Katz (1995, 2003) in their treatment of stative *vs*. eventive predicates. In particular, Katz claims that stative predicates are properties of times, and they do not have the event argument that eventive predicates have. The lexical entry of a stative verb like *love* is given in (53). This reflects Davidson's view that "action sentences" should be distinguished from sentences referring to a "fact", such as "*the cat has mange*", by their logical structure.

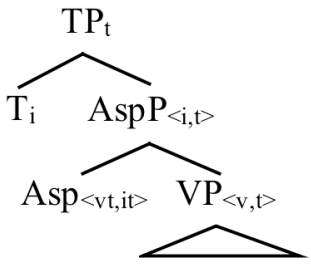
(53) $[\![\text{love}]\!]^{g,c} = \lambda x.\lambda y.\lambda t.\ \text{LOVE}\ (t, y, x)$
$[\![\text{VP John love Mary}]\!]^{g,c} = \lambda t.\ \text{LOVE}\ (t, J, M)$

According to Katz, an eventive verb is a predicate of events; an aspect operator is needed to map such a predicate to a predicate of times of the sort that stative predicates contribute. Tense will then apply to time predicates to give a truth value to the sentence. Syntactically, sentences describing a particular event differ from sentences describing a state. This is because (following Klein (1994) and Kratzer (1998)) they include a syntactic projection between tense and the VP whose head is occupied by the aspect operator PERFECTIVE or PROGRESSIVE – an operator that converts properties of events to properties of times.

Recall Reichenbach and Klein's theory of tense and aspect that we discussed in the previous section: tense relates the reference time to the utterance time and aspect relates the reference time to the event time. A specific compositional implementation of Klein's theory was proposed by Kratzer (1998). She proposes that aspect takes the property of events denoted by the VP (of type $\langle v,t \rangle$, where v is the

type of events[16]) and returns at AspP a property of times (of type <*i,t*>, where *i* is the type of time intervals). The T node is sister to AspP, and introduces a variable over time intervals, which corresponds to the reference time. This is how aspect establishes the relation between event time and reference time.

(54)



(See also Kratzer 1998)

Specifically, imperfective aspect requires that the reference time be included in the event time. The semantics of the imperfective operator IMP is given in (55), based on Kratzer (1998:17)[17]. IMP takes a property of events and gives a property of times, true of a time *t* (the reference time) that is included in the running time of the eventuality (its event time) described by the VP.

(55) Imperfective aspect:

$[\![IMP]\!] = \lambda P_{<v,t>}.\lambda t.\exists e\ [\ t \subseteq \tau\ (e)\ \&\ P(e) = 1]$

(τ is a "temporal trace" function from an event to its run time. See Krifka (1989a:97)).

Conversely, perfective aspect requires that the reference time include the event time. Thus the operator PERF combines with a property of

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[16] The type "*v*" used here corresponds to the "*l*" type in Kratzer (1998). The only reason to use "*v*" instead of "*l*" is to be consistent with the terminology used in other parts of the dissertation.

[17] Kratzer's lexical entries for aspectual operators and for verbs select for a world argument *w* as well, that we omit here.

eventualities and returns a property of times, true of a time *t* (the reference time) that includes the event time, as shown in (56):

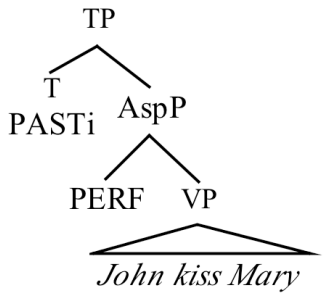
(56) Perfective aspect:

$[\![\text{PERF}]\!] = \lambda P_{<v,t>}.\lambda t.\exists e\ (\tau\ (e) \subseteq t\ \&\ P(e) = 1$

In his proposal concerning differences between sentences describing states and those describing events, Katz (2003) adopts Kratzer's semantic account of aspect in the sense of Klein. To illustrate, given the lexical entries of the past tense and the perfective aspect in (57), a sentence describing an event like *John kissed Mary* will have a structure as in (58) and the detailed derivation in (59).

(57) $[\![\text{PAST}_i]\!]^{g,c}$ is defined only if $g(i) < t_c$; where defined,
$[\![\text{PAST}_i]\!]^{g,c} = g(i)$
$[\![\text{PERF}]\!]^{g,c} = \lambda P.\lambda t.\ \exists e\ [P(e)=1\ \&\ \tau(e) \subseteq t]$

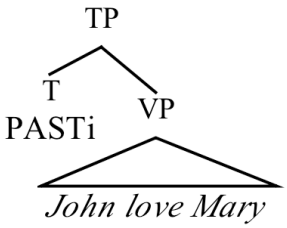
(58)



(59) $[\![_{\text{VP}}\text{John kiss Mary}]\!]^{g,c} = \lambda e.$ KISS (e, *J*, *M*)
$[\![\text{AspP}]\!]^{g,c} = \lambda t.\ \exists e\ [$KISS (e, *J*, *M*) $\&\ \tau(e) \subseteq t]$
$[\![\text{TP}]\!]^{g,c}$ is defined only if $g(i) < t_c$; where defined, $[\![\text{TP}]\!]^{g,c} =$ 1 iff there is an event of *J* kissing *M*, such that its running time is included in g(i).

By contrast, a sentence with a stative VP like *John loved Mary* will have a structure as in (60), where the stative VP can combine directly with the past tense.

(60)



The derivation for *John loved Mary* is given in (61):

(61) $[\![_{VP}$John love Mary$]\!]^{g,c}$ = λt. LOVE (t, *J*, *M*)
$[\![TP]\!]^{g,c}$ is defined only if g(i) < t_c, where defined, $[\![TP]\!]^{g,c}$ = 1 iff *J* loves *M* for the duration of g(i).

If we compare the semantic value of the stative VP in (61) with that of the AspP of the eventive sentence in (59), we find the same logical type: they are both properties of times.

The advantage of the argument structure analysis of the difference between stative and eventive predicates is that it correctly captures phenomena such as the incompatibility of the progressive aspect with stative verbs, and the "Stative Adverb Gap" extensively discussed in Katz (2003).

On the argument structure analysis, the progressive, being an operator that maps event predicates to time predicates, should not be compatible with stative VPs, themselves predicates of times. This is exactly what we find in English:[18]

(62) *Mary is knowing the answer.

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[18] As we have mentioned in Section 2.2.1, in some contexts, progressive aspect can appear in sentence with a stative predicate, such as *John is being stupid*, but the sentence has a particular meaning. It could mean that temporally John is acting purposely as if he were stupid. In the current discussion, we do not take into account these specific cases.
The reader can consult Johannsdottir (2011), who proposes a coercion when the progressive combines with states.

The second advantage of the argument structure analysis is to explain the "Stative Adverb Gap". Katz (2003) points out that a number of adverbs cannot appear in sentences with a stative predicate, but almost none are restricted from modifying sentences with an eventive predicate. The asymmetry can be illustrated by the contrast between (63a) and (63b). Adverbs such as *quickly* are compatible with eventive verbs like *kiss*, but incompatible with stative verbs like *love*.

(63) a. *John loved Mary quickly.
b. John kissed Mary quickly.

(Katz 2003:456)

However, almost no adverbs function the other way around: that is, would be compatible with stative verbs but incompatible with eventive verbs. For instance, no adverb fits the particular schema in (64):

(64) a. John loved Mary ADVERB.
b. *John kissed Mary ADVERB.

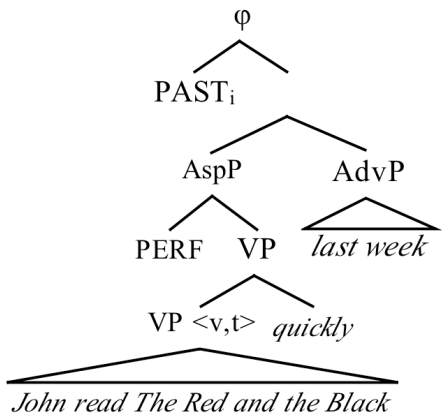
(Katz 2003:456)

One could explain the contrast observed in (63) by verb-adverb selectional restrictions. For instance, some adverbials select for dynamic properties of an eventuality, explaining the behavior of *quickly* in (63). The problem is, according to Katz, that this selectional restriction on adverbial modification cannot capture the asymmetry between (63) and (64) -that is- why there are no adverbs that select for properties that a stative predicate but not an eventive predicate would have.

The argument structure approach can carry over to account for the asymmetry discussed above in a simple way. The behavior of different kinds of modifying adverbials lies in the different syntactic positions they occupy. Sentential adverbs, such as *probably* and *immediately*, are TP adjuncts. Temporal adverbs, such as *in 1919* and *last year*, adjoin either to a stative VP or an AspP, adding restrictions on times. Event adverbials, such as *quickly* and *slowly*, modify eventive VPs. Consider (65), a sentence containing at the same time an event adverbial *quickly* and a temporal adverbial *last week*. Its syntactic structure is illustrated in (66), and the truth conditions of (65) are given in (67).

(65) John read *The Red and the Black* quickly last week.

(66)



(67) $[\![\varphi]\!]^{g,c}$ is defined only if $g(i) < t_c$, where defined, $[\![\varphi]\!]^{g,c} = 1$ iff ∃e
[READ (e, *J*, *RB*) & quick (e) & τ(e) ⊆ g(i) &
g(i) ⊆ *last week*(c)]

(67) says that the semantic value of the structure φ is defined only if the value assigned to PAST$_i$, *g(i)*, precedes the utterance time. φ is true if and only if there is an event of John reading *The Red and the Black*, such that the event is quick and whose running time is included in a contextually determined time *g(i)*, which should be in the week before the week of the utterance time.

At this stage, we can easily explain the Stative Adverb Gap. Adverbs like *quickly* are properties of events, and thus cannot apply to stative VPs, explaining the contrast between (63a) and (63b). The lexical entry of *quickly* is given in (68).

(68) $[\![\text{quickly}]\!]^{g,c} = \lambda e.$ e is quick

Temporal adverbials like *last week* are properties of times, and therefore compatible with both a stative VP and an AspP having an eventive VP as a component. This is why no adverbs can only appear with a stative VP but not an eventive VP, as the schema in (64) indicates. This restriction on adverbial modification follows from the argument structure approach.

We will show in Chapter 3 how Mandarin data provide evidence for Katz's argument structure analysis. We claim that aspect must be overtly realized in root clauses in Mandarin, unlike in languages like English. It plays the role of mapping properties of events to properties of times, in Mandarin just like in English.

2.4 Semantic Assumptions and notation

We follow Heim & Kratzer (1998) in our assumptions about the rules of semantic composition. The notation used in this thesis is summarized in Table 4 and Table 5:

Individuals:	type e
Times:	type i
Events:	type v
worlds:	type s
Truth values:	type t

Table 4 Notation for types

Individual variables:	x, y, z…
Time variables:	t
Event variables:	e
World variables:	w
Function variables:	P, Q… (capital letters)

Table 5 Notation for metalanguage

Chapter 3 Bare predicates in Mandarin

This chapter is primarily concerned with bare predicates (that is, predicates with no morphological aspect, neither verbal aspectual markers nor sentence final markers) in root clauses in Mandarin. We investigate in detail the temporal interpretations of sentences with a bare (stative or eventive) predicate with or without an adverb. We put forth the following generalizations:

G1. Root clauses with no overt aspect describe states or report regularities; (Yong 1997, Klein et al. 2000 among others) (It follows from this that all episodic uses of eventive predicates in root clauses require overt aspect.)

G2. All stative predicates can appear without aspect;

G3. Eventive predicates that appear without overt aspect cannot have their temporal reference fixed by an adverb alone. (Tang & Lee 2000, Tsai 2008 among others)

We claim that these generalizations follow from the hypotheses below:

H1. States and eventives have different argument structures: states are properties of times while eventive predicates are properties of events (Katz 2003, Kratzer 1998);

H2. Aspect must be overtly marked in Mandarin.

We further address the question of whether Mandarin has a syntactic T projection or not. The above assumptions above lead us to conclude that there should be a T projection in the syntax in Mandarin, introducing a time argument required in the semantic derivation.

This chapter is organized as follows:

In Section 3.1, we discuss temporal construals of sentences containing a bare stative/eventive predicate with or without explicit temporal adverbials. We show that while bare stative predicates do not require aspect and allow stative readings (describing *stage-level* or *individual-level* properties), eventive predicates (*activities*, *accomplishments* and *achievements*) require overt aspect to allow episodic readings. Section 3.2 examines in detail sentences with a bare

eventive predicate that are grammatical. We show that these sentences with or without a modifying adverbial (eg. a quantification adverb, a locative prepositional phrase or an other adverbial) are felicitous, but only on a generic reading. Section 3.3 recapitulates our generalizations concerning the interpretation of bare predicates in Mandarin. In particular, we claim that sentences without any morphological aspect yield either stative or generic readings in Mandarin.

Section 3.4 is dedicated to an analysis of the temporal interpretations of bare predicates in Mandarin. We adopt Katz's (2003) hypothesis, which attributes a different argument structure to stative and to eventive predicates. We moreover follow Katz (2003) in giving aspect the role of relating event time to reference time (see also Klein (1994)). Together with a referential analysis for tense and the proposal that aspect must be overtly realized in Mandarin, this proposal correctly captures the temporal interpretation of sentences with bare stative/eventive predicates in Mandarin.

In Section 3.5, we argue against the default viewpoint aspect account, adopted by both Lin (2006) and Smith & Erbaugh (2005) in their analysis of the temporal construal of bare predicates in Mandarin. We discuss the predictions of their analyses and Mandarin data that challenge their proposals.

Finally Section 3.6 discusses some apparent counter-examples.

3.1 Temporal construal of bare predicates

In their studies of the expression of temporal relations in Mandarin, scholars have traditionally devoted attention to the distribution of aspect, that is, lexical aspect (aktionsart) and grammatical aspect (aspectual particles). This is expected in so far as the Mandarin grammatical system does not contain any items equivalent to the tense morphemes in Indo-European languages such as English and French.

This thesis takes a new and different approach to these issues: we will look at interpretations of sentences containing a predicate that is modified, neither by an aspect, nor by any other type of particle that might alter the interpretation or even the grammaticality of a sentence.

The current section investigates the temporal interpretations of bare stative/eventive predicates with no explicit temporal adverbials. The data presented below is organized according to Vendler's (1967) four-way classification of predicates: *states*, *activities*, *accomplishments* and *achievements* (see Chapter 2).

Unless otherwise specified, the reader should imagine that the sentences discussed in this section are uttered in an out-of-the-blue context, that is, without any contextually set up reference time (henceforth RT) that excludes the utterance time (UT).

3.1.1 States

As has been observed before, in Mandarin, bare predicates of states are well-formed without aspectual marking. They describe states that hold at a contextually salient time.

In the absence of an adverb indicating a time interval excluding the speech time, the state described by the predicate *hěn cōngmíng* 'very smart' in (1a), *hěn jǔsàng* 'very frustrated' in (1b) or *xǐhuān lǚxíng* 'like travelling' in (1c) holds at the moment of the utterance. Thus, bare states yield present state readings in an out-of-the-blue context.

(1) a. Yīchén hěn cōngmíng.
Yichen very smart
'Yichen is very smart.'

b. Lùlu hěn jǔsàng.
Lulu very frustrated
'Lulu is very frustrated.'

c. Yīchén xǐhuān lǚxíng.
Yichen like travel
'Yichen likes travelling.

The reader may have noticed that the adjectival predicates in both (1a) and (1b) are modified by *hěn* 'very', which is a "positive marker" according to Grano (2011). He points out that Mandarin gradable adjectives, such as *cōngmíng* 'smart' and *jǔsàng* 'frustrated' in our examples (1a-b), must co-occur with overt degree morphology for positive interpretation; otherwise, it is infelicitous in isolation. Accordingly, (2b) below is infelicitous in an out-of-the-blue context.

With a proper context, (2b) is acceptable, but only with a comparative reading.

(2) a. A: -Zhāngsān hé Lǐsì shéi gāo?
Zhangsan and Lisi who tall
'Who is taller between Zhangsan and Lisi?'

b. B: -Zhāngsān gāo.
Zhangsan tall
'Zhangsan is taller.'

The adverb *hěn* is, among the degree morphemes, the most neutral one, although it is mostly interpreted as "very". The adjectival predicates modified by *hěn* are considered as bare predicates in this thesis, because *hěn* is not an aspectual marker, and therefore does not bring any extra aspectual information to the sentence.

Some states can co-occur with present time adverbials (adverbials referring to time intervals that include the UT). In cases where the sentence with a bare state is accompanied by a present time adverb, we have a present reading, as shown in (3a) and (3b):

(3) a. **Jīntiān** Lùlu hěn jǔsàng.
today Lulu very frustrated
'Today, Lulu is very frustrated.'

b. **Zuìjìn** Yīchén tèbié xǐhuān lǚxíng.
recently Yichen special like travel
'Nowadays, Yichen likes travelling very much.'

(3a) conveys that *Lùlu*'s frustration lasts throughout the time denoted by *jīntiān* 'today'. Since *jīntiān*, being an indexical temporal adverb, refers to the day that includes the UT, (3a) receives a present reading. In a similar way, (3b) is used to report *Yīchén*'s recent hobby of travelling. The time duration indicated by the adverb *zuìjìn* 'recently' starts at a past time that is relatively close to the UT and lasts at least up to the UT. Consequently, (3b) has a present reading.

Sentences with a bare state receive past readings in the presence of an appropriate past time adverb (an adverb referring to a time interval that precedes the UT), such as *zuótiān* 'yesterday' in (4a) and *nèishíshòu* 'that time' in (4b):

(4) a. **Zuótiān** Lùlu hěn jǔsàng.
yesterday Lulu very frustrated
'Yesterday, Lulu was very frustrated.'

b. **Nèi-shíshòu** Yīchén tèbié xǐhuān lǚxíng.
that-time Yichen special like travel
'At that time, Yichen liked travelling very much.

(4a) says that *Lùlu*'s frustration lasts (at least) for the duration of the day before the day of the utterance, and (4b) conveys that *Yīchén* has a hobby of travelling at a contextually determined past time *nèi-shíshòu* 'at that time'.

There are also cases where the co-occurrence of a frame setting temporal adverbial and a bare state gives rise to an infelicitous sentence, like (5a) and (5b) below.

(5) a. #**Zuótiān** Yīchén hěn cōngmíng.
yesterday Yichen very smart
#'Yesterday, Yichen was very smart.'

b. #**Gāngcái** Èrmáo hěn gāo.
just.now Ermao very tall
#'Just now, Ermao was very tall.'

The oddness of these sentences is due to the incompatibility of the temporal adverb and the lexical property of the predicate. Predicates like *cōngmíng* 'smart' in (5a) and *gāo* 'tall' in (5b) are referred to in the literature as *individual-level* predicates (Carlson 1977, Kratzer 1995): they describe relatively stable properties that do not vary from one time to another. Consequently, modifying an individual-level predicate with a time adverb denoting a comparatively "short" time interval, such as *zuótiān* 'yesterday' or *gāngcái* 'just-now', suggests that the individual no longer has the relevant property, which is a surprising suggestion.

To sum up, root clauses with a bare state are well-formed in Mandarin and they allow stative readings. In the absence of any temporal adverbials, sentences with a bare state receive present readings. In principle, present and past time adverbials can appear in root clauses with a bare state as long as they are compatible with the lexical meaning of the predicate they modify. Present or past time adverbs can fix the temporal reference of a sentence with a bare state,

yielding either present or past stative readings. See Chapter 5 (Section 5.1) for the discussion of interavtion of time adverbs and bare predicates.

3.1.2 Achievements

Root clauses with a bare achievement such as *yíng* 'win', *sǐ* 'die' or *dào* 'arrive' are ungrammatical, as shown in (6a), (7a) and (8a) below:

(6) (*Context: -Who won the game last night?*)

a. *Lǐsì yíng.
Lisi win

b. Lǐsì yíng *(**le**).
Lisi win PERF
'Lisi won.'

(7) a. *Yú sǐ.
fish die

b. Yú sǐ *(**le**).
fish die PERF
'The fish died.'

(8) a.*Kèrén dào.
visitor arrive

b. Kèrén dào *(**le**).
visitor arrive PERF
'The visitor arrived.'

To license an episodic past reading for the achievement *yíng* 'win', *sǐ* 'die' or *dào* 'arrive', an overt aspect marker (the perfective maker *le* for instance) is required, as shown in (6b), (7b) and (8b). The "b" examples above are all interpreted as past events.

A question arises whether a temporal adverb can play the same role as the perfective aspect in the "b" examples in (6)-(8). In other words, can a temporal adverb alone rescue a sentence with a bare eventive predicate from ill-formedness by fixing the temporal reference of the event described by the predicate?

Consider the sentences below.

(9) a. **Jīntiān** Lǐsì yíng *(le).
today Lisi win PERF
'Lisi won today.'

b. **Zuótiān** nèi-tiáo yú sǐ *(le).
yesterday that-CL fish die PERF
'That fish died yesterday.'

c. Kèrén **gāngcái** dào *(le).
visitor just.now arrive PERF
'The visitor arrived just now.'

As shown in (9), despite the explicit temporal adverbs, the sentences are all ungrammatical without the perfective aspect marker *le*. This suggests that neither present time adverbs like *jīntiān* 'today' in (9a), nor past time adverbs like *zuótiān* 'yesterday' in (9b) or *gāngcái* 'just-now' in (9c), can by themselves license episodic readings for sentences with a bare achievement. The overt aspect is required to license episodic readings.

We conclude that, in Mandarin, achievements must be overtly marked for aspect to be interpreted as episodic events. This will be discussed in Chapter 3.

3.1.3 Activities

As has been observed before, by Tang & Lee (2002) and Tsai (2008), independent root clauses like (10) with a bare activity sound incomplete. such as *xiào* 'smile' in (11a) and *tuī tā de xiǎochē* 'push her stroller' in (12a) are ill-formed.

(10) *Akiu na shu.
Akiu take book

(Tsai 2008: 678)

(11) a. *Mǎlì xiào.
Mary smile

b. Mǎlì xiào **le**.
Mary smile PERF
'Mary smiled'.

c. Mǎlì **zài** xiào.
Mary PROG smile
'Mary is smiling.'

(12) a. ??Yīchén tuī tā de xiǎochē.
Yiche push 3SG *de* stroller

b. Yīchén tuī **zhe** tā de xiǎochē.
Yichen push DUR 3SG *de* stroller
'Yichen is pushing her stroller.'

Modified by the overt perfective marker *le*, the activity *xiào* in (11b) yields an episodic past reading. In the presence of the progressive marker *zài* or the durative marker *zhe*, (11c) and (12b) report that the events described by the verb *xiào* and *tuī* are ongoing.

(13a) and (13b) below illustrate cases where present or past time adverbs modify a sentence with an activity.

(13) a. **Zhèi-huǐr** Yīchén tuī *(**zhe**) tā de xiǎochē.
this-instant Yichen push DUR 3SG *de* stroller
'Yichen is pushing her stroller right now.'

b. **Gāngcái** Mǎlì xiào *(**le**).
just.now Mary smile PERF
'Mary smiled just now'.

Both (13a) and (13b) require overt aspectual marking (the durative *zhe* or the perfective *le*) to be well-formed, suggesting that neither a present time adverb like *zhèi-huǐr* 'this instant', nor a past time adverb like *gāngcái* 'just now', can by itself fix the temporal reference of a sentence with a bare activity. An aspect marker must be present for an activity to receive an episodic present or past reading.

3.1.4 Accomplishments

With a bare accomplishment *kàn Sān Guó Yǎnyì* 'read *Romance of the Three Kingdoms*' or *chī yíkuài dàngāo* 'eat a piece of cake', (14a) and (15a) are not felicitous as independent sentences.[19]

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[19] The reader should keep in mind that the grammaticality judgments reported here are based on sentences uttered out of the blue as

(14) a. ?? Mòyán kàn “Sān Guó Yǎnyì”.
Moyan read three kingdom romance

b. Mòyán kàn **le** “Sān Guó Yǎnyì”.
Moyan read PERF three kingdom romance
‘Moyan (has) read *Romance of the Three Kingdoms*.’

c. Mòyán **zài** kàn “Sān Guó Yǎnyì”.
Moyan PROG read three kingdom romance
‘Moyan is reading *Romance of the Three Kingdoms*.’

(15) a. ?? Lǐsì chī yí-kuài dàngāo.
Lisi eat one-CL cake

b. Lǐsì chī **le** yí-kuài dàngāo.
Lisi eat PERF one-CL cake
‘Lisi ate a piece of cake.’

b. Lǐsì **zài** chī yí-kuài dàngāo.
Lisi PROG eat one-CL cake
‘Lisi is eating a piece of cake.’

---

independent clauses. We assigned question marks to (14a) and (15a), because they sound incomplete or even odd in out-of-the-blue context. However, a complex sentence (that is, a sentence with more than one verb, or occurrence of a verb) with (14a) or (15a) as its part can be felicitous. This is the case in (i) and (ii) below. These sentences are grammatical with the perfective marker *le* or the negation for perfective sentences *méi* modifying the second occurrence of the verb *kàn*. (See also Tsai 2008 for discussion.)

i) Mòyán kàn “Sān Guó Yǎnyì”
Moyan read three kingdom romance
kàn le yí-bàn.
read PERF one-half
‘Moyan read a half of *Romance of the Three Kingdoms*.’

ii) Mòyán kàn “Sān Guó Yǎnyì”
Moyan read three kingdom romance
méi kàn wán.
NEG.PERF read finish
‘Moyan didn’t finish reading *Romance of the Three Kingdoms*.’

The presence of the perfective aspect marker *le* licenses a past reading for (14a) and (15a), while the progressive aspect *zài* allows an on-going reading for (14b) and (15b).

Temporal adverbials like *1967 nián* 'the year of 1967' in (16a), *shàng-gè-yuè* 'last month' in (16b), and *cǐshícǐkè* 'this very moment' in (16c) cannot rescue a sentence with a bare accomplishment from illformedness. To license an episodic past or ongoing reading, an overt aspect is obligatory.

(16) a. **1967 nián**, Mòyán kàn ***(le)** "Sān Guó
1967 year Moyan read PERF three kingdom
Yǎnyì".
romance
'Moyan read *Romance of the Three Kingdoms* in 1967.'

b. **Shàng-gè-yuè**, Mòyán kàn ***(le)** "Sān Guó
up-CL-month Moyan read PERF three kingdom
Yǎnyì".
romance
'Moyan read Romance of the Three Kingdoms last month.'

c. **Cǐ-shí-cǐ-kè** Lǐsì ***(zài)** chī yí-kuài
this-time-this-moment Lisi PROG eat one-CL
dàngāo.
cake
'Right now, Lisi is eating a piece of cake.'

In Mandarin, sentences with an accomplishment must be overtly marked for aspect to license episodic readings.

To summarize, the data that we have seen from Section 3.1.1 to Section 3.1.4 show that:

(17) Sentences with a bare state are well-formed and yield stative readings. Present or past time adverbials can fix the reference time of a sentence with a bare state, yielding a present or past stative reading;

(18) Sentences with an eventive predicate - that is, an achievement, an activity or an accomplishment - must be overtly marked for aspect to yield episodic past or on-going readings.

3.2 Well-formed bare eventives and genericity

The data that we discussed in the previous section concerning root clauses with a bare predicate suggest that sentences with a bare stative predicate are well-formed, while sentences with a bare eventive are not. However, where eventive predicates are concerned, the situation is more complicated than this. While an eventive predicate must be overtly marked for aspect (the perfective *le* or the progressive *zài*, for instance) to license episodic readings, bare eventives are sometimes grammatical. As we shall see, this is the case in sentences containing a quantificational adverb, a locative prepositional phrase (PP), or other adverbial modifiers. Moreover, some sentences with an activity are well-formed with neither aspect nor even a modifying adverbial. We will see that, when a sentence with a bare eventive predicate is grammatical, it necessarily yields a generic reading.

3.2.1 Quantificational adverbs

The sentences in (19) below are sentences with eventive bare predicates. Each of them contains a quantificational adverb, namely, *zǒng* 'always', *jīngcháng* 'often', *hěnshǎo* 'rarely' or *měinián* 'every year'. They convey that the event described by the predicate happens with a certain *frequency* or *regularity*.

(19) a. Zhōngguó duì **zǒng** shū.
China team always lose
'The Chinese team loses all the time.'

b. Èrmáo **jīngcháng** tīng zhèi-shǒu gē.
Ermao often listen this-CL song
'Ermao often listens to this song.'

c. Mǎlì **hěnshǎo** xiào.
Mary rarely smile
'Mary rarely smiles.'

d. Gǔlóng **měinián** xiě hǎojǐběn xiǎoshuō.
Gulong every-year write several-CL novel
'Gulong writes several novels a year.'

These sentences are of the kind sometimes referred to in the literature as "*generic sentences*". They make generalizations or report regularities, as opposed to "*episodic sentences*", which describe specific events (see Carlson et al. 1995). More precisely, (19a-d) are of a subcategory of generic sentences: those labeled by many scholars as "*habitual sentences*", which contain eventive predicates and make generalizations over instances of events.[20]

3.2.2 Locative PPs

Another type of modifier that often appears in sentences with a bare eventive is a locative prepositional phrase (PP), such as *zài zhèi-jiā miànbāofáng* 'in this bakery' in (20a), or *zài wòshì-lǐ* 'in the bedroom' in (20b). These sentences are also *generic* sentences. They convey that the predicated event takes place generally in a specific location.

(20) a. Tā **zài** **zhèi-jiā** **miànbāofáng** mǎi tiándiǎn.
3SG at this-CL bakery buy dessert
'He buys his dessert in this bakery.'

b. Lùlu **zài** **wòshì-lǐ** tīng zhèi-shǒu gē.
Lulu at bedroom-inside listen this-CL song
'Lulu listens to this song in her bedroom.'

Notes that in some cases locative PPs seem to trigger a progressive reading for sentences with an eventive predicate, as shown in (21):

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[20] The other subcategory of "*generic sentences*" is known as "*lexical characterizing sentences*". They contain stative predicates and describe relatively stable properties of an individual or a kind. The sentences below are of this kind:
i) Alice is blond.
ii) A cat has four legs.
Generic sentences are discussed in more detail in Chapter 4.

(21) Tā zài túshūguǎn chá zīliào.
3SG ZAI library consult document
'He consults documents in the library.'
'He is consulting documents in the library.'

(21) appears to allow not only a generic reading, but also an on-going episodic reading.[21] In Section 3.6, I discuss the reason why sentences containing a prepositional phrase headed by *zài* also allow progressive readings.

3.2.3 Other adverbial modifiers

Sentences with a bare eventive predicate, modified by adverbs like *róngyì* 'easily', *hěn wǎn* 'very late' or *hěn kuài* 'very fast', are well-formed and they yield generic readings, as shown in (22) below.

(22) a. Zhèi-jǐ-gè bōlibēi hěn **róngyì** suì.
this-many-CL glass very easy break
'These glasses break easily.'

b. Zhè-jǐ-jiā diàn **hěn** **wǎn** guānmén.
this-many-CL store very late close
'These stores close late.'

c. Shùyè luò de **hěn** **kuài**.
leaf fall *de* very fast
'Leaves fall fast.'

3.2.4 Well-formed bare activities

The sentences with a bare eventive that we have seen in Section 3.2.1 through 3.2.3 all contain an adverbial modifying the VP. There are also sentences with a bare activity that are well-formed without any adverb. Consider the sentences below:

(23) a. Lǐsì dǎ wǎngqiú.
Lisi play tennis
'Lisi plays tennis.'/*'Lisi is playing tennis'.

(Example adapted from Lin 2006)

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[21] Thanks to Rint Sybesma and Waltraud Paul for bringing this ambiguity to my attention.

b. Gǔlóng chōu-yān.
Gulong smoke-cigarette
'Gulong smokes.'/ *'Gulong is smoking.'

Containing the bare activity *dǎ wǎngqiú* 'play tennis', (23a) can only be used to convey that *Lisi* (regularly) plays tennis. To communicate that a particular event of *Lisi* playing tennis is going on, the progressive marker *zài* is needed, as shown in (24a) below. Similarly, (23b), with the bare activity *chōuyān* 'smoke', describes a property of *Gulong* as a smoker, as opposed to (24b), where the progressive marker *zài* gives rise to an ongoing episodic reading.

(24) a. Lǐsì **zài** dǎ wǎngqiú.
Lisi PROG play tennis
'Lisi is playing tennis.'

b. Gǔlóng **zài** chōuyān.
Gulong PROG smoke
'Gulong is smoking.'

Taking together the sentences with bare activities that we discussed in (11) and (12) in Section 3.1.3 and sentences in (23) above, it seems that if a sentence with a **bare activity is well-formed, it necessarily yields a generic construal.** This will be handled in Chapter 4.

3.3 Bare Predicate Generalizations

In Section 3.2, we went through cases with bare eventives (activities, accomplishments, achievements) that allow generic readings. Bare eventive predicates yield generic readings in the presence of overt Quanrificational Adverbs (Section 3.2.1), locative PPs (Section 3.2.2), or other adverbial modifiers (Section 3.2.3). Moreover, sentences with a bare activity allow generic readings with no modifiers (Sections 3.2.4).

To sum up, on the basis of the Mandarin data discussed in the previous sections, we put forward the following three Bare Predicate Generalizations (BPGs):

BPG 1. Sentences with a bare state are well-formed and yield stative readings.

BPG 2. Sentences with a bare eventive only allow generic readings.

BPG 3. To license an episodic reading for a sentence with an eventive predicate, an overt aspect is required.

How do we account for these generalizations? An appropriate analysis should be able to capture not only the contrast between bare states and bare eventives - that is, that bare states are well-formed, while eventives require an overt aspect in order to license an episodic reading - but also more generally the generalization established in this chapter that bare predicates are grammatical, but only with stative or generic readings.

The following section presents our analyses of the temporal interpretations of bare predicates in Mandarin. We will show how they correctly capture the generalizations made in this section.

3.4 Our proposal

This section presents our analysis of the temporal construal of sentences with bare predicates. This analysis rests on the two following claims:

(25) Argument structure: states are properties of intervals (type $<i,t>$), true or false for a time interval, while bare eventives are properties of events (type $<v,t>$)[22] (Katz 1995; Kratzer 1998).

(26) Overt aspect: Aspect must be overtly marked in Mandarin.

Notice that the first claim is not language specific, but a universal generalization, while the second claim is language specific.

To show how these two claims derive the above generalizations, we adopt a referential approach for the analysis of tense (cf. Chapter 2, Section 2.1.2). Concretely for the demonstration, we assume that syntactically there is a TP projection with a T°. This T node has a time interval as its semantic value, which serves as reference time for anchoring the eventuality described by the sentence. As far as this chapter is concerned, what we mean by "T projection" is a projection

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[22] Recall that we use the following notations for types: "*i*" stands for "interval", "*t*" for "truth value" and "*v*" for "event".

introducing *times*, but not necessarily the projection of *tense* – that is, this projection could in principle host whatever category that would be responsible for introducing time in the representation. The question of whether Mandarin has Tense or not will be treated in Chapter 5.

That a sentence with neither overt temporal/aspectual marking, nor an overt temporal adverbial, can still be temporally interpreted in Mandarin suggests that something must be responsible for temporal anchoring, even if it is not overtly realized. In the following sections, the tree structures representing Mandarin sentences contain a T projection introducing a time variable t_i, which could be bound by the utterance time or another previously mentioned time interval.

3.4.1 Davidsonian theories and the state/event contrast

3.4.1.1 Event semantics and argument structure analysis

The argument structure analysis that we are assuming in (25) is based on the *event semantics*, originally formulated in Davidson (1967). He points out that the pronoun *it* in a sentence like (27) refers to an event, and not an individual, and the adverbs *slowly* and *deliberately* describe that event.

(27) John did it slowly, deliberately…

He proposes that eventive predicates like *kiss* are three-place predicates (that is, a patient, an agent and an event). As shown in (28) below, there is a variable *e* ranging over events in the lexical entry of *kiss*, which is existentially bound.

(28) $[\![\text{kiss}]\!]^{g,c} = \lambda x.\lambda y.\exists e$: KISS (e, y, x)

Davidson's idea led to new proposals as to how to distinguish stative predicates from eventive predicates. Dowty (1979) argues that states are true or false for a time (an interval or a moment), while events are not true or false, they "take place" (Dowty 1979:74). Katz (1995, 2003) argues that stative predicates are properties of times, and as such do not have the event argument that eventive predicates have. A stative verb like *love* does not take an *e* argument, but instead, a *t* argument, representing a time, as shown in (29), where we intend 'LOVE (t, y, x)' to express that y loves x for the duration of t.

(29) $[\![\text{love}]\!]^{g,c} = \lambda x.\lambda y.\lambda t.$ LOVE (t, y, x)

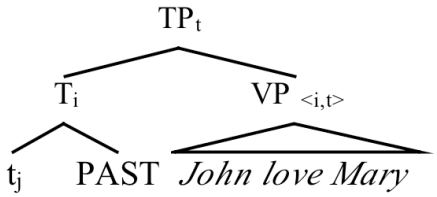
We refer to Katz's proposal in this thesis as the **"Argument structure analysis"**. His idea can be illustrated by considering the two sentences in (30) and (34) below.

The sentence *John loved Mary* in (30) contains a stative verb, "love". Its syntactic structure is illustrated in (31b), where the stative bare VP *John love Mary*, being a property of times (cf. (31a)), combines directly with the time introduced by the T node, t_j, a time variable with index *j*.

(30) John loved Mary.

(31) a. $[\![_{VP}$ John love Mary$]\!]^{g,c} = \lambda t.$ LOVE (t, *J*, *M*)

b. Stative VP $_{<i,t>}$ combines directly with a time.



Note that on a referential approach for tense, the possible value assigned to t_j bears a restriction on its temporal location with respect to the utterance time (UT). The role of the semantic tense PAST in (31b) is to impose that restriction, namely, PAST gives rise to the condition that the time assigned to the index *j* must precede the UT, as shown by the semantic value of PAST given in (32). Thus the sentence *John loved Mary* is true if and only if John loves Mary for the duration of that time, *g(j)*, as shown in (33).

(32) $[\![\text{PAST}]\!]^{g,c} = \lambda t: t < t_c. t$
(In general, sentences are evaluated with respect to a c such that t_c= UT.)

(33) $[\![\text{TP}]\!]^{g,c}$ is defined only if g(j) < t_c; where defined, $[\![\text{TP}]\!]^{g,c}$ = 1 iff *J* loves *M* for the duration of g(j).

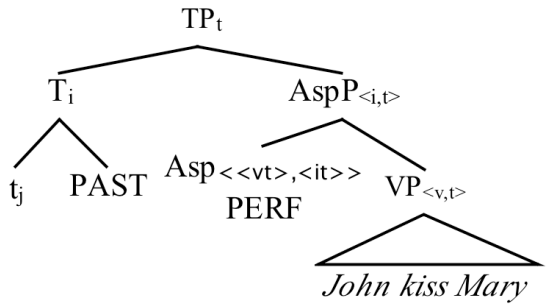
In contrast, a sentence with an eventive VP like (34) *John kissed Mary* has a syntactic structure like (35b), where the VP combines first with the perfective aspect "PERF" and gives a property of times at the

AspP level. The AspP, which is of type <*i,t*> can then combine with a time.

(34) John kissed Mary.

(35) a. $[\![_{VP}$ John kiss Mary$]\!]^{g,c} = \lambda e.$ KISS (e, *J*, *M*)

b. Eventive $VP_{<v,t>}$ combines with a time via Asp.



(See Kratzer 1998)

Analyzing aspect as an element establishing the temporal order between the event time and another time (*topic time* / *reference time*) is generally considered to be the contribution of Klein (1994).[23] Kratzer (1998) gives a precise account of the semantics of aspect (*perfective*, *imperfective* and *perfect*) based on Klein's proposal. The structure in (35b) above is based on her proposal. Out of a property of events, the perfective aspect PERF creates a property of time intervals that holds of all intervals within which an event bearing the original property takes place. The lexical entry of PERF given in (36a) is based on Kratzer (1998) and the truth value of the sentence *John kissed Mary* is given in (36b).

Aspect relates the event time to the reference time.

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[23] See also Chapter 2 (Section 2.2.3) for discussion of Reichenbach (1947) and Klein (1994)'s theory of tense and aspect.

(36) a. $[\![\text{PERF}]\!]^{g,c} = \lambda P.\lambda t.\ \exists e\ [P(e)=1\ \&\ \tau(e) \subseteq t]$
where τ is a "temporal trace" function from an event to its running time (Krifka 1989a)

b. $[\![\text{TP}]\!]^{g,c}$ is defined only if $g(j) < t_c$; where defined,
$[\![\text{TP}]\!]^{g,c}$ = 1 iff there is an event of *J* kissing *M*,
such that its running time is included in g(j).

The contrast between the structure in (31b) and that in (35b) shows that sentences describing states differ syntactically from sentences describing particular events on the part in-between the TP and the VP, namely, the aspect. A stative VP combines directly with the time introduced by the T node; while an eventive VP combines first with an aspect that situates the running time of the event described by the VP with respect to a RT. The source of this syntactic difference lies in the different argument structures of predicates: stative predicates are properties of times, while eventive predicates are properties of events.

3.4.1.2 Argument structure analysis and Mandarin

The argument structure hypothesis developed by Katz (1995, 2003) that distinguishes stative predicates from eventive predicates is based on English data. To make it work, Katz needs to assume covert aspect for English. As we shall see, Mandarin is a perfect example to illustrate his theory, since aspect is obligatorily marked overtly. We extend the argument structure hypothesis to Mandarin and show how Mandarin provides evidence for this analysis.

Recall that the fundamental difference between stative predicates and eventive predicates according to Katz lies in their argument structure: stative predicates are predicates of times while eventive predicates are predicates of events. One argument for making this distinction is that it leads to a straightforward account of the contrast between (37) and (38).

(37) John is happy.

(38) a. ?? Max eats the cake.
b. Max is eating the cake.

With a state *be happy*, (37) is grammatical and is construed as a current state with respect to the moment of the utterance. In contrast, a

sentence with an eventive predicate *eat the cake*, like in (38), requires an aspect (the progressive in (38b)) to be felicitous. The syntactic structures of (37) and (38b) differ in the presence of an Asp node: (38b), but not (37), needs an Asp projection under which the progressive aspect maps the predicate of events to a predicate of times.

Bearing this contrast in mind, consider now the past-tensed sentences in (39) and (40) below:

(39) John was happy.

(40) a. Max ate the cake.
b. Max was eating the cake.

Apparently, the sentences in (39) and (40) differ from sentences in (37) and (38) only in their tense: (39) is the past-tensed counterpart of (37), and (40) the past-tensed counterpart of (38). Consequently, the temporal construal of (39) and (40) should in principle follow the same reasoning that we used above for (37) and (38). However, the question arises as to why (40a) but not (38a) is grammatical. Recall that eventive predicates, being properties of events, require an aspect to be able to combine with a time, predicting the ill-formedness of (38a), but it should also predict (40a) to be ungrammatical, contrary to fact.

In order to explain why sentences like (40a) are grammatical, Katz postulated a *covert perfective aspect*, which turns the event predicate into a predicate of times.

Reconsider English sentences (30) and (34) discussed in Section 3.4.1.1, repeated below as (41a) and (41b). It's not obvious that the structure of (41b) contains a perfective aspect "PERF", as shown in (42b), since it is not morphologically realized in English.

(41) a. John loved Mary.

b. John kissed Mary.

(42) a. $[_{TP}\ [_{T}\ t_i\ \text{PAST}]\ [_{VP}\ \text{John love Mary}]]$

b. $[_{TP}\ [_{T}\ t_i\ \text{PAST}]\ [_{AspP}\ \textbf{PERF}\ [_{VP}\ \text{John kiss Mary}]]]$

In Mandarin, however, the contrast predicted by Katz's analysis is straightforward. Consider (43a) and (43b) below, the Mandarin counterparts of the English sentences in (41) above.

(43) a. Nèi-shíhou Lǎomóuzi xǐhuān Gǒng Lì
that-time Laomouzi love Gong Li
'At that time, Laomouzi loved Gong Li.'

b. Lǎomóuzi qīn ***(le)** Gǒng Lì
Laomouzi kiss PERF Gong Li
'Laomozi kissed Gong Li.'

(44) a. [$_{TP}$ that-time$_i$ [$_{TP}$ t$_j$ [$_{VP}$ L love G]]]

b. [$_{TP}$ t$_j$ [$_{AspP}$ **le** [$_{VP}$ L kiss G]]]

Besides the part under the T node, the fundamental difference between the English examples and the Mandarin examples is that *the perfective aspect is overt in Mandarin*: the presence of the perfective *le* is obligatory in (43b). As we stated earlier in this chapter, episodic readings are only licensed by overt aspect in Mandarin.

The overtly marked aspect makes Mandarin a perfect illustration of Katz's hypothesis. Mandarin data, as we have seen, provide evidence for Katz's argument structure analysis of stative and eventive predicates: states are predicates of time intervals while eventives are predicates of events; aspect maps an event predicate to a time predicate.

Notice that the English examples are represented with a semantic tense PAST in (42), while the Mandarin counterparts in (44) contain no semantic tense. The issue of whether Mandarin has a semantic tense will be addressed in Chapter 5. We will show that there are constraints on the possible values assigned to the time variable under the T node, and this suggests that Mandarin has a covert tense.

Bare states and time adverbials

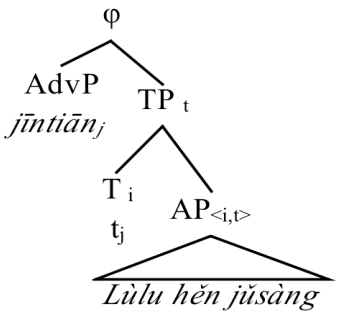
Recall our discussion in Section 3.1.1 concerning the temporal construal of sentences with a stative predicate: they are well-formed without being overtly marked for aspect. This is so because, under the current analysis, a stative predicate, being a property of times, can combine directly with a time and gives a truth value at the sentence level. This section demonstrates in detail how to derive the temporal readings of sentences with stative BPs (with or without time adverbs) on the argument structure analysis.

In the presence of a **present time adverbial** like *jīntiān* 'today', a sentence with a bare state like (3) repeated here as (45) yields a present state reading.

(45) **Jīntiān** Lùlu hěn jǔsàng.
today Lulu very frustrated
'Today, Lulu is very frustrated.'

The structure of (45) is illustrated in (46), where the AP (of type <*i,t*>) combines with a time (of type *i*) under T. In this case, the time variable t_i under T is bound by the time interval described by the overt adverb *jīntiān* 'today', namely, the day of the utterance. Thus the sentence is true if and only if *Lulu* is frustrated throughout the day of the utterance, as shown in (48c). Thus the present reading of (45) is correctly predicted.

(46) [φ Today$_j$ [$_{TP}$ t_j [$_{AP}$ Lùlu very frustrated]]



(47) a. ⟦hěn jǔsàng⟧^{g,c} = λx.λt. x is frustrated for the duration of t
b. ⟦Lùlu⟧^{g,c} = *L*
c. ⟦t_j⟧^{g,c}= g(j)
d. ⟦Jīntiān⟧^{g,c}= the day that contains t_c,
where t_c corresponds to the utterance time for a root clause.

(48) a. ⟦$_{AP}$ Lùlu hěn jǔsàng⟧^{g,c} = λt. *L* is frustrated throughout t

b. ⟦TP⟧^{g,c} =1 iff *L* is frustrated throughout g(j)

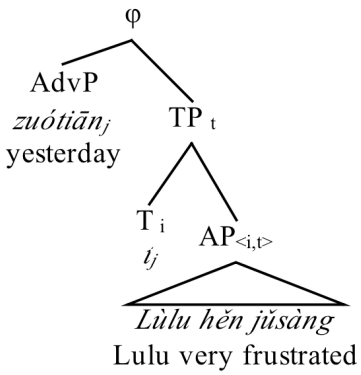
c. ⟦φ⟧^{g,c} =1 iff *L* is frustrated throughout the day of t_c;
0 otherwise

In the presence of a **past time adverb** like *zuótiān* 'yesterday', a sentence with a bare state receives a past reading, as shown in (49):

(49) **Zuótiān** Lùlu hěn jǔsàng.
yesterday Lulu very frustrated
'Yesterday, Lulu was very frustrated.'

(50) below illustrates the structure of (49) and it is very similar to (46): they only differ in the value of the time under the Adv node. In (50), the state described by the predicate is evaluated with respect to the time denoted by the past time adverb *zuótiān*, namely, the day before the day of the utterance. Thus, the sentence is true only if *Lùlu*'s frustration holds throughout the day before the day of the utterance, as shown in (52). That's how we derive the past reading for (49).

(50) [φ Yesterday$_j$ [$_{TP}$ t$_j$ [$_{AP}$ [Lulu very frustrated]]



(51) a. ⟦hěn jǔsàng⟧^{g,c} = λx.λt. x is frustrated for the duration of t
b. ⟦Lùlu⟧^{g,c} = *L*
c. ⟦t$_j$⟧^{g,c}= g(j)
d. ⟦zuótiān⟧^{g,c}= the day before the day that contains t$_c$

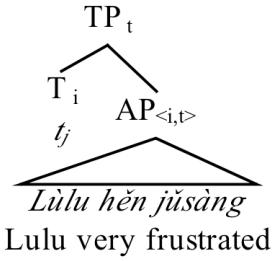
(52) ⟦φ⟧^{g,c} =1 iff *L* is frustrated throughout the day before the day containing t$_c$; 0 otherwise

In the **absence of any overt temporal adverbial**, a sentence with a bare state usually receives a present interpretation when uttered out of the blue, as shown in (53):

(53) Lùlu hěn jǔsàng.
Lulu very frustrated
'Lulu is very frustrated.'

Why do we get a present reading for (53)? Under our analysis, (53) has a structure like in (54) below, where t_j is a free time variable, which gets its value by the assignment function. Thus the sentence is true only if *Lulu*'s frustration holds throughout the interval assigned to t_j, *g(j)*, as shown by the semantic value given in (55).

(54) [t_j [Lulu very frustrated]]



(55) $[\![TP]\!]^{g,c}$ =1 iff *L* is frustrated throughout g(j); 0 otherwise

Note that (55) says nothing about how we get the value for t_j, and whether there are any constraints on the temporal location of *g(j)*. The question then is why (53) yields a present reading. The explanation given here is rather pragmatic: when a root clause is uttered out of the blue, the most salient time is the UT, and since sentences are evaluated with respect to assignments with salient objects in their range, *g(j)* generally coincides with UT. That's why (53) gets a present reading.

To summarize, sentences with stative BPs yield stative readings, and they convey that the state described by the predicate is true at a time. With a past time adverb, the described state is interpreted as being situated in the past; with a present time adverb, the described state has a present reading. In the absence of (overt / covert) temporal adverbials, a sentence with a bare state receives a present reading when it is uttered out-of-the-blue. We can account for these readings by assuming that states are predicates of times. A stative BP combines with a time introduced by the T node and gives a truth value. The

sentence is true if and only if the described state holds for the duration of the time under the T node. Thus, our proposal correctly accounts for the present and the past readings of stative BPs.

The reader might notice that nothing has been said concerning the interaction of bare states with *future* time adverbs. We deal with future cases in Chapter 5, and we show that there is an asymmetry in the behavior of future time adverbs and past time adverbs as to their interaction with sentences with bare predicates. Future time adverbs fail to temporally anchor bare sentences by themselves: a modal is required to license future readings. From this point of view, future is less "accessible" than past.

We will see in the following section how our analysis captures the temporal readings of sentences with a bare eventive predicate.

Bare eventive predicates

Recall the "Bare Predicate Generalizations" in Section 3.3: we have shown that sentences with a bare eventive predicate (*accomplishment*, *achievement*, *activity*) only allow generic readings, and that the episodic readings are licensed for eventive predicates only in the presence of an overt aspect (cf. BPG 2).

How do we account for these two generalizations above? In other words, how do we derive the generic readings for sentences containing eventive BPs (cf. BPG 2) and what is the source of the lack of episodic readings for aspectually unmarked sentences with eventive predicates? The first question will be discussed in Chapter 4, in which we propose an analysis of the generic readings of sentences containing eventive BPs. The section that follows attempts to answer the second question by the *argument structure* analysis of the semantics of eventive predicates.

Consider first (56) below, a root clause with a bare accomplishment *dú Sān Guó Yǎnyì* 'read *Romance of the Three Kingdoms*', without any modifying adverbial:

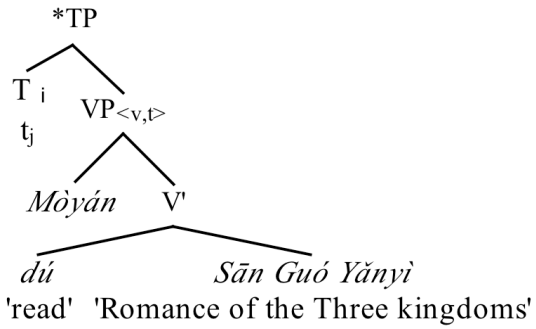
(56)	??Mòyán	dú	"Sān	Guó	Yǎnyì".
	Moyan	read	three	kingdom	romance

??'Moyan reads *Romance of the Three Kingdoms*.'

(56) sounds odd for most Mandarin speakers consulted, and it cannot be used to describe an episodic (present / past) event of *Moyan* reading the *Romance of the Three Kingdoms*.

Why is the root clause with a bare accomplishment unable to be used in this way? Recall that bare eventives are properties of events (of type <*v,t*>) according to the argument structure hypothesis. Therefore, they cannot combine directly with a time, which is of type *i*, rendering the structure in (57) below uninterpretable.

(57)



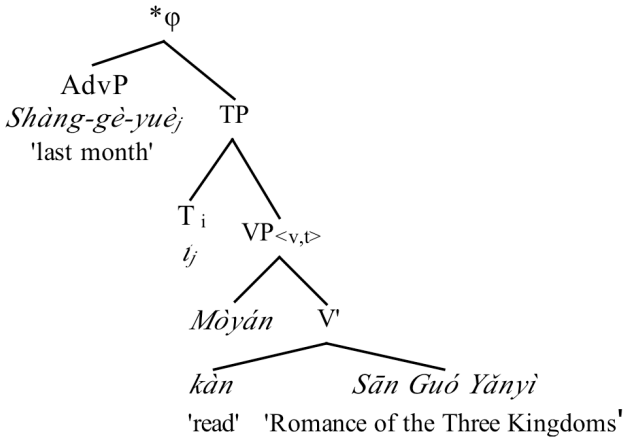
As we have seen in Section 3.1, some sentences with eventive BPs are ungrammatical even if there is an overt temporal adverb. Take (58) for example:

(58) **Shàng-ge-yuè**, Mòyán kàn ***(le)** "Sān-Guó Yǎnyì".
up-CL-month Moyan read PERF three-kingdom romance
'Moyan read *Romance of the Three Kingdoms* last month.'

The adverb denoting a past time interval *shàng-gè-yuè* 'last month' in (58) does not license a past reading for the sentence. An overt aspect is required for the sentence to be felicitous. In other words, time adverbs cannot save sentences with an event BP from ill-formedness.

This observation can be carried over to follow from our analysis. Given the structure in (57), a sentence like (58) will have a structure like (59):

(59)



Since the mismatch between the eventive VP and the time under the T head remains unresolved in (59), the extra projection for the time adverb cannot save the structure from uninterpretability.

It's because the projection is there, the VP could yield the semantics

If TP is not there, we cannot rule out sentences like 57.

To conclude, our assumptions about the argument structure of the predicates predict that all sentences with eventive BPs are uninterpretable on episodic readings. The lack of episodic readings of sentences with eventive BPs (cf. BPG 2) is thus correctly captured. As noted above, how generic construals are arised will be discussed in Chapter 4.

In Section 3.4.2, we show that the argument structure hypothesis also correctly captures the readings of sentences with an overt aspect. The crucial point is that aspect, being of type <<*v*,*t*>,<*i*,*t*>>, matches properties of events to properties of times. In other words, aspect locates the running time of the event described by the predicate with respect to another time, yielding a temporally anchored particular event. As illustration, the distribution of the progressive aspect *zài* and perfective aspect *le* will be discussed.

3.4.2 Overt aspect

The data discussed earlier in this chapter (cf. Section 3.1) show that sentences with eventive BPs lack episodic readings. In order to license episodic readings, an overt aspect is required. This follows from the argument structure hypothesis, according to which eventive predicates are properties of events (of type <*v*,*t*>), and thus must combine with an aspect (of type<<*v*,*t*>,<*i*,*t*>>), that maps properties of events to properties of times, before they can combine with a time (of type *i*).

In this section, we discuss how our analysis captures the temporal readings of sentences with an overt aspect. In particular, we show the derivation of the semantic value for sentences with the progressive aspect marker *zài* or the perfective aspect marker *le*.

3.4.2.1 Overt progressive aspect

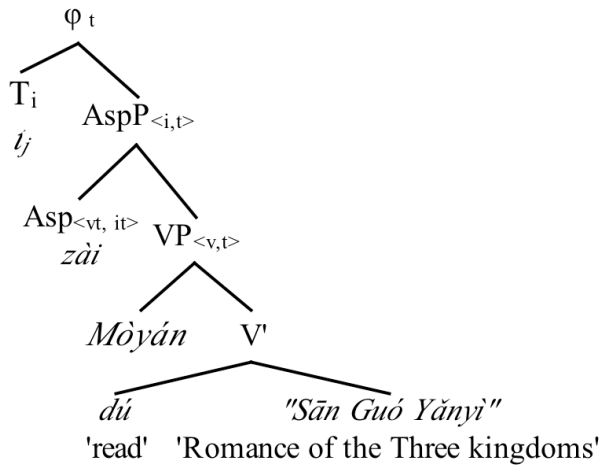
Consider (60) below, in comparison with (56) above:

(60) Mòyán **zài** dú "Sān Guó Yǎnyì".
Moyan PROG du three kingdom romance
'Moyan is reading *Romance of the Three Kingdoms*.'

With an overt progressive aspect *zài*, (60) is well formed and is interpreted as an ongoing present event of *Mòyán* reading *Romance of the Three Kingdoms*. (60) contrasts with (56), which is not grammatical.

Under our proposal, aspect is an operator of type <<*v*,*t*>,<*i*,*t*>>: it maps a property of events to a property of times. Since there is no zero aspect in Mandarin according to our hypothesis, an eventive VP must combine first with an overt aspect to be able to take a time as argument, as shown in (61):

(61)



The overt progressive head *zài* takes a property of events described by *Mòyán dú Sān Guó Yǎnyì* [Moyan read *Romance of the Three Kingdoms*] and gives a property of times at the AspP level. The value of t_j, *g(j)*, saturates the time slot of the AspP and returns a truth value for the proposition.

At this stage, we are able to derive an on-going present reading for (60). I assume that *zài*, just like the progressive in English, requires a time to be included in the running time of the event described by the VP, as shown in the denotation given below:[24]

(62) $[\![zài]\!]^{g,c} = \lambda P_{<v,t>}. \lambda t. \exists e[P(e)=1 \ \& \ t \subseteq \tau(e)]$

(62) says that *zài* takes a predicate of events *P* (of type <*v*,*t*>) and gives a predicate of times, true of a time *t* that is included within the running time of an event *e* that has the property *P*.

(63) below gives the semantics for the minimal constituents of (61), and the detailed derivation is given in (64):

---

[24] The progressive has been argued to involve modality. (Dowty 1977, Landman 1992, Ferreira 2004, a.o.) For reason of simplification, we do not include the modality in the semantics of Mandarin *zài*.

(63) a. $[\![\text{dú}]\!]^{g,c} = \lambda y.\lambda x.\lambda e.$ READ (e, x, y)
b. $[\![\text{Sān Guó Yǎnyì}]\!]^{g,c} = SG$
c. $[\![\text{Mòyán}]\!]^{g,c} = M$
d. $[\![zài]\!]^{g,c} = \lambda P_{<v,t>}.\ \lambda t.\ \exists e[P(e)=1\ \&\ t \subseteq \tau(e)]$
e. $[\![t_j]\!]^{g,c} = g(j)$

(64) a. $[\![_{VP}$ Mòyán dú *Sān Guó Yǎnyì*$]\!]^{g,c} = \lambda e.$ READ (e, *M*, *SG*)
b. $[\![_{AspP}$ *zài* [Mòyán dú *Sān Guó Yǎnyì*] $]\!]^{g,c} = \lambda t.\ \exists e$ [READ (e, *M*, *SG*) & $t \subseteq \tau(e)$]
c. $[\![\varphi]\!]^{g,c} = 1$ iff $\exists e$ [READ (e, *M*, *SG*) & $g(j) \subseteq \tau(e)$], 0 otherwise

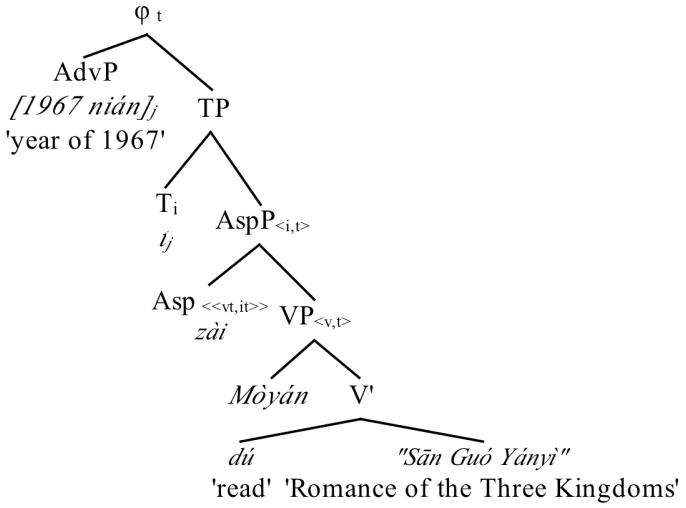
According to the last line of (64), φ is true if and only if there is an event of *Mòyán* reading *Romance of the Three Kingdoms*, whose running time includes *g(j)*. When (64) is uttered out of the blue, the most salient time is the UT. Thus t_j gets the UT as its value. Consequently, the time of the reading event should include the UT, and the ongoing present reading of (64) is correctly predicted.

The question arises whether our analysis can also capture temporal readings of progressive **sentences with a time adverb**. Consider (65) below:

(65) 1967 nián, Mòyán zài dú "Sān-Guó Yǎnyì".
1967-year Moyan PROG du three-kingdom romance
'In 1967, Mòyán was reading *Romance of the Three Kingdoms*.'

In the presence of a past time adverbial *1967 nián* 'the year of 1967', (65) yields an ongoing past reading. How can we account for this past reading? Recall our analysis for bare states accompanied by a past time adverb: the variable t_j should be bound by the time interval denoted by the temporal adverb. Therefore, *1967 nián* in (65) provides a time interval that saturates the time slot of AspP and gives the truth value for the sentence, as shown in (66) below:

(66)



If *1967 nián* has the semantics as in (67), the truth conditions of (65) should be something like in (68):

(67) a. ⟦dú⟧^{g,c} = λy.λx.λe. READ (e, x, y)
b. ⟦Sān Guó Yǎnyì⟧^{g,c} = *SG*
c. ⟦Mòyán⟧^{g,c}=*M*
d. ⟦*zài*⟧^{g,c} = λP$_{<v,t>}$. λt. ∃e[P(e)=1 & t ⊆ τ (e)]
e. ⟦1967 nián⟧^{g,c} = *the year of 1967*
f. ⟦t$_j$⟧^{g,c}= g(j)

(68) ⟦φ⟧^{g,c} =1 iff ∃e [READ (e, *M*, *SG*) & *the year of 1967* ⊆ τ(e)], 0 otherwise

(68) says that φ is true if and only if there is an event of *Mòyán* reading *Romance of the Three Kingdoms*, whose running time includes the year of 1967. Notice that (65) does not mean that *Moyan* spent every moment of the year reading the book, which seems to be an implausible scenario in the real world. Since the progressive can not only give rise to an ongoing perspective of a "single" continuous event ((69a)), but also an ongoing perspective of a sequence of episodes of a discontinuous event ((69b)), the "running time" function τ in the semantics of progressive *zài* ((67d)) returns not necessarily the

set of moments at which the described event is true, but rather the interval composed by all moments between the moment where the event starts and the moment where it finishes.

(69) a. Max was drawing a circle when I saw him.

b. Max is building a house.

The event of *Mòyán* reading *Romance of the Three Kingdoms* during the year of 1967 described by (65) is probably a discontinuous event with several episodes for some pragmatic reasons. Therefore, (68) means that (65) is true if and only if the interval beginning at the moment where *Mòyán* starts reading *Romance of the Three Kingdoms*, and ending at the moment where he finishes it includes the year of 1967.

3.4.2.2 Overt perfective aspect

We have shown that root clauses with a bare eventive do not allow episodic readings. An overt aspect is required to license a past or ongoing reading for a bare eventive. In this section, we look into the semantics of sentences with a perfective aspect to see how our analysis captures their temporal readings.

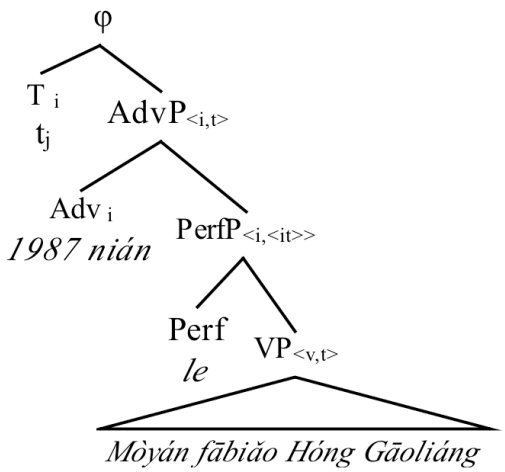
Compare (70a) and (70b) below, two sentences with the same eventive predicate *fābiǎo Hóng Gāoliáng Jiāzú* 'publish *Red Sorghum Clan*':

(70) a. ??1987 nián, Mòyán fābiǎo *Hóng Gāoliáng Jiāzú*.
1987 year Moyan publish Red Sorghum Clan

b. 1987 nián, Mòyán fābiǎo **le** *Hóng Gāoliáng Jiāzú*.
1987 year Moyan publish PERF Red Sorghum Clan
'In 1987, Moyan published *Red Sorghum Clan*.'

(70a) is ill-formed with a bare achievement while (70b) is fine with a perfective marker *le*. According to our analysis, the overt perfective aspect takes a property of events denoted by the VP *Mòyán fābiǎo Hóng Gāoliáng Jiāzú* [Mòyán publish *Red Sorghum Clan*] and gives a property of times, which then can combine with a time under T, as shown in (71) below:

(71)



More precisely, the temporal order that directs our understanding of the sentence in (70b) comes from the perfective aspect *le*. We assume that *le* has the lexical entry given in (72):

(72) $[\![le]\!]^{g,c} = \lambda P_{<v,t>}. \lambda t'.\lambda t.\ t' < t \ \& \ \exists e\ [P(e)=1 \ \& \ t' \supseteq \tau(e)]$

(72) says that *le* takes a predicate of events *P* (type <*v*, *t*>) and gives a relation between times that holds between a time *t'* and a time *t* when *t'* precedes *t* and includes the running time of an event with property *P*. The semantics of *le* given in (72) is a preliminary analysis. We will redefine it later in (77).

To explain (72) in terms of Reichenbach (1947) and Klein (1994), *t'* is the reference time (RT) and *t* is the UT (or another evaluation time). Recall that in Reichenbach and Klein's tense-aspect system, tense orders the RT to UT, and aspect relates the event time (ET) to the RT. Since the semantics of *le* in (72) contains at the same time information about the ordering of RT and UT (*t'* < *t*) and the inclusion

relation between RT and ET (*t' ⊇ τ(e)*), we can conclude that *le* is not a pure aspectual marker, but a mixture of tense-aspect marking.[25]

The lexical entries and the detailed derivation of the semantic values in (70b) are given below:

(73) a. $[\![\text{fābiǎo}]\!]^{g,c} = \lambda y.\lambda x.\lambda e.$ PUBLISH (e, x, y)
b. $[\![\textit{Hóng Gāoliáng Jiāzú}]\!]^{g,c} = \textit{HGL}$
c. $[\![\text{Mòyán}]\!]^{g,c} = \textit{M}$
d. $[\![\textit{le}]\!]^{g,c} = \lambda P_{<v,t>}.\ \lambda t'.\lambda t.\ t' < t\ \&\ \exists e\ [P(e)=1\ \&\ t' \supseteq \tau(e)]$
e. $[\![\text{1987 nián}]\!]^{g,c} = \textit{the year of 1987}$
f. $[\![t_j]\!]^{g,c} = g(j)$

(74) $[\![\text{VP}]\!]^{g,c} = \lambda e.$ PUBLISH (e, *M*, *HGL*)
$[\![\text{AspP}]\!]^{g,c} = \lambda t'.\ \lambda t.\ t' < t\ \&\ \exists e\ [$PUBLISH (e, *M*, *HGL*) $\&\ t' \supseteq \tau(e)]$
$[\![\text{AdvP}]\!]^{g,c} = \lambda t.$ *the year of 1987* $< t\ \&\ \exists e\ [$PUBLISH (e, *M*, *HGL*) $\&$ *the year of 1987* $\supseteq \tau(e)]$

---

[25] This is not the whole story about *le*. Note that *le* can also combine with some bare states, such as *zhīdào* 'know' in (i) and *bing* 'sick' in (ii) below, yielding an inchoative state.

(i). Xiǎomǐ zhīdào le bèi táotài de zhēnzhèng yuányīn.
Xiaomi know PERF PASSIV eliminate *de* real reason
'Xiaomi has known the real reason for her elimination.'

(ii). Xiǎomǐ bìng le.
Xiaomi sick PERF
'Xiaomi has got sick / is sick.'

It has been argued that there are two different *le*: the verbal suffix *le* and the sentence final *le*. Both behave like clitics that form a unit with the preceding word (Chao 1968:246, Teng 1973, Chan 1980, Li & Thompson 1981:296, Sybesma 1999:65, Paul 2015:14). The verbal *le* is analyzed as a perfective aspect under Asp°, while the sentence final *le* gives rise to "currently relevant state" (Li and Thompson 1981:238, Paul 2015). There are also proposals for unifying the semantics of *le*, but these proposals are problematic since the verbal *le* and the sentence final *le* can co-exist in one sentence, as pointed out by Paul (2015), thus contribute differently to the interpretation.

$[\![\varphi]\!]^{g,c}$ = 1 iff *the year of 1987* < g(j) & ∃e [PUBLISH (e, *M*, *HGL*) & *the year of 1987* ⊇ τ(e)], 0 otherwise

The last line in (74) states that the proposition φ is true if and only if there is an event of *Mòyán* publishing *HGL* whose running time is included within the year of 1987, which precedes the interval assigned to t_i, *g(j)*. When (70b) is uttered out of the blue, the most salient time is the moment of utterance t_c, and thus *g(j)* gets as its value the moment of the utterance. Therefore, the event time of *Mòyán* publishing *HGL* must be included in the year of 1987, which precedes t_c, the moment of utterance. In other words, (70b) yields a past reading.

The problem with this analysis is that it makes wrong predictions about perfective sentences with a deictic adverb denoting an interval including the utterance time, such as (75):

(75) Jīnnián, Mòyán fābiǎo **le** *Hóng Gāoliáng Jiāzú*.
this-year Moyan publish PERF Red Sorghum Clan
'This year, Moyan published *Red Sorghum Clan*.'

Following the analysis proposed above, (75) should have the logical form and the truth conditions as in (76):

(76) a. [t_j [Jīnnián [le [Mòyán fābiǎo *Hóng Gāoliáng Jiāzú*]]]]

b. $[\![\varphi]\!]^{g,c}$ = 1 iff *the year including* t_c < g(j) & ∃e [PUBLISH (e, *M*, *HGL*) & *the year including* t_c ⊇ τ(e)], 0 otherwise

Since *g(j)* coincides with t_c when (75) is uttered out of the blue, (76b) requires that the year including UT precede UT, a condition that will rule out (75). However, (75) is perfectly fine and conveys that *Mòyán* has published the novel *Red Sorghum Clan* at the moment of the utterance and the time of the publication is included in the year containing the moment of the utterance. Therefore, some parts in our analysis should be revised to capture the reading of sentences like (75).

We redefine the semantics of the perfective marker *le* as follows:

(77) $[\![le]\!]^{g,c} = \lambda P_{<v,t>}.\ \lambda t'.\lambda t.\ \exists e\ [P(e)=1\ \&\ t' \supseteq \tau(e)\ \&\ \mathbf{\tau(e) < t}]$

What differentiates (77) from our first definition in (72) repeated below as (78) is that in (77), *le* requires the event time (*τ(e)*), but not the reference time (*t'*) to precede a contextually determined time *t*.

(78) $[\![le]\!]^{g,c} = \lambda P_{<v,t>}. \lambda t'.\lambda t.$ **t' < t** & $\exists e$ [P(e)=1 & t' $\supseteq \tau(e)$]

Note that (75) has the anteriority in the definition. This is generally assumed in the literature. Given (77), the sentence in (75) has the truth conditions in (79):

(79) $[\![\varphi]\!]^{g,c}$ = 1 iff $\exists e$ [PUBLISH (e, *M*, *HGL*) & *the year including* $t_c \supseteq$ $\tau(e)$ & $\tau(e) < g(j)$], 0 otherwise

This time, φ is true if and only if there is an event of *Mòyán* publishing *HGL* such that its running time is included within the year of the utterance and precedes the interval assigned to t_j, *g(j)*.

Thus, our assumption about the mapping of properties of events to the properties of times together with the assumption about the semantics of the progressive *zài* and the perfective *le*, correctly captures the readings of aspectually marked sentences: sentences with an eventive predicate allow ongoing present readings when they are overtly marked by the progressive aspect *zài*, and they only allow past-shifted episodic readings when they are marked by perfective aspect *le*.

3.4.3 Time variables and the T projection

On an argument structure analysis, there is an element that realizes the temporal argument of the verb or the aspect marker, namely, a variable under T, which is provided with a value by the assignment function.

As we have seen from the previous sections, our analysis with the assumption of a T projection correctly captures the temporal interpretation of sentences with or without an overt aspect: sentences with eventive BPs cannot describe episodic events because they are simply uninterpretable, due to the type mismatch between an eventive VP (of type <*v,t*>) and the time under T (of type *i*); sentences with stative BPs are well-formed and interpretable, because stative VPs (of type <*i,t*>) are compatible with the time (of type *i*) introduced by T, and this time then serves as a reference for anchoring the state, yielding a past or present reading.

Another question closely related to our current discussion about the T projection is whether Mandarin, which lacks morphological

tense, has semantic tense. Chapter 5 is dedicated to this issue. We argue that the time intervals assigned to the variable under T do bear restrictions, supporting the hypothesis of a semantic covert tense in Mandarin.

3.5 Alternative analyses

In this section, we present alternative analyses of the temporal construal of bare predicates in Mandarin. We show that these treatments cannot go through for Mandarin and that our analysis better captures the data discussed so far.

3.5.1 The default viewpoint aspect hypothesis/ Telicity-dependent approach (Lin 2006)

A classic hypothesis often adopted for deriving temporal readings of "tenseless" VPs is the "Default Viewpoint Aspect" (DVA) analysis (Bohnemeyer & Swift 2004 (B&S 2004), Lin 2006, Smith & Erbaugh 2005 (S&E 2005), Smith 2008).

Recall our discussion about aspect in Chapter 2 (Dahl 1981, Smith 1991, Olsen 1997 a.o.): situation aspect is distinguished from viewpoint aspect. Situation aspect is associated with properties of the bare predicate, while viewpoint aspect (perfective vs. imperfective) concerns perspectives on a situation or an event. In general, situation aspect is not overtly marked, but this is not the case for viewpoint aspect. Most languages possess perfective and imperfective morphemes (includin Mandarin). There are also languages, like Finnish and Icelandic, which do not have perfective or imperfective aspectual markers.

When the predicate is unmarked for aspect, either there is a "default viewpoint aspect", namely, imperfective or perfective (B&S 2004), or the viewpoint aspect is neutral in the sense that it allows either a bounded or an unbounded interpretation for the situation (Smith 1991)[26].

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[26] The neutral viewpoint focuses on the initial point and at least one inner stage of a situation. A sentence with neutral viewpoint allows either bounded or unbounded interpretations. See Smith (1991) for details.

B&S (2004) argue that in German, Inuktitut and Russian, there are correlations between the telicity of event predicates and their aspectual reference. Based on the notion o 'event realization', aspectually unmarked sentences with *telic* predicates have default *perfective* viewpoint aspect and those with *atelic* predicates have default *imperfective* aspect. Following Klein (1994)'s proposal that aspect relates the event time to the topic time (the time about which something is asserted), B&S (2004) define the perfective aspect (PRV) and the imperfective aspect (IMPF) as follows:

(80) a. PRV : = $\lambda P\, \lambda t_{TOP} \exists e[\, P(e) \wedge \tau(e) \subseteq t_{TOP}]$
b. IMPF : = $\lambda P\, \lambda_{TOP} \exists e[\, P(e) \wedge t_{TOP} \subset \tau(e)]$[27]

(Bohnemeyer & Swift 2004:280)

where the perfective aspect (80a) encodes inclusion of the running time of the event $\tau(e)$ in the topic time t_{TOP}, and the imperfective aspect (80b) encodes the proper inclusion of t_{TOP} in $\tau(e)$. In terms of 'event realization', perfective gives rise to the realization of the whole event, while imperfective only entails partial realization of the event.

B&S (2004) inspired Lin's (2006) *tenseless* treatment of Mandarin. Lin claims that there is no tense node in Mandarin and we obtain the temporal interpretation of a sentence from default aspect, aspectual particles, and pragmatic reasoning. In particular, when there are neither temporal adverbs nor aspectual markers in a sentence, the temporal construal can be derived from the "Default Viewpoint Aspect" of the predicate.

In his derivation of temporal relation, Lin also adopts the three time spans in Klein (1994): Speech Time, Topic Time (TT) and Event Time (ET). In order to be consistent in the terminology, we will use "Utterance Time (UT)" to refer to "Speech Time".

An *atelic* predicate denoting a state or an activity (e.g. *máng* 'be busy' or *dǎ lánqiú* 'play basketball') has imperfective viewpoint aspect by default, the topic time should be included in the event time (TT $\subseteq$ ET). If the default topic time is the utterance time (TT=UT),

---

[27] Recall that "τ" is the temporal trace function that gives the run time of an event (See Krifka 1989a).

the utterance time should be included within the event time (UT ⊆ ET), and the sentence has a present reading, as illustrated in (81) below:

(81) Imperfective

----[$_{ET}$---[$_{TT}$---]---]--->
TT=UT(default) ⇒ ----[$_{ET}$---[$_{UT}$---]---]--->

In contrast, a *telic* predicate, that is, an achievement or an accomplishment (eg. *dǎpò yígè huāpíng* 'break a vase') has perfective aspect by default. The event time should therefore be included in the topic time (ET⊆TT). Since the default topic time is the utterance time (TT=UT), the running time of the event denoted by a telic predicate should be included in the UT (ET⊆UT), as shown in (82) below:

(82) Perfective

----[$_{TT}$---[$_{ET}$---]---]--->
TT=UT(default) ⇒ ----[$_{UT}$---[$_{ET}$---]---]--->

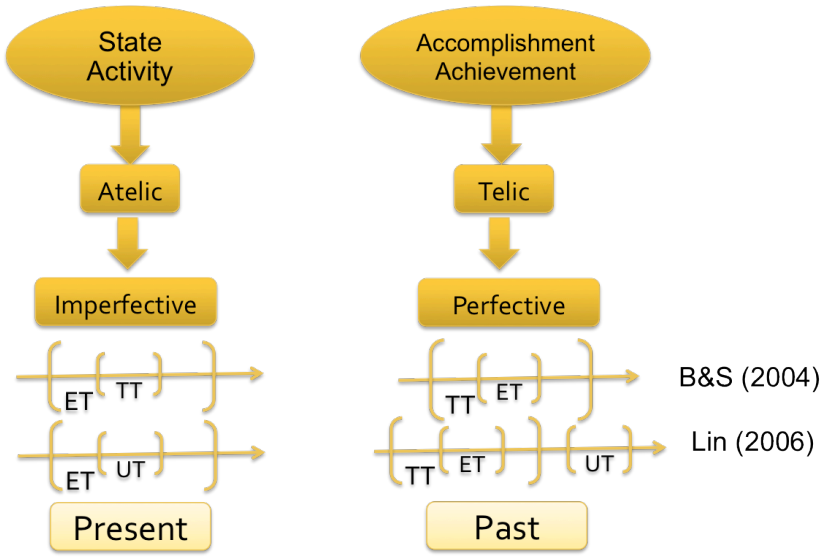
This derivation leads to a prediction that a zero-marked telic predicate yields a *present* reading, that is, the time of the event denoted by the predicate is included within the utterance time, which is normally very short. Being aware that the result of the derivation is not right, Lin revises the definition of perfective aspect given in B&S (2004) by stipulating a precedence relation between a topic time variable t_{Top} and the evaluation time variable t_0 in the lexical meaning of perfective, as shown in (83). The perfective aspect thus contains not only aspectual information ($t \subseteq t_{Top}$) but also temporal relation ($t_{Top} < t_0$). Consequently, a telic predicate gets a past reading via the default perfective aspect.

(83) Perfective aspect = $\lambda P_{<i,t>} \lambda t_{Top} \lambda t_0 \exists t[t \subseteq t_{Top} \wedge P(t) \wedge t_{Top} < t_0]$

(Lin 2006)

(84) below recapitulates the derivation of the temporal readings for bare predicates on a *Default Viewpoint Aspect* approach à la Lin (2006).

(84) *Default Viewpoint Aspect*



Note that B&S predict the grammatical aspect from the lexical aspect. Lin adds in the definition of perfective a precedence relation, thus predicts past readings for perfective predicates and present readings for imperfective predicates. Bare states and bare activities are predicted to yield present readings by the DVA analysis. Lin's analysis aims to capture the temporal interpretations of the sentences below: (85a) contains a bare state *hěn máng* 'very busy', and (85b) a bare activity *dǎ lánqiú* "play basketball".

(85) a. Zhāngsān hěn máng.
Zhangsan very busy
'Zhangsan is very busy.'

b. Nǐ dǎ lánqiú ma?
2SG play basketball Q
'Do you play basketball?'

(Lin 2006:3)

The sentence in (85a) with a bare state *hěn máng* 'very busy' has a present state reading, which is correctly predicted by the DVA hypothesis: a stative predicate has default imperfective viewpoint aspect which requires the topic time (which coincides with the UT) to

be included in the time of the eventuality described by the predicate, that is, the period during which Zhangsan is busy. Accordingly, (85a) conveys that the UT is within the time during which *Zhangsan* is busy, in other words, a sentence with a bare state like (85a) allows a present reading.

Although the DVA hypothesis captures the present readings of bare states, it fails to capture the temporal readings of sentences with bare activities. The sentence in (85b) above contains a bare activity *dǎ lánqiú* 'play basketball', and it only allows a generic reading, as also pointed out by Lin. Recall that under the DVA approach, an activity, being an atelic predicate, has default imperfective aspect and thus the UT should be included within the running time of the event described by that activity predicate. In other words, a sentence with a bare activity is predicted by the DVA hypothesis to yield an *on-going* event. However, the truth-value of a generic sentence like (85b) does not depend on whether there is an on-going event at the speech time. More precisely, a sentence like (86) below is true if *Lisi* is a basketball player. The speaker can truthfully utter (86) being aware that *Lisi* is not playing basketball at the moment of his speech.

(86) Lǐsì dǎ lánqiú.
Lisi play basketball
'Lisi plays basketball.'

The DVA hypothesis thus fails to account for the obligatorily generic readings of sentences like (86). Lin (2006) does not distinguish the generic (present) reading from the on-going (present) reading, and thus there is no explanation for how to derive the generic readings for sentences with bare activities. We will present our analysis of generic construals of sentences with bare activities or other eventive predicates in Chapter 4.

Another problem with Lin's DVA analysis is that bare telic predicates (accomplishments / achievements) are predicted to yield past episodic readings. However, as we will see, his account ignores a large amount of data. His analysis is motivated by the temporal readings of sentences like (87) and (88).

(87) Tā dài wǒ qù táiběi.
3SG take 1SG go Taipei
'He took me to Taipei.'

(88) Zhāngsān dǎpò yí-gè huāpíng.
Zhangsan break one-CL vase
'Zhangsan broke a vase.'

(Lin 2006:3)

According to Lin, (87) has a past reading 'he *took* me to Taipei', while the Mandarin speakers that we consulted had a different judgment: this sentence receives a future-oriented reading, that is, "he *will take* me to Taipei". The past episodic reading can only be obtained by adding an aspectual marker *le* or *guo*.

(89) Tā dài wǒ qù le/guo táiběi.
3SG take 1SG go PERF/EXP Taipei
'He took me to Taipei.'

The future-oriented reading of (87) is not very surprising. In many other languages, we find similar sentences with the verb "go" that encode future eventualities. In French for instance, the present tensed sentences with the verb *vont* 'go.3PL.PRES' in (90) below receive future readings. In English, the verb *go* is also associated with future in cases like (91). The Mandarin sentences in (92) below receive future-oriented readings. This is so probably because of the semantic property of the bare verb *qù* 'go', which intuitively gives future orientation. A form explicit account is beyond the scope of the study.

(90) a. Où vont-ils?
where go.3PL.PRES-3PL
'Where will they go?'

b. Ils vont à Shenyang.
3PL go.3PL.PRES to Shenyang
'They will go to Shenyang.'

(91) a. Where are they going?

b. They are going to Shenyang.

(92) a. Tāmen qù nǎr?
3PL go where
'Where will they go?'

b. Tāmen qù Shěnyáng.
3PL go Shenyang
'They will go to Shenyang.'

Concerning the temporal interpretation of bare achievements, Lin gives (88) as example. With the achievement predicate *dǎpò yí-gè huāpíng* 'break a vase', (88) receives a past reading "Zhangsan broke a vase" according to Lin. Mandarin speakers that we consulted have different judgment for (88): some of them accept, but others reject (88) as a grammatical sentence. Those who accept (88) also prefer a sentence containing the perfective marker *le* shown in (93) below:

(93) Zhāngsān dǎpò **le** yí-gè huāpíng.
Zhangsan break PERF one-CL vase
'Zhangsan broke a vase.'

Lin's analysis for telic bare predicates is based on the judgment on sentences in (87) and (88), which is somewhat controversial. Even if we set aside the disagreement on the grammaticality judgment of these two sentences, there is a large amount of data that cannot be captured by the DVA approach.

Firstly, the sentences in (94a), (94b) and (94c) below are closely related to the sentence in (87) above:

(94) a. Zhāngsān dǎpò *(**le**) nèi-gè huāpíng.
Zhangsan break PERF that-CL vase
'Zhangsan broke that vase.'

b. Zhāngsān dǎpò *(**le**) tā-de huāpíng.
Zhangsan break PERF 3SG-DE vase
'Zhangsan broke his vase.'

c. Zhāngsān dǎpò *(**le**) huāpíng.
Zhangsan break PERF vase
'Zhangsan broke a vase / vases.'

These sentences differ from Lin's example in (88) only for the object part: the object in (88) is a numeral or an indefinite *yí-gè huāpíng* 'a vase', while the sentences in (94) contain either a demonstrative *nèi-gè*, a possessive pronoun *tā-de* 'his' or a bare noun. (88) is felicitous without *le*, while (94a-c) are all ungrammatical without *le*. This contrast will challenge Lin's analysis. (94c), for example, contains a

bare noun *huāpíng*, which can have an indefinite interpretation. Thus it should in principle have a similar semantic value as (88), which itself contains an indefinite *yí-gè huāpíng* 'a vase'. Lin derives the following interpretation for (88):

(95) $\exists t_{Top} \exists t \exists x[t \subseteq t_{Top} \wedge t_{Top} < s^* \wedge$ break' (x)(Zhangsan')(t) $\wedge$ vase (x)]

(Lin 2006:6)

(95) says that (88) is true iff there is a topic time t_{Top} such that t_{Top} precedes the speech time s^* and such that t_{Top} includes a time t, at which *Zhangsan* breaks a vase.

Given the similarity between (94c) and (88), (94c) should also allow a past reading under this analysis. However, as we have seen, (94c) is not felicitous in the absence of an overt marker *le*.

The puzzle of how different types of object influence the grammaticality judgment for a bare sentence is beyond the scope of this thesis, but in designing an analysis of the temporal interpretation of bare predicates, we should at least be sensitive to the existence of facts like (94a-c).

There are other data that are problematic for Lin's analysis: sentences with a *bǎ* construction require overt aspect to allow a past episodic reading. The *bǎ* construction is a very productive process of placing the object before the verb in Mandarin. In the sentences with a *ba* construction below, the particle *le* is always required to license the episodic reading, no matter what type of object the verb takes:

(96) a. Zhāngsān bǎ yí-gè huāpíng dǎpò *(**le**).
Zhangsan BA[28] one-CL vase break PERF
'Zhangsan broke a vase.'

b. Zhāngsān bǎ nèi-gè huāpíng dǎpò *(**le**).
Zhangsan BA that-CL vase break PERF
'Zhangsan broke that vase.'

---

[28] "*Bǎ*" is a particle marking the so-called *bǎ*-construction in Subject-Object-Verb order sentences.

c. Zhāngsān bǎ tā-de huāpíng dǎpò *(**le**).
Zhangsan BA 3SG-DE vase break PERF
'Zhangsan broke his vase.'

d. Zhāngsān bǎ huāpíng dǎpò *(**le**).
Zhangsan BA vase break PERF
'Zhangsan broke the vase / the vases.'

If the default aspect of a telic predicate gives rise to the past reading, as Lin claims, it is a huge challenge to explain why all the sentences above are ill-formed in their bare form.

Moreover, as we have seen earlier in this chapter (Section 3.1), bare activities never allow on-going present readings in root clauses and bare achievements / accomplishments do not have past episodic readings, contra to Lin's prediction.

All the data that we have just discussed seem to show that the DVA approach cannot be carried over to derive temporal interpretations for Mandarin bare predicates. Lin's analysis ignores a huge amount of data.

To summarize, Lin's (2006) analysis based on the DVA of the predicate predicts present readings for bare states / activities and past readings for bare accomplishments / achievements. It correctly captures the temporal interpretation of bare states, that is, they yield present readings when there is no temporal adverb excluding the utterance time. However, it cannot go through for temporal construals of bare eventive predicates, namely, bare activities, achievements and accomplishments: they only allow generic readings, but not episodic readings as claimed by Lin. To license episodic readings for a sentence with an eventive predicate in Mandarin, an overt aspect is required.

3.5.2 Boundedness analyses: Smith & Erbaugh (2005), Smith (2008)

Smith & Erbaugh (2005) (henceforth "S&E") also defend a tenseless analysis for Mandarin. The term "tense" that they use corresponds to morphological tense but not semantic tense. They claim that there is neither syntactic tense nor a finite-nonfinite distinction in Mandarin.

The temporal readings of bare predicates are derived from **aspectual viewpoint** and **situation type** (boundedness).

"Boundedness" refers to "a property of the situations expressed in sentences". To quote,

> *"Bounded situations are temporally closed, by implicit or explicit bounds (ran, broke); unbounded situations are ongoing, temporally open (running, breaking). Boundedness depends on both aspectual viewpoint and situation type."*
>
> Smith & Erbaugh (2005:715)

S&E claim that bare (zero-marked) sentences have *neutral* viewpoint aspect. That is, they can be either interpreted as bounded or unbounded situations. However, sentences with bare predicates have a consistent *default* interpretation: states and activities are unbounded, while telic and/or instantaneous events are taken to be bounded. When interpreting a sentence, we refer to the "temporal schema of its situation type", unless there is explicit information to the contrary. They put forworth the "*Temporal Schema Principle*", stating that:

> *"In a zero-marked clause, interpret a verb constellation according to the temporal schema of its situation type, unless there is explicit or contextual information to the contrary."*

Moreover, they stipulate a "deictic pattern", which makes the connection between the situation type of the predicate and its temporal location:

(97) *Deictic pattern*:
Unbounded situations are located in the Present.
Bounded events are located in the Past.

Thus, Smith & Erbaugh (2005) predict that bare states and activities, which denote unbounded situations by default, have present readings; and bare achievements, semelfactives and accomplishments, which denote bounded events by default, have past readings.

Although the "Boundedness analysis" of Smith & Erbaugh (2005) and the "Default Viewpoint Aspect" analysis adopted by Lin (2006) may differ in their specifics, the predictions they make are very similar, as illustrated in Table 6 below:

Bare predicates	**Lin**	**Smith & Erbaugh**
States / activities	On-going Present	On-going Present
Accomplishments / Achievements	Past	Past
Semelfactives	--	Past

Table 6 Temporal readings of bare predicates predicted by Lin and Smith & Erbaugh

Both Lin and S&E predict that bare states and activities yield on-going present readings, and bare accomplishments and bare achievements allow episodic past readings. The only divergence of their predictions lies in the "extra" verb class in Smith's framework, namely, the semelfactives.

Semelfactives denote single-stage events and each single stage is, according to Smith, a bounded situation. Consequently, they are interpreted as past events. There is no discussion of semelfactives in Lin (2006).

While there is this minor difference between the two accounts, neither Lin nor S&E makes right predictions about eventive predicates. Bare achievements and accomplishments are predicted to yield past readings by both Lin (2006) and S&E (2005). However, we have shown that they are ill-formed as episodic events and only overt aspectual markers license episodic past/on-going readings. Bare activities do not allow on-going readings as they predict. They are either ill-formed or yield generic readings.

3.5.3 Observations by Klein, Li & Hendriks (2000)

Klein, Li & Hendriks (2000) make some insightful remarks that are in line with our generalizations: sentences with no aspectual markers, referred to as 'zero marking' sentences, either "sound incomplete or odd, especially when uttered in isolation", or "be interpreted as a kind of imperative", or "indicate a habitual meaning" (Klein et al.

2000:765). In particular, they point out that (98), an example from Yong (1997:7), makes no assertion "with respect to any particular interval" in the absence of the perfective marker *le*, which is a "temporal assertion marker".

(98) Tā (xīngqītiān) xǐ yīfu.
he (Sunday) wash clothes
'He washes clothes (on Sundays).'

Recall that in the system of Klein (1994), aspect relates the ET to Topic Time (TT) and tense relates the TT to the UT.[29] Both Klein (1994) and Klein et al. (2000) defend a "tenseless" treatment of Mandarin and argue that adverbials and the context play the role of tense. That zero marking sentences like (98) are not assertions about a temporally anchored specific event because there is no aspect that temporally anchors the event described by the predicate to the TT. We share this point of view about the absence of aspect. However, they do not explain why zero marking sentences have habitual readings.

Another remark of Klein et al. (2000) concerns the "neutral aspect" proposed by Smith (1991). (99), an example given by Smith, is supposed to have "neutral aspect". That is, the sentence can have either perfective or imperfective aspect in the absence of aspect marking.

(99) Zhāngsān dào jiā de shíhou, Mǎlì
Zhangsan arrive home de time Mali
xiě gōngzuò bàogào.
write work report
'When Zhangsan arrived at home, Mali wrote the work report.'
'When Zhangsan arrived at home, Mali was writing the work report.'

Smith (1991:79)

---

[29] The Topic Time (TT) in Klein (1994) corresponds approximately to the Reference Time (RT) in Reichenbach (1947). In this thesis, we do not make difference between these two terms. The reader can refer to Chapter 2 for detailed discussion.

However, as Klein et al. (2000) point out, the main clause in (99) is not felicitous without an aspect marker, and aspectual particles are obligatory most of the time in Mandarin.

We agree with Klein et al. (2000)'s the empirical judgment that (97) is ill-formed. We go further assuming that there is no "neutral aspect" in Mandarin root clauses; they are either perfective or imperfective. Moreover, aspect must be overtly marked in root clauses with eventive BPs.

The existing analyses of aspect in Mandarin either make wrong predictions or do not cover the temporal readings of sentences with BPs.

3.6 Apparent counterexamples

Recall our claim concerning eventive predicates in Mandarin: sentences with eventive predicates must be overtly marked for aspect to allow episodic readings; and well-formed eventive bare predicates only allow generic readings.

As we have mentioned in the previous sections, some sentences can actually be interpreted episodically even when there is no overt aspect. This section deals with these apparent counterexamples to our generalizations.

3.6.1 *Zài* locative Prepositional Phrases (PPs)

Recall that in Section 3.2.2 above, we pointed out that bare sentences containing a locative prepositional phrase headed by *zài* allow either generic or progressive readings. This is the case in (21) which is repeated here as (100).

(100) Tā zài túshūguǎn chá zīliào.
3SG ZAI library consult document
'He consults documents in the library.'
'He is consulting documents in the library.'

Since under our analysis, sentences with bare eventive predicates only allow generic readings, and never episodic readings, (100) appears to be a counterexample.

In the following sections, we show how the progressive readings can be derived from bare sentences containing a *zài*-phrase.

3.6.1.1 PPs and progressive

The availability of progressive readings for sentences containing a locative PP has been discussed in the literature. In particular, Chen (1977, 1978) points out that the sentence in (101) below yields an on-going reading.

(101) Tā **zài** kètīng-lǐ dǎ diànhuà.
3SG ZAI living-room make phone
'He's making a phone call in the living room.'

(Chen 1977:236)

Chen (1977) focuses on the derivation of the progressive reading for (101) and he doesn't mention whether the sentence has other readings. According to our investigations among Mandarin native speakers, (101) also allows a habitual reading, that is, 'he (usually) makes phone calls in the living room'. The derivation of the habitual construal will be discussed later. This section focuses particularly on the progressive readings of sentences with a PP.

Chen imputes the progressive reading of (101) to what he called *distant haplology*. The term "haplology" is defined in the *The (online) Oxford Dictionary* as:

(102) The omission of one occurrence of a sound or syllable which is repeated within a word (e.g. *probly* for *probably*)

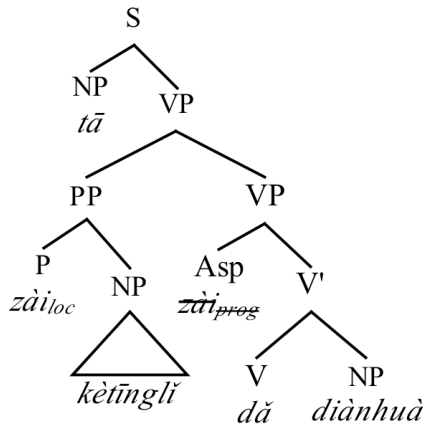
In particular in Mandarin, the progressive marker *zài*$_{prog}$ is homophonous with the preposition *zài*$_{loc}$ 'at'. (101) above only contains one occurrence of *zài*, but its literal meaning seems to involve both a progressive *zài*$_{prog}$ and a preposition *zài*$_{loc}$. Chen proposes that the underlying structure of (101) contains two occurrences of the morpheme *zài*: the preposition head *zài*$_{loc}$, which corresponds to the surface morpheme and a progressive *zài*$_{prog}$ that immediately precedes the verb phrase *dǎ diànhuà* 'make a phone call', as shown in (103).

(103) Tā **zài**$_{\mathbf{loc}}$ kètīng-lǐ **zài**$_{\mathbf{prog}}$ dǎ diànhuà.
3SG at living-room PROG make phone

The preverbal progressive *zài*$_{prog}$ is then deleted because of the "*distant haplology*" effect (Chen 1977), giving rise to the structure illustrated in (105) below.

(104) Tā **zài$_{loc}$** kètīng-lǐ **~~zài~~$_{prog}$** dǎ diànhuà.
3SG at living-room PROG make phone

(105) *Distant haplology* (Chen 1977)



The term "haplology" originally refers to the deletion of one of two *adjacent* identical syllables. Since the two occurrences of *zài* in (104) are not adjacent, Chen stipulates that the haplology effect can also be applied to "distant" homophonous morphemes, explaining why the progressive marker *zài$_{prog}$* in (104) is not pronounced. In other words, the progressive reading of (101) comes from a preverbal null progressive marker *zài$_{prog}$*.

Chen's intuition of explaining the progressive reading of sentences containing a *zài*-phrase by a deletion is basically right, although the underlying assumptions of his approach are not accurate.

The first assumption concerns the syntactic position of the progressive marker, that is,

Chen 1. The progressive marker immediately precedes the verb. It behaves like a prefix of the verb.

The second assumption is the so-called "*distant haplology*" effect:

Chen 2. One of the two homophonous morphemes in a sentence can be deleted.[30]

In what follows, we show the problems with these assumptions and give our proposals, which are based on the idea of hyplology, just like Chen's, but unlike him, we don't allow *distant* haplology, and the syntactic structure we propose more accurately captures the facts about when the haplology happen.

Chen's analysis correctly predicts the progressive reading of sentences like (101). However, "distant haplology" fails to explain the following puzzle: why is the on-going reading not available for a sentence with a topicalized locative PP, as illustrated by the contrast between (106a) and (106b) below:[31]

(106) a. Lùlu **zài** **túshūguǎn** chá zīliào.
Lulu ZAI library consult document
'Lulu is consulting documents in the library.'
'Lulu consults documents in the library.'

b. **Zài** **túshūguǎn**, Lùlu chá zīliào.
ZAI library Lulu consult document
'Lulu consults documents in the library.'

With a locative PP *in-situ*, (106a) allows a progressive reading. However, when the locative PP *zài túshūguǎn* 'in the library' is topicalized, as the case in (106b), the progressive reading is no longer available. (106b) can only be used to report what *Lùlu* usually does in a specific place, that is, the library, but not an on-going event of *Lùlu* consulting documents in the library at the speech time. In other words when the locative PP is topicalized, the progressive reading is lost.

The contrast between (106a) and (106b) is problematic for "*distant haplology*" because if the "haplology" effect can be "distant",

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30 Chen's assumptions presented here are formulated in our terms. These ideas are abstracted from Chen (1977, 1978).

31 I would like to thank Waltraud Paul for bringing to my attention the contrast between topicalized and *in-situ* PPs and for her comments.

why is the distant deletion of *zài*$_{prog}$ possible for (106a) but not (106b), as shown in (107a) and (107b) below? (Paul Waltraud, p.c.)

(107) a. Lùlu **zài**$_{loc}$ túshūguǎn ~~**zài**~~$_{prog}$ chá zīliào.
Lulu at library PROG consult document

b. **Zài**$_{lo}$ túshūguǎn, Lùlu ***~~zài~~**$_{prog}$ chá zīliào.
at library Lulu PROG consult document

Let's name this puzzle the "topicalized PP puzzle". The solution that we would like to suggest for this puzzle is based on two assumptions: one assumption concerning the syntactic position of the progressive morpheme in Mandarin (Hyp 1) and the other on the deletion rule (Hyp 2), as shown below:

Hyp 1. Syntactic position of *PROG*:

In Mandarin, the progressive takes the whole VP as complement in the syntax. It can but need not immediately precede the verb in the surface structure.

Hyp 2. "Haplology":

The deletion of a syllable or a morpheme is possible if it is homophonous with an adjacent morpheme. The "haplology" effect is only applied to the phonological form (PF), and it must be "local" but never "distant".

The *haplology* defined in Hyp 2 above is largely based on the original meaning of the term (cf. the definition given in (102)). What makes it different from Chen's haplology is that it requires the adjacency of the two identical morphemes.

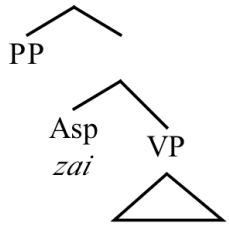
The following section discusses in detail why the syntactic structure of the progressive assumed by Chen is not tenable and we provide evidence for our assumption about the basic syntactic structure of the progressive in Mandarin. In Section 3.6.1.3, we show how the deletion rule "haplology" described in Hyp 2 above captures more facts.

3.6.1.2 Syntactic position of zài

Our explanation for the progressive readings of bare sentences containing a PP will crucially rely on certains assumptions about the syntax, which we will justify in the section.

According to Chen, the underlying structure of a sentence with the progressive marker is as follows:

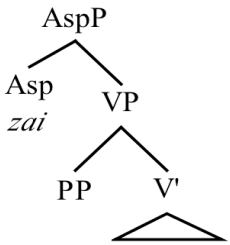
(108) Syntactic structure according to Chen (1977)



In (108), the progressive marker *zài* is generated in a preverbal position and behaves like a prefix of the verb, that is, the verb immediately follows the progressive marker and they form a constituent that excludes other modifying constituents such as PPs.

On our proposal, in contrast, the progressive marker modifies the whole VP and since Mandarin allows preverbal adverbials and PPs modifying a verb, the progressive marker can consequently be "separated" from the verb linearly. Therefore, for a sentence with a PP modifying the verb, the structure is as in (109):

(109) Syntactic structure under our assumption



In the literature, we find proposals concerning the syntactic position of aspect in Mandarin. Cheng (1991) argues that aspect is base-generated in a position higher than VP. The progressive marker *zài*, which is not an affix, contrary to the perfective marker *le* and the experiential marker *guo*, does not "lower" to be attached to the verb in

the surface structure (Cheng 1991:12-13). Cheng's analysis is more appealing and we provide more evidence for her proposal.

Firstly, the syntactic position of *zhèngzài*, another progressive marker, suggests that the progressive in Mandarin is not necessarily in an immediate preverbal position. Note that the progressive marker *zhèngzài* is almost equivalent to $zài_{prog}$ in Mandarin.[32] In most progressive sentences, these two morphemes are morphologically related and almost interchangeable, as illustrated in (110a) and (110b):

(110) a. Lùlu **zhèngzài / $zài_{prog}$** héduì zhàngdān.
Lulu PROG check bill
'Lulu is checking her bills carefully.'

b. Zhāngsān **zhèngzài / $zài_{prog}$** tīng yīnyuè.
Zhangsan PROG listen music
'Zhangsan is listening to the music.'

Moreover, *zhèngzài* is not a preposition but a pure progressive marker: it cannot replace the preposition $zài_{loc}$, as shown by the contrast between (111a) and (111b):

(111) a. Lùlu **zài** jiā.
Lulu at home
'Lulu is at home.'

b. *Lùlu **zhèngzài** jiā.
Lulu PROG home

Since *zhèngzài* has the same distribution as $zài_{prog}$, but not $zài_{loc}$, its behavior will shed light on the syntactic environment of the progressive in Mandarin and thus help us identify $zài_{prog}$ in a complex structure in order to verify assumptions about the syntactic properties of the progressive in general.

The first observation about *zhèngzài* is that it precedes but does not follow a full prepositional phrase modifying the verb, as shown in (112a) and (112b).

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[32] The difference between *zhèngzài* and *zài*, if there is any, lies in the morpheme *zhèng* in *zhèngzài*, which means "at this point" and therefore reinforces the aspectual feature of *zhèngzài* as a progressive marker.

(112) a. Xiǎoxīn **zhèngzài** cháo dìdi
Xiaoxin PROG towards brother
rēng dōngxī.
throw thing
'Xiaoxin is throwing things at his brother.'

b. ?? Xiǎoxīn cháo dìdi **zhèngzài** rēng
Xiaoxin towards brother PROG throw
dōngxī.
thing
Intended: 'Xiaoxin is throwing things at his brother.'

When *zhèngzài* precedes the PP *cháo dìdi* 'towards his brother', the sentence in (112a) is felicitous and has a progressive reading. In contrast, when *zhèngzài* appears in-between the PP *cháo dìdi* and the verb *rēng* 'throw', as is the case in (112b), the sentence sounds odd.

The second observation about *zhèngzài* is that in the presence of a preverbal adverb modifying the main verb, such as *zǐxì* 'carefully' or *jījí* 'actively', *zhèngzài* must precede and can never follow the adverb, as illustrated in (113) below.

(113) a. Lùlu **zhèngzài** zǐxì héduì zhàngdān.
Lulu PROG careful check bill
'Lulu is checking her bill carefully.'

b. *Lùlu zǐxì **zhèngzài** héduì zhàngdān.
Lulu careful PROG check bill

c. Tāmen **zhèngzài** jījí chóubèi huìyì.
3PL PROG active prepare meeting
'They are actively preparing for the meeting.'

d. *Tāmen jījí **zhèngzài** chóubèi huìyì.
3PL active PROG prepare meeting

The impossibility of having *zhèngzài* in an immediately preverbal position when a locative PP or another adverbial is present in the sentence suggests that **the progressive is generated in a position that is external to the whole VP** in Mandarin.

The second argument supporting our hypothesis about the syntactic position of *zài* (cf. (109)) is that the simple form of the

progressive *zài* can also co-occur with a PP that is not headed by the preposition $zài_{loc}$, yielding a progressive reading for the sentence, as shown in (114a) and (114b):

(114) a. Lùlu zài wǎng xuéxiào zǒu.
'Lulu ZAI to school walk
'Lulu is walking to school.'

b. Xiǎoxīn zài cháo dìdi rēng dōngxī.
Xiaoxin ZAI towards brother throw thing
'Xiaoxin is throwing things at his brother.'

In (114a), the preposition introducing the place *xuéxiào* 'school' is not *zài* but a directional *wǎng* 'to'. Thus it is reasonable to analyze *zài* as the progressive marker $zài_{prog}$, responsible for the on-going reading of the sentence. For the same reason, *zài* in (114b) is a progressive marker rather than a P head. Consequently, the syntactic representations of (114a) and (114b) should be as follows:

(115) a. […[$_{AspP}$ $zài_{prog}$ [$_{VP}$ [$_{PP}$ to school] walk]]]

b. […[$_{AspP}$ $zài_{prog}$ [$_{VP}$ [$_{PP}$ towards brother] [$_{V'}$ throw thing]]]]

The progressive $zài_{prog}$ takes the whole VP as complement. In a similar way, the sentence discussed earlier in (101), repeated here as (116a), has the base structure in (116b).

(116) a. Tā **zài** kètīng-lǐ dǎ diànhuà.
3SG ZAI living-room make phone
'He's making a phone call in the living room.'

b. [$_{TP}$ he [$_{AspP}$ $zài_{prog}$ [$_{VP}$[$_{PP}$ $zài_{loc}$ living room][$_{V'}$ make a phone call]]]]

The derivation from (116b), which contains two occurrences of the morpheme *zài*, to the PF of the sentence, where only one *zài* is pronounced, necessarily involves the deletion of one morpheme. The following section presents our proposal concerning the deletion rule, which is different from Chen's "distant haplology": we keep the traditional definition of "haplology", namely, a morpheme can be null only if it is homophonous to an adjacent morpheme.

3.6.1.3 Haplology: local or distant?

Recall that the distant haplology, as defined by Chen (1977) for the purpose of explaining the deleted morpheme, is much less restrictive than the original meaning of "haplology". He stipulates that one of two (distant) homophonous morphemes in a sentence can be deleted.

This deletion rule is too strong as shown in Section 3.6.1.1 above, because if any homophonous morphemes in a sentence are subject to this deletion rule without any extra conditions, we would expect to find sentences that are apparently not attested, however generated by the rule.

Recall our proposal Hyp 2 in Section 3.6.1.1 concerning the deletion rule: the haplology effect must be *local* but never *distant*, that is, **the deletion of a morpheme is possible only if it is identical to the *adjacent* morpheme preceding it.** Besides, it applies to the phonological form (PF), but not any earlier stages of the derivation.

The base structure of the sentence in (116b) discussed in the previous section is repeated below as (117a). Since two morphemes *zài* are adjacent, they are subject to the (local) "haplology" rule. One of the two *zài* thus becomes null in the PF, as shown in (117b).

(117) a. [$_{TP}$ he [$_{AspP}$ *zài*$_{prog}$ [$_{VP}$[$_{PP}$ *zài*$_{loc}$ living room][$_{V'}$ make a phone call]]]]

b. [$_{TP}$ he [$_{AspP}$ *zài*$_{prog}$ [$_{VP}$[$_{PP}$ ~~*zài*$_{loc}$~~ living room][$_{V'}$ make a phone call]]]]

This is how sentences containing a PP headed by *zài* derive progressive readings under our proposal. Moreover, our analysis also straightforwardly captures the "topicalized PP puzzle". Reconsider sentences in (106a) and (106b), repeated below as (118a) and (118b):

(118) a. Lùlu zài túshūguǎn chá zīliào.
Lulu ZAI library consult document
'Lulu is consulting documents in the library.'
'Lulu consults documents in the library.'

b. Zài túshūguǎn, Lùlu chá zīliào.
ZAI library Lulu consult document
'In the library, Lulu consults documents.'

(118a) but not (118b) allows an on-going reading for the following reasons: when the locative PP is *in-situ*, the preposition $zài_{loc}$ following the progressive $zài_{prog}$ is deleted by the (local) haplology rule, and the ongoing reading is due to the overt progressive aspect $zài_{prog}$, as shown in (119a); when the PP is topicalized, the haplology rule can no longer apply given that no identical morphemes are adjacent, as shown in (119b). Thus the null morpheme $zài_{prog}$ preceding the VP in (119b) is not felicitous, explaining the unavailability of the progressive reading for the sentence in (118b).

(119) a. [$_{TP}$ Lùlu [$_{AspP}$ $zài_{prog}$ [$_{VP}$[$_{PP}$ ~~$zài_{loc}$~~ library][$_{V'}$ consult documents]]]]

b. [$_{PP}$ $zài_{loc}$ library]$_i$ [$_{TP}$ Lùlu [$_{AspP}$ *~~$zài$~~ [$_{VP}$ t_i [$_{V'}$ consult documents]]]]

Our analysis, which is directly inspired by Chen's idea of dropping one of two identical syllables, not only solves the "topicalized PP puzzle" that Chen fails to account for with the possibility of "distant haplology", but also is consistent with our claim concerning overt aspect in Mandarin (see (18) in Section 3.1). We argued that episodic readings are licensed by overt aspect; in other words, aspect cannot be null in Mandarin. That's exactly what we find in the data discussed above: the overt morpheme *zài* in (118a) is the progressive marker $zài_{prog}$ that gives rise to the ongoing reading; in contrast, the fronted *zài* in (118b) can only be the preposition $zài_{loc}$ because of the syntactic position and consequently there is no overt progressive marker, explaining the absence of the episodic readings for (119b).

We will see later (in Chapter 4) how our analysis captures the habitual readings of sentences with an *in-situ* or topicalized locative PP.

3.6.2 Resultative Verb Compounds

Another challenge for our analysis comes from sentences with Resultative Verb Compound (RVC) that are well formed as past events.

Consider the sentence given in Lin (2006) repeated as (120) below:

(120) Zhāngsān dǎpò yí-gè huāpíng.
Zhangsan break one-CL vase
'Zhangsan broke a vase.'

(Lin 2006:3)

Our hypothesis predicts (120) to be ill-formed or to yield a generic reading, since apparently the eventive verb *dǎpò* 'break' in (120) is not overtly marked for aspect. However, this is not the case: (120) is interpreted as a past event of *Zhangsan* breaking a vase.[33] Why is this sentence without overt aspect marking a well-formed report of a past event?

To answer this question, we first look into the event structure of the predicate *dǎpò*. Although translated as "break" in Lin's example in (120), *dǎpò* is literally composed of two morphemes: an activity verb *dǎ*, which means "hit", and another verb *pò*, which means "break". In the literature, verbs like *dǎpò* are referred to as "Resultative Verb Compounds". They are "a succession of verbs and their complements" (Collins 1997:462), and they encode complex events by expressing the result of an action (Li & Thompson 1981; Lin 2004; Nishiyama 1998; among others). Thus a more accurate translation of *dǎ-pò* is "hit-break", and it means something like "x hits y and as a result, y breaks".

---

[33] It must be emphasized that the most natural way to report a past event that "Zhangsan broke a vase" is the following:

(i) Zhāngsān dǎpò **le** yí-gè huāpíng.
Zhangsan break PERF one-CL vase
'Zhangsan broke a vase.'

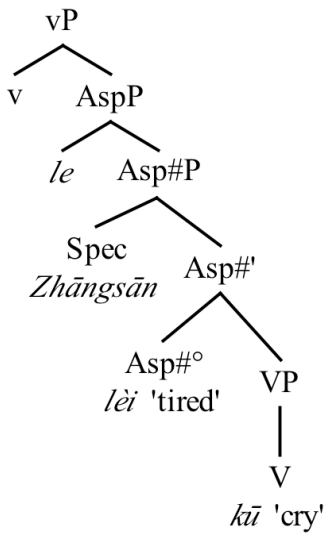
(ii) Zhāngsān bǎ yí-gè huāpíng (gěi) dǎpò ***(le)**.
Zhangsan BA one-CL vase GEI break PERF
'Zhangsan broke a vase.'

The version with the perfective particle *le* in (i) is preferred by our informants to the corresponding bare form in (120) even if the latter is acceptable, and *le* is obligatory in the *bǎ* constuction in (ii).

The event structure of RVCs is a hotly debated issue in the literature and we cannot give a detailed overview of different analyses on RVCs here. Following Sybesma (1999, 2013), Xuan (2008) and Travis (2010), we assume that RVCs have an extra aspectual layer, referred to as "inner aspect" in Travis (2010), and labelled as "Asp#P" in the syntax in Sybesma (2013). This projection is in-between the VP and the AspP (the projection for the grammatical aspect such as *le* and *guo*). If we use V1 to refer to the first activity verb and V2 to refer to the second resultative complement, the projection "Asp#" corresponds to V2 in a RVC, namely, the verb denoting the result. The structure in (122) below is from Sybesma (2013), adapted from Travis (2010) and Xuan (2008).

(121) Zhè-jiàn shì kū-lèi le Zhāngsān.
this-CL affair cry-tired PERF Zhangsan
'This affair got Zhangsan to cry himself tired'

(122)



The RVC *kū-lèi* 'cry-tired' in (121) is separated into V1 *kū* 'cry', the V head in the verbal domain, and V2 *lèi* 'tired', the inner aspect "Asp#".

Projecting V2 in a RVC as an aspectual layer in the syntax is very insightful. Resultative complements change the event structure of the described process (*telicity*, *boundedness*). Even if most V2s in RVCs are verbal in nature, they also contribute to the aspectual properties of the whole predicate. Moreover, some of them, such as *wán* 'finish', *diào* 'drop', *zhù* 'stay' and *chéng* 'become', became the so-called "Grammaticalized Resultative Complements" in modern Chinese, since their literal verbal meaning is weakened or lost in favor of a grammatical function of marking the completion of the process described by the activity verb (Xuan 2010). Take (123b) for instance. Here, the verb *diào* 'drop' in the compound *chī-diào* 'eat-drop' indicates the endpoint of the process "eating a plate of vegetables" and its original meaning "drop" as a main verb that we find in sentences like (123a) is no longer preserved in a RVC like (123b).

(123) a. Tā diào le yì-kē yá.
3SG drop PERF one-CL tooth
'He lost a tooth.'

b. Tā chī-diào le yì-pánzi cài.
3SG eat-drop PERF one-plate vegetable
'He ate (up) a plate of vegetables.'

Another argument for the aspectual contribution of V2 in a RVC comes from the aspectual particle *guo* 过. 过, as a verb, has a falling tone *guò*, which means "pass", but in modern Chinese, 过 is also a pure experiential marker that can be attached to most verbs as a suffix and in this case, it has a neutral (phonolgically reduced) tone *guo*. Consider (124a) and (124b) below:

(124) a. Tāmen guò le yì-tiáo hé.
3PL pass PERF one-CL river
'They crossed a river.'

b. Lìli kàn guo *Hóng yǔ Hēi*.
Lili read EXP red and black
'Lili has read *The Red and the Black*.'

In (124a), *guò* has a verbal use, while *guo* in (124b) is a pure aspectual marker. (124b) reports Lili's experience of reading *The Red and the Black* in the past.

The correlation that we find in the discussion above is that candidates for resultative complements have different degrees of grammaticalization. If the process of grammaticalization is complete for the purely functional head *guo*, the small group of verbs mentioned earlier as "*Grammaticalized Resultative Complements*" (that is, *wán* 'finish', *diào* 'drop', *zhù* 'stay' and *chéng* 'become', etc.), are partially grammaticalized. And finally, even for resultative complements having limited use as to their compatibility with other verbs since they preserve their verbal meaning, there must be some aspectual ingredients anchored in these verbs as V2. The conclusion is that resultative complements (grammaticalized or not) convey aspectual information.

Let's now return to our starting point. The sentence containing the RVC *dǎ-pò* 'hit-break' in (120) has no overt aspectual marker such as *le* o *guo*. Surprisingly it is acceptable. We are not offering here an explicite solution for it. It is acceptable as reporting a past event, probably due to the aspectual information conveyed by the resultative complement *pò* 'break', which favors a resultative state interpretation, and thus licenses a past episodic reading.

This is however not the whole story. Past episodic readings are not systematically available when the predicate is a RVC. Recall examples (94a), (94b) and (94c) discussed in Section 3.5.1, repeated below as (125a), (125b) and (125c):

(125) a. Zhāngsān dǎpò ***(le)** nèi-gè huāpíng.
Zhangsan break PERF that-CL vase
'Zhangsan broke that vase.'

b. Zhāngsān dǎpò ***(le)** tā-de huāpíng.
Zhangsan break PERF 3SG-DE vase
'Zhangsan broke his vase.'

c. Zhāngsān dǎpò ***(le)** huāpíng.
Zhangsan break PERF vase
'Zhangsan broke a vase / vases.'

These sentences differ from (120) in the complements of the RVC *dǎ-pò*. If the past reading is derived directly from the RVC *dǎ-pò*, the ungrammaticality of the sentences in (125) in the absence of overt aspect *le* still requires explanation? To solve this puzzle, more

investigation should be done into the distribution of nominal phrases within the VP, and my attention to other aspects of this thesis has prevented me from exploring this to my satisfaction.

For more details concerning the syntactic and semantic properties of Resultative Verb Compounds, the reader is invited to consult Sybesma (1999, 2013), Xuan (2008) and Travis (2010).

In our data concerning the temporal interpretations of bare predicates, we have intentionally avoided examples formed with RVCs, which already contain aspectual information in the resultative complement. Since the goal of this thesis is to clarify the temporal construal of aspectually "bare" predicates, RVCs are, from this perspective, not the most primitive form that we can find as "bare" predicates. Though fully aware of the interesting issues concerning RVCs that might shed light on the lexical / semantic properties of Mandarin predicates without overt aspect, we leave this topic for future research.

To summarize, in this section we have discussed some apparent counterexamples to our claim that episodic readings are only licenced by overt aspect. We have argued that the progressive readings of sentences with a *zài*-phrase result from the overt progressive marker $zài_{prog}$, and the past readings of sentences with a Resultative Verb Compound are due to the aspectual information carried by the resultative complement. We continue to maintain the hypothesis that aspect must be overtly marked in Mandarin.

3.7 Conclusion

In this chapter, we have shown that: i) root clauses with stative Bare Predicates (BPs) (no morphological aspect or any other particles) are well-formed and denote states; ii) root clauses with eventive BPs are ill-formed as episodic events.

These generalizations can be captured if we make the following hypotheses: firstly, stative BPs are properties of times, and thus can combine directly with a time; secondly, eventive BPs are properties of events and as such require an aspect head to return a property of times; and finally, aspect must be overtly marked in Mandarin. Thus to license episodic readings for eventive BPs in Mandarin, an overt aspect is required.

We have shown that root clauses with eventive BPs can be well-formed, but they only allow generic readings. Chapter 4 is dedicated to this issue, in which we give an account for the generic readings of bare sentences.

The reader might have noticed that the referential treatment for tense adopted in our analysis requires a T projection introducing a time interval to anchor the eventuality denoted by the stative VP or the AspP, but until now we have not assumed that the element in T has any restriction on its temporal location. We will discuss in Chapter 5 the issue of whether Mandarin has an element that contributes semantically what tenses contribute in other languages. There we show that the value of the time variable under T does bear restrictions, suggesting that Mandarin has a covert semantic tense.

Chapter 4 Generic sentences

The last chapter attributed the impossibility of episodic readings for eventive bare predicates (BPs) in root clauses to the fact that there was no way of obtaining a constituent of type <*i*,*t*>. That means that the derivation will crash, and thus the sentence will be uninterpretable. We saw, however, that non-episodic readings of eventive BPs are possible. Following our earlier point of view, this suggests that in these cases we *can* obtain constituents of type <*i*,*t*> with the relevant meaning. This chapter makes a proposal for how this happens.

There are two main classes of cases to consider: sentences with adverbial quantifiers, and so-called "habitual" sentences without overt adverbial quantifiers (including what have been termed "dispositional" sentences). With this in mind:

1. We give an analysis of the former cases and suggest an analysis of the latter, which includes a covert quantifier and thus reduces to the former.

2. Since the analysis of "habitual" sentences here differs from some others that have been proposed, We explain what those other analyses are and why we didn't adopt them.

This chapter is organized as follows:

Section 4.1 introduces definitions and some important notions concerning genericity. In particular, we distinguish generic NPs from generic sentences and we define precisely the subcategory of generic sentences that are relevant to the current study on Mandarin, that is, sentences with eventive predicates reporting regularities or making generalizations.

Section 4.2 presents previous analyses of generic sentences: the *Quantificational Treatment*, which assumes a GEN operator quantifying over situations or times; the *Aspectual Treatment*, which makes the assumption of a covert imperfective operator HAB_{imp}; and the *Modal Analysis*, which derives genericity from a modal operator HAB_{mod}.

Section 4.3 reviews the data in Mandarin concerning generic sentences that are aspectually unmarked. We investigate connection between aspectual marking and generic readings in sentences with eventive BPs as well as the temporal anchoring of generic sentences.

Section 4.4 spells out the semantics of Q-adverbs and the covert operator Q. We discuss the difference between Q and the purely aspectual HAB, and we provide evidence for a quantificational treatment of generic sentences with eventive BPs in Mandarin.

4.1 Genericity

Genericity is a well-researched topic. It is far beyond the scope of this thesis to give an overview of many different notions and analyses involving genericity. Instead, we focus on the kind of generic construal that is relevant to the temporal interpretation of aspectually unmarked sentences in Mandarin. We have seen in Chapter 3 that sentences with bare eventive predicates only allow generic readings in Mandarin. In this section, we clarify the meaning of the term "generic" in our generalizations. In particular, Section 4.1.1 distinguishes sentence-level genericity from NP-level genericity and Section 4.1.2 discusses different types of generic sentences and pinpoints those that are present in our Mandarin data.

4.1.1 Genericity: NP level *vs.* sentence level

The term "genericity" has two different uses: it can either refer to i) a property of a Noun Phrase (NP) denoting a kind, or ii) the characterizing feature of a sentence reporting a regularity (see Krifka et al. 1995:2-3). The first use of *genericity* concerns *kind-referring NPs*, also known as *generic NPs*, as opposed to *object-referring NPs*; the second use of *genericity* indicates a property at the sentence level, *generic sentences*, as opposed to *episodic sentences* (Carlson 1988). Episodic sentences are related to specific instances of eventualities. Their truth value can be obtained, according to Carlson, by examining directly the world at a certain temporal location, while a generic sentence makes a generalization (about an individual or a kind) that is inferred from instances; they are also referred to as *characterizing sentences* (Krifka et al. 1995:2-3).

The examples in (1) and (2) below illustrate how the two meanings of *genericity* differ from each other:

(1) Pandas were discovered a long time ago.

Generic NP; Episodic sentence

(2) Huanhuan eats a lot.

Object-referring NP; Generic sentence

(1) is an *episodic sentence*: it reports a particular event in the past, that is, the discovery of the species of panda, although the subject of the sentence is a "generic" NP referring to the kind "panda". (2), in contrast, is a *generic sentence*, which contains no kind-referring NP: it makes a generalization about the behavior of the individual *Huanhuan*. We see here that the presence of a 'generic NP' does not itself make a sentence a 'generic sentence' and a generic sentence does not necessarily contain a kind-referring NP. They are distinct properties.

Note, however, that these two types of genericity are often connected. Generic NPs often appear in sentences making generalizations. Take (3) for instance:

(3) Pandas eat a lot.

The bare plural *pandas* refers to a kind and the whole sentence *Pandas eat a lot* could be paraphrased as "A typical member of the panda kind tends to eat a lot". (3) generalizes over individuals. In other words, the individual members of the panda kind are the relevant "instances". Given the definitions of genericity, (3) is a generic sentence. Compare (3) with (2). They differ in the nature of the argument involved in the characterization: while (2) makes a generalization over regular occurrences of events involving a particular *individual*, Huanhuan, (3) characterizes a *kind*, the species of "panda".

Having clarified the two notions of genericity, we now turn to sentences involving genericity in Mandarin. The Mandarin data further confirm that kind-referring NPs have different properties from characterizing sentences.

Consider (4)-(6) below:

(4) Xióngmāo hěnjiǔ yǐqián jiù bèi
panda long.time before already PASSIF
fāxiàn *(le).
discover PERF
'Pandas were discovered a long time ago.'

(5) Xióngmāo chī de tèbié duō.
panda eat *de* special lot
'Pandas eat a lot.'

(6) Huānhuān chī de tèbié duō.
Huanhuan eat *de* special lot
'Huanhuan eats a lot.'

(4) above is the Mandarin counterpart of (1), an episodic sentence describing a past event involving a kind *xióngmāo* 'panda'. (5) is a characterizing sentence about the kind "panda" and (6) is a characterizing sentence about the individual named *Huānhuān*.

Interestingly, we find another contrast between (4) on the one hand and (5) / (6) on the other hand: (4) must be overtly marked by the perfective aspect *le*, otherwise it is ill-formed, whereas both (5) and (6) are well-formed with no overt aspect. How can we explain this contrast? Notice that (4) reports a particular past event and thus is an *episodic sentence*, although the subject NP *xióngmāo* 'panda' refers to a kind. (5) and (6), in contrast, make generalizations over events, and they are *generic sentences*. Since Mandarin eventive predicates must be overtly marked for aspect to allow episodic readings, as we proposed in Chapter 3, (4) requires an aspect to be felicitous. Recall that we also claimed that when bare eventive predicates are well-formed, they only allow generic readings. That's exactly what we find in (5) and (6). They contain bare eventive predicates and they only allow a generic construal.

The contrast observed in the Mandarin data that we have just discussed provides evidence for the distinction between two distinct phenomena related to "genericity" that we have introduced earlier: *kind-referring NPs* and *characterizing sentences*.

In this chapter, we essentially deal with sentences with a bare eventive predicate that express regularities. Therefore, our discussion will be restricted to *genericity* as a clausal property, and not as a nominal property. Only generic sentences are relevant.

4.1.2 Generic sentences: lexical *vs.* habitual

Also referred to as "characterizing sentences" (Krifka et al. 1995), *generic sentences* make generalizations or express regularities over eventualities, situations, or individuals. From this point of view, they are the opposite of *episodic sentences*, which report episodic eventualities.

There are two subtypes of generic sentences depending on the lexical-semantic properties of the predicate. Generic sentences with a stative predicate like "have" in (7) below are known as *lexical characterizing sentences*, as opposed to *habitual characterizing sentences*, which refer to generic sentences containing an eventive predicate like "eat bamboo" in (8) (see Krifka et al. 1995).

(7) Huanhuan has black circles.

(8) Huanhuan eats bamboo.

Table 7 below recapitulates the classification of *generic sentences* and *episodic sentences*. The specific focus of this chapter, however, will be on the class of *habitual sentences* in Table 7; that is, sentences with an eventive predicate reporting regularities. (The temporal interpretation of sentences with stative predicates in Mandarin has already been discussed in Chapter 3.) We will continue to use the term *generic sentences,* but with these sentences in particular in mind, and our concern will be how the readings of these sentences get derived.

	GENERIC SENTENCES[34]	EPISODIC SENTENCES
STATIVE PREDICATE	**Lexical** characterizing sentences *Pandas have black circles.* *Max is smart.*	**Episodic statives** *John is at home.* *Mary is available.*
EVENTIVE PREDICATE	**Habitual** sentences *John drinks a beer every day.* *A panda eats bamboo.*	**Episodic dynamic** sentences *John ate the cake.* *Dinosaurs disappeared from earth.*

Table 7 Classification of generic vs. episodic sentences (See Krifka et al. 1995:14-18)

One reason why we have decided to continue to use the term *generic sentences* for these cases -- instead of *habitual sentences* -- is that some sentences relevant to our discussion cannot necessarily be paraphrased by "having the habit of", since the regularity of the

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[34] We described earlier *generic sentences* as sentences making "generalizations or express regularities over eventualities, situations and individuals". The reader has probably imagined how this description applies to *John drinks a beer every day*: the truth of *John drinks a beer every day* is guaranteed by the existence of many episodes of John drinking a beer. Likewise for *Pandas have black circles*: the truth of this sentence is guaranteed by the existence of many pandas who have black circles. It is probably less easy to see in what sense this description applies to a sentence like *Max is smart*. *Max is smart* is classified as a generic sentence in the literature because it contains an *individual-level* predicate 'be smart", which "ascribe[s] tendentially permanent properties to [its] argument" (Chierchia 1995:198), which is closely related to the key properties of generic sentences. This type of sentences do not make generalizations over episodic eventualities or individuals, but inherently generic.

occurrence can vary according to the meaning of the predicate or/and the quantificational adverb if there is any. Compare (9a) to (9b):

(9) a. John goes to the movies.

b. Mary murders children. (Rimell 2004)

Rimell (2004) points out that an utterance like (9a) is normally based on the observation of relatively frequent events of John going to the movies, while (9b) can be truthfully uttered on the basis of fewer instances of murder.

Moreover, some generic sentences with no overt Q-adverbs are used to characterize individuals without any specification of the frequency of the events. Ferreira (2005) argues that (10) describes John as a vacuum-cleaner salesman, and it can be true even if John has never sold a single vacuum-cleaner.

(10) John sells vacuum-cleaners.

(Ferreira 2005:121)

(10) is an example given in Krifka et al. (1995:39) as a *habitual sentence*. In the analysis of Ferreira (2005), sentences describing activities or professions like (10) have a different semantics compared to sentences making generalizations over instances of events. On his proposal, sentences describing activities or professions like (10) involve a null stativizer, functioning like the nominalizing suffix *-er* in English, on a par with "John is a vacuum-cleaner seller": it takes an eventive predicate as its argument and yields a stative predicate. Although Ferreira (2005) does not go any further to explore the semantics of sentences describing activities or professions, his observation shows us that the term "*habitual sentences*" used in the literature might be misleading. Sentences like (10) do not form a homogeneous class with sentences describing habits like (9a) above. Scheiner (2003) defines *habituals* as sentences that can be paraphrased by *used to*, *has the habit of*, without change in meaning. (10) is clearly not a habitual sentence in Scheiner's view.

In Mandarin, sentences describing regular events and those reporting professions are both aspectually unmarked. Consider (11) below:

(11) a. Lùlu hē lǜ-chá.
Lulu drink green-tea
'Lulu drinks green tea.'

b. Lánlan mài huàzhuāngpǐn.
Lanlan sell cosmetics
'Lanlan sells cosmetics.'

(11a) describes Lulu's habit of drinking green tea and (11b) reports Lanlan's profession as a cosmetics saleswoman. They should be analyzed differently if we follow Ferreira (2005) and Scheiner (2003), but both (11a) and (11b) have a "minimal" form: the temporally/aspectually unmarked form.

The priority of our investigation in this chapter is the semantics of "habitual" sentences like (11a). We leave open the question of the semantics of "profession-denoting" sentences like (11b). Obviously, a purely temporal / aspectual analysis leads to many issues: why (11b) can be uttered even if there is no instantiation of the described event at all, namely, in a context where Lanlan never managed to sell anything, and (11b) is only used to describe her profession. We will bring up later the analyses by Ferreira (2005) and Boneh & Doron (2010) of profession-denoting habituals, but we will not take sides as to which analysis is more plausible.

The next section gives an overview of theoretical accounts for generic sentences. We show why these analyses are not adequate for our purpose. In Section 4.4, we propose an analysis of generic readings of sentences with eventive BPs in Mandarin.

4.2 Overview of analyses for genericity

Sentences yielding generic readings are attested cross-linguistically and they share some quasi "universal" properties: they are for example minimally marked for tense and aspect in most languages investigated in Dahl (1995). The source of genericity has been of interest to semanticists. This section examines some analyses of generic sentences in the literature.

In particular, we discuss the *Quantificational Treatment*, the *Aspectual Treatment* and the *Modal Treatment* of generic sentences.

We observe the advantages and the limits of each approach and evaluate their appropriateness for our current study.

4.2.1 The quantificational GEN operator

It is commonly assumed that the semantics of generic sentences involves a silent operator GEN, which behaves like quantificational adverbs (Q-Adverbs) such as *usually*, *in general* or *always* (Wilkinson 1991). On one implementation of this idea, GEN is analyzed as a dyadic operator operator of the kind originally imagined for Q-adverbs (Lewis 1975; Kamp 1981; Heim 1982; Farkas & Sugioka 1983; Carlson 1989 and Krifka et al.1995). The operator relates two constituents at logical form, a "restrictor" and a "nuclear scope", and it quantifies over individuals and/or situations. A generic sentence thus has a "tripartite" logical form along the lines of (12):

(12) Q-Adv/GEN (Restrictor) (Nuclear scope)

GEN quantifies over situations or cases in generic (characterizing) sentences reporting regularities (Lawler 1972, Schubert & Pelletier 1989, among others). In the sentences of interest to us, GEN functions specifically as a quantifier over situations, and the analysis under discussion would assign to (13a) a logical form of the kind in (13b), where *s* is a situation variable (Krifka et al. 1995).

(13) a. John goes to the movies when he is free.
b. GEN[s] (John is free in s; John goes to the movies in s)

(13b) says that most or all situations of John being free are also situations in which John goes to the movies. The restrictor corresponds to the condition "John is free" and the nuclear scope corresponds to the matrix "John goes to the movies".

Note that there are generic sentences, such as (14a) below, which do not contain a conditional or a *when*-clause like (13a). A question arises whether these sentences have a tripartite structure at all, or if they simply lack a restrictor altogether. One of the most commonly adopted representations for these "simple generic sentences" is that they contain an implicit (contextually determined) restrictor, as shown in (14b), where GEN quantifies over "normal situations" for Mary to smoke:

(14) a. Mary smokes.
b. GEN[s] (s is a normal situation with respect to smoking & s contains Mary; Mary smokes in s)

(cf. Krifka et al. 1995:31)

An important challenge for this analysis is how to define these "normal situations".

Although the quantificational treatment of generic sentences is very influential in the literature, the semantics of the generic operator is hotly debated and no analysis has been established as standard. Krifka et al. (1995) give an overview of several plausible directions (*relevant quantification; prototypes; stereotypes; modal interpretations*, *situations* and *nonmonotonic inferences*), but leave open the question of the semantics of GEN.

The difficulty in finding a unified treatment for GEN results at least partly from the large range of empiral facts that the term "genericity" is used to cover. Both Scheiner (2003) and Rimell (2004) argue for a distinction between *habitual* sentences that range over situations and *generic* sentences that involve genericity under other forms. The following sections present non-quantificational treatments of generic sentences, that is, the aspectual analysis and the modal analysis of generic sentences.

4.2.2 The aspectual HAB operator

The term *habitual sentences*, as we have seen in Section 4.1.2, refers to sentences that contain an *eventive* predicate and report regularities. They are considered as a subtype of *generic sentences*. That is, habitual sentences are often taken to be generic sentences with an eventive predicate.

Under the influential quantificational treatment presented in the previous section, genericity of both *kind-referring NPs* and *generic sentences* is associated with a null quantificational operator GEN. However, many scholars investigating the semantics of habitual sentences assume an implicit operator HAB (Schoorlemmer 1995, Paslawska & von Stechow 2003, Scheiner 2003, Rimell 2004, Ferreira 2005, Boneh & Doron 2008, 2010 among others), itself not a quantifier of the same nature as Q-adverbs. One of the arguments for

distinguishing HAB from quantifiers is that habitual sentences lack scope ambiguities, contrary to quantificational sentences. Consider (15a) and (15b):

(15) a. John smokes a pipe.

b. #John smokes a cigarette.

Analyzing HAB as a quantifier ranging over events described by the predicate fails to explain why (15a) but not (15b) is felicitous as a habitual sentence. That is, why can't (15b) be interpreted as a generalization over events of "John smoking a cigarette", the way *John usually smokes a cigarette* can? The source of the contrast observed above is the scope of HAB. The indefinite NP scopes over the HAB operator, and since a pipe but not a cigarette can usually be smoked again and again, (15a) but not (15b) is felicitous.

Although many scholars provide evidence for distinguishing HAB from universal quantifiers like *always* and *usually*, the semantic value of HAB remains a hotly debated issue.

4.2.2.1 Kaufmann (Scheiner 2003), Paslawska & von Stechow (2003) and Schoorlemmer (1995)

Schoorlemmer (1995) analyzes HAB as an imperfective operator that selects for a predicate of events. Paslawska & von Stechow (2003) (henceforth P&S) share the view that HAB encodes imperfectivity, but in their definition given in (16) below, HAB selects for a predicate of times rather than for a predicate of events.

(16) $HAB_{<it, it>}$ is defined only for summative properties[35] of intervals, more accurately 'habits';
where defined, ⟦HAB⟧ = λP.λI.∃J[I ⊆ J & P(J)]

Paslawska & von Stechow (2003:337)

Under P&S' assumption, a sentence like (17) in Russian given by Schoorlemmer has the logical form in (18).

(17) *My* *každyj* *god* *ezdili* *na* *kurort.*
we every year went-IMP to spa
'We went to the spa every year.'

Schoorlemmer (1995:110)

(18) PAST HAB [ϕ] where
⟦ϕ ⟧ = λJ.∀K[year(K) & K ⊆ J → ∃e[e: we go to the spa & τ (e) ⊆ K⟧[36]

Adapted from P&S (2003:337)

According to (18), HAB selects for a predicate that holds of an interval if every year inside it contains the duration of an event of our going to the spa. the event variable *e* is bound by the perfective aspect INCLUDED ⊆ (in 'τ (e) ⊆ K'), and HAB, which is imperfective in nature, binds the reference time.

---

[35] By "*summative* property", P&S mean the so-called *cumulative* property (CUM) defined by Krifka (1992:32) as follows:

(i) $\forall P[CUM(P) \leftrightarrow \forall x, y\,[P(x) \wedge P(y) \rightarrow P(x \cup y)]$

A property *P* is *cumulative* iff for any *x*, *y* satisfying *P*, the fusion of *x* and *y* also satisfies P.

Krifka (1992:39) defines the *summative* property as a *cumulative* property for two-place relations, which is therefore different from the term used in P&S (2003).

(ii) $\forall R[SUM(R) \leftrightarrow \forall e, e', x, x'\,[R(e, x) \wedge R(e', x') \rightarrow R(e \cup e', x \cup x')]]$

[36] The semantics of (17) given by P&S is as follows:
PAST λI∃J[I ⊆ J & ∀K[year(K) & K ⊆ J → ∃e[e: we go to the spa & τ (e) ⊆ K]]]

P&S (2003:337)

P&S give a very brief note on habituals and their discussion focuses on the case discussed in (17), which contains an overt quantificational adverbial *kaÏdyj god* 'every year'. Otherwise, they give no detail on how to derive summative properties in habitual sentences with no overt quantification, such as (19a). For instance, while *go to the movies every week* clearly denotes a habit in their sense, it is not obvious whether the VP *go to the movies* without any adverb in (19a) denotes a habit, or whether it describes intervals corresponding to single events of going to the movies:

(19) a. John goes to the movies.

b. John goes to the movies every week.

Assuming that (20a) contains an instance of HAB, this raises the question how to derive a predicate of times characterized as a 'habit' from a VP like *go to the movies* in (19a).

Inspired by P&S (2003), M. Kaufmann (Scheiner 2003) also argues for an imperfective operator HAB in habitual sentences. Kaufmann's HAB is not a covert Q-adverb, but takes Q-adverbs as arguments -- specifically, it takes as an argument a Q-adverb that turns an eventive predicate to a habitus, which is cumulative. Thus, Kaufmann's HAB, like P&S's, ultimately gives a property of times, namely, the property of being included in an interval that constitutes a "habitus". Here is her definition of HAB:

(20) $[\![\text{HAB}]\!]^{g,c} = \lambda Q.\lambda P.\lambda I.\exists J\,[I \subseteq J \,\&\, Q(P)(J)]$,
HAB$_{<<vt,it><vt,it>>}$, defined only if CUM($||Q||$).[37]
cumulativity as restriction on a quantifier:
CUM ($||Q||$) $\leftrightarrow \forall P \forall I \forall J[Q(P)(I) \,\&\, Q(P)(J) \,\&\, I><J \rightarrow Q(P)(I \cup J)]$.[38] [39]

---

[37] Kaufmann represents an "event" as type "*s*". We replace "*s*" by "*v*" in order to be consistent with the terminology used in the previous parts of this thesis.

[38] The *cumulativity* is similar to the property referred to as *summative* in Paslawska & von Stechow (2003).

[39] "I><J" means I and J are adjacent.

For instance, HAB could combine with the Q-adverb *often*, whose semantic value is as in (21) according to Kaufmann:

(21) $[\![\text{often}]\!]^{g,c} = \lambda P.\lambda t.\ [\ |\{e: \tau(e) \subset t\ \&\ P(e)=1\}| > C\ ]$
where C a contextually given standard for the number of events e in t such that P(e).

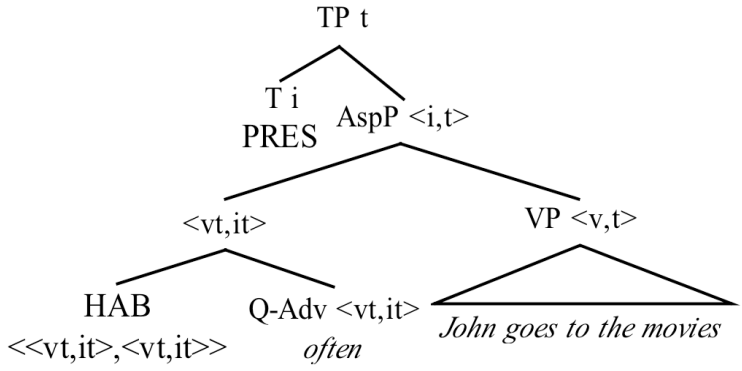
Adapted from Scheiner (2003:9)

(21) defines *often* as a <*vt*, *it*> type operator. When it combines with a predicate *P*, it gives a property of intervals, true of an interval *t* if the amount of *P*-events within *t* is larger than a contextually specified standard *C*. As for sentences with no overt quantification, Kaufmann assumes a covert Q-adverb "Q_c".

To summarize, under Kaufmann's analysis in Scheiner (2003), habituals are statives derived from eventive predicates, and HAB is a "stativizer" that relates predicates of events to predicates of times, just like aspect. Quantificational adverbs are not overt HAB-operators, but modify the complement of HAB. To illustrate, a habitual sentence like in (22) has the representation in (23):

(22) John often goes to the movies.

(23)



Kaufmann adopts the view that morphological tenses introduce semantic tenses (PRES, PAST, FUT) and moreover she adopts a

deictic theory of tense (Partee 1973). The semantic value of PRES is as follows (see also Chapter 2 of this thesis):[40]

(24) $[\![PRES_i]\!]^{g,c}$ = g(i) if g(i) overlaps t_c, undefined otherwise.

In (24), *g(i)* is a time the speaker refers to when she utters a sentence with present tense where the index on PRES is *i*. The present tense PRES is defined only if the value assigned to the index *i*, *g(i)*, overlaps the utterance time t_c, and if it is defined, PRES gives the value *g(i)*.

(25) below gives the semantic values of the composants in (22) and (26) illustrates the derivation of the habitual construal.

(25)

a. $[\![PRES_i]\!]^{g,c}$ = g(i) if g(i) overlaps t_c, undefined otherwise

b. $[\![HAB]\!]^{g,c}$= $\lambda Q.\lambda P.\lambda I.\exists J$ [$I \subseteq J$ & Q(P)(J) = 1],
$HAB_{<<vt,it><vt,it>>}$, defined only if CUM($[\![Q]\!]^{g,c}$).

c. $[\![often]\!]^{g,c}$ = $\lambda P.\lambda t.$ [$|\{e: \tau(e) \subset t$ & P(e) = 1$\}| > C$]
where C a contextually given standard for the number of events e in t such that P(e) = 1.

d. $[\![John]\!]^{g,c}$ = John

e. $[\![goes\ to\ the\ movies]\!]^{g,c}$ = $\lambda x.\ \lambda e.$ GOES TO THE MOVIES (e, x)

(26) Derivation:

a. $[\![\alpha]\!]^{g,c}$ = $\lambda e.$ GOES TO THE MOVIES (e, John)

b. $[\![\beta]\!]^{g,c}$ = $\lambda P.\lambda I.\exists J$ [$I \subseteq J$ & [$|\{e: \tau(e) \subset J$ & P(e) = 1$\}| > C$]
(since $[\![often]\!]^{g,c}$ is cumulative)

c. $[\![\gamma]\!]^{g,c}$ = $\lambda I.\exists J$ [$I \subseteq J$ & $|\{e: \tau(e) \subset J$ &
GOES TO THE MOVIES (e, John)$\}| > C$]

---

[40] The past tense PAST and the future tense FUT are defined as follows:
$[\![PAST_i]\!]^{g,c}$ = g(i) if g(i) precedes t_c, undefined otherwise.
$[\![FUT_i]\!]^{g,c}$ = g(i) if g(i) follows t_c, undefined otherwise.

d. $[\![\varphi]\!]^{g,c} = 1$ iff $\exists J$ [g(i) $\subseteq$ J & |{e: τ (e) $\subset$ J &
GOES TO THE MOVIES (e, John)}| > C], where g(i) O t_c,
undefined otherwise

The last step in (26) says that φ is defined only if the value assigned to $PRES_i$ by the function *g*, *g(i)*, is a time that overlaps with the utterance time t_c. Where defined, (22) is true if and only if there is an interval J that includes *g(i)*, and within which the number of events characterized by *John goes to the movies* exceeds the contextually specified standard C.

Note that we have not presented the final version of Kaufmann's semantics for HAB, which integrates a kind of subinterval property[41] of the habitual sentences as well, as shown in (27) below:

(27) $[\![HAB]\!] = \lambda Q.\lambda P.\lambda I.\exists J$: $I \subseteq J$ & $\forall J'[J' \subseteq_{RELEVANT} J \rightarrow Q(P)(J')]$,
$HAB_{<<vt,it><vt,it>>}$, defined only if $CUM([\![Q]\!]^{g,c})$.

Since building the subinterval property into the meaning of HAB, without any further restrictions may be too strong for the semantics of HAB, Kaufmann restricts the range of subintervals involved in its definition by a pragmatic relation $\subseteq_{RELEVANT}$. $\subseteq_{RELEVANT}$ in (27) only selects relevant subintervals (with a certain size for instance). Thus the derivation of the semantic value of (22) will be as follows:

(28) Derivation:

a. $[\![\alpha]\!]^{g,c} = \lambda e.$ GOES TO THE MOVIES (e, John)

b. $[\![\beta]\!]^{g,c} = \lambda P.\lambda I.\exists J$: $I \subseteq J$ & $\forall J'[J' \subseteq_{RELEVANT} J \rightarrow [|\{e: \tau (e) \subset J' \&$
$P(e) = 1\}| > C]\!]$ (since $[\![often]\!]^{g,c}$ is cumulative)

c. $[\![\gamma]\!]^{g,c} = \lambda I.\exists J$: $I \subseteq J$ & $\forall J'[J' \subseteq_{RELEVANT} J \rightarrow$
$[|\{e: \tau (e) \subset J' \&$ GOES TO THE MOVIES (e, John)$\}| > C]\!]$

---

41 The subinterval property is referred to in Scheiner as the *divisive* property. Here is her defintion:
Divisive: $DIV(||\phi||) \leftrightarrow \forall I,J[(\phi(I) \wedge J \subseteq I) \rightarrow \phi(J)]$
That is, ϕ is divisive or has the subinterval property iff ϕ is true for any subinterval of an interval for which ϕ is true.

d. $[\![\varphi]\!]^{g,c} = 1$ iff g(i) O t_c & ∃J: g(i) ⊆J & ∀J'[J'⊆$_{RELEVANT}$ J →
[|{e: τ (e) ⊂ J' & GOES TO THE MOVIES (e, John)}| > C]],
undefined otherwise

(28d) says that *φ* is true only if the interval assigned to $PRES_i$ by the function *g*, *g(i)*, overlaps the utterance time t_c, and there is an interval *J* that includes *g(i)*, for which the number of events characterized by *John goes to the movies* within any relevant subinterval exceeds the contextually specified standard C.

4.2.2.2 A problem with aspectual HAB

At least once we adopt the analysis we have been assuming of temporal adverbs, Kaufmann's analysis fails to explain the contrast between (29a) and (29b) below. That is, (29a) is not felicitous while (29b) is.

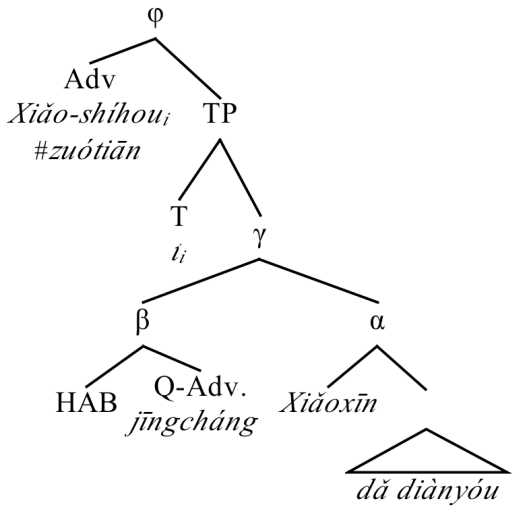
(29) a. #Zuótiān/gāngcái, Xiǎoxīn jīngcháng dǎ diànyóu.
yesterday/just.now Xiaoxin often play video.game

b. Xiǎo-shíhou, Xiǎoxīn jīngcháng dǎ diànyóu.
little-time Xiaoxin often play video.game
'When he was a child, Xiaoxin often played video games.

(29b) contains a temporal adverb *xiǎo-shíhou* 'when he was a child', and receives a past habitual reading; in contrast, (29) is ill-formed with the adverb *zuótiān* 'yesterday' or *gāngcái* 'just now'. Habitual sentences select frame setting time adverbs that refer to a "large" time interval.

If we apply Kaufmann's analysis of habitual sentences, (29a) and (29b) will have the structure in (30) and they give rise to the truth conditions in (33a,b) respectively.

(30)



(31) Lexical entries:

a. $[\![$(Xiǎoxīn) xiǎo-shíhou$]\!]^{g,c}$ = (X's) childhood

b. $[\![$zuótiān$]\!]^{g,c}$ = the day before the day of t_c

c. $[\![t_i]\!]^{g,c} = g(i)$

d. $[\![$HAB$]\!]^{g,c} = \lambda Q.\lambda P.\lambda I.\exists J$: $I \subseteq J$ &
$\forall J'[J' \subseteq_{RELEVANT} J \rightarrow Q(P)(J')]$,
$HAB_{<<vt,it><vt,it>>}$, defined only if $CUM([\![Q]\!]^{g,c})$.

e. $[\![$jīngcháng$]\!]^{g,c} = \lambda P.\lambda t.\ [|\{e: \tau(e) \subset t \ \&\ P(e) = 1\}| > C]$
where C a contextually given standard for the number of events e in t such that P(e) =1.

f. $[\![$Xiǎoxīn$]\!]^{g,c}$ = X

g. $[\![$dǎ diànyóu$]\!]^{g,c} = \lambda x.\lambda e.$ PLAY VIDEO GAMES (e, x)

(32) Derivation:

a. $[\![\alpha]\!]^{g,c} = \lambda e.$ PLAY VIDEO GAMES (e, X)

b. $[\![\beta]\!]^{g,c} = \lambda P.\lambda I.\exists J$: $I \subseteq J$ & $\forall J'[J' \subseteq_{RELEVANT} J \rightarrow [|\{e: \tau(e) \subset J'$ & $P(e) = 1\}| > C]\!]$ (since $[\![$often$]\!]^{g,c}$ is cumulative)

c. $[\![\gamma]\!]^{g,c} = \lambda I.\exists J$: $I \subseteq J$ & $\forall J'[J' \subseteq_{RELEVANT} J \rightarrow$
$[|\{e: \tau(e) \subset J'$ & PLAY VIDEO GAMES (e, X)$\}| > C]\!]$

(33) a. $[\![\varphi]\!]^{g,c} = 1$ iff $\exists J$: X's childhood $\subseteq J$ & $\forall J'[J' \subseteq_{\text{RELEVANT}} J \rightarrow$
$[|\{e: \tau(e) \subset J' \text{ \& PLAY VIDEO GAMES } (e, X)\}| > C]]$,
undefined otherwise

b. $[\![\#\varphi]\!]^{g,c} = 1$ iff $\exists J$: YESTERDAY $\subseteq J$ & $\forall J'[J' \subseteq_{\text{RELEVANT}} J \rightarrow$
$[|\{e: \tau(e) \subset J' \text{ \& PLAY VIDEO GAMES } (e, X)\}| > C]]$,
undefined otherwise

(33b) predicts that the sentence in (29) conveys that the habit of *Xiaoxin often playing video games* is in force over an interval that contains the day before the day of the utterance. There are many plausible scenarios that could in principle satisfy these conditions. However (29) is not a felicitous sentence.

Kaufmann's analysis therefore cannot capture the selection of adverbs in generic sentences. That is, it cannot explain why generic sentences are not compatible with adverbs denoting "short" time intervals.

Note also that for Kaufmann the purely aspectual operator HAB does not contribute to the core meaning of habitual sentences, that is, the derivation of the generic property from eventive predicates. According to the lexical entries she defines for HAB and *often* in (25), the "habitus" is obtained because of the Q-adverb *often* rather than HAB.

For Kaufmann, HAB is a covert imperfective aspect marker. One could see the assumption of a covert imperfective aspect for generic sentences as related to the compatibility of imperfectivity with generic sentences in general. But notice that imperfective aspect seems to be compatible with all sentences describing stative properties. So if we follow the spirit of Kaufmann's approach, it seems that sentences with a stative predicate like (34) should contain a covert imperfective aspect as well.

(34) Sue is upset.

Recall however our analysis of sentences with bare states in Mandarin. We argued that states do not require overt aspect because they are properties of intervals, and can thus combine directly with a time. In light of this, one might imagine that generic sentences, which share major properties with sentences with stative BPs (cf. the "subinterval property"), can be assigned similar structures as stative sentences, that

is, structures without the AspP. We will show later that generic readings can be correctly accounted for without the assumption of a covert imperfective aspect.

4.2.3 The modal HAB operator

4.2.3.1 Ferreira (2005)

Ferreira (2005) considers habituality as involving both aspectual and modal components. He points out some similarities between habitual and progressive sentences: progressive sentences describe ongoing events and habitual sentences describe ongoing sequences of events. The HAB operator that Ferreira posits, just like the operator PROG that he associates with progressive aspect, encodes an inclusion relation between time intervals. Take (35) for instance:

(35) a. John is playing soccer (right now).
b. John plays soccer.

Ferreira (2005:116)

The progressive aspect PROG in (35a) relates the event time (ET) to the reference time (RT) (which itself coincides with the utterance time (UT) in this case), - the time of the event "John playing soccer" is thus required to include the UT. The habitual operator HAB in (35b) requires the RT (= UT) to be included within an interval including a sequence of events of John playing soccer. In sum, PROG and HAB both instantiate imperfective aspect, they differ only in the number of the events they select: PROG applies to singular events while HAB applies to plural events. The logical forms of (35a) and (35b) are given below:

(36) a. $[_{TP}\ Pres_i\ [_{AspP}\ PROG\ [_{VP\text{-}sg}\ sg\ [_{VP}$ John play soccer ⟧⟧

b. $[_{TP}\ Pres_i\ [_{AspP}\ HAB\ [_{VP\text{-}pl}\ pl\ [_{VP}$ John play soccer ⟧⟧

According to Ferreira, bare VPs denote sets containing singular and plural events. In (36a), "sg" stands for a number morpheme that only selects singular events in the set denoted by the VP. Similarly, "pl" in (36b) only selects plural events. HAB, also labelled as "Imp-pl" in Ferreira, then encodes temporal inclusion of the reference time within the time of a plural event in the set denoted by the VP-pl.

Ferreira further argues that a purely temporal/aspectual analysis of HAB as presented above is inadequate, because temporal inclusion itself cannot explain why a habitual sentence can be true even if the sequence of events is interrupted after the UT by external factors. To illustrate, (35b) is true if John regularly plays soccer. In other words, there should be a sequence of events of John playing soccer prior to the UT and he probably continues to play soccer after the UT if nothing happens after the UT that prevents him from playing soccer. In a case where some "external factors" interfere (John breaks his leg, the campus is closed just after the UT, for instance), and John never plays soccer again after the UT, (35b) is still true, because the speaker who utters (35b) "does not commit himself to the existence of future events of John playing soccer regardless of what might happen to John".

From this point of view, habitual sentences are very similar to progressive sentences: the event described by a progressive sentence with an accomplishment can also be interrupted without changing the truth-value of the sentence. Consider (37), an example from Portner (1998).

(37) Mary was climbing Mount Toby.

(37) is true even if the climbing was interrupted by an accident (Mary was eaten by a bear or got injured).

Ferreira argues for a unified semantics for habitual and progressive sentences. He adopts Portner's modal analysis of the progressive (Portner 1998, Kratzer 1981). On this analysis, progressive involves universal quantification over possible worlds (w). The relevant set of possible worlds is determined by a circumstantial modal base (M) and an ordering source (O) based on the ideal that the event described by the sentence is not interrupted by any "outside" factor (See also Dowty (1977) and Landman (1992) for modal analyses of progressive).

Likewise, the on-going sequences of events denoted by habitual sentences can also be interrupted by unexpected factors. The truth-conditions of a habitual sentence like (35b) are as follows:

(38) $[\![TP]\!]^w = 1$ *iff* for every world w' in BEST(M, O, w, t), there is a plural event e that occurs in w', such that Pres $\subseteq \tau$*(e)* & *play_soccer(e,j).*[42]

In (38), *BEST(M, O, w, t)* contains ideal worlds very similar to the real world at a time *t*. The ideal worlds are defined in terms of two sets of propositions : a circumstantial modal base *M* given in (39), and an ordering source *O* like that given in (40). The modal base *M* in (39) contains facts / conditions that make "John plays soccer" possible, and the ordering source O in (40) contains propositions that exclude the existence of factors of a kind that could interrupt a sequence of events of John playing soccer. The sense in which Best (M, O, w, t) defines ideal worlds at a time *t* is that it selects those worlds meeting the conditions in M that satisfy the greatest number possible of propositions in O. In all of these worlds, there are no external factors preventing John from playing soccer after the UT.

(39) M(w, t) = {John played soccer with his friends several times recently, John is in good physical condition, John intends to play soccer again, there is a soccer stadium close to John's house, … }

(40) O(w,t)={John does not die tomorrow, John does not get arrested, the stadium does not close, …}

Thus in ideal worlds for John to keep playing soccer, as defined by *BEST(M, O, w, t)*, there should be both past and future events of John playing soccer for the sentence in (35b) to be true. In other words, the sequence of events 'John playing soccer' should not be interrupted before the utterance time. Take a scenario where there are past events of John playing soccer, but something happened to him before the UT and he can no longer play soccer, the worlds denoted by *BEST(M, O, w, t)* do not contain an interval, which itself contains "John playing soccer" events that includes the UT, and thus the sentence is false.

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42 "Pres" refers to the utterance time.

Ferreira defines imperfective aspect (HAB and PROG) as in (41):[43]

(41) $[\![\text{Imp}]\!]^w = \lambda P.\ \lambda t.$ for every world w' in BEST(M, O, w, t), there is an event e, such that $t \subseteq \tau(e)$, and $P(w')(e) = 1$.

In other words, HAB and PROG have a unified semantics. They only differ in the kinds of events described by their sister: HAB is applied to sets of plural events, while PROG to sets of singular events.

4.2.3.2 Boneh & Doron (2008, 2010)

Boneh & Doron (2008, 2010) dissociate habituality and imperfectivity. They reject the purely temporal treatment of HAB, contra Scheiner (2003) and Rimell (2005), and adopt a modal treatment (Carlson 1977, Dahl 1985, Comrie 1985). They propose two possible layers in the syntax for habituality: a *modal* operator HAB_1 at the VP level which is responsible for habituals like (42) and an aspectual HAB_2 generated under Asp, which gives rise to habituality in periphrastic expressions like (43).

(42) Mary goes to work by tram.

(43) John used to play tennis.

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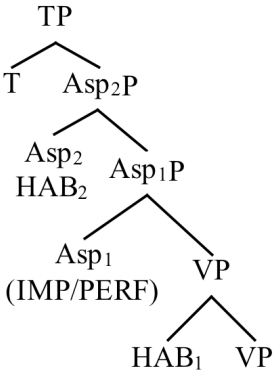
[43] The revised definition given by Ferreira is as follows:
(i) $[\![\text{Imp}]\!]^w = \lambda P.\ \lambda e.$ for every world w' in BEST(M, O, w, $\tau(e)$), there is an event e', such that $e \leq e'$, and $P(w')(e') = 1$.
According to (i), *Imp* takes a set of events and returns another set of events. This modification aims to account for the interaction between Imp and Q-Adverbs. See Ferreira (2005: 122-125) for more details.

The syntactic structure of habituals is illustrated in (44):

(44)



In the structure in (44), the imperfective/perfective aspect is higher than the modal HAB_1, but lower than the aspectual head HAB_2. Since HAB_2 is proposed to account for periphrastic habitual sentences like (43), in which the predicate is not in its "bare" form, it is not relevant to the goal of this chapter. We only discuss the modal operator HAB_1.

HAB_1 takes a predicate of events Q and yields a predicate of states.[44] Its semantic value is given in (45):

(45) $HAB_1 = \lambda Q \lambda s \lambda w[init(Q,s,w) \ \& \ \forall w' \in MB_{\tau(s),w} \ \exists i \ [\tau(s) \subseteq i \ \& \ FOR(Q,i,w')]$

(45) says that HAB only selects Q-events that have been initiated and that iterate within an interval *i* in ideal worlds.

B&D's (2010) modal analysis of HAB differs from that of Ferreira's. B&D uses a modal base to account for the habitual sentences with no instantiation (at all), while the modal HAB in Ferreira aims to explain the potential lack of instantiation of the events in the future. Recall the definition of HAB in (45) given by B&D: the Q-events described by the bare VP should be initiated in ideal worlds and there does not have to be any occurrence of the Q-event at all in

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[44] In Boneh & Doron (2010), the input of HAB can also be a predicate of states. We ignore this part in the semantics of HAB, since the current chapter focuses on habitual sentences with bare eventive predicates.

the actual world. Thus this definition allows for habitual sentences like (46):

(46) John sells vacuum-cleaners.

Ferreira (2005) considers sentences describing professions like (46) as involving a nominal stativizer. (46) is thus equivalent to (47) and does not need to be have actual occurrences of the selling event.

(47) John is a vacuum-cleaner seller.

B&D (2010) and Ferreira (2005) also differ as to whether HAB is related to plurality. Ferreira (2005) claims that HAB selects for plural events and the progressive aspect takes singular events, while B&D (2010) argue that plurality is not always associated with habituality. The progressive aspect can also be applied to plural events, such as the case in (48):

(48) Sue is dialing a busy number.

(48) can be used to report a situation where Sue dials the same number again and again, thus it describes an on-going plural event but not a singular event.

The divergence concerning the modal base and the ordering source associated with habituals has been pointed out by Krifka et al. (1995). They defend one unique covert operator in habitual sentences. They claim that the variety of interpretations of habitual examples results from different modal bases and ordering sources that the hearer constructs to "accommodate" the interpretation of a sentence (Krifka et al. 1995:55-56).

4.3 Generic sentences with eventive BPs in Mandarin

4.3.1 Well-formed eventive BPs and genericity

In Chapter 3, we presented sentences with eventive BPs that are well-formed in Mandarin (Section 3.2). We have shown that these sentences either contain overt modifying phrases (Q-adverbs, locative PPs and other adverbials) or can be totally "bare" (with bare activities in particular), and they are used to report certain regularities about the event described by the predicate rather than single events. We repeat some examples below:

Q-Adverbs:

(49) Zhōngguó duì **zǒng** shū.
China team always lose
'The Chinese team loses all the time.'

(50) Èrmáo **jīngcháng** tīng zhèi-shǒu gē.
Ermao often listen this-CL song
'Ermao often listens to this song.'

Locative PPs:

(51) Tā **zài** **zhèi-jiā** **miànbāofáng** mǎi tiándiǎn.
3SG at this-CL bakery buy dessert
'He buys his dessert in this bakery.'

(52) Lùlu **zài** **wòshì-lǐ** tīng zhèi-shǒu gē.
Lulu at bedroom-inside listen this-CL song
'Lulu listens to this song in her bedroom.'

Other modifiers:

(53) Bōlibēi **hěn** **róngyì** suì.
glass very easy break
'Glasses break easily.'

(54) Zhè jǐ-jiā diàn **hěn** **wǎn** guānmén.
this several-CL store very late close
'These stores close late.'

Bare activities:

(55) Lǐsì dǎ wǎngqiú.
Lisi play tennis
'Lisi plays tennis.'

(56) Gǔlóng chōuyān.
Gulong smoke
'Gulong smokes.'

We have also shown that sentences with eventive BPs, such as (57)-(59) below, are ill-formed as assertions of the occurrence of a single event in Mandarin:

(57) Jīnglǐ dào *(le).
manager arrive PERF
'The manager arrived.'

(58) Mǎlì xiào *(le).
Mary smile PERF
'Mary smiled.'

(59) Tā *(zài) xiě yìběn xiǎoshuō.
3SG PROG write one-CL novel
'He is writing a novel.'

(57)-(59) require an overt aspect to license *episodic* readings, while (49)-(56), which are unmarked for aspect, only allow *generic* readings, but never episodic readings. We observe a correlation here between the availability of a generic reading for a bare eventive and the necessity for an overt aspect; that is, when a sentence with an eventive BP is well-formed, it necessarily yields a generic reading; and when a sentence with an eventive predicate allows for an episodic reading, it must be overtly marked for aspect (perfective, progressive or durative).

The lack of an episodic construal for sentences with eventive BPs is due to the argument structure of the predicate, as we claimed. More precisely, eventive BPs are predicates of events, which require an aspect to map them to properties of times. Since aspect must be overtly realized in Mandarin according to our assumption, eventive BPs do not allow episodic past or on-going readings.

The remaining puzzle is how to account for the generic construal of sentences with bare BPs (with or without a modifying adverbial) like (49)-(56). Recall that our analysis presented earlier predicts that eventive BPs, being properties of events, are incompatible with a time, and consequently sentences with eventive BPs are not interpretable. However, we have just seen that some sentences with eventive BPs are felicitous, and they yield generic construals. Then the remaining question is how the generic construal is derived on the basis of an eventive BP?

Before making a proposal about the generic construals of bare sentences, we see in Section 4.3.2 below the interaction of temporal adverbials with generic sentences. Section 4.4 is dedicated to our analysis of generic construals. We explore the semantics of generic

sentences with or without overt quantification. We claim that the generic readings of sentences with a bare eventive predicate are due to a quantificational element. When the sentence contains an overt quantificational adverb, it is the Q-adverb that maps the properties of eventualities to properties of times; when the sentence does not contain any quantificational element, a covert operator Q plays a role similar to that of a Q-adverb.

4.3.2 Temporal anchoring of generic sentences

Recall our analysis of temporal construals of sentences with bare stative predicates and sentences with aspectually marked eventive predicates presented in Chapter 3. We argued for a "minimal" TP projection introducing a time that serves as a reference time to anchor the eventuality denoted by the stative VP or the AspP. As far as this section is concerned, we continue to assume that there is a TP projection introducing a time variable t_i in Mandarin, and we leave open for the moment the question of whether or not Mandarin has a null "tense" morpheme.

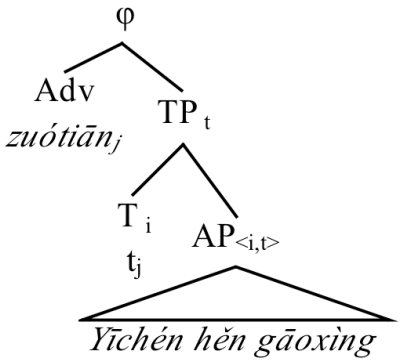
The variable t_i can either be bound by an adverb or remain free and in so doing comes to have a salient time as its value. We assume that frame setting temporal adverbials, such as *zuótiān* 'yesterday', *jīntiān* 'today', *qùnián* 'last year', *xiàwǔ liǎngdiǎn* '2 pm', *April 1st*, are of type *i*. They refer to time *intervals* (including *moments*). Stative VPs are of type <*i*,*t*>; imperfective aspect (Imp) is of type <*vt*, *it*>, and thus it yields a <*i*,*t*> type at ImpP when combined with an eventive VP (of type <*v*,*t*>); perfective aspect (PerfP) is of type <*vt*, <*i*,*it*>> and thus requires a property of events and a time to return a <*i*,*t*> type at PerfP.

We'll run through our analysis with the derivations of the examples in (60) and (64):

A sentence containing a *stative* bare predicate modified by a time adverb like (60) has the structure in (61), where the time variable t_j is bound by the adverb *zuótiān* 'yesterday'. As a result of the binding, the structure is interpreted as though the interval denoted by *zuótiān* were the time argument of the AP. Accordingly, the structure expresses that the state of Yichen's happiness extends throughout *yesterday*.

(60) Yīchén zuótiān hěn gāoxìng.
Yichen yesterday very happy
'Yichen was very happy yesterday.'

(61)



The lexical entries are given in (62) and the semantic value of the sentence in (63).

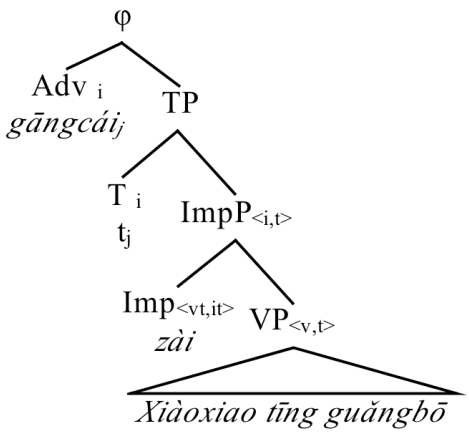
(62) Lexical entries:
a. $[\![\text{Yīchén}]\!]^{g,c}$= Y
b. $[\![\text{zuótiān}]\!]^{g,c}$= the day before the day that contains t_c
c. $[\![\text{hěn gāoxìng}]\!]^{g,c}=\lambda x.\lambda t.$ x is happy in t
d. $[\![t_j]\!]^{g,c}$= g(j)

(63) $[\![\varphi]\!]^{g,c}$=1 iff Y is happy on the day before the day containing t_c,
0 otherwise

Similarly, a sentence with an overt imperfective aspect like (64) has the structure in (65), where t_j gets bound by the time adverb *gāngcái* 'just now' and combines with the ImpP by saturating its time slot:

(64) Gāngcái, Xiàoxiao zài tīng guǎngbō.
just-now, Xiaoxiao PROG listen radio
'Just now, Xiaoxiao was listening to the radio.'

(65)



(66) Lexicon:

a. ⟦gāngcái⟧^{g,c}= the moment before t_c

b. ⟦t_j⟧^{g,c}= g(j)

c. ⟦zài⟧^{g,c} = λ$P_{<v,t>}$. λt. ∃e: P(e)=1 & t ⊆ τ (e)

d. ⟦tīng guǎngbō⟧^{g,c} = λx.λe. e is an event of x listening to the radio.

e. ⟦Xiàoxiao⟧^{g,c} = *X*

(67) Derivation:

a. ⟦Xiàoxiao tīng guǎngbō⟧^{g,c} = λe. e is an event of *X* listening to the radio.

b. ⟦ImpP⟧^{g,c} = λt. there is an event of *X* listening to the radio, whose running time includes t

c.⟦TP⟧^{g,c}=1 iff there is an event of *X* listening to the radio, whose running time includes g(j), 0 otherwise

d. ⟦φ⟧^{g,c}=1 iff there is an event of *X* listening to the radio, whose running time includes the moment before t_c,
0 otherwise

We have seen in Chapter 3 that sentences with eventive BPs only allow generic readings, and episodic readings are licensed by overt aspect. Moreover, we have seen that eventive BPs are ill-formed as

episodic events and this is the case even if there is an overt present/past time adverb that could serve as the reference time for the sentence. Consider (68) and (69) below:

(68) *Zuótiān* nèi-tiáo yú sǐ *(le).
yesterday that-CL fish die PERF
'That fish died yesterday.'

(69) *Zhèi-huǐr* Yīchén tuī *(zhe) tā de xiǎochē.
this-instant Yichen push DUR 3SG *de* stroller
'Yichen is pushing her stroller right now.'

In the absence of the overt aspect *le*, (68) cannot mean that the fish died on the day before the day of the utterance. Similarly, (69) fails to license the on-going present reading "Yichen is pushing her stroller" without the durative aspect *zhe*, even if the adverb *zhèi-huǐr* 'this-instant' clearly refers to a time that includes the UT.

This observation exemplifies our generalization that overt aspect is required to license episodic construals. Temporal adverbs, even if they fix the temporal reference of sentences describing single events, are not sufficient to license an episodic reading for an eventive BP. Now the question is: how do temporal adverbs interact with generic sentences with eventive BPs? Can they fix the temporal reference of generic sentences? Consider (70)-(72):

(70) Gǔlóng jīngcháng chōu-yān.
Gulong often smoke-cigarette
'Gulong often smokes.'

(71) **Xiànzài** Gǔlóng jīngcháng chōu-yān.
now Gulong often smoke-cigarette
'Now, Gulong often smokes.'

(72) **Niánqīng-shí** Gǔlóng jīngcháng chōu-yān.
youth-time Gulong often smoke-cigarette
'Gulong used to smoke when he was young.'

(70) allows a generic reading with an eventive BP *chōu-yān* 'smoke-cigarette'. In the absence of a time adverb, (70) is interpreted in the present, namely, the habit of Gulong holds through a period including the UT. With an overt present-time denoting adverb *xiànzài* 'now', (71) is grammatical and yields a present reading. With an overt past

time adverb *niánqīng-shí* 'when he was young', (72) is well-formed and receives a past reading.

The sentences discussed above seem to suggest that time adverbs can fix the temporal reference of generic sentences with eventive BPs, yielding present or past generic readings. Consider now (73a) and (73b):

(73) a. #	**Zuótiān**	Gǔlóng	(jīngcháng)	chōu-yān.
	yesterday	Gulong	(often)	smoke-cigarette
b. #	**Jīntiān**	Gǔlóng	(jīngcháng)	chōu-yān.[45]
	today	Gulong	(often)	smoke-cigarette

These two sentences containing either a past time adverb *zuótiān* 'yesterday' or a present time adverb *jīntiān* 'today' are ill-formed.

The contrast between (73a, b) on the one hand and (71)-(72) on the other hand suggests that sentences with eventive bare predicates in Mandarin select for a specific type of time adverbial. This is so, because sentences with eventive BPs are used to make generalizations over instances of events, and the "generic properties" are usually evaluated with respect to relatively "long" time spans. The adverb *xiànzài* in (71) actually means "nowadays" rather than "at this moment". *Gulong*'s habit of smoking conveyed by *Gǔlóng chōuyān* is compatible with *xiànzài* in (71) and *niánqīng-shí* 'when he was young' in (72), but incompatible with *zuótiān* 'yesterday' in (73a) and *jīntiān* 'today' in (73b).

The selection of time adverbs in generic sentences recalls sentences with bare states. We have shown in Chapter 3 that the compatibility of time adverbs with some sentences containing bare states relies largely on the semantic properties of the predicate.

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[45] The sentence below is acceptable in a scenario where Gulong usually does not smoke and for some particular reason he will exceptionally smoke 'today'. In this case, the sentence receives a future-oriented reading, and it is the only available reading for the sentence. Sentences of this type will be discussed in Chapter 5.

i) Jīntiān Gǔlóng chōu-yān
today Gulong smoke-cigarette
'Today, Gulong will smoke.'

Individual-level properties denoted by bare states like *gāo* 'tall' and *cōngmíng* 'smart', being relatively stable, do not vary with time, explaining the oddness of (74) and (75) below:

(74) #**Zuótiān** Yīchén hěn cōngmíng.
yesterday Yichen very smart
#'Yesterday, Yichen was very smart.'

(75) #**Gāngcái** Èrmáo hěn gāo.
just.now Ermao very tall
#'Just now, Ermao was very tall.'

To summarize, sentences with eventive BPs in Mandarin yield generic readings. Generic properties can be temporally anchored in the past or in the present with appropriate temporal adverbs, that is, adverbs denoting intervals that are relatively *long*.

A counterexample to the generalization stated above about adverb selection in generic sentences in Mandarin might be (76):

(76) Lǐsì yùjiàn Gǔlóng$_i$ shí, tā$_i$ jīngcháng chōuyān.
Lisi meet Gulong time 3SG often smoke
'When Lisi met Gulong$_i$, he$_i$ often smoked.'

(76) is grammatical, and allows for a generic reading, although the event described by *Lǐsì yùjiàn Gǔlóng* in the *when*-clause apparently refers to a moment of time (the moment when *Lisi* met *Gulong*) rather than an interval.

(76) seems to challenge our generalization that generic sentences with bare eventives only select for adverbials referring to *long* time spans. The explanation that we suggest for this "exception" is that *when*-clauses can be ambiguous between moment denoting and interval denoting (at least in Mandarin). We claim that the semantics of *when*-clauses is different from that of deictic temporal adverbs like *yesterday*. We assume that deictic time adverbs are of type *i*. The semantic value of *yesterday* is given in (77):

(77) $[\![\text{yesterday}]\!]^{g,c}$ = the day before the day that contains t_c

According to (77), *yesterday* refers to the day before the day of the utterance. Whereas, a *when*-clause describes intervals that OVERLAP with the time (moment or interval) of the situation denoted by the embedded proposition. Take "when Lisi meets Gulong" for instance:

(78) ⟦when Lisi meets Gulong⟧^{g,c} = λt: t includes a moment at which Lisi meets Gulong. t

(78) defines "when Lisi met Gulong" as times that overlaps the time *t'*, at which Lisi meets *Gulong*. In other words, *Lǐsì yùjiàn Gǔlóng$_i$ shí* can either refer to the exact moment at which Lisi meets Gulong or a larger time interval containing that moment. (76) is felicitous because the *when*-clause in (76) refers to a large interval containing the moment that Lisi meets Gulong, and "Gulong often smokes" holds for that large interval.

If we replace the *when*-clause in (76) by another temporal adverbial clause headed by "the-moment", the sentence is no longer grammatical. Compare (79) with (76):

(79) #Lǐsì	yùjiàn	Gǔlóng$_i$	de	nà-yí-kè,	
Lisi	meet	Gulong	time	DE	that-one-instant
tā$_i$	jīngcháng	chōuyān.			
3SG	often	smoke			

The adverbial clause [$_{ADV}$ Lǐsì yùjiàn Gǔlóng$_i$ de nà-yí-kè] in (79) means "the moment when Lisi meets Gulong", and it clearly refers to an instant of time, but not a long time interval. The ill-formedness of (79) is probably due to the incompatibility of the generic property described by the main clause *tā$_i$ jīngcháng chōuyān* 'he often smokes' and the moment-denoting temporal adverbial clause. In contrast (76) is well-formed, because the *when*-clause headed by *shí* 'time' can refer to time intervals compatible with generic properties.

To conclude, the generic readings of sentences with eventive BPs in Mandarin can be temporally anchored in the past or in the present with appropriate temporal adverbs, that is, adverbs denoting intervals that are relatively *long*. Analyses of generic sentences should be compatible with the selection of temporal adverbials.

4.4 Our proposals

The goal of this section is to figure out what elements contribute to the genericity of habitual sentences in Mandarin and how. (We use the term "*bare sentence*" to indicate that the sentence in question has no overt aspectual marking; in other words, the predicate is unmarked for aspect.)

Habitual sentences have been argued not to form a homogeneous class (Scheiner 2003, Ferreira 2005, Rimell 2004). We share this view. Thus we use *simple habituals* (SHs) to refer to sentences that are not modified by any overt adverbial, and *quantified habituals* (QHs) to refer to habitual sentences with overt Q-adverbs.

We claim that the genericity at the sentence level is derived either from an overt quantificational adverbial (in QHs) or a covert quantificational operator Q (in SHs).

In QHs, the overt Q-adverbs take properties of eventualities and yield generic properties. In SHs, there is a covert quantificational operator Q that plays a role similar to that of a Q-adverb.

4.4.1 Quantified habituals (QH)

Quantified habituals are habitual sentences with overt quantificational adverbials (Q-adverbs) such as *zǒng* 'always', *jīngcháng* 'often', *hěnshǎo* 'rarely', *cóngbù* 'never' or *měinián* 'every year', etc. We have seen that sentences with eventive BPs in Mandarin are well-formed in the presence of overt Q-adverbials, and they yield generic construals.

Consider (80) and (81) below:

(80) a. *Zhōngguó duì shū-qiú.
China team lose-ball

b. Zhōngguó duì **zǒng** shū-qiú.
China team always lose-ball
'The Chinese team loses all the time.'

c. Zhōngguó duì **měi**-cì-shìjiè-bēi dou shū-qiú.
China team every-CL-world-cup DOU lose-ball
'The Chinese team loses in every World Cup.'

(81) a. #Èrmáo xiào.
Ermao smile

b. Èrmáo **hěnshǎo** xiào.
Ermao rarely smile
'Ermao rarely smiles.'

c. Èrmáo **yí** jiàn-dào xiǎochǒu jiù xiào.
Ermao **one** see-reach clown JIU smile
'Ermao smiles every time he sees a clown.'

The Q-adverbs in the "b" examples, *zǒng* 'always' and *hěnshǎo* 'rarely', rescue the "a" sentences with eventive BPs from ill-formedness. The "c" examples contain quantified DPs serving as adverbs: *měi-cì shìjiè-bēi* 'every World Cup' in (82c) and *yí jiàn-dào xiǎochǒu* 'every time he sees a clown' in (81c). The question then is what is the distribution of Q-adverbs and how they license generic construals.

We claim that the genericity of quantified habituals comes from the Q-adverbs or other expressions having quantificational force, which map properties of eventualities to properties of times.

4.4.1.1 Q-adverbs: zǒng 'always'

We suggest here a treatment of *zǒng* 'always' on which it combines with two predicates, a predicate of events and a predicate of time intervals.

Lewis (1975) proposes that Q-adverbs like *always* are 'unselective quantifiers' that combine with two "open" propositions and that potentially bind more than one variable in these propositions. Ogihara (1991:66) has taken this view, and gives the semantics of structure involving always as in (82).

(82) *always* [ψ, ϕ] is true iff every assignment to the free variables in ψ which makes ψ true also makes ϕ true.

Our proposal is more in line with the particular variants of this view on which the bound variables include event variables and time variables.[46] Here is the way our analysis of *always* applies to an example like (83).[47] In (83) below, *always* relates two properties: *when John is happy* (C) and *he goes to the movies* (P). The *when*-clause corresponds to the *restrictor* in the tripartite structure, and the main clause to the *nuclear scope* (see also Section 4.2.1).

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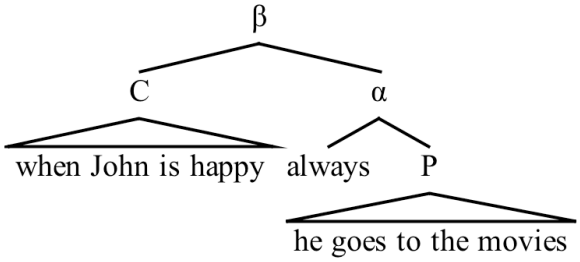
[46] Partee (1984) considers that *always* can bind event variables.

[47] We will ignore the focus-sensitive behaviors that have been observed for some quantified habituals (Rooth 1985).

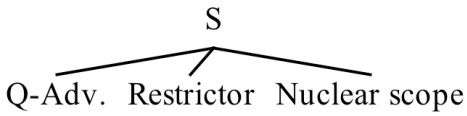
(83) When John$_i$ is happy, he$_i$ *always* goes to the movies.

(84)



Note that (84) is one of the possible binary-branching representations of quantified habituals. Partee (1991) uses a tripartite structure like (85) to represent the structural ambiguity, but for readability reasons, we keep using binary-branching structures like (84) and ignore the ambiguity in the interpretation of quantified habituals.

(85)



(86) below gives the lexical entries concerning the sentence in (83), and the derivation is given in (87).

(86) Lexical entries:

a. $[\![\text{always}]\!]^{g,c} = \lambda P_{<v,t>}.\lambda Q_{<i,t>}$. Every maximal interval t such that Q(t)=1 contains the running time of an event e such that P(e)=1

b. $[\![\text{John}_i]\!]^{g,c} = J$

c. $[\![\text{happy}]\!]^{g,c} = \lambda x.\lambda t.$ x is happy for the duration of t

d. $[\![\text{he}_i]\!]^{g,c} = g(i)$

e. $[\![\text{goes to movies}]\!]^{g,c} = \lambda x.\lambda e.$ GOES TO MOVIES (e, x)

(87) Derivation:

a. $[\![$ when John is happy$]\!]^{g,c} = \lambda t$. John is happy for the duration of t

b. $[\![$ he_i goes to the movies$]\!]^{g,c} = \lambda e$. GOES TO (e, g(i), the movies)

c. $[\![\alpha]\!]^{g,c} = \lambda Q_{<i,t>}$. Every maximal interval t such that Q(t)=1 contains the running time of an event of g(i) going to the movies.

d. $[\![\beta]\!]^{g,c}$ = 1 iff every maximal interval t such that *J* is happy throughout t contains the running time of an event e of *J* going to the movies; 0 otherwise

(84) is not the complete structure of (83), since it says nothing about tense, though (84) is a present-tensed sentence. The semantics of *always* should be modified as follows:

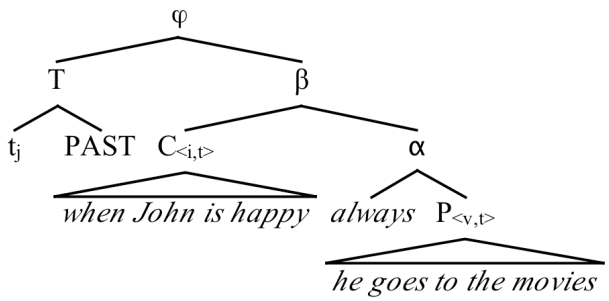
(88) $[\![$always$]\!]^{g,c} = \lambda P.\lambda Q_{<i,t>}.\lambda t$. Every maximal interval t' such that t' $\subseteq$ t and such that Q(t')=1 contains the running time of an event e such that P(e)=1

(88) says that *always* takes two properties (P and Q) and returns a property of times. The relation between P and Q holds for a (long) time interval.

Similarly, the temporal readings of sentences like (89), which describes John's habit in the past, can be correctly captured with the structure in (90):

(89) When $John_i$ was happy, he_i *always* went to the movies.

(90)



Tense scopes over the Q-adverb (Partee 1984, De Swart 1991). In (90), the T projection provides a time argument for β, which denotes a generic property. Here is the detailed derivation:

(91) Lexical entries:

a. $[\![\text{always}]\!]^{g,c} = \lambda P.\lambda Q_{<i,t>}.\lambda t$. Every maximal interval t' such that t' $\subseteq$ t and such that Q(t')=1 contains the running time of an event e such that P(e)=1

b. $[\![t_j]\!]^{g,c} = g(j)$

c. $[\![\text{PAST}]\!]^{g,c} = \lambda t: t < t_c. t$

(92) Derivation:

a. [when John is happy$]\!]^{g,c} = \lambda t$. t is a maximal interval for the duration of which *J* is happy

b. $[\![\text{he}_i$ goes to the movies$]\!]^{g,c} = \lambda e$. GOES TO (e, g(i), the movies)

c. $[\![\alpha]\!]^{g,c} = \lambda Q_{<i,t>}.\lambda t$. Every maximal interval t' such that t' $\subseteq$ t and such that Q(t')=1 contains the running time of an event of g(i) goigng to the movies.

d. $[\![\beta]\!]^{g,c} = \lambda t$. Every maximal interval t' such that t' $\subseteq$ t and such that *J* is happy throughout t' contains the running time of an event of *J* going to the movies.

e. $[\![_T\ t_j\ \text{PAST}]\!]^{g,c}$ = g(j) iff g(j) precedes t_c, undefined otherwise.

f. $[\![\varphi]\!]^{g,c}$ is defined only if g(j) < t_c, where defined, $[\![\varphi]\!]^{g,c}$ =1 iff every maximal interval t' such that t' $\subseteq$ t and such that *J* is happy throughout t' contains the running time of an event of *J* going to the movies; 0 otherwise

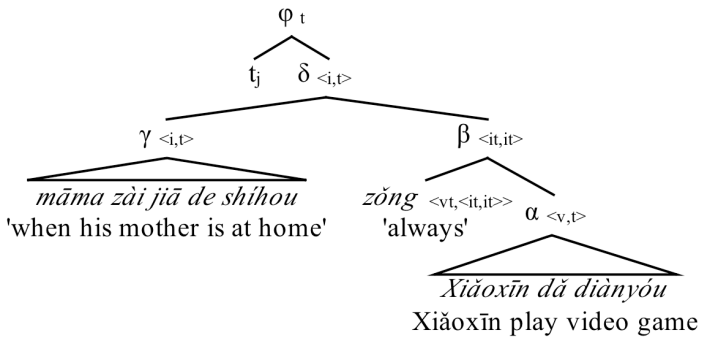
In a similar way, a quantified sentence with no overt temporal / aspectual marking in Mandarin, such as (93), has the structure illustrated in (94):

(93) Māma zài jiā de shíhou,
mother at home *de* time

Xiǎoxīn *zǒng* dǎ diàn-yóu.
Xiaoxin always play electronic-game

'Xiaoxin always plays video games when his mother is at home.'

(94)



(95) Lexical entries:

a. $[\![t_i]\!]^{g,c} = g(i)$

b. $[\![zǒng]\!]^{g,c} = \lambda P.\lambda Q_{<i,t>}.\lambda t$. Every maximal interval t' such that t' $\subseteq$ t and such that Q(t')=1 contains the running time of a P-event

c. $[\![Xiǎoxīn]\!]^{g,c} = X$

d. $[\![dǎ\ diànyóu]\!]^{g,c} = \lambda x.\lambda e.$ PLAY VIDEO GAMES (e, x)

(96) Derivations:

a. $[\![\alpha]\!]^{g,c} = \lambda e.$ PLAY VIDEO GAMES (e, *X*)

b. $[\![\beta]\!]^{g,c} = \lambda Q_{<i,t>}.\lambda t$. Every interval t' such that t' $\subseteq$ t and such that Q(t')=1 contains the running time of an event of *X* playing video games

c. $[\![\gamma]\!]^{g,c} = \lambda t$. t is a maximal interval during which (*X*'s) mother is at home

d. $[\![\delta]\!]^{g,c}$ = λt. Each maximal interval t' in t such that *X*'s mother is at home throughout t' contains an event of *X* playing video games

(97) $[\![\varphi]\!]^{g,c}$ =1 iff each interval t' in g(i) such that *X*'s mother is at home throughout t' contains an event of *X* playing video games; 0 otherwise

The Q-adverb *zǒng* in Mandarin behaves just like *always* in English; i,t combines with two properties denoted by two clauses in the sentence and gives rise to a property of times.

There is still a problem with the truth conditions in (97). We have shown in Section 4.3.2 that a generic property is evaluated with respect to long time intervals, whereas (97) says nothing about that. We think that this requirement is anchored in the lexical meaning of the Q-adverb *zǒng*, since it is the relation established by *zǒng* that is associated with long time intervals. Thus we revise the definition of *zǒng* as follows:

(98) $[\![\text{zǒng}]\!]^{g,c}$ (P)(Q)(t) is defined only if t is long; [48]
where defined, $[\![\text{zǒng}]\!]^{g,c}$(P)(Q)(t)=1 iff every maximal interval t' such that t' ⊆ t and such that Q(t')=1 contains the running time of a P-event

The truth condition of the quantified habitual in (93) is revised as:

(99) $[\![\varphi]\!]^{g,c}$ is defined only if g(i) is long;
where defined, $[\![\varphi]\!]^{g,c}$=1 iff each interval t' in g(i) such that *X*'s mother is at home throughout t' contains an event of *X* playing video games; 0 otherwise

The derivation of the truth condition in (99) shows that in overtly quantified habituals, the Q-adverbial takes properties of eventualities and gives properties of long intervals, explaining the well-formedness

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[48] The requirement for the length of an interval t is relative to the property described by the sentence. An interval of a certain size can be appropriate for evaluating one generic property but not another. See Section 5.1.2.1 for detailed discussion.

of QHs without overt aspectual marking and the fact that habituals make reference to long time intervals.

In the next section, we turn to another Q-adverb, *hěnshǎo* 'rarely', showing that sentences with Q-adverbs have the same structure.

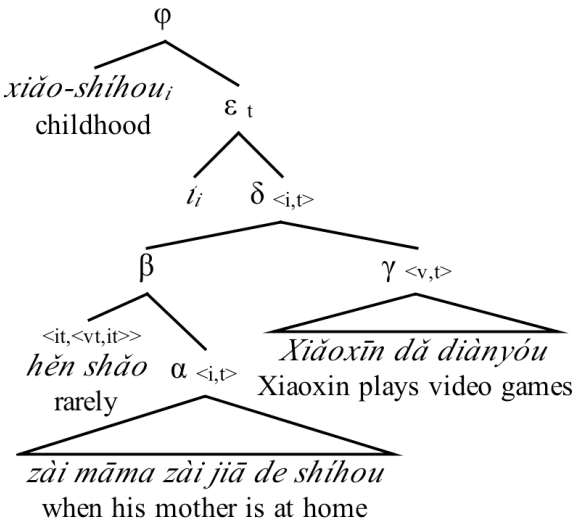
4.4.1.2 Q-adverbs: hěnshǎo 'rarely'

The Q-adverb *hěnshǎo* 'rarely' has a similar role to *zǒng* 'always', in the sense that it selects for two sets denoted respectively by the temporal adverbial clause and the main clause, and yields a property of times.

Consider (100) below. It says that when *Xiaoxin* was a child, there were few occasions of his mother being home, in which *Xiaoxin* played video games. (100) will have a structure as in (101), where *hěnshǎo* combines with the restrictor (*when*-clause α) and the main clause (β), and gives a property of times at δ.

(100) Xiǎo-shíhou, Xiǎoxīn **hěnshǎo** zài māma zài
little-time Xiaoxin rarely at mother at
jiā de shíhou dǎ diànyóu.
home *de* time play electronic-game
'When he was a kid, Xiaoxin rarely played video games when his mother was at home.'

(101)



The lexical entries are given in (102) and the derivation is illustrated in (103).

(102) Lexical entries:

a. $[\![\text{hěnshǎo}]\!]^{g,c} = \lambda P.\ \lambda Q_{<i,t>}.\lambda t$: t is long. Few Q-intervals in t contain a P-event

b. $[\![$ (Xiǎoxīn) xiǎo-shíhou$]\!]^{g,c}$ = (*X*'s) childhood

c. $[\![\text{Xiǎoxīn}]\!]^{g,c} = X$

d. $[\![\text{dǎ diànyóu}]\!]^{g,c} = \lambda x.\lambda e.$ PLAY VIDEO GAMES (e, x)

(103) Derivation:

a. $[\![\alpha]\!]^{g,c} = \lambda e.$ PLAY VIDEO GAMES (e, *X*)

b. $[\![\beta]\!]^{g,c} = \lambda Q_{<i,t>}.\lambda t$: t is long. Few Q-intervals in t contain an event of *X* playing video games

c. $[\![\gamma]\!]^{g,c} = \lambda t$. t is a maximal interval during which (*X*'s) mother is at home

d. $[\![\delta]\!]^{g,c} = \lambda t$: t is long. Few maximal intervals in t during which *X*'s mother is at home contain an event of *X* playing video games

e. $[\![\varepsilon]\!]^{g,c}$ is defined since *X*'s childhood is a long time interval; $[\![\varepsilon]\!]^{g,c}$ =1 iff few maximal intervals t' in *X*'s childhood such that *X*'s mother is at home throughout t' contain an event of *X* playing video games; 0 otherwise

The important point concerning the semantic value of quantified habituals is that the Q-adverb (*zǒng* or *hěnshǎo* in the cases discussed above) applies to two sets of eventualities (α and γ) and returns a property of times (δ). The node δ denotes a *cumulative* property in both (94) and (101). We borrow the definition of Krifka (1992:32) for *cumulative* property (CUM) (see also Link 1983):

(104) $\forall P[CUM(P) \leftrightarrow \forall x, y\ [P(x) \wedge P(y) \rightarrow P(x \cup y)]$

(104) says that a property *P* is cumulative if and only if for any individual *x* and *y* having the property *P*, the conjunction $x \cup y$ also has that property.

Now reconsider (103d). δ clearly denotes a cumulative property following the definition in (104). If in July *Xiaoxin* rarely plays video games when his mother is at home, and in August this is also the case, we can infer that *Xiaoxin* rarely plays video games when his mother is at home during the summer.

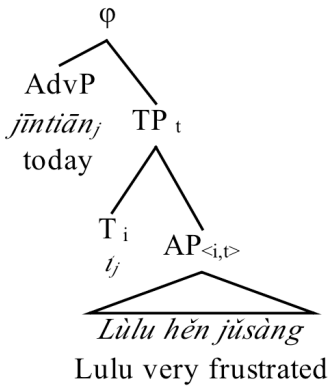
The cumulativity encoded in quantified habituals recalls the cumulativity found with stative predicates (Krifka 1989b, 1992). Take *hěn máng* 'very busy' in (105) for instance. If Lulu is busy for the month of July and that she is also busy during August, then she is busy during the whole summer.

(105) Lùlu hěn máng.
Lulu very busy
'Lulu is very busy.'

The cumulative property shared by quantified habituals and stative predicates makes it plausible to pursue syntactic similarities between them. Recall our analysis of sentences with stative predicates: we claimed that stative bare predicates are properties of times (of type $<i,t>$), true or false for a time. Reconsider (106) below, a sentence with a bare stative predicate discussed in Chapter 3. The syntactic structure of (106) is illustrated in (107):

(106) **Jīntiān** Lùlu hěn jǔsàng.
today Lulu very frustrated
'Today, Lulu is very frustrated.'

(107)



The bare stative predicate, that is, the AP in (107), is of type <*i*,*t*>, and thus can combine directly with a time without resorting to aspect.

We believe that quantified habituals should have similar structures to sentences with stative predicates, that is, at a certain level of derivation (namely, when the Q-adverbs are saturated by two properties of eventualities), we get cumulative properties that can combine directly with a time. Q-adverbs play the same role as aspect: they map properties of eventualities to properties of times, and consequently quantified habituals need not be overtly marked for aspect and their syntactic structures lack the projection AspP.

Our analysis of aspectually unmarked generic sentences differs from the aspectual HAB operator analyses for habitual sentences presented in Section 4.2.2 (Paslawska & von Stechow 2003 ; Scheiner 2003). Both P&S and Scheiner posit a null HAB operator encoding imperfectivity, as shown below:

(108) HAB$_{<it, it>}$ is defined only for summative properties of intervals, more accurately 'habits';
where defined, ⟦HAB⟧ = λP.λI.∃J[I ⊆ J & P(J)]

Paslawska & von Stechow (2003:337)

(109) $[\![\text{HAB}]\!]^{g,c} = \lambda Q.\lambda P.\lambda I.\exists J\ [I \subseteq J\ \&\ Q(P)(J)]$,
$\text{HAB}_{<<vt,it><vt,it>>}$, defined only if CUM(||Q||).

Scheiner (2003:10)

In both (108) and (109), the input of HAB should already have all elements resulting in habituality, and the basic role of HAB is to place the reference time within the time of the "habit".

We reject this position, because under this perspective, sentences with stative predicates should also be analyzed as involving a null imperfective operator. Although stative predicates are often associated with an imperfective interpretation, we believe that the imperfectivity results most likely from the lexical / semantic properties of the predicates, and not from an external null operator. Moreover, we can make the semantic composition right without an extra covert element in sentences with stative predicates (see Chapter 3 for discussion). So we would make the same assumption for quantified habitual sentences, that is, there is no covert aspectual HAB in quantified habituals.

To sum up, the generic readings of quantified habitual sentences with eventive bare predicates in Mandarin result from the combination of the overt quantificational adverbs with the properties they relate. Q-adverbs take properties of eventualities and give properties of times, that is, habituality. Habitual properties, just like stative properties, are cumulative and can be temporally anchored by a reference time under T projection, without involving aspect.

4.4.2 Simple habituals

Simple habituals (SHs) refer to habitual sentences with no overt Q-adverb. Under the quantificational treatment that we presented in Section 4.2.1, SHs involve a covert operator GEN, equivalent to Q-Adverbs such as *generally*, or *always* (Lewis 1975; Kamp 1981; Heim 1982; Farkas & Sugioka 1983; Carlson 1989 among others). GEN quantifies over cases or times (Lawler 1973). In the aspectual treatment of habituals defended by Scheiner (2003), bare habituals contain not only a covert Q-adverb that she labels as "Q_c" (which means *often*, *mostly* or *regularly*) turning an eventive predicate to a "habitus", but also a covert imperfective aspect that she calls "HAB". Both Ferreira (2005) and Boneh & Doron (2010) defend a modal "HAB" mapping properties of eventualities to properties of times.

Although each of these analyses has its specificities, they share the assumption of a covert element that takes properties of eventulaties and returns habituality. (cf. The operator "GEN" in the quantificational treatment, the "Q_c" operator for Scheiner and the "HAB" operator for Ferreira and B&D)

We share the view that bare habituals contain a null operator encoding quantification over eventualities. Let's call it "Q" for "quantification". The reason why we do not use "GEN" to refer to this quantificational operator is simply to avoid ambiguities between genericity as a property of kind-referring NPs and genericity at the sentence level.

The meaning of Q is a big issue (see Krifka et al. 1995 for the discussion of the semantics of the generic operator in characterizing sentences). No Q-adverb seems to be the overt form of Q given the whole range of possible readings of habitual sentences. If the sentences in (110a) and (110b) can be paraphrased as involving a covert Q-adverb *always* or *generally*, these adverbs are much less appropriate for cases like (111a) and (111b), which describe either an activity or a profession.

(110) a. John smokes after dinner.
b. John smokes in the kitchen.

(111) a. John smokes.
b. John sells vacuum-cleaners.

Now we focus on habitual sentences without any (temporal or locative) adverbial modifier like (111a) above. Its counterpart in Mandarin is given in (112) below.

(112) Gǔlóng chōu-yān.
Gulong smoke-cigarette
'Gulong smokes.'

What is the meaning of an SH like (112)? More precisely, what is the semantics of the covert quantificational operator Q in SHs? Can we paraphrase (112) as "Gulong often smokes" or "Gulong regularly smokes"? We think that neither of these sentences can convey the real meaning of (112). Gulong does not have to smoke regularly or very often for the speaker to truthfully utter (112). Consider now (113):

(113) a. Gǔlóng *jīngcháng* chōu-yān.
Gulong often smoke-cigarette
'Gulong often smokes.'

b. Gǔlóng *ǒu'ěr* chōu-yān.
Gulong occasionally smoke-cigarette
'Gulong smokes occasionally.'

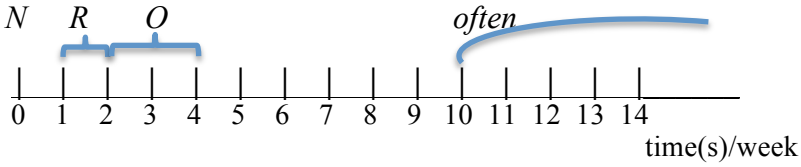
c. Gǔlóng *hěn-shǎo* chōu-yān.
Gulong very-few smoke-cigarette
'Gulong rarely smokes.'

d. Gǔlóng *cóngbù* chōu-yān.
Gulong never smoke-cigarette
'Gulong never smokes.'

The sentences in (113) are overtly quantified habituals. At first sight, (113a), (113b) and (113c) describe situations that are compatible with (112), while (113d) is inconsistent with (112). If (112) is a covertly quantified habitual, the semantics of the covert operator Q should give rise to a semantic value compatible with our observation above, that is, (112) should be interpreted as sets of situations that include all situations denoted by (113a), (113b) and (113c), and exclude the set of situations conveyed by (113d).

Suppose that the covert Q has a similar distribution to that of Q-adverbs. Then it should measure the quantity of events of Gulong smoking over a certain period. Imagine a scale of the occurrences of events within a given time span ("per week" for instance) like (114):

(114)



N: *cóngbù* (never)
R: *hěnshǎo* (rarely)
O: *ǒu'ěr* (occasionally)

When talking about the frequency of the predicated event, we can use the exact number of occurrences per week, "three times per week",

"four times per week" for instance; or we can also use more "vague" terms like the Q-adverbs *jīngcháng* 'often', *ǒu'ěr* 'occasionally' or *hěnshǎo* 'rarely' in (113).

Suppose that *hěnshǎo* 'rarely' in terms of smoking corresponds to less than two times per week, and *jīngcháng(chōuyān)* 'often(smoke)' corresponds to more than ten times a week. Then under the same convention, the covert Q operator as well as other Q-adverbs should also be associated with a certain range of frequency, which is determined by the lexical meaning of the Q-adverb, the semantic properties of the predicate or other pragmatic factors.

What are the frequencies associated to Q when we talk about one's smoking? We think that when Q applies to a property P, Q(P) means that the occurrences of the P-event over a certain time partition (unit) could vary from 1 to the biggest possible number. Here is an attempt at the semantic value of Q:

(115) $[\![Q]\!]^{g,c} = \lambda P.\lambda t$: t is long. $|\{e: \tau(e) \subset t \ \& \ P(e)=1\}| > 0$

Adapted from the semantics of "*often*" in Scheiner (2003:9)

The semantic value of the sentence (112) is derived as follows:

(116)

a. $[\![\text{Gǔlóng}]\!]^{g,c} = G$

b. $[\![\text{chōuyān}]\!]^{g,c} = \lambda x.\lambda e.$ SMOKE (e, x)

c. $[\![\text{Gǔlóng chōuyān}]\!]^{g,c} = \lambda e.$ SMOKE (e, *G*)

d. $[\![\text{Q Gǔlóng chōuyān}]\!]^{g,c} = \lambda t$: t is long. $|\{e:$ SMOKE (e, *G*) $\& \ \tau(e) \subset t\}| > 0$

e. $[\![_{TP}\ t_i\ \text{Q Gǔlóng chōuyān}]\!]^{g,c}$ is defined only if g(i) is a long time interval; where defined $[\![TP]\!]^{g,c} = 1$ iff
$|\{e:$ SMOKE (e, *G*) $\& \ \tau(e) \subset g(i)\}| > 0$, 0 otherwise

(116e) says that the sentence *Gǔlóng chōuyān* 'Gulong smokes' conveys that there is at least one event of Gulong smoking within a contextually determined interval including the utterance time. This truth condition seems too weak. According to (116e), a scenario where Gulong only smoked once in the past is predicted to be

compatible with the sentence *Gǔlóng chōuyān*, if the present time interval referred to by the speaker includes the event time of the only occurrence of Gulong smoking, whereas it is counter-intuitive to use the habitual sentence in (112) to report this kind of situation.

However, we think that (116e) is the exact truth condition of (112). Notice that (113a), (113b) and (113c) all entail (112). (112) is just an underspecified quantificational habitual sentence with respect to the sentences in (113a, b, c). For (112) to be true, there should be events (or at least one event) of *Gulong* smoking within the relevant interval, but the quantity of the events is unspecified. When interpreting a sentence like (112), we can imagine *Gulong* as a smoker who smokes more or less regularly / frequently. (112) can be truthfully uttered if *Gulong* only smokes once a week. In another case where *Gulong* just started smoking and he has only smoked once, (112) is perfectly appropriate if the speaker assumes that *Gulong* will probably smoke again.

To summarize, simple bare habituals contain a covert quantificational operator Q, which ranges over eventualities denoted by the predicate and results in habitual properties. The covert Q differs from overt Q-adverbials in the range of frequency of events they cover: the covert Q is less restricted than overt Q-adverbs, thus is compatible with more situations.

4.4.3 Habituals with locative PPs

The assumption of a covert Q operator also captures the temporal readings of habitual sentences with locative PPs. Take (117) for instance:

(117) Gǔlóng zài wòshì lǐ chōu-yān.
Gulong at bedroom inside smoke-cigarette
'Gulong smokes in the bedroom.'

(117) can be used to describe Gulong's habit of smoking in the bedroom. On a habitual reading, the semantic value of (117) is derived as follows:

(118)

a. $[\![\text{Gǔlóng}_k]\!]^{g,c} = G$

b. $[\![\text{chōuyān}]\!]^{g,c} = \lambda x.\lambda e.$ SMOKE (e, x)

c. $[\![t_k \text{ chōuyān}]\!]^{g,c} = \lambda e.$ SMOKE (e, g(k))

d. $[\![\text{zài wòshì lǐ}]\!]^{g,c} = \lambda x.\ \lambda t.$ x is in the bedroom throughtout t

e. $[\![t_k \text{ zài wòshì lǐ}]\!]^{g,c} = \lambda t.$ g(k) is in the bedroom throughtout t

f. $[\![Q\ [t_k \text{ zài wòshì lǐ}]\ [t_k \text{ chōuyān}]\!]^{g,c} = \lambda t.$ there are intervals t', t''… in t, such that g(k) is in the bedroom throughout t', t''…, and such that t', t''… contain un event of g(k) smoking

g. $[\![_{TP}\ t_i \text{ Gǔlóng}_k\ Q\ [t_k \text{ zài wòshì lǐ}]\ [t_k \text{ chōuyān}]\!]^{g,c}$ = defined only if g(i) is a long time interval; where defined $[\![TP]\!]^{g,c}$ =1 iff there are maximal intervals t', t''… in g(i), such that *G* is in the bedroom throughout t', t''…, and such that t', t''… contain an event of *G* smoking; 0 otherwise

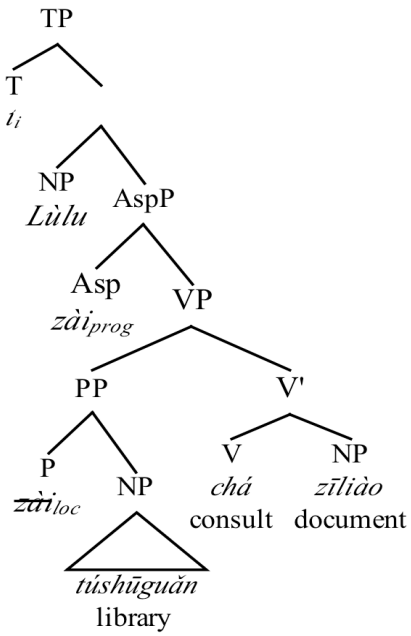
4.4.3.1 Q and locative PPs

In Chapter 3, we have shown that some sentences with a locative prepositional phrase are ambiguous between a habitual and an ongoing construal, as is the case for (119).

(119) Lùlu zài túshūguǎn chá zīliào.
Lulu ZAI library consult document
'Lulu is consulting documents in the library.'
'Lulu consults documents in the library.'

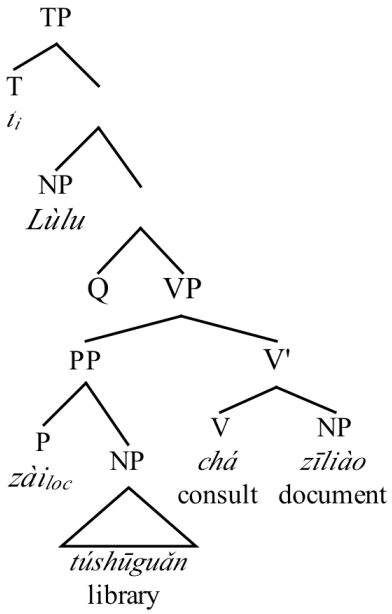
We argued that the progressive reading of (119) is due to the overt progressive aspect marker $zài_{prog}$, and that the preposition heading the PP 'in the library', $zài_{loc}$, homophonous with the progressive $zài_{prog}$ preceding it, is deleted at the PF by *haplology*, as shown in (120).

(120) [$_{TP}$ t_j [Lùlu [$_{AspP}$ *zài*$_{prog}$ [$_{VP}$[$_{PP}$ ~~*zài*$_{loc}$~~ library][$_{V'}$ consult docs]]]]



Note that (119) can also receive a generic construal. As we have argued in the current chapter, the generic readings of sentences with no aspectual marking are derived from the null operator Q, which turns properties of eventualities into generic properties. (121) below gives the logical form of the generic reading of (119), where the morpheme *zài* is a preposition.

(121) [$_{TP}$ t_j [Q [Lùlu [$_{VP}$[$_{PP}$ *zài$_{loc}$* library][$_{V'}$ consult docs]]]]



The operator Q licenses the generic construal for (119). The sentence is interpreted as communicating Lulu's habit of consulting documents in the library.

The assumption of a quantificational operator Q licensing genericity also captures the "topicalized PP puzzle" pointed out by Waltraud Paul (p.c.) discussed in Chapter 3. The puzzle is that when the locative PP is topicalized, the progressive reading of (119) is lost and only the generic reading is available for the sentence with a topicalized PP, as illustrated in (122).

(122) **Zài** **túshūguǎn**, Lùlu chá zīliào.
ZAI library Lulu consult document
*'Lulu is consulting documents in the library.'
'Lulu consults documents in the library.'

Why is the progressive reading lost? Because, as we have argued, in the topicalization case we no longer have an environment where locative *zài* can go unpronounced and so the *zài* in this case cannot be the progressive *zài*. Why is the habitual reading available? Because, in

the absence of overt aspect, eventive predicates can only yield habitual readings due to the null operator Q. The logical form of (122) is given below:

(123) [$_{PP}$ *zài*$_{loc}$ library]$_i$ [$_{TP}$ t$_i$ [Q [$_{VP}$ Lùlu [$_{V'}$ consult docs]]

The generic reading of (122) comes from the covert Q, just like the generic reading of (119). Whether the locative PP is topicalized or not has no impact on the generic construal of the sentence.

4.5 Summary

In this chapter we discussed generic sentences containing eventive bare predicates in Mandarin. We distinguished genericity in the nominal domain and genericity as a clausal property. We gave a brief overview of analyses proposed in the literature to capture generic construals. In particular, we presented the quantificational treatment, aspectual analyses and the modal treatment of generic sentences.

We adopted the quantificational treatment of generic sentences and argued that the genericity of sentences with eventive bare predicates in Mandarin is derived from a quantificational element in the form of overt or covert quantificational adverbials.

Overt Q-adverbs take predicates of events and return generic properties, which are properties of times. That's the reason why sentences with eventive predicates containing Q-adverbs are grammatical and only yield generic construals.

The covert quantification operator Q plays a similar role to that of overt Q-adverbs, and it also gives properties of times. The only difference between overt Q-adverbs and the covert Q is that Q is an underspecified quantification.

Chapter 5 Future

This chapter investigates the "future" construals of bare sentences (sentences with bare predicates) in Mandarin. We show that the temporal reference of the eventualities described by bare sentences cannot be freely shifted into the future by adverbs denoting future times, supporting a covert tense hypothesis for Mandarin. Based on Matthewson (2006)'s "tensed" analysis of St'át'imcets, we argue for a null tense NONFUT in Mandarin, restricting the RT of bare sentences to non-future times.

In Mandarin, there are also bare sentences that allow future readings with appropriate future time adverbs. We show that whether a bare sentence can receive future readings depends (most of the time) on whether the eventuality described by the predicate can be scheduled or controlled. The similarities that we find between bare sentences allowing future-oriented readings in Mandarin and present-tensed sentences allowing future-oriented readings (referred to as *futurate* sentences) in English and French suggest that future construals in languages with or without overt tense morpheme might have common sources. We follow Copley (2008b)'s analysis of futurates in English, and argue that the future construals of bare sentences in Mandarin are licensed by implicit modal ingredients.

This chapter is organized as follows:

i. Section 5.1 examines the interaction between bare predicates and temporal adverbs. In particular, we show that while past and present time adverbs can fix the temporal reference of bare sentences in the past or in the present, future time adverbs cannot fix freely the temporal reference of bare sentences in the future. In contrast, a modal verb is used to license future construals.

ii. In Section 5.2, we discuss temporal analyses of languages with no morphological tense. On the basis of the facts discussed in Section 5.1 and other empirical evidence, we argue for a covert tense NONFUT in Mandarin in Section 5.3.

iii. Section 5.4 compares bare sentences yielding future construals in Mandarin with futurate sentences in English and French. We propose a modal treatment of future construals of bare sentences.

5.1 Future and adverbs

In Chapter 3, we discussed temporal interpretations of aspectually unmarked sentences in out-of-the-blue contexts, that is, in the absence of any explicit or implicit time adverbs. In this section, we examine temporal construals of bare sentences with an overt temporal adverbial. In particular, we investigate whether a future time adverb can shift the temporal reference of bare sentences to future times.

By "temporal adverbial", we refer particularly to the so-called "frame setting temporal adverbial", which denotes a time interval in which an event is asserted to be true or to take place. (cf. Bennett & Partee 1978) A frame adverbial can be either indexical (*today*, *last year*, *next month*) or non-indexical (*in 1911*, *on October 10, 1911*). It indicates either a moment of time (*at noon*, *in five minutes*) or an interval of time (*next week*).

In the literature, temporal adverbs are often argued to play an important role in temporally locating eventualities in languages with no morphological tense. However, we observe an asymmetry between past / present time adverbs on the one hand and future time adverbs on the other in their interaction with bare sentences in Mandarin:

i) Root clauses with bare stative predicates *can* be modified by appropriate past or present time adverbs, yielding past or present stative readings;

ii) Root clauses with bare eventive predicates *can* be modified by past or present time adverbs denoting sufficiently large time intervals, yielding past or present generic readings;

iii) Future time adverbs *cannot* combine freely with sentences with bare predicates: some bare sentences allow future-oriented readings with future time adverbs, others require a modal to license future construals.

We will thus conclude that future time adverbials behave differently from past and present time denoting adverbials when combined with bare predicates.

5.1.1 Bare stative predicates

In the previous chapters, we have shown that in the absence of an explicit or implicit temporal adverb, sentences with a bare state receive present stative readings. This section examines the distribution of future time adverbials in sentences with a bare state in order to figure out whether a future time adverb can fix by itself the temporal reference of sentences with stative bare predicates (BPs).

5.1.1.1 Stative BPs and past/present time adverbs

We have shown in Chapter 3 that root clauses with stative BPs, such as (1) and (2) below, receive present readings when they are uttered out-of-the-blue.

(1) a. Lùlu hěn jǔsàng.
Lulu very frustrated
'Lulu is very frustrated.'

b. Wáng lǎoshī hěn máng.
Wang professor very busy
'Professor Wang is very busy.'

(2) a. Yáo Míng hěn gāo.
Yao Ming very tall
'Yao Ming is very tall.'

b. Xiǎoxīn hěn cōngmíng.
Xiaoxin very smart
'Xiaoxin is very smart.'

c. Yīchén xǐhuān lǚxíng.
Yichen like travel
'Yichen likes travelling

Stative BPs such as *jǔsàng* 'frustrated' in (1a) and *hěn máng* 'busy' in (1b) are compatible with temporal adverbials denoting a moment (*gāngcái* 'just now') or an interval (*shàng-ge-yuè* 'last month') of time in the past, yielding past stative readings, as shown in (3) below.

(3) a. Lùlu *gāngcái* hěn jǔsàng.
Lulu just.now very frustrated
'Lulu was very frustrated just now.'

b. Wáng lǎoshī *shàng-ge-yuè* hěn máng.
Wang professor last-CL-month very busy
'Professor Wang was very busy last month.'

The same stative BPs - *jǔsàng* 'frustrated' or *máng* 'busy'- can also be modified by a temporal adverb referring to a time that includes the UT, yielding present stative readings, as shown in (4) below:

(4) a. Lùlu *cǐ-shí-cǐ-kè* hěn jǔsàng.
Lulu this-time-this-moment very frustrated
'Lulu is very frustrated right now.'

b. Wáng lǎoshī *zhèi-ge-yuè* hěn máng.
Wang professor this-CL-month very busy
'Professor Wang is very busy this month.'

In contrast, there are sentences with stative BPs that sound odd when modified by temporal adverbs. This is the case with (5) and (6) below:

(5) a. #Yáo.Míng *gāngcái* hěn gāo.
Yao.Ming just.now very tall

b. #Yáo.Míng *cǐ-shí-cǐ-kè* hěn gāo.
Yao.Ming this-time-this-moment very tall

(6) a. #Xiǎoxīn *zuótiān* hěn cōngmíng.
Xiaoxin yesterday very smart

b. #Xiǎoxīn *jīntiān* hěn cōngmíng.
Xiaoxin today very smart

(5) and (6) differ from (3) and (4) in the lexical properties of the predicates: *gāo* 'tall' in (5) and *cōngmíng* 'smart' in (6) describe stable properties of an individual that do not change from one moment to another. Consequently, they are incompatible with adverbs referring to "short" time intervals like *gāngcái* 'just now' in (5a) and *zuótiān* 'yesterday' in (6b).

However, we can set up a specific context in which (6a) can be felicitously uttered. Suppose that:

Yesterday, *Xiaoxin*, *who is not one of the smartest boys, found (maybe accidentally) a very ingenious solution to a problem.*

We can then use (6a) to communicate that *Xiaoxin* was *being* smart during that specific event. In this case, the adjective *cōngmíng* is used to describe a temporary property instead of a long-standing one, explaining why (6a) is acceptable in this scenario.

Since Carlson (1977), predicates like *tall* have been classified as typical "*individual*-level" predicates, that is, they describe stable properties that do not vary during a relatively large time span. In contrast, predicates like *jǔsàng* 'frustrated' or *máng* 'busy' are "*stage*-level" predicates denoting transitory properties. As a consequence, *individual*-level and *stage*-level predicates interact differently with time adverbs: *stage*-level predicates and not *individual*-level predicates are compatible with adverbs denoting time points or short time intervals (see also Kratzer 1995 and Chierchia 1995).

The oddness of (5) and (6) above results from the incompatibility of the lexical meaning of the "*individual*-level" predicate and the *size* of the interval denoted by the time adverb. In other words, the temporal location (*past* or *present*) of the interval in question is not relevant.

To summarize, our data suggest that root clauses with stative BPs yield stative readings, and the eventualities denoted by stative BPs can be temporally anchored in the past or in the present by appropriate past or present time adverbs.

5.1.1.2 Stative BPs and future time adverbs

We deal now with the interaction of stative BPs with future time adverbials. We will see that future cases do not have the same pattern that we identified in past / present cases.

Consider (7) below:

(7) a. *Míngtiān* Lùlu *(huì) hěn jǔsàng.
tomorrow Lulu MOD very frustrated
'Tomorrow, Lulu will be very frustrated.'

b. Yīchén *zhǎngdà yǐhòu* *(jiānghuì) hěn
Yichen grow.up after MOD very
xǐhuān lǚxíng.
like travel
'Yichen will like travelling when she grows up.'

The stative BPs *hěn jǔsàng* 'very frustrated' in (7a) and *xǐhuān lǚxíng* 'like travelling' in (7b) cannot combine directly with future time adverbials like *míngtiān* 'tomorrow' or *zhǎngdà yǐhòu* 'when (she) grows up' to yield future states. Both (7a) and (7b) are ill-formed without a modal.

Notice that future and past time adverbs have asymmetrical behaviors as to their interaction with stative predicates: while past time adverbs can shift the temporal reference of bare states to the past, future time adverbs fail to fix the temporal reference of bare stative predicates in the future, as shown by the contrast between (8) below and (7) above:

(8) a. *Zuótiān* Lùlu hěn jǔsàng.
yesterday Lulu very frustrated
'Yesterday, Lulu was very frustrated.'

b. *Xiǎoshíhou* Yīchén hěn xǐhuān lǚxíng.
childhood Yichen very like travel
'Yichen liked travelling when she was a child.'

At this point, the question arises: how can we explain the asymmetry between the future and past construals of sentences with stative predicates? Recall our analysis of temporal readings of sentences with stative BPs presented in Chapter 3. We claimed that bare states, being properties of intervals, combine directly with a time. The value of this (reference) time can be provided either by an adverb or by the context. The reader may have noticed that we have said nothing about constraints on the value of this time. Now that we have seen the incompatibility of future time adverbs with bare states like *jǔsàng* 'frustrated', we need to reconsider the initial version of our analysis. As it stands, it will not carry over to and account for the asymmetry just established: past/present *vs*. future time adverbs in sentences with stative BPs. This issue will be developed in Section 5.3,

where we argue for a covert tense NONFUT in Mandarin (cf. Matthewson 2006).

The observation above is not yet the whole picture of the interactions between future time adverbs and bare stative predicates. Crucially, some bare stative predicates *can* combine with future time adverbs and allow future readings. Consider (9) below:

(9) a. *Míngtiān* Lùlu hěn máng.
tomorrow Lulu very busy
'Tomorrow, Lulu will be very busy.'

b. Xiǎoxīn *jīnwǎn* zài jiā.
Xiaoxin tonight at home
'Xiaoxin will be at home tonight.'

c. *Míngnián* tāmen zhù zài Běijīng.
next.year 3PL live at Beijing
'Next year, they will live in Beijing.'

Bare states like *hěn máng* 'very busy' in (9a), *zài jiā* 'at home' in (9b) and *zhù zài Běijīng* 'live in Beijing' in (9c) are compatible with adverbs referring to future time intervals, such as *míngtiān* 'tomorrow', *jīnwǎn* 'tonight' and *míngnián* 'next year'. (9a), (9b) and (9c) are grammatical and describe states that are temporally located after the UT.

If we compare (9) with the sentences discussed earlier in (7), bare stative predicates seem to have different behaviors as to their compatibility with future time adverbs. Some stative BPs - *hěn máng* 'very busy', *zài jiā* 'at home' and *zhù zài Běijīng* 'live in Beijing' in (9) - can combine with future adverbs, yielding future construals, while other stative predicates - *hěn jǔsàng* 'very frustrated' and *xǐhuān lǚxíng* 'like travelling' in (7) - require a modal to allow future readings.

The contrast between (9) and (7) is important for our understanding of future readings: we should be able to explain why a modal is required in one case, but not in the other. A similar contrast is also observed with eventive BPs (Section 5.1.2). We argue for a correlation between the schedulability of the eventuality and the presence of a modal in licensing future construals in Section 5.4. We claim that the future readings of sentences with BPs are similar to the

futurate readings of present tensed sentences in English and French: there is no covert future tense, but a covert modal ingredient in bare sentences yielding future construals.

To sum up, past and present time adverbs can be used to temporally anchor states described by sentences with stative BPs (thereby yielding past or present readings); while future time adverbs cannot freely combine with sentences with stative BPs. Some stative predicates require a modal to allow future readings.

5.1.2 Bare eventive predicates

This section examines the interaction between eventive predicates and time adverbs in order to establish whether there is the same asymmetry between past/present time adverbs and future time adverbs observed in sentences with stative predicates. We show that future time adverbs do not license future construals for all sentences with eventive BPs: a modal is required in some cases.

5.1.2.1 Eventive BPs and past/present adverbs

Sentences with bare eventive predicates (*activities*, *accomplishments* and *achievements*) only allow generic readings. They can be modified by past or present time adverbs and yield past or present generic construals as long as the interval denoted by the modifying adverb is *long* enough. Consider (10)-(12):

(10) a. Gǔlóng *niánqīng* *shí* chōuyān.
Gulong youth time smoke
'Gulong used to smoke when he was young.'

b. Gǔlóng *zhèi-jǐ-ge-yuè* chōuyān.
Gulong this-many-CL-month smoke
'Gulong smokes these months.'

c. #Gǔlóng *gāngcái* chōuyān.
Gulong just.now smoke
Intended: 'Gulong smoked just now.'

(11) a. Wēiwei *nèi-xiē-nián* pǎo sì-bǎi mǐ.
Weiwei that-CL.PL-year run four-hundred meter
'Weiwei used to run four hundred meters those years.'

b. Wēiwei *jìn-jǐ-nián* pǎo sì-bǎi mǐ.
Weiwei recent-many-year run four-hundred meter
'Weiwei runs four hundred meters these years.'

c. #Wēiwei *zuótiān* pǎo sì-bǎi mǐ.
Weiwei yesterday run four-hundred meter
Intended: 'Weiwei ran four hundred meters yesterday.'

(12) a. *Nèi-shíhou* jīnglǐ bā-diǎn dào.
that-time manager eight-o'clock arrive
'At that time, the manager used to arrive at eight.'

b. *Zhèi-jǐ-gè yuè* jīnglǐ bā-diǎn dào.
this-many-CL month manager eight-o'clock arrive
'The manager arrives at eight these months.'

c. ?*Zuótiān* jīnglǐ bā-diǎn dào.
yesterday manager eight-o'clock arrive
Intended: 'The manager arrived at eight yesterday.'

The sentences in (10) contain the bare activity *chōuyān* 'smoke'. They are compatible with the time adverbs *niánqīng shí* 'when he was young' in (10a) and *zhèi-jǐ-ge-yuè* 'these months' in (10b), but incompatible with *gāngcái* 'just now' in (10c). In (11), the bare accomplishment *pǎo sì-bǎi mǐ* 'run 400 meters' can combine with the past time adverb *nèi-xiē-nián* 'those years' or the present time adverb *jìn-jǐ-nián* 'these years', but not with the adverb *zuótiān* 'yesterday'. In a similar way, the bare achievement *dào* 'arrive' forms a grammatical sentence with adverbs like *nèi-shíhou* 'that time' ((12a)) or *zhèi-jǐ-gè yuè* 'these months' ((12b)), but not with *zuótiān* 'yesterday' ((12c)).

This is so because, as we claimed, sentences with eventive BPs only allow *generic* readings, and since generic properties are most likely based on series of events within a large time span, only time adverbs denoting relatively *long* time intervals are compatible with generic sentences.

The adverbs in the "a" and "b" examples denote large time intervals (either in the past or in the present), and therefore they are compatible with generic properties, giving rise to past or present generic readings. In contrast, the "c" examples are not felicitous due to the incompatibility of the "short" time intervals denoted by the

adverbs and the generic properties. Given the lack of overt aspect markers in these sentences, episodic readings are not licensed.

The notion of "large" as to intervals is relative: an interval is appropriate relative to a generic property as long as it is large enough to contain a certain number of (discontinuous) instantiated events based on which a generalization can be made. An interval of a certain size can be appropriate for evaluating one generic property but not another. Take the adverb *shàng-zhōu* 'last week' for example. It can felicitously combine with *jīngcháng kū* 'often cry' in (13a) below, but is much less appropriate for the property of "often watching movies on weekends" conveyed by the predicate in (13b).

(13) a. *Shàng-zhōu* Lùlu jīngcháng kū.
last-week Lulu often cry
'Lulu often cried last week.'

b. #*Shàng-zhōu* Lùlu jīngcháng zhōu-mò
last-week Lulu often week-end
kàn diànyǐng.
watch film
#"Lulu often watched movies on weekends last week."

What we learn from (10)-(13) is that appropriate past or present time adverbs (referring to long enough intervals) can modify sentences with eventive BPs, yielding past or present generic construals.

5.1.2.2 Eventive BPs and future time adverbs

Let us now turn to future time adverbs. An obvious question is whether they bear the same restrictions as past time adverbs in sentences with eventive BPs. In other words, can adverbs denoting large future time intervals combine with eventive BPs, yielding generic construals in future times? Consider (14) below:

(14) a.*Lùlu *xià-zhōu* jīngcháng kū.
Lulu next-week often cry
Intended: 'Lulu will often cry next week.'

b. **Míngnián* Zhōngguó duì hěn-shǎo yíng-qiú.
next.year China team very-few win-ball
Intended: 'The Chinese team will rarely win next year.'

The adverbs in both (14a) and (14b) refer to time intervals that are in principle long enough for the generic property denoted by each predicate to hold: *xià-zhōu* "next week" in (14a) refers to a time span that is long enough to contain a series of crying events, and as such, validate the generalization "Lulu often cries" (cf. (13a) above). Similarly, *míngnián* 'next year' in (14b) refers to an interval during which a number of matches could take place, and thus can be associated with the generalization "rarely wins". However, neither (14a) or (14b) is felicitous. To rescue them from ill-formedness, a modal is required, as shown in (15):

(15) a. Lùlu xià-zhōu *huì* jīngcháng kū.
Lulu next-week MOD often cry
'Lulu will often cry next week.'

b. Míngnián Zhōngguó duì *jiāng* hěn-shǎo
next.year China team MOD very-few
shū-qiú.
lose-ball
'The Chinese team will rarely lose next year.'

(14) and (15) show that future generic readings are not obtained directly by combining eventive BPs with an adverb denoting a long future time span, contrary to the past generic readings of sentences with eventive BPs in (10a), (11a) and (12a). Does this mean that future generic readings of sentences with eventive predicates are only licensed by modal verbs? Consider (16) below:

(16) a. *Xià-ge-yuè* Xiǎoxīn zǎoshàng hē
next-CL-month Xiaoxin morning drink
kāfēi.
coffee
'Xiaoxin will drink coffee in the morning next month.'

b. Mǐqílín *jīnhòu* měi-nián jiàn
Michelin henceforth every-year build
liǎng-jiā gōngchǎng.
two-CL factory
'Michelin will henceforth build two factories every year.'

c. Jīnglǐ *jīnhòu* bā-diǎn dào.
manager henceforth eight-o'clock arrive
'The manager will henceforth arrive at eight.'

These sentences with no modal verb are grammatical and report regular events in the future, suggesting that future generic readings *can* be obtained without a modal for *some* bare eventive predicates.

The obvious question is why the sentences in (14a, b) are ungrammatical while those in (16a-c) are good. This issue will be addressed in Section 5.4: we show that bare sentences allow future readings when the event described by the predicate can be planned (Copley 2008b).

We can conclude that there is an asymmetry between past and future generic construals of sentences with eventive BPs: while past generic construals can be derived as long as the past time adverbs are appropriate (denoting long intervals) for the relevant generic properties, future generic construals cannot be automatically obtained by the combination of eventive BPs with future time adverbs, even if the latter denotes time intervals compatible with the generic properties described by the VP. Some eventive predicates require a modal to yield future construals.

Moreover, this is not the only difference between future time adverbs and past time adverbs, regarding their interaction with sentences with eventive BPs. As we shall see, eventive BPs allow future-oriented "episodic" readings with appropriate adverbs, while they do not allow past episodic readings. Consider (17), (18) and (19) below:

(17) a. Lǐsì *míngtiān* dǎ wǎngqiú.
Lisi tomorrow play tennis
'Lisi will play tennis tomorrow.'

b. Gǔlóng *xià-kè* *yǐhòu* chōuyān.
Gulong down-class after smoke
'Gulong will smoke after the class.'[49]

(18) a. Mǐqílín *míngnián* jiàn liǎng-jiā gōngchǎng.
Michelin next.year build two-CL factory
'Michelin will build two factories next year.'

b. Mòyán *míngnián* xiě yì-běn shū.
Moyan next.year write one-CL book
'Moyan will write a book next year.'

(19) a. Xiǎoxīn *jīnwǎn* dào.
Xiaoxin tonight arrive
'Xiaoxin will arrive tonight.'

b. Lǐ Níng *míngwǎn* *shídiǎn* diǎnrán
Li Ning tomorrow.night ten-o'clock light
shèng-huǒ
saint-fire
'Li Ning will light the cauldron tomorrow night at ten.'

(17), (18) and (19) contain future time adverbs referring to either intervals or moments of time, and they are construed as future-oriented *episodic* events, but not generic properties. (17a) reports an event of Lisi playing tennis the day after the UT; (18b) reports an event of Moyan writing a book the year after the year containing the UT; and (19a) conveys that Xiaoxin's arrival will be during the night of the day of the UT. Recall that when sentences with eventive BPs have a past interpretation, *only generic* readings are available. The sentences in (16)-(19) clearly show that when sentences with eventive BPs receive future readings, *both generic and episodic* readings are available. In other words, past time adverbs cannot combine with eventive BPs and yield episodic events (cf. (10c), (11c) and (12c), while future time adverbs can (cf. (17), (18) and (19)). This

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[49] Another possible reading of this sentence is *Gulong (generally) smokes after class*, and this reading will not be relevant to our current discussion.

constitutes the second difference between future and past interpretations of eventive BPs.

However, not all eventive BPs allow future-oriented episodic construals. Some sentences with an eventive BP and a future time adverb are much less acceptable than the cases discussed in (16)-(19). Consider (20) and (21) below:

(20) a. ??Lùlu yìhuìr kū.
Lulu a.moment cry
Intended: 'Lulu will cry in a moment.'[50]

b. Lùlu yìhuìr *huì* kū.
Lulu a.moment MOD cry
'Lulu will cry in a moment.'

(21) a. *Zhōngguó duì míngtiān yíng.
China team tomorrow win
Intended: 'The Chinese team will win tomorrow.'

b. Zhōngguó duì míngtiān *huì* yíng.
China team tomorrow MOD win
Intended: 'The Chinese team will win tomorrow.'

The bare sentence in (20a) is odd. To convey that *Lulu* will cry in a moment, the utterance with a modal *huì* in (20b) is much more natural. The sentence with a bare achievement *yíng* 'win' also requires a modal *huì* to felicitously convey a future event. In cases like (20) and (21), a modal is required to yield future episodic readings, contrary to (17), (18) and (19).

Recapitulating what we have seen for the temporal interpretation of sentences with eventive BPs, there is an asymmetry between past and future construals:

i) Past: Sentences with eventive BPs only allow generic readings, thus require past adverbs denoting long time intervals to fix the

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[50] We can set up a very specific context in which this sentence is acceptable. Imagine that Lulu has a role in a play where she is supposed to cry at a particular moment. One can utter (20) just before her crying scene to inform others about the scenario.

generic properties into the past. The episodic past readings are only licensed by overt aspect (cf. Chapter 3).

ii) Future: Some sentences with eventive BPs require a modal to yield future-oriented generic or episodic readings; and others can receive future-oriented generic or episodic readings without a modal.

5.1.3 Bare predicates and modals

We have just seen that both in sentences with stative BPs and those with eventive BPs, there is an asymmetry between past and future construals. The past readings can be obtained by the presence of appropriate past time adverbs (compatible with the stative or the generic property denoted by the predicate), while the licensing of future readings bears restrictions. Future time adverbs referring to time intervals semantically compatible with the predicated property cannot automatically give rise to future readings: some future construals are only licensed by modals.

Given the asymmetry between past and future cases, the analysis proposed so far for the past readings of bare sentences cannot directly carry over to the future readings of bare sentences. Something different must be going on with the future.

Another important observation is that there seems to be no *strict* correlation between the aspectual (Vendlerian) class of verbs and whether their bare forms allow future readings: in each class, there are verbs that require a modal to obtain future readings and also verbs that do not need a modal to obtain future-oriented construals.[51] However, verbs of different classes are not equal as to the possibility of yielding future readings with a bare form. In particular, bare activities and bare accomplishments receive future-oriented construals easily without a modal, while most states and achievements require a modal to obtain future readings.

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[51] I would like to thank Bridget Copley for discussing this issue with me during the "Journées d'études Temptypac 2010" in Paris.

The two major puzzles to solve for future construals are the following:

i. Why can some bare sentences not yield future construals?

ii. What are the criteria distinguishing predicates yielding future readings without a modal from those that require a modal?

Section 5.3 deals with the first puzzle and Section 5.4. makes an attempt to solve the second. To answer the second question, we can already exclude the properties of different Vendlerian verb classes as key criteria for "modal *vs*. non-modal" distinction, since in each verbal class we find verbs that allow future readings without a modal and also verbs that require a modal to yield future construals. We should nevertheless be able to explain why most bare states and bare achievements require a modal to be interpreted in the future, whereas most bare activities and accomplishments can dispense with the modal.

5.2 Bare future and tense

This section discusses in more detail the sense in which bare future sentences challenge our initial analysis of the temporal interpretation of bare predicates (cf. Chapter 3), and argues that the question of whether Mandarin has tense or not is closely related to this issue.

Before developing in detail our proposal of a null tense NONFUT in Mandarin in Section 5.3, we present in Section 5.2.1 how future cases challenge the analysis proposed so far, discuss extensively in Section 5.2.2 the *tense / tenselessness* contrast, and review in Section 5.2.3 different treatments of temporal construals in languages with no morphological tense.

5.2.1 Integrating future into previous analyses: challenges

Recall the asymmetry observed in the behaviors of time adverbs in bare sentences: past / present time adverbs but not future time adverbs can always fix the temporal reference of bare sentences. In many cases, future construals require a modal.

What challenges our previous analysis of temporal interpretations of bare sentences is the following: if time adverbs (past/present/future) occupy the same syntactic position, how can we account for their different behaviors with no further assumptions?

To illustrate, take (7a) repeated as (22a). The bare stative predicate *jǔsàng* 'frustrated' does not allow a future reading, even in the presence of a future time adverb *míngtiān* 'tomorrow'. In contrast, (22b) and (22c) are grammatical and receive respectively a past and a present reading.

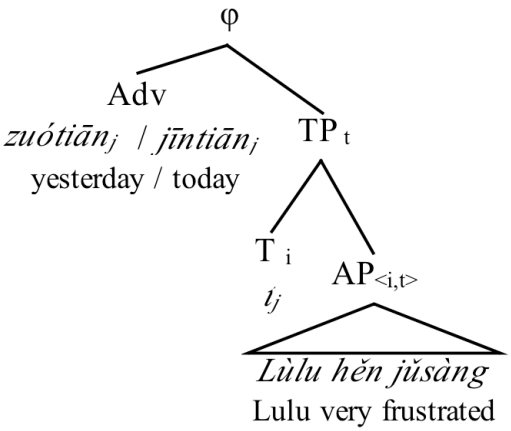
(22) a. **Míngtiān* Lùlu hěn jǔsàng.
tomorrow Lulu very frustrated
Intended: 'Tomorrow, Lulu will be very frustrated.'

b. *Zuótiān* Lùlu hěn jǔsàng.
yesterday Lulu very frustrated
'Yesterday, Lulu was very frustrated.'

c. *Jīntiān* Lùlu hěn jǔsàng.
today Lulu very frustrated
'Today, Lulu is very frustrated.'

Recall our analysis of sentences with bare predicates discussed in Chapter 3. We argued that stative BPs are predicates of intervals, and can thus combine syntactically with a time, while eventive BPs are predicates of events, which combine with a time via overt aspect or covert Q operator. Following the analysis that we gave, the syntactic structures of the sentences with stative BPs in (22b) and (22c) are as illustrated in (23):

(23)



In (23), the time variable under T, *t*, is bound by the binder index on the adverb available in the sentence, *zuótiān* 'yesterday' or *jīntiān* 'today'. It saturates the time slot of the predicate *hěn jǔsàng* 'very frustrated' with the result that what the structure expresses is true if *Lulu*'s frustration holds for the duration of the interval referred to by the adverb. The truth conditions of (22b) and (22c) are given respectively in (24a) and (24b) below:

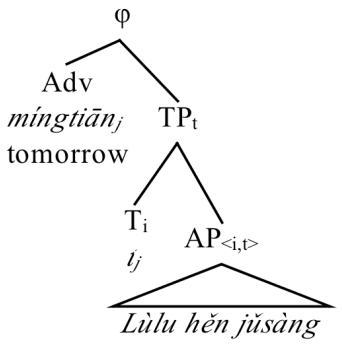
(24) a. $[\![(22b)]\!]^{g,c}$ =1 iff *L* is frustrated throughout the day before the day containing t_c; 0 otherwise

b. $[\![(22c)]\!]^{g,c}$ =1 iff *L* is frustrated throughout the day of t_c; 0 otherwise

Thus both the past reading of (22b) and the present reading of (22c) are correctly predicted by our initial analysis.[52]

Applying the analysis now to (22a), which only differs from (22b) and (22c) in the time adverb, we get the structure in (25), which is very similar to (23) above: the future time adverb *míngtiān* 'tomorrow' replaces the past / present time adverb in (23).

(25)



Accordingly, the truth conditions of (22a) should be:

(26) $[\![(22a)]\!]^{g,c}$ =1 iff *L* is frustrated throughout the day after the day containing t_c; 0 otherwise

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[52] For detailed derivation, see Section 3.4.1.

(26) says that (22a) has a future reading, contrary to the fact that it is ill-formed.

Our initial analysis of the temporal interpretation of bare sentences, as presented in Chapter 3, fails to account for the ill-formedness of sentences with stative BPs modified by a future time adverb like (22a). Moreover, it also incorrectly predicts future construals for ungrammatical sentences with eventive BPs like (27a).

(27) a. **Guò-xiē-nián* Zhōngguó duì hěn-shǎo
pass- CL.PL-year China team very-few

shū-qiú.
lose-ball

Intended: 'The Chinese team will rarely lose in a few years.'

b. *Qián-xiē-nián* Zhōngguó duì hěn-shǎo
before-CL.PL-year China team very-few

shū-qiú.
lose-ball

'The Chinese team rarely lost over the last few years.'

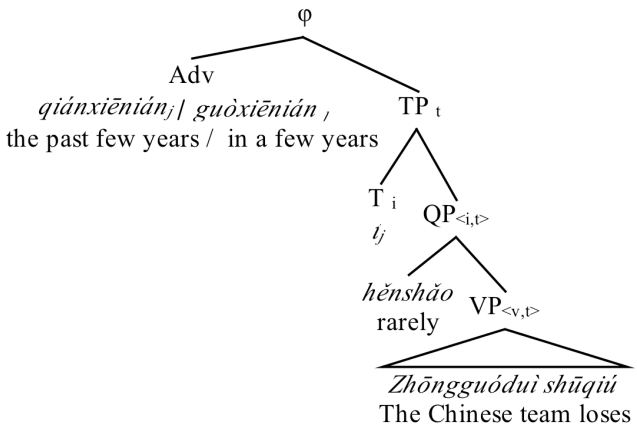
c. *Zhè-xiē-nián* Zhōngguó duì hěn-shǎo
this-CL.PL-year China team very-few

shū-qiú.
lose-ball

'The Chinese team rarely loses these years.'

On our previous analysis, (27a) and (27b) should in principle have similar structures, as shown in (28) below, since they only differ in the time adverbs modifying the sentence. As a result, we would expect the truth conditions in (29a) for (27a), according to which (27a) allows a future reading, contrary to the fact that it is ill-formed.

(28)



(29) a. $[\![(27a)]\!]^{g,c}$ =1 iff there are few events of the Chinese team losing games within the interval constituted of the few years following t_c;
0 otherwise

b. $[\![(27b)]\!]^{g,c}$ =1 iff there are few events of the Chinese team losing games within the interval constituted of the few years previous to t_c;
0 otherwise

The above discussion shows that our analysis as presented in Chapter 3 cannot accommodate future cases. Some modification must be made to capture the temporal interpretations of these sentences. In particular, it should explain why some bare sentences with future adverbs are ill-formed.

The problem with our previous analysis, illustrated in (23) and (28), is that it imposes no restriction on the values assigned to the time variable *t* under T. However, future intervals are clearly excluded from the possible values of *t*, as shown by cases like (22) and (27). Apparently, *t* can only take as its value intervals preceding or overlapping the UT, not intervals following the UT. In other words, there are constraints on assigning values to the time variable in sentences with BPs: the RT of a sentence with no overt aspect should either precede or overlap the UT.

The constraint on the possible values for RTs in Mandarin is very similar to the constraint imposed by semantic tenses in overtly tensed languages like English and French: PAST tense requires the RT to precede the UT and PRESENT requires the RT to include the UT. The past tense in (30), for instance, validates the past time adverb *yesterday*, but rules out future time adverbs like *tomorrow*, because only intervals preceding the UT are in the domain of PAST, as shown in (31).

(30) a. Mary was happy yesterday / *tomorrow.
b. [$_{\varphi}$ [yesterday/*tomorrow PAST] [$_{IP}$ Mary happy]]

(31) $[\![\text{PAST}]\!]^{g,c} = \lambda t: t < t_c.\ t$

Although Mandarin has no overt tense, it must have a semantic tense playing a similar role as the past tense in English. Section 5.3 investigates the semantic value of the covert tense in Mandarin. Before that, Section 5.2.2 presents different views of "tense" and "tenselessness" in the literature, which is the source of debates on whether morphologically tenseless languages could have covert tense, and Section 5.2.3 gives a brief overview of "tensed" and "tenseless" analyses for Mandarin.

5.2.2 Tensed or tenseless

In Chapter 3, we argued for a syntactic projection in Mandarin sentences introducing a time that serves as reference time in the temporal anchoring of the eventuality described by the predicate (cf. Section 3.4.3). In view of this, "TP" in our previous analysis stands for *Time Phrase* rather than *Tense Phrase*. Whether Mandarin has tense or not is another question that we deal with in the current section and the section that follows. By tense, we refer to an element whose presence serves to introduce a relation to the UT. This could be because its semantic value encodes on its own a relation to the UT – in which case it is not only a *syntactic tense* but also a *semantic tense*. But in principle it could also be because the element in some way signals the fact that a relation to the UT becomes relevant at a different stage of the compositional semantics. In that case, it would merely be a *syntactic tense* without being a *semantic tense*.

The assumption of a T projection for *time* (if not *tense*) is motivated by the possibility of temporally interpreting Mandarin sentences. The fact that native speakers of a language are capable of temporally interpreting a sentence without overt tense morphemes suggests that something must be responsible for the temporal location of the eventuality conveyed by the sentence. It is reasonable to assume that this element, which is semantically present, is also projected in the syntax; and in our system, it is generated under TP. We are convinced that temporality is universal, and a TP projection should be present in all languages.

Whether Mandarin has "tense" or not is a very controversial issue that divides scholars. The debate is at least partly due to the ambiguity that the term "tense" may evoke. Tense can either refer to *i*) a grammaticalized morpheme indicating the temporal location of an eventuality with respect to the UT, such as the past tense morpheme *-ed* in English and the present tense *-nun* in Korean, known as *morphological tense*; or to *ii*) the kind of covert element posited by some researchers, which semantically relates the RT of an eventuality to the UT, known as *semantic tense*.

If the first meaning of "tense" is well accepted as a traditional definition, the second one is rejected by many researchers in their treatment of languages with no overt tense morpheme, such as Mandarin. The question is partly related to the disagreement on whether semantic tense should be obligatorily spelled out, that is, certain authors do not admit covert grammatical categories, in particular, tenses.

We believe that languages can have morphologically null tense. That is, tense is present in the syntax but receives no dedicated phonological realization. Even in languages with overt tenses, a covert tense could coexist with the overt one. Many tensed languages such as English have a spelled-out past tense but use an unmarked form for the present.[53] Therefore, it is reasonable to believe that tense can be

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[53] There are also analyses supporting a semantically "vacuous" present tense in English: the morphological present tense in English does not give rise to a semantic present (cf. Sauerland 2002). See also Thomas (2014) for counterarguments.

morphologically null cross-linguistically. In view of this, languages with no overt tense can also be endowed with covert tense.

If we are on the right track in assuming that morphologically "tenseless" languages may have covert tense, two unavoidable questions then are i) what are criteria for judging whether a language has covert tense or not, and ii) how to identify the semantics of the covert tense.

Note that by definition the fundamental role of "tense" (whether it is phonologically realized or not) in "tensed" languages is to restrict the range of the RT of an eventuality to a partition of the time line. Accordingly, past tense requires the RT to precede the UT; present tense requires the RT to overlap the UT; and finally future tense requires the RT to follow the UT (if we assume a three-way distinction of tenses).

From this point of view, to tell whether a language has "tense" or not, is to find out whether it possesses an element restricting the temporal location of eventualities reported by an utterance. Since in "tenseless" languages, this element (if it exists) is not spelled out, the only way of identifying it is to figure out whether a given utterance bears any other restriction on temporal interpretation besides the restriction imposed by overt morphemes like aspect and other particles. That's the reason why bare sentences (that is, sentences with no overt aspect) in their minimal form are interesting to study, since there are minimal factors that might interfere with the temporal interpretation.

To illustrate, imagine a language *L* with no overt tense. Suppose that bare sentences (with no aspectual marking or any other overt element that might influence the temporal reading) in *L* receive temporally free readings, that is, they can be interpreted as past, present, or future eventualities. Then we can conclude that there is no restriction on the temporal anchoring, thus no covert tense in *L*.

In contrast, if in another "tenseless" language *L'*, bare sentences cannot receive temporally free readings and there is a certain regularity in the temporal construal of these sentences, this might suggest the existence of a covert tense in language *L'*. On this view, the restriction on the temporal location of a given eventuality reflects directly the semantics of the covert tense. For instance, if bare sentences in *L'* only allow past readings, then it follows that *L'* has a

covert past tense; similarly, if they only allow present readings, it follows that *L'* has a covert present tense.

Note that all the diagnostics we just discussed are not strict criteria, since natural languages are much more complicated and less uniform than the "perfect" languages *L* and *L'*. Even in tensed languages, morphological tense can be semantically vacuous. A past tensed clause does not necessarily describe an eventuality temporally preceding the UT, and present tensed sentences are not always interpreted as on-going situations.[54] As for "tenseless" languages like Mandarin, we believe that the general patterns observed in the data will lead us to enlightening generalizations, although it is far from the imagined "perfect" pattern discussed above.

Bearing these in mind, we will review some proposals made in the literature concerning *tense* in morphologically tenseless languages before getting into data discussion and our proposal, a tensed treatment of Mandarin.

5.2.3 Analyses for "tenseless" languages: previous accounts

Whether languages that lack morphological tense have syntactic and semantic tense is a hotly debated issue in the literature. This section presents some previous *tensed* and *tenseless* accounts for Mandarin (Section 5.2.3.1) and other languages with no morphological tense (Section 5.2.3.2), in order to clarify the exact meaning of "tense in these proposals (Section 5.2.3.3).

5.2.3.1 Previous accounts for Mandarin

As we have shown in the introduction of this thesis, Mandarin is traditionally considered as a morphologically tenseless language, since it lacks overt morphemes identified as tense markers relating the RT of an eventuality described by a sentence to the UT. The issue of whether Mandarin has syntactic and semantic tense divides researchers. We see below some *tensed* and *tenseless* proposals for

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[54] The reader is invited to refer to Abusch (1988, 1994, 1997) and Ogihara (1996) for discussion of the well-studied Sequence Of Tense (SOT) phenomena and to Sauerland (2002) and Thomas (2014) for discussion about the vacuity (or not) of the present tense.

Mandarin, and we provide evidence for a different treatment and explain how it differs from these previous analyses in Section 5.3.

Huang (1984:556) assumes an empty *Infl* node in finite clauses in Mandarin. Li (1990) also argues for a finite / nonfinite distinction in Mandarin. In particular, she follows Tsang (1981) and analyses *huì* and *yào* as future tense markers that can occur in finite but not in non-finite clauses. Simpson & Wu (2002:197) claim that in the cleft construction *shì-de* in Mandarin, *de* is projected under T° as a past tense morpheme.

The above "tensed" proposals focus on the finite / nonfinite distinction and whether there is an overt tense morpheme. Sybesma (2007) has a different view of tense in Mandarin. He points out some similarities between Mandarin and Dutch in the temporal interpretations of sentences with stative BPs like (32) and (33): a past time adverb is required to form a felicitous past-tensed sentence in Dutch, as shown by the contrast between (32a) and (32b). Similarly in Mandarin, to license a past reading for bare sentences with a stative predicate *zhù zài Lùtèdān* 'live in Rotterdam', a past time adverb is required ((33a) *vs*. (33b)).

(32) a. #Ik woonde in Rotterdam.
1SG live.PAST in Rotterdam
'I lived in Rotterdam.' (very odd/infelicitous in isolation)

b. Ik woonde in 1989 in Rotterdam.
1SG live. PAST in 1989 in Rotterdam
'I lived in Rotterdam in 1989.'

(33) a. Wǒ zhù zài Lùtèdān.
1SG live in Rotterdam
'I live in Rotterdam.'
'I lived in Rotterdam.'

b. Wǒ 1989 nián zhù zài Lùtèdān.
1SG 1989 year live in Rotterdam
'I lived in Rotterdam in 1989.'

Sybesma (2007:582)

Since the overt past tense in Dutch seems unable to shift by itself the temporal reference of the predicate ((32a)), Sybesma concludes that

the Dutch past tense is an *agreement morpheme* that requires a past time adverb as input. More generally, T agrees with the temporal adverb in a process that he calls *Tense agreement* (Sybesma 2007: 583). Given the similar pattern observed in the Dutch examples in (32) and the Mandarin examples in (33), he claims that Mandarin also has a past tense, which is a covert agreement morpheme.

The tense that Sybesma posits is merely a syntactic tense and not a semantic tense. If we assume by contrast that Mandarin has semantic tense, then the data seem to suggest that the semantic tense has a non-future meaning. Firstly, (33a) does not allow past readings when uttered out of the blue, probably because sentences with stative BPs uttered out of the blue takes the most salient time, the UT, to be the RT, yielding a present reading. The covert tense should be semantically compatible with this RT. In other words, this tense should at least allow for times including the UT: a "present" tense, a "non-future" tense or a "non-past" tense are all plausible candidates, but not a "past" tense. (33b) has a past time adverb and yields a past reading. This indicates that the covert tense in it should select at least past time intervals. Therefore, both "past" and "non-future" tenses are possible candidates, and "present" and "non-past" are excluded. From this point of view, only "non-future" is compatible with these two cases. If there is only one semantic tense in Mandarin, then the tense should be "non-future". Even if we assume that Mandarin has two covert tenses, past and present, (33a) should contain a present tense, but not a past tense. This treatment (of splitting present and past) for Mandarin has its limits that we discuss later.

Klein (1994) and Klein et al. (2000) give an alternative view of this issue. They argue that Mandarin lacks inflectional morphology to express tense, that is, to restrict the location of the topic time with respect to the UT, and this information comes from adverbials or the context. To quote:

> *"Note that TT(topic time) itself is not localised in temporal order by* le*, because aspectual particles do not express tense. Thus, if TT is to be further specified in relation to TU(time of utterance), this*

information must come from adverbials or from the general context."[55]

Klein et al. (2000:759)

Lin (2006, 2010) also defends a tenseless treatment of Mandarin. He claims that Mandarin has no TP projection at all, and the temporal interpretation is derived from lexical/grammatical aspect or pragmatic factors (see Section 3.5 for critical discussion).

For Smith & Erbaugh (2005), Mandarin has neither syntactic tense, nor a finite/nonfinite distinction. The temporal interpretation is largely based on aspect.

Klein (1994), Klein, Li, & Hendriks (2000), Lin (2006, 2010) and Smith & Erbaugh (2005) share a "tenseless" view of Mandarin: Mandarin has neither morphological nor syntactic tense.

5.2.3.2 Tensed vs. tenseless analyses in other languages

Whether languages with no tense morphology have covert tense is also hotly debated in other morphologically "tenseless" languages such as St'át'imcets (also known as *Lillooet Salish*), Gitxsan, West Greenlandic and Paraguayan Guaraní.

Matthewson (2006) argues for a tensed treatment for St'át'imcets, a Salish language. Jóhannsdóttir & Matthewson (2007) provide similar arguments as those in Matthewson (2006) for a null tense in Gitxsan, a Tsimshianic language.

In particular, Matthewson shows that a sentence with no morphological tense in St'át'imcets can receive either a present or a past reading, but never a future reading. Typically, a sentence with a bare activity like *sáy'sez'* 'play' in (34) allows either an on-going present or a past reading.

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[55] The reader is invited to refer to Chapter 2 for details of Klein's theory about tense and aspect.

(34) sáy'sez'-lhkan.
play-1SG.SUBJ
'I played.'
'I am playing.'

∅ adverb → Past or Present

Modified by an overt past time adverb *tsilkstásq'et* 'Friday', the sentence with a bare activity in (35) only yields a past reading.

(35) sáy'sez'-lhkan i-tsilkstásq'et-as.
play-DIR-1SG.SUBJ COMP.PAST-Friday-3CONJ
'I played on Friday.'

+ Past adverb → Past reading

However, a future time adverb, such as *natcw* 'tomorrow' in (36a), fails to fix the temporal reference of a bare predicate into the future. A modal *kelh* is required, as shown in (36a).

(36) a. *sáy'sez'-lhkan natcw.
play-1SG.SUBJ one.day.away
Intended: 'I will play tomorrow.'

+ Future adverb → *Future reading

b. sáy'sez'-lhkan *kelh.*
play-1SG.SUBJ MOD
'I will play.'

+ Modal → Future reading

To explain these facts, Matthewson claims that there is a phonological null tense restricting the RT of all predicates to non-future times. This proposal explains why the bare predicate *sáy'sez'* 'play' in (34) can be construed as having either past or present time reference, and also a past time adverb but not a future time adverb can fix by itself the temporal reference of a bare predicate in (36).

The reader may notice that the generalization described about St'át'imcets concerning the future is very similar to that in Mandarin ((22) and (27)): in both languages, future readings require the presence of a modal. Future time adverbs cannot alone shift the

temporal reference of sentences with bare predicates into the future.[56] In other words, there are restrictions on the temporal location of an eventuality described by a bare predicate. We have pointed out earlier that these restrictions recall the restrictions imposed by tenses in overtly tensed languages like English and French. Matthewson (2006) describes the null tense in St'át'imcets as an "underspecified" tense with respect to past tense: the null tense restricts the RTs to non-future times, whereas past tense in English / French restricts the RTs to past times.

Scholars like Shaer (2003), Bittner (2005) and Tonhauser (2011) defend a "tenseless" treatment for the morphologically "tenseless" languages they study.

According to Shaer (2003) and Bittner (2005), West Greenlandic is syntactically tenseless, because its inflectional system contains no tense node "dedicated to the encoding of relations between speech time and reference time" (Shaer 2003:139).

Tonhauser (2011) argues against the tensed analysis proposed by Matthewson (2006), and claims that the "temporal reference is not constrained by tense in Paraguayan Guaraní, but only by context and temporal adverbials" (Tonhauser 2011:257).

5.2.3.3 Analyses recapitulation

Table 8 recapitulates the positions of the authors cited in the last two subsections concerning whether the language in question has or does not have a morphological, syntactic or semantic tense.

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[56] The reader may notice that the aspectual interpretations of sentences with BPs crucially differ in St'át'imcets and Mandarin: sentences with eventive BPs like (34) allow for episodic readings in St'át'imcets, whereas they only allow generic readings in Mandarin.
This contrast raises the intriguing question of how to explain crosslinguistic variation in the interpretation of BPs. This is an important question that we leave open for future research.

Language	Author	Morpho tense	Sem tense	Syn tense
West Greenlandic	Shaer (2003) Bittner (2005)	-	-	-
Paraguayan Guaraní	Tonhauser (2011)			
Mandarin	Klein (1994), Klein, Li, & Hendriks (2000) Lin (2006, 2010) Smith & Erbaugh (2005)	-	-	-
	Sybesma (2007) Huang (1984)	-	-	+
	This dissertation	+	+	+
	Tsang (1981), Li (1990) Simpson & Wu (2002)	+	+	+
St'át'imcets	Matthewson (2006)	+	+	+
Gitxsan	Jóhannsdóttir & Matthewson (2007)			
English		+	+	+

Table 8 Tensed and tenseless treatments

Focusing on the authors who study Mandarin listed in Table 8: there are very different or even opposite views on whether Mandarin has or not morphological, syntactic or semantic tense.

Precisely, there are four different positions.

I. *Tenseless analysis:* no tense at all

Firstly, we can identify a tenseless view of languages with no tense morpheme. Just like Shaer (2003), Bittner (2005) and Tonhauser (2011) who adopt a *tenseless* treatment for West Greenlandic and Paraguayan Guaraní, Klein (1994), Klein, Li, & Hendriks (2000), Lin (2006, 2010) and Smith & Erbaugh (2005) also defend a *tenseless* analysis of Mandarin: according to these researchers, these languages have neither morphological nor syntactic/semantic tense, and the temporal interpretation comes from other elements, such as lexical aspect, time adverbs, context, etc.

II. *Morphologically tensed treatments: overt tense morphemes*

Tsang (1981), Li (1990) and Simpson & Wu (2002) have a *tensed* view of Mandarin. All of them argue for the existence of an overt tense morpheme: the future tense marker *huì* and *yào* for Tsang and Li, and the past tense marker *de* in *shì-de* construction for Simpson & Wu. In view of this, Mandarin is an English type language concerning tense, that is, Mandarin has morphological tense, thus it has logically syntactic and semantic tense.

II. *Morphologically tensed treatments: covert tense morphemes*

This is the view defended in this thesis, along the lines of Matthewson (2006) and Jóhannsdóttir & Matthewson (2007): Mandarin has no overt tense morpheme, but a zero non-future tense. It is projected in the syntax and semantically orders the time reference of bare sentences to non-future time.

III. *Syntactically tensed treatments:*

According to Huang (1984) and Sybesma (2007), Mandarin has no overt tense morpheme, but a syntactic tense projection.

IV. *Semantically tensed treatments: no morphological tense, but syntactic and semantic tense*

5.3 Proposal: NONFUT in Mandarin

This section presents our analysis of tense in Mandarin, which is largely inspired by Matthewson (2006). We claim that there is a covert tense NONFUT in Mandarin, restricting the RT of all bare root clauses to non-future times. This proposal correctly captures the past and present readings of the sentences with BPs and the illformedness of sentences with BPs modified by future time adverbs, thus solving the puzzle challenging our earlier analysis that we ran into in Section 5.1. We further provide evidence for the NONFUT tense and argue against the other tensed proposals discussed in Section 5.2.3.1.

5.3.1 Covert tense NONFUT

We claim that Mandarin has a covert tense, NONFUT, which limits the time span for anchoring an eventuality denoted by a bare predicate to intervals that precede or include the UT (Matthewson 2006). In

other words, it excludes all intervals that entirely follow the UT. The semantic value of NONFUT is given below.

(37) $[\![\text{NONFUT}]\!]^{g,c} = \lambda t: t < t_c \text{ or } t \supseteq t_c. t$

NONFUT takes a time and gives the same value, only if this time precedes or includes the contextually determined time t_c.

5.3.1.1 NONFUT and stative BPs

Now that we have argued for a T projection NONFUT, the structures of sentences with BPs in (22) repeated as (38) will be different. (38a) and (38b) have very similar structures, as illustrated in (39), which differs from (23), the earlier version of the structure, in the part under the T: the time variable t_j directly occupies the T head in (23), while it combines first with the null tense NONFUT in (39).[57]

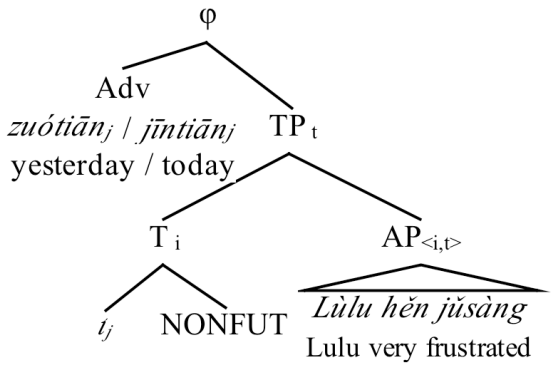
(38) a. *Zuótiān* Lùlu hěn jǔsàng.
yesterday Lulu very frustrated
'Yesterday, Lulu was very frustrated.'

b. *Jīntiān* Lùlu hěn jǔsàng.
today Lulu very frustrated
'Today, Lulu is very frustrated.'

c. **Míngtiān* Lùlu hěn jǔsàng.
tomorrow Lulu very frustrated

[57] The representation in (39) is a way of fleshing out the earlier way of analyzing pronoms. Note that the T head is still referential.

(39)



To show more precisely the distribution of NONFUT, we compute the semantic value of (38a) based on the structure in (39). The relevant lexical entries are given in (40) and the derivation in (41).

(40) a. $[\![\text{zuótiān}]\!]^{g,c}$= the day before the day that contains t_c

b. $[\![t_j]\!]^{g,c}$= g(j)

c. $[\![\text{NONFUT}]\!]^{g,c} = \lambda t$: $t < t_c$ or $t \supseteq t_c$. t

d. $[\![\text{Lùlu}]\!]^{g,c} = L$

e. $[\![\text{hěn jǔsàng}]\!]^{g,c} = \lambda x.\lambda t$. x is frustrated throughout t

(41) a. $[\![\text{AP}]\!]^{g,c} = \lambda t$. *L* is frustrated throughout t

b. $[\![\text{T}]\!]^{g,c}$ is defined only if $g(j) < t_c$ or $g(j) \supseteq t_c$.

Where defined, $[\![\text{T}]\!]^{g,c} = g(j)$.

c. $[\![\text{TP}]\!]^{g,c}$ is defined only if $g(j) < t_c$ or $g(j) \supseteq t_c$.

Where defined, $[\![\text{TP}]\!]^{g,c} = 1$ iff *L* is frustrated throughout g(j); 0 otherwise.

d. $[\![(38a)]\!]^{g,c} = 1$ iff *L* is frustrated throughout the day before the day containing t_c; 0 otherwise
(since the day before the day containing $t_c < t_c$)

(41b) says that the combination of NONFUT with the time interval "the day before the day containing t_c" gives rise to the same interval,

since the latter clearly precedes the UT, and as such satisfies the condition imposed by NONFUT. Therefore, the sentence receives a past reading, as shown in (41c).

In a similar way, given the lexical entry of *jīntiān* 'today' in (42), the derivation of the semantic value of (38b) will be like (43):

(42) $[\![\text{jīntiān}_j]\!]^{g,c}$= the day containing t_c

(43) a. $[\![\text{AP}]\!]^{g,c} = \lambda t.$ *L* is frustrated throughout t

b. $[\![\text{T}]\!]^{g,c}$ = is defined only if $g(j) < t_c$ or $g(j) \supseteq t_c$.

Where defined, $[\![\text{T}]\!]^{g,c} = g(j)$.

c. $[\![\text{TP}]\!]^{g,c}$ is defined only if $g(j) < t_c$ or $g(j) \supseteq t_c$.

Where defined, $[\![\text{TP}]\!]^{g,c}$ = 1 iff *L* is frustrated throughout g(j); 0 otherwise.

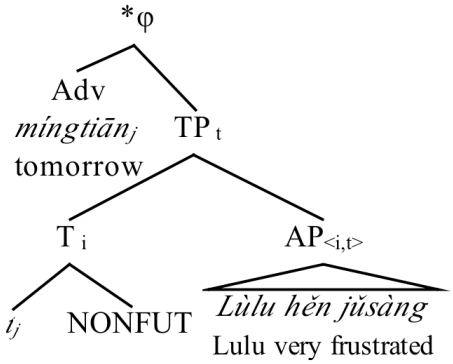
d. $[\![(38b)]\!]^{g,c}$ =1 iff *L* is frustrated throughout the day containing t_c; 0 otherwise

(since the day containing $t_c \supseteq t_c$)

The semantic value of the T node is, as shown in (43b), "the day containing t_c", since this interval satisfies the condition imposed by NONFUT. The present stative reading of (38b) is correctly derived in (43c).

With the same assumptions, let us now consider the syntactic structure of (38c), illustrated in (44) below:

(44)



The lexical entry of *míngtiān* 'tomorrow' is given in (45), and the derivation of the semantic value of (38c) in (46).

(45) $[\![\text{míngtiān}_j]\!]^{g,c}$= the day following the day that contains t_c

(46) a. $[\![t_j]\!]^{g,c} = g(j)$

b. $[\![T]\!]^{g,c}$ is defined only if $g(j) < t_c$ or $g(j) \supseteq t_c$.

Where defined, $[\![T]\!]^{g,c} = g(j)$.

c. $[\![TP]\!]^{g,c}$ is defined only if $g(j) < t_c$ or $g(j) \supseteq t_c$.

Where defined, $[\![TP]\!]^{g,c}$ = 1 iff *L* is frustrated throughout g(j); 0 otherwise.

d. $[\![(38c)]\!]^{g,c}$ is defined only if

$[\![\text{tomorrow }]\!]^{g,c} < t_c$ or $[\![\text{tomorrow }]\!]^{g,c} \supseteq t_c$

(where defined, $[\![(38c)]\!]^{g,c}$ = 1 iff *L* is frustrated throughout $[\![\text{tomorrow }]\!]^{g,c}$; 0 otherwise.)

e. $[\![(38c)]\!]^{g,c}$ is undefined since the condition in (d) is not met.

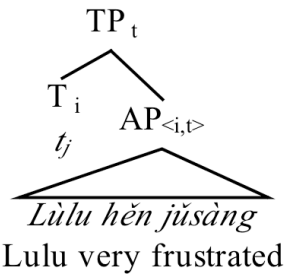
In (38c), the RT is overtly spelled out. The adverb *míngtiān* 'tomorrow' refers to "the day after the day containing t_c", a time interval entirely following the UT. However, since NONFUT has in its domain only intervals preceding or including the UT, it cannot apply to "the day following the day containing t_c". $[\![T]\!]^{g,c}$ is undefined, giving rise to an uninterpretable sentence.

Another question arises whether NONFUT captures the temporal construals of sentences with stative BPs that do not contain time adverbs at all. Reconsider (47):

(47) Lùlu hěn jǔsàng.
Lulu very frustrated
'Lulu is very frustrated.'

When uttered out of the blue, (47) receives a present reading. This is so because the most salient time available for a given utterance without adverbs is the UT, and since sentences are evaluated with respect to assignments with salient objects in their range, *g(j)* generally coincides with UT. The early version of our analysis is illustrated in (48) below:

(48)

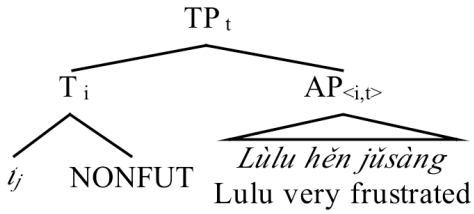


(49) $[\![(47)]\!]^{g,c}$ = 1 iff *L* is frustrated throughout g(j); 0 otherwise

If g(j) = UT, then the sentence is true iff *Lulu*'s frustration holds for the duration of the UT, explaining why (47) has a present interpretation.

Integrating now NONFUT to the structure above, we get the following:

(50)



NONFUT will check the location of the RT, *g(j)*. That is, *g(j)* should not entirely follow the UT. In (50), with the absence of overt time adverbs, *g(j)* can coincide with the UT. Consequently, the truth conditions of (47) remain unchanged, that is, (47) is true iff *Lulu* is frustrated at the UT. The present reading is correctly predicted.

Note that there are sentences like (51) below, which contain no time adverbs, and they are interpreted in the past.

(51) Zhūgěliàng hěn jīngmíng.
Zhugeliang very shrewd
'Zhugeliang was very shrewd.'

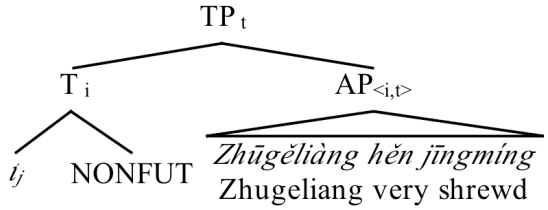
In principle, (51) should have a similar structure as (47). If we follow the same reasoning, the RT should be the UT in the absence of overt time adverbs, and accordingly (51) yields a present reading. However, this is not correct. (51) only has a past reading.

Is (51) a counterexample to our analysis presented above? How can we account for the past reading of (51)?

In fact, the person mentioned in (51), *Zhūgěliàng*, was a great military strategist during the Three Kindoms period (220-280 AC) in the history of China. The reason why (51) yields a past reading, but not a present reading, is that the person that the predication is about is a dead person. Suppose that (51) is uttered in 2014, and the only reading we get for (51) is the past reading. This example seems to challenge our analysis, which derives present readings for bare sentences with no overt time adverbs. However, a closer examination will lead us to a different conclusion.

If the past tense is used in the translation in (51), that's because we know that the utterance is given in a more or less "actual" time, thousands of years later than the lifetime of *Zhūgěliàng*. If (51) is uttered when *Zhūgěliàng* is alive, it must receive a present reading. Strictly speaking, (51) can either receive a past or a present reading, depending on the temporal relation between the lifetime of *Zhūgěliàng* and the moment of the utterance, and that is exactly what the null tense NONFUT predicts. Let us illustrate the structure of (51) in (52); the truth condition is given in (53).

(52)



(53) $[\![(51)]\!]^{g,c}$ is defined only if $g(j) < t_c$ or $g(j) \supset t_c$;
where defined, $[\![(51)]\!]^{g,c} = 1$ iff *Z* is frustrated throughout g(j); 0 otherwise

According to (53), (51) can either be interpreted as a past state or a present state, which is correct, following our previous discussion. The only reason for which we translate it as past tensed sentence in English is that we suppose that the UT is later than the lifetime of the person. The present reading is nevertheless available. The two sentences with no time adverbs have different temporal construals: the past tense for (51) and the present tense for (47). This is due to pragmatic factors rather than a difference in their truth conditions. Both present and past readings are available for (47) and (51). When interpreting (47), we pick up the UT as RT with the knowledge that we are talking about a living person, while we have to take into consideration the lifetime (or a part of the lifetime) of *Zhūgěliàng* in the interpretation of (51).

To summarize, the assumption of a covert tense NONFUT correctly predicts the temporal construals of sentences with stative BPs and their interaction with time adverbs.

5.3.1.2 NONFUT and eventive BPs

Let us now reconsider sentences with eventive BPs to see whether their temporal construals can also be captured by NONFUT. The sentences in (27) above are repeated as (54) below:

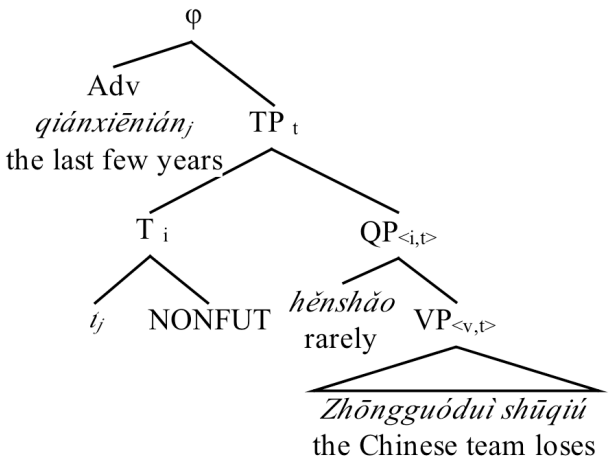
(54) a. *Qián-xiē-nián* Zhōngguó duì hěn-shǎo
before-CL.PL-year China team very-few
shū-qiú.
lose-ball
'The Chinese team rarely lost over the last few years.'

b. *Zhè-xiē-nián* Zhōngguó duì hěn-shǎo
this-CL.PL-year China team very-few
shū-qiú.
lose-ball
'The Chinese team rarely loses these years.'

c. **Guò-xiē-nián* Zhōngguó duì hěn-shǎo
pass- CL.PL-year China team very-few
shū-qiú.
lose-ball
'The Chinese team will rarely lose in a few years.'

Under the assumption of a NONFUT tense, (54a) will have the structure in (55):

(55)



The lexical entries of items in (55) are given in (56), and the detailed calculation is illustrated in (57).

(56)

a. $[\![$qián-xiē-nián$]\!]^{g,c}$= the interval constituted of the few years previous to t_c

b. $[\![t_j]\!]^{g,c}$= g(j)

c. $[\![$NONFUT$]\!]^{g,c}$ = λt: t < t_c or t ⊇ t_c. t

d. $[\![$hěnshǎo$]\!]^{g,c}$ = λP.λt: t is relatively long. t contains few P-events

e. $[\![$Zhōngguó duì$]\!]^{g,c}$ = *CT*

f. $[\![$shū$]\!]^{g,c}$ = λx. λe. LOSE (e, x)

(57)

a. $[\![$VP$]\!]^{g,c}$ = λe. LOSE (e, *CT*)

b. $[\![$QP$]\!]^{g,c}$ = λt: t is long. Few intervals in t contain an event of *CT* losing games.

c. $[\![$T$]\!]^{g,c}$ is defined only if g(j) < t_c or g(j) ⊇ t_c .
Where defined, $[\![$T$]\!]^{g,c}$ = g(j).

d. $[\![$TP$]\!]^{g,c}$ is defined only if g(j) < t_c or g(j) ⊇ t_c .

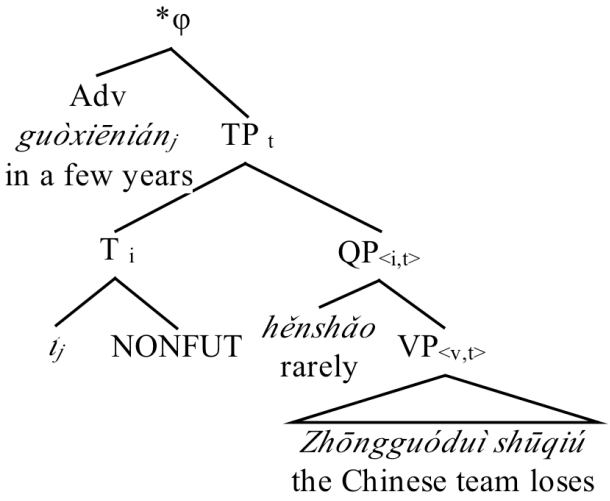
Where defined, $[\![TP]\!]^{g,c} = 1$ iff there are few events of the Chinese team losing games within the interval constituted of the few years previous to t_c;
0 otherwise

e. $[\![(54a)]\!]^{g,c} = 1$ iff there are few events of the Chinese team losing games within the interval constituted of the few years previous to t_c;
0 otherwise
(since $[\![qián\text{-}xiē\text{-}nián]\!]^{g,c} < t_c$)

As shown in (57e), the past generic reading of (54a) is accounted for by our analysis.

Let us now reconsider (54c), the sentence with a future time adverb. It has a similar structure as (55), as shown in (58) below.

(58)



Since t_j refers to an interval situated a few years later than the UT, as shown in (59b), it does not fall into the domain of NONFUT. The semantic value of (54c) is thus incalculable.

(59)

a. $[\![guòxiēnián]\!]^{g,c}$= the interval constituted of the few years following t_c

b. $[\![t_j]\!]^{g,c} = g(j)$

(60)

a. $[\![T]\!]^{g,c}$ is defined only if $g(j) < t_c$ or $g(j) \supseteq t_c$.

Where defined, $[\![T]\!]^{g,c} = g(j)$.

b. $[\![TP]\!]^{g,c}$ is defined only if $g(j) < t_c$ or $g(j) \supseteq t_c$

Where defined, $[\![TP]\!]^{g,c} = 1$ iff there are few events of the Chinese team losing games within the interval constituted of the few years following t_c;
0 otherwise

c. $[\![(54c)]\!]^{g,c}$ is undefined.

(since $[\![$ guòxiēnián $]\!]^{g,c} > t_c$)

The covert tense NONFUT captures the temporal interpretation of sentences with eventive BPs. In particular, it explains why past / present time adverbs but not future time adverbs can combine with eventive BPs, yielding past / future construals.

To sum up, I propose a covert NONFUT tense in Mandarin. We showed that NONFUT explains the interaction of time adverbs with bare sentences. Past and present time adverbs are compatible with bare sentences, because they denote time intervals preceding or overlapping the UT, that is, intervals that are in the domain of NONFUT. Accordingly, the eventualities described by bare sentences are temporally anchored in the past or in the present. In contrast, future time adverbs fail to temporally anchor by themselves the eventualites denoted by bare sentences, because they denote intervals that entirely follow the UT, which are not in the domain of NONFUT, giving rise to uninterpretable sentences.

5.3.2 Arguments for NONFUT tense

5.3.2.1 The two-way tense split and morphological NONFUT

According to Comrie (1985), languages differ in whether their tense system has a three-way or two-way distinction. Crucially however, the two-way systems do not all reduce to *past/non-past*. The two-way tense distinction *past/non-past* can be found in Indo-European

languages, such as German and Finnish, where the present tense form is also "frequently used for future time reference" (Comrie 1985:49). The other binary tense system *future/non-future* is attested in languages such as Inuktitut, Rukai and Hua. The present/non-present split is not a possible configuration according to Comrie. He defends a possible universal of tense systems, that is, "in a tense system, the time reference of each tense is a continuity" (Comrie 1985:50).

Swift (2004) shows that the tense system in Inuktitut has a future-nonfuture split where future must be overtly marked, while the bare form either yields past or present readings, as exemplified in (61).

(61) a. *Anijuq*.
ani-juq
go.out-PAR.3SG.SUBJ
'She went out.'

b. *Pisuttuq*.
pisuk-juq
walk- PAR.3SG.SUBJ
'She is walking.'

(Swift 2004:23, glosses adapted)

Haiman (1980) points out that in Hua, a Papuan language of New Guinea, bare verbs are used to describe past or present actions or states, and future eventualities are expressed by overtly marked forms, as shown in (62) and (63).

(62) a. hu+e
'I did; I do.'

b. bau+e
'I stay here; I am here; I stayed here; I was here.'

(Haiman 1980:136)

(63) a. hu+gu+e
'I will do.'

b. hi+ga+e
'You all (they all) will do.'

(Haiman 1980:141)

Comrie (1985:49) considers Hua as a language with "a clear and basic tense opposition between future and nonfuture".

Chen (2008) follows Zeitoun et al. (1996) and Zeitoun & Huang (1997) and argues that Rukai has overt nonfuture (64a) and future (64b) tenses[58]. (66c) shows that sentences must be inflected for tense, otherwise, they are infelicitous.

(64) a. **Wa**-thingal-aku iniane.
NONFUT-know-1SG.NOM 3SG.OBL
'I know/knew him.'

b. **Lri**-thingal-aku iniane.
FUT-know-1SG.NOM 3SG.OBL
'I will know him.'

c. *Thingal-aku iniane.
know-1SG.NOM 3SG.OBL

(Chen 2008:146, glosses adapted)

Chen further argues that nonfuture and future tense do not co-occur in the same clause, because they compete for the same structural position.

The above cross-linguistic data suggest that the binary tense system future/nonfuture does exist in natural language, and the nonfuture tense can either be morphologically realized (cf. *wa-* in the Rukai example (64a)) or not (cf. Hua). Therefore, the hypothesis of a zero nonfuture tense in Mandarin is plausible.

5.3.2.2 NONFUT vs. PRES/PAST

Among the tensed analyses proposed for languages with no overt tense, some argue for more than one covert tense: a past and a present tense, for instance (see Sybesma 2007 and Reis & Matthewson 2007). We show in this section that these proposals are not appropriate at least for Mandarin, and that an under-specified non-future tense better

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[58] The morphological form of the nonfuture tense in Rukai varies according to the voices (active/passive). *wa-*, *ma-*, *ta-* and the zero morpheme are all possible realizations of nonfuture (cf. Chen 2008: 146-147).

fits Mandarin data. The arguments presented below are based on Matthewson (2006).

Some sentences with a bare predicate in Mandarin are used to describe plural eventualities with more than one temporal location (both past and present for example). (65a) below contains only one bare predicate *duì wùlǐ gǎnxìngqù* 'be interested in physics" and two experiencers – *Newton* and *Hawking*. It can be truthfully uttered in 2014 to convey that *Newton was* interested in physics (during his lifetime in the 17th -18th century) and *Hawking is* interested in physics throughout a period including the UT (sometime in the year of 2014). Similarly, (65b) conveys that *Gulong*, who is no longer alive in the year of 2014, *used to* smoke, and *Moyan*, who is alive, *is* a smoker at the UT.[59] The smoking habits of these two persons are true for different time intervals. (65c) conveys that the state of Lulu being frustrated holds during the day of the UT *jīntiān,* and also the day that is two days before the UT *qián-tiān*.

(65) a. Niúdùn hé Huòjīn dōu duì wùlǐ gǎnxìngqù.
Newton and Hawking DOU to physics interest

b. Gǔlóng hé Mòyán dōu chōuyān.
Gulong and Moyan DOU smoke

c. Qián-tiān hé jīntiān Lùlu dou hěn jǔsàng.
before-day and today Lulu DOU very frustrated

Each of the sentences in (65) has one predicate, thus one TP by hypothesis. Since these sentences have past and present readings simultaneously, the covert tense should select both past and present intervals as RTs for the eventuality described by the predicate. This possibility is exactly encoded in the lexical entry of NONFUT that we proposed in (37).

Moreover, (65a) and (65b) can be translated neither as past tensed nor present tensed sentences in English without losing temporal information, suggesting that the covert tense in Mandarin is neither a past tense nor a present tense. A non-specified tense NONFUT better

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[59] Gulong (1938-1985) was a Chinese novelist. Moyan (1955-) is a Chinese novelist, awarded the Nobel Prize in Literature in 2012.

accounts for the temporal interpretation of (65). The above argument for the NONFUT tense is largely based on that of Matthewson (2006: 20-21). However, there is a fundamental difference between Mandarin and St'át'imcets as to the temporal interpretations of bare sentences: Mandarin bare sentences only allow past or present *stative/generic* readings, while St'át'imcets bare sentences allow past or present *episodic* readings. See Chapter 4, Section 4.1.1 for discussion of generic *vs*. episodic readings.

5.3.2.3 Mandarin tense: vacuous or not?

Recall the different points of view on whether Mandarin has tense or not (Section 5.2.3.3). Among the "tensed" analyses, we distinguish "morphologically" tensed analyses, "syntactically" tensed analyses and "semantically" tensed analyses.

We reject the morphologically tensed view for Mandarin for the following reasons. Firstly, *huì* and *yào*, analyzed as future tense markers by Tsang (1981) and Li (1990), literally correspond to "can" and "want" in English, so they should more likely be analyzed as modal verbs than a real future tense. Secondly, the cleft construction *shì-de*, which Simpson & Wu (2002) claim to contain a past tense marker *de*, has very limited uses: most of the sentences yielding past time eventualities in Mandarin do not have a cleft construction. One should be able to explain how the past construals are derived in sentences without a *shì-de* construction.

The syntactically tensed analyses admit the absence of an overt tense morpheme in Mandarin, and argue for a syntactic projection for Inflection (Huang 1984) or Tense (Sybesma 2007). We take Sybesma (2007) as an example and show how his approach differs from ours.

The fundamental difference between our analysis and that of Sybesma (2007) concerning tense in Mandarin is that the covert tense NONFUT in our proposal is a *semantic* tense, whereas the past tense proposed by Sybesma is an agreement morpheme under T, which is semantically vacuous. More precisely, NONFUT semantically contributes to constrain the temporal location of the reference time for an eventuality to non-future times. Whereas the null 'agreement

morpheme' proposed by Sybesma (2007:583) is "quite meaningless"; its presence reflects the presence of a past time adverb.[60] Therefore, it is only a syntactic tense, but not a semantic tense. The temporality of a sentence is related more closely to time adverbs than to the vacuous tense. To quote:

> *"we can conclude that the tense morpheme in Dutch is quite meaningless. I would like to claim that it is a mere agreement morpheme. It is enforced by the presence of the past temporal adverbial* in 1989 *and has no expressive power in and of itself... Let's call the process Tense agreement and assume that T agrees with the temporal adverb, possibly in its specifier."*
> *"Note that, since Mandarin [examples] show exactly the same pattern as Dutch [examples], ... Mandarin has the same Tense agreement; it is just not overt."*
>
> Sybesma (2007:583)

What challenges Sybesma's point of view is the cases discussed in the previous section, where more than two reference times (one refers to a past time and the other to a present time) co-exist in one utterance (cf. (65)): neither past tense nor present tense is appropriate for the T projection, since neither of them can agree simultaneously with a past and a present time adverb.

We conclude that Mandarin has a syntactic and semantic tense NONFUT, which restricts the RT of bare root clauses to non-future times.

5.4 *Bare* future and futurates

The hypothesis of a null tense NONFUT in Mandarin, restricting the RT of bare root clauses to non-future times, explains why future time adverbs cannot license future construals of some bare sentences by

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[60] Note however that in this case adverbs must come with some formal feature that indexes their pastness, and one could think of this feature as a "semantic tense." This recalls Percus's (2006) conclusion that in sentences like *Only the professor was decorating her office*, *her* is an agreement form that reflects the presence of an unpronounced feature on the DP *the professor* that indexes femaleness.

themselves. However, there remain two puzzles to be solved based on the data examined in Section 5.1:

i. Why do some sentences require a modal for future construals?

ii. What are the criteria distinguishing predicates yielding future without modal from those that require a modal?

This section aims to solve the second puzzle, namely, why some sentences with BPs can receive future readings without modals.

5.4.1 *Bare* future in Mandarin

Some sentences containing a stative BP allow future construals, as shown by the cases in (66) repeated from (9). With a future time adverb, (66a-c) are grammatical sentences describing states in future times without a modal.

(66) a. *Míngtiān* Lùlu hěn máng.
tomorrow Lulu very busy
'Tomorrow, Lulu will be very busy.'

b. Xiǎoxīn *jīnwǎn* zài jiā.
Xiaoxin tonight at home
'Xiaoxin will be at home tonight.'

c. *Míngnián* tāmen zhù zài Běijīng.
next.year 3PL live at Beijing
'Next year, they will live in Beijing.'

There are also sentences with eventive BPs that do not require a modal to license future readings, as shown in (16), repeated here as (67). The sentences in (67) are grammatical and report generic properties that hold in the future.

(67) a. *Xià-ge-yuè* Xiǎoxīn zǎoshàng hē kāfēi.
next-CL-month Xiaoxin morning drink coffee
'Xiaoxin will drink coffee in the morning next week.'

b. Mǐqílín *jīnhòu* měi-nián jiàn
Michelin henceforth every-year build
liǎng-jiā gōngchǎng.
two-CL factory
'Michelin will henceforth build two factories every year.'

c. Jīnglǐ *jīnhòu* bā-diǎn dào.
manager henceforth eight-o'clock arrive
'The manager will henceforth arrive at eight.'

Moreover, sentences with eventive BPs can also be used to describe *episodic* events in the future. (68)-(70) are repeated from (17)-(19).

(68) a. Lǐsì *míngtiān* dǎ wǎngqiú.
Lisi tomorrow play tennis
'Lisi will play tennis tomorrow.'

b. Gǔlóng *xià-kè* yǐhòu chōuyān.
Gulong down-class after smoke
'Gulong will smoke after class.'

(69) a. Mǐqílín *míngnián* jiàn liǎng-jiā gōngchǎng.
Michelin next.year build two-CL factory
'Michelin will build two factories next year.'

b. Mòyán *míngnián* xiě yì-běn shū.
Moyan next.year write one-CL book
'Moyan will write a book next year.'

(70) a. Xiǎoxīn *jīnwǎn* dào.
Xiaoxin tonight arrive
'Xiaoxin will arrive tonight.'

b. Lǐ Níng *míngwǎn* shídiǎn diǎnrán
Li Ning tomorrow.night ten-o'clock light
shènghuǒ.
cauldron
'Li Ning will light the cauldron tomorrow night at ten.'

(68a) says that there will be an event of *Lisi* playing tennis during the day after the UT, and (68b) reports an event of *Gulong* smoking in a future time, *xià-kè yǐhòu* 'after class'. Similarly, (69) and (70) are also used to convey future episodic events: building two factories, writing a book, *Xiaoxin*'s arrival and *Li Ning* lighting the cauldron. In the sentences above, future time adverbs felicitously modify eventive BPs and yield episodic events in the future.

To sum up, there are sentences with BPs that can receive future readings without modals in Mandarin. This observation seems to

challenge our previous analysis, which predicts bare sentences with future time adverbs to be ungrammatical because of the null tense NONFUT.

The following section presents our analysis of future construals of bare sentences. In particular, we compare Mandarin with two languages with overt tense: English and French. We show that English and French also have present tensed sentences (without a modal) yielding future-oriented readings, and these sentences share semantic properties with the Mandarin sentences discussed in this section, suggesting that a similar treatment may be adopted to analyze the future-oriented readings of sentences a without a modal in both morphologically "tensed" and "tenseless" languages, and that the existence of bare sentences yielding future readings in Mandarin does not invalidate our hypothesis of the covert NONFUT tense. On the contrary, such comparisons provide extra support for the covert tense analysis.

5.4.2 *Futurates* in languages with overt tense

We will henceforth refer to bare sentences yielding future readings without modals as "bare future (BF) sentences" and sentences with a modal yielding future readings as "modal future (MF) sentences".

The BF sentences discussed in the previous section are reminiscent of present tensed sentences allowing future readings in languages with overt tense, such as English ((71)) and French ((72)):

(71) a. Mary plays tennis tomorrow.

b. Max arrives tonight.

c. The train leaves in ten minutes.

(72) a. Marie joue au tennis demain.
Marie play.PRES.3SG PREP.D tennis tomorrow
'Marie plays tennis tomorrow.'

b. Max arrive ce soir.
Max arrive.PRES.3SG this evening
'Max arrives tonight.'

c. Le train part dans dix minutes.
D train leave in ten minute.PL
'The train leaves in ten minutes.'

The English sentences in (71) are present-tensed. They are however used to report future-oriented eventualities: the event of Mary playing tennis the day after the UT ((71a)), the arrival of Max the evening of the UT ((71b)) and the departure of the train ten minutes after the UT ((71c)). Similarly, the French sentences in (72) are also interpreted as future events, although the verbs *joue* 'play', *arrive* 'arrive' and *part* 'leave' are morphologically in the present tense.

The data above show that languages with overt tense, such as English and French, also have sentences with no overt future morphology (or a modal), which report future-oriented events. These sentences are referred to in the literature as *futurate* sentences. (Copley 2002 among others)

Using present tense to refer to future eventualities is not a newly observed phenomenon in Indo-European languages. In *The English Grammar*, Miege (1688) points out that the present tensed sentence in (73) conveys 'tomorrow will be a holiday':

(73) To morrow is a Holy Day.

Miege (1688:70)

Similar examples can be found in De la Touche (1696) for French: [61]

(74) Je pars demain.
1SG leave tomorrow
'I leave tomorrow.'

De la Touche (1696:240)

Futurate sentences[62] in morphologically "tensed" languages are interesting for our current study, because they have striking

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61 The reader can consult Binnick (1991) for a more detailed overview of futurate sentences.

62 English distinguishes *simple* futurates as in (71) from *progressive* futurates as in (71') below.

similarities with the BF sentences in Mandarin. The Mandarin counterparts of the futurate sentences discussed above contain neither overt functional morphemes nor modal verbs, as shown in (75) below.

(71') a. Mary *is playing* tennis tomorrow.
b. Max *is arriving* tonight.
c. The train *is leaving* in ten minutes.

Although both (71) and (71') report future-oriented events, they are not asserting the same thing. Copley (2002:50) illustrates the difference between simple futurates and progressive futurates by using the two questions in (i) below. The progressive futurate in (i-a) "asks whether the plan provides for Joe to go skydiving tomorrow", and the simple futurate in (i-b) presupposes a plan for Joe to go skydiving, and "asks whether tomorrow is the day".

(i) a. Is Joe going skydiving tomorrow?
b. Does Joe go skydiving tomorrow?

The reader can refer to Copley (2002) for details about the semantics of simple futurates and progressive futurates.

In Mandarin, however, the progressive form does not allow future construals even in the presence of a future adverb, as shown in (75').

(75') a. *Mǎlì míngtiān zài dǎ wǎngqiú.
Mali tomorrow PROG play tennis
b. *Lùlu jīnwǎn zài dào.
Lulu tonight PROG arrive
c. *Huǒchē zài guò shí fēnzhōng zài fāchē.
train more pass ten minute PROG leave

A modal can rescue some progressive sentences from ill-formedness, but they are interpreted as ongoing events at a future time, as shown in ((75''a)), which is different from the English futurate in (75''b). The latter conveys that the event of Mary playing tennis will *begin* at five "tomorrow".

(75'') a. Mǎlì míngtiān wǔdiǎn huì zài dǎ wǎngqiú.
Mali tomorrow five.o'clock MOD PROG play tennis
'Mali will be playing tennis tomorrow at five.'
b. Mary is playing tennis tomorrow at five.

As far as this dissertation is concerned, we do not place great emphasis on the contrast between simple futurates and progressive futurates, since the Mandarin progressive does not allow future-oriented readings without a modal.

(75) a. Mǎlì míngtiān dǎ wǎngqiú.
Mali tomorrow play tennis
'Mali plays tennis tomorrow.'

b. Lùlu jīnwǎn dào.
Lulu tonight arrive
'Lulu arrives tonight.'

c. Huǒchē zài guò shí fēnzhōng fāchē.
train more pass ten minute leave
'The train leaves in ten minutes.'

Interestingly, in both English and French, not all present tensed sentences can describe future eventualities. Some sentences require a modal or the future tense to allow future readings, as illustrated in (76) and (77) below: [63]

(76) a. ?John is very frustrated tomorrow.
a'. John will be very frustrated tomorrow.

b. ?Peter forgets Mary later.
b'. Peter will forget Mary later.

c. ?This fish dies next week.
c'. This fish will die next week.

(77) a. ?Jean est très frustré demain.
Jean be.PRES.3SG very frustrated tomorrow

a'. Jean sera très frustré demain.
Jean be.FUT.3SG very frustrated tomorrow
'Jean will be very frustrated tomorrow.'

b. ?Pierre oublie Marie plus tard.
Pierre forget.PRES.3SG Marie more late

b'. Pierre oubliera Marie plus tard.
Pierre forget.FUT.3SG Marie more late
'Pierre will forget Marie later.'

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[63] (76a, c) and (77a, c) are acceptable in scheduling scenarios. (76b) and (77b) can be used in recounting the plot of a film for example.

c. ?Ce poisson meurt la semaine prochaine.
this fish die.PRES.3SG D week next

c'. Ce poisson mourra la semaine prochaine.
this fish die.FUT.3SG D week next
'This fish will die next week.'

With an adverb indicating a future time, the English sentences in (76a b, c) and their French counterparts in (77a, b, c) are in the present tense but they are ungrammatical. To license future readings for these sentences, a modal or the future tense is required, as shown in (76a', b', c') and (77a', b', c').[64]

Mandarin sentences containing the same predicates as (76) and (77) have similar behaviors: when the predicate is in the bare form, the sentence with a future time adverb is ill-formed, as shown in (7) repeated as (78a, b, c); while in the presence of a modal, the future reading is legitimated, as the cases in (78a', b', c').

(78) a. *Míngtiān Lùlu hěn jǔsàng.
tomorrow Lulu very frustrated

a'. Míngtiān Lùlu huì hěn jǔsàng.
tomorrow Lulu MOD very frustrated
'Tomorrow, Lulu will be very frustrated.'

b. *Xiǎoxīn yǐhòu wàngjì Mǎlì.
Xiaoxin later forget Mary

b'. Xiǎoxīn yǐhòu huì wàngjì Mǎlì.
Xiaoxin later MOD forget Mary
'Xiaoxin will forget Mary later.'

c. *Zhèi-tiáo yú xià zhōu sǐ.
this-CL fish next week die

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64 Notice that the progressive counterpart of (76c) given in (76c') is a felicitous sentence and means that Mac is programmed to die next week. See also footnote 62.
(76) c'. Mac is dying next week.

c'. Zhèi-tiáo yú xià zhōu kěndìng huì sǐ.
this-CL fish next week definitely MOD die
'This fish will definitely die next week.'

The data examined so far show that the contrast between BF sentences *vs*. MF sentences in Mandarin is very similar to the contrast between *futurates vs*. modal/tensed future sentences in English and French: while predicates like *play tennis* and *arrive* in both Mandarin and English / French can receive a future-oriented reading without a modal, the eventualities conveyed by predicates such as *frustrated* and *forget* cannot receive future construals in the absence of an overt future tense or a modal.

The similar behavior of BF sentences in Mandarin and futurate sentences in English and French suggests that the source of the future-oriented readings of these sentences might be the same. The questions that arise at this point are the following: Can we relate the futurate construals with the lack of overt tense marking? Does the lexical meaning of the predicate constrain the future anchoring of the eventuality? Are there other factors (overt or not) that license future construals? Some possible answers will be considered in the following section. We show that the future readings of BF sentences in Mandarin are derived from a covert modal ingredient.

5.4.3 The *plan* in futurates

Given the striking similarities observed between the BF sentences in Mandarin and the futurate sentences in English, their temporal interpretation might be derived the same way. The potential sources of the future construals are:

i) tenses (overt or covert);

ii) lexical properties of the predicate;

iii) covert modals.

Is tense the source? For English and French, there are proposals that consider the present tense as the preparatory phrase of the future-oriented eventuality, and as such explain the use of present tense (simple and progressive form) in sentences describing future events. This cannot be the right answer for Mandarin, since, as we have shown, Mandarin does not have a present but a NONFUT tense.

We will argue that although the lexical property of the predicate may play a minor role in determining whether the bare forms allow future construals, the source of the temporal readings of BF sentences lies in the modal component involved in the described situation.

Firstly, the temporal readings of BF sentences and futurate sentences are not directly derived from tense. Under our hypothesis presented in Section 5.3, sentences with BPs contain a covert tense NONFUT, which only selects past and present intervals as the RT for the eventuality described by the sentence. Consequently, bare sentences are predicted to yield past or present, but not future readings, contrary to fact. Similarly, English futurates are morphologically in the present tense. If we assume that the morphological present tense is the spell-out of the semantic present (in the relevant cases), which requires the RT to overlap the UT, futurates should describe present situations, which is clearly not the case. In brief, neither the covert NONFUT tense in Mandarin nor the present tense in English gives rise to future references. Therefore, the overt or covert tense fails to capture the future readings of BF and futurate sentences.

Secondly, the temporal readings of BF sentences and futurate sentences are not directly related to the lexical meaning of the predicate.

Notice that the data discussed in the previous section seem to suggest a correlation between the possibility of yielding future readings without future tense or modals and the predicate: while *play tennis*, *arrive* and *leave* allow future readings without a modal or the future tense, *be frustrated*, *forget* and *die* require a modal or overt future tense to report future eventualities. Moreover, this observation is valid cross-linguistically. Suppose that the verbs that we considered are semantically (quasi-)equivalent in Mandarin, English and French, then it is possible that the temporal readings of these sentences are closely related to the lexical meaning of the predicates.

Suppose that the lexical property of the predicate is a plausible source of the future construals for BF sentences. How can we define this property? Does it correlate with the Vendlerian aspectual classes? This question does not seem to have a clear-cut answer, based on the data discussed in Section 5.1 and our investigation of verbs: while activities and accomplishments easily receive future-oriented

construals without a modal, most states and achievements require a modal to be interpreted with future time reference. However, there is no strict correlation between the aspectual class of a predicate and whether its bare form allows future readings, because in each class, there are verbs that require a modal for future readings and also verbs that do not. If the lexical properties of the predicates contribute somehow to the future-oriented construals, they must differ from the properties characterizing aspectual classes; and in this case, the future construals of BF sentences might be related to some covert element.

To clarify this issue, we now look into futurate sentences in English, which, by virtue of their similar construction to BF sentences in Mandarin, might shed light on our puzzle.

As we have seen in the previous section, futurate sentences have long been of interest to both English and French linguists. Reichenbach (1947) and Binnick (1991) evoke a certain predictability of futurates. Based on Lakoff's (1971:339) observation of the difference between the futurate sentence in (79a) and the modal future sentence in (79b), Vetter (1973:106) and Dowty (1979)[65] argue that futurates describe events "which can be planned in the strict sense; that is, one over which the participants presently have control".

(79) a. The Yankees play the Red Sox tomorrow.

b. The Yankees *(will) play well tomorrow.

Lakoff (1971:339)

Smith (1991:246) points out that "the futurate requires some kind of plan, schedule, control, or pattern of events". Copley (2002, 2008b) also highlights the component of planning involved in *futurate* sentences. To quote,

> *"A futurate is a sentence with no obvious means of future reference, which conveys that a future-oriented eventuality is planned or scheduled."*
>
> Copley (2008b:261)

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[65] Dowty (1979) gives an interesting discussion of futurates, by focusing on the semantics of progressive futurates, that we will not detail here. (See also footnote 62.)

She argues that a futurate sentence like (80a) reports a planned event in a future time (on the day following the day of the UT). In contrast, (80b) is odd because the event of winning is normally unplannable. (80c) is perfect as report of a future event with the modal *will*. However, (80b) is acceptable in a context where someone fixed the game and thus the winner is "decided" beforehand.

(80) a. The Red Sox play the Yankees tomorrow.

b. #The Red Sox defeat the Yankees tomorrow.

c. The Red Sox will defeat the Yankees tomorrow.

The data in Mandarin below show similar behaviors, as shown in (81):

(81) a. Zhōngguó duì míngtiān bǐsài.
China team tomorrow play
'The Chinese team plays tomorrow.'

b. #Zhōngguó duì míngtiān yíng.
China team tomorrow win
Intended: 'The Chinese team will win tomorrow.'

c. Zhōngguó duì míngtiān néng yíng.
China team tomorrow can win
'The Chinese team can win tomorrow.'

While the bare verb *bǐsài* 'play' can easily receive future-oriented readings without a modal, the verb *yíng* 'win' normally requires a modal to allow future readings. However (81b) is acceptable if the speaker is informed that the game was fixed.

Recall the sentences in (20) discussed in Section 5.1.2 repeated as (82) below.

(82) a. #Lùlu yìhuìr kū.
Lulu a.moment cry
Intended: 'Lulu will cry in a moment.'

b. Lùlu yìhuìr huì kū.
Lulu a.moment MOD cry
'Lulu will cry in a moment.'

We have mentioned that a specific context can rescue (82a) from oddness: if the speaker is talking about a crying scene in a play that takes place later than the UT, (82a) is acceptable, although the

sentence with a modal in (82b) remains a better choice than (82a) even in this context.

The possibility of overcoming the oddness of (80b) in English and (81b)/(82a) in Mandarin by specific contexts rather than overt morphological change in the sentence suggests that we cannot entirely attribute the oddness of these sentences to the lexical meaning of the predicate, even if certain predicates lead more likely to infelicitous sentences than others. (80b), (81b) and (82a) sound odd probably because the contexts legitimizing them cannot be easily/naturally associated with the eventuality described by the predicate. The lexical meaning of *defeat*, *yíng* 'win' and *kū* 'cry' might be responsible for the rareness of the contexts licensing future construals without modals, but they should be definitely discharged from full responsibility for the oddness, because if the lexical meaning of the predicate gives rise to the oddness, contexts should not be able to improve the acceptability of the sentence. Then what is the source of the oddness of these sentences? Why does the context rescue them of the ill-formedness?

Copley (2002, 2008b) argues that the semantics of futurates in English is related to the notion of *plans*. Whoever makes the plan is referred to as the "director" *d*. (80a) conveys that there is a plan for a game in the day after the UT. The director *d* has not only the ability but also the commitment to make the event described by the predicate (P-event) happen. The definition of *direction* is given in (83):

(83) An entity d *directs* a proposition P in w at t iff:
∀w', d has the same abilities in w′ as in w:
[∀w" metaphysically accessible from w' at t and consistent with d's commitments in w′ at t:
[∀w"' metaphysically accessible from w at t:
[∃t′ > t: [P(w")(t')] ⇔ [∃t" > t: [P(w"')(t")]]]]]

(Copley 2008b:272)

(83) defines *direction* by the abilities of *d* in metaphysically possible worlds of a world *w*. If *w″* is metaphysically accessible from *w′* at *t* (in other words, *w″* has exactly the same history as *w′* at *t*), *d* should have the same abilities in *w″* as in *w′* to be the director of *P*. In each

metaphysically accessible world *w‴* of *w″*, *d* has the same commitments as in *w″*.

Copley claims that futurate sentences involve a modal operator PLAN, defined in (84):

(84) PLAN(d)(P)(w)(t) is defined iff *d* directs *P* in *w* at *t*. If defined, PLAN(d)(P)(w)(t) = 1 iff *d* is committed to *P* in *w* at *t*.

A futurate sentence is defined only if in the world *w* at *t*, *d* has the ability of to ensure that P holds in a future time. Where defined, the sentence is true iff *d* has the commitment to make the *P*-event happen.

Note that futurates in Copley's definition assert not future eventualities but a *present* plan and the commitments of the director to the plan at the moment of the utterance. In other words, futurates do not involve future tense.[66] If Copley is right, present-tensed futurates in English are not only morphologically in the present tense but also contain a semantic present.[67]

5.4.4 Non-future plans in Mandarin

Following Copley (2002, 2008b), we claim that bare sentences yielding future-oriented eventualities in Mandarin also contain a silent modal PLAN, which requires the contextually provided *director* to have the ability and the commitments of realizing the eventuality described by the predicate in a future time.

However, there is a fundamental difference between Mandarin bare futures and English futurates. That is, while futurates in English assert a *present* plan, BFs in Mandarin asserts a *non-future* plan.

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[66] See also Copley (2008a), in which she points out that "when we assert a futurate, we are asserting a stative of the present, not asserting an eventive of the future."

(Copley 2008a:72)

[67] For interesting discussion of futurates in French child *vs*. adult grammar, see Lungu (2012).

Consider the conversation in (85).

(85) a. - Xiǎoxīn shénme shíhou dào?
Xiaoxin what time arrive
'When is Xiaoxin arriving?'

b. - Liǎng-diǎn dào.
two-o'clock arrive
'He is arriving at 2.'

Both (85a) and (85b) have a bare verb *dào* 'arrive'. With no specific context, these sentences have very similar readings to the English futurates in (86). In other words, (85) presupposes a plan for *Xiaoxin* to arrive at some time, and the conversation is about the planned arrival time. In the absence of a pre-established reference time, (85a,b) are interpreted as describing a scheduled future event according to a *present* plan.

(86) a. -When is Xiaoxin arriving?

b. - He is arriving at 2.

Although the sequence in (85) is translated in the present tense as its "counterpart" in (86), it is different from (86) because it can receive past readings if a proper context is set up.

Suppose that *Xiaoxin* has an appointment with the manager at 2pm. It's 3pm, and he hasn't shown up. A conversation between the manager (M) and his secretary (S) could be (85').

(85') a. M: Dōu sān-diǎn le! Xiǎoxīn shénme
DOU three-o'clock FIN.LE Xiaoxin what
shíhou dào?
time arrive
'It's already 3 o'clock! When is/was Xiaoxin arriving?'

(*The secretary checks the agenda*…)

b. S: Liǎng-diǎn dào. Yǒu-kěnéng tā
two-o'clock arrive have-possiblity 3SG
fēijī wǎndiǎn le.
plane delay PERF

‘He was arriving at 2 o’clock. It is possible that his flight is delayed.’

In this specific context, the same bare sentences as in (85) are used in (85’), yielding *past* or *present/past* readings instead of *present* readings as in (85). This is so, because the plan for *Xiaoxin* to arrive at 2 o’clock can only hold at a time earlier than 2pm, and since (85’) is uttered at about 3, only past readings are possible.

Let’s go back to English. The counterpart of (85’) using the sentences in (86) will be infelicitous in this context, as shown in (87).

(87) a. M: It’s already 3 o’clock. When *is* Xiaoxin arriving?

b. S: #He *is* arriving at 2.

b’. S: He *was* arriving at 2.

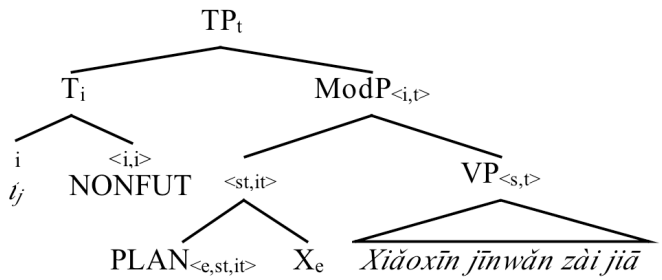
The data discussed so far suggest that Mandarin bare future sentences and English futurates have different temporal interpretations. The source of this difference is the tense, that is, the tense for the plan. While English futurates assert a *present plan*, Mandarin BF sentences assert a *non-future plan*.

Let us turn now to the semantic derivation of a bare future sentence in Mandarin. Consider (88):

(88) Xiǎoxīn jīnwǎn zài jiā.
Xiaoxin tonight at home
‘Xiaoxin will be at home tonight.’

(88) has the structure in (89) and the truth conditions in (91).

(89)



Note that PLAN in (89) quantifies over worlds. To express this idea, the following derivation contains a world parameter *w* that we have been avoiding till now for sake of simplicity.

(90) a. $[\![\text{Xiǎoxīn}]\!]^{g,w,c} = X$

b. $[\![t_j]\!]^{g,w,c} = g(j)$

c. $[\![\text{NONFUT}]\!]^{g,w,c} = \lambda t: t < t_c \text{ or } t \supseteq t_c. t$

d. $[\![_{VP}\text{Xiǎoxīn jīnwǎn zài jiā }]\!]^{g,w,c}$= 1 iff *X* is at home in w throughout the evening of the day containing t_c[68]

e. $[\![\text{PLAN}]\!]^{g,w,c} = \lambda x_e. \lambda P_{<s,t>}. \lambda t_i$: *x* directs *P* in *w* at *t*. *x* is committed to *P* in *w* at *t*.

(91) $[\![(88)]\!]^{g,w,c}$ is defined only if, in *w* at g(j), *X* directs the proposition *λw'. X is at home in w' throughout the evening of the day containing* t_c, and if $g(j) < t_c$ or $g(j) \supseteq t_c$.

Where defined, $[\![(88)]\!]^{g,w,c}$ = 1 iff, in *w* at g(j), *X* is committed to the proposition *λw'. X is at home in w' throughout the evening of the day containing* t_c; 0 otherwise

Note that cases like (92) in Mandarin and (93) in English may challenge the modal analysis of futurates presented above.

(92) Míngtiān tàiyáng qī-diǎn xià-shān.
tomorrow sun seven-o'clock down-mountain
'The sun sets tomorrow at seven.'

(93) The sun sets tomorrow at 7.

(Adapted from Goodman 1973), quoted in Dowty 1979:156))

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[68] Note that the VP would then compose with its sister by Heim and Kratzer's (1998:308) rule of Intensional Functional Application:
If α is a branching node and {β, γ} the set of its daughters, then, for any possible world w and any assignment a, if $[\![\beta]\!]^{w,a}$ *is a function whose domain contains λw'.* $[\![\gamma]\!]^{w',a}$, *then* $[\![\alpha]\!]^{w,a} = [\![\beta]\!]^{w,a}(\lambda w'. [\![\gamma]\!]^{w',a})$.

(92) and (93) are grammatical as reporting a sunset at a future time, which cannot be controlled by an animate agent or "director". Both Leech (1971) and Goodman (1973) point out that futurate sentences like (93) describe something other than a *plan* since the eventuality cannot be planned. From this point of view, the semantics of futurates in English and BF sentences in Mandarin might be more complicated than the version presented so far. In this dissertation, we will not go any further into the question of how natural forces interact with BF sentences.

5.5 Summary

To summarize, we argued:

i) in the first place for a covert tense NONFUT in Mandarin, which restricts the temporal reference of bare sentences to non-future times. We showed that the null tense NONFUT permits us to account for the asymmetry between past / present time adverbs and future time adverbs as to their interaction with bare predicates: past / present adverbs but not future adverbs can alone fix the RT for bare sentences;

ii) in the second place for a covert modal ingredient in bare sentences yielding future construals. By showing the striking similarities between bare future sentences in Mandarin and futurate sentences in English and French, we claimed that the future readings of BF sentences in Mandarin and the futurate sentences in English and French result from the same semantic component, a modal ingredient involving a *plan*. What is important is that present-tensed futurates in English and French assert a *present* plan, while bare futures in Mandarin assert a *non-future* plan.

Chapter 6 Conclusions

The research presented here is notable in that it is devoted to the temporal construals of bare predicates in Mandarin, an important issue that is underrepresented in previous studies of temporal reference. It contributes novel generalizations and analyses supported by empirical evidence.

We take the core and original contribution of this thesis to be that it provides the first systematic investigation and detailed theoretical analysis of the temporal interpretations of Mandarin sentences with *bare* predicates, that is without morphological aspect, neither verbal aspectual markers or sentence final markers.

The temporal construals of sentences *with* overt morphological aspect in Mandarin have been largely studied in the literature. We have tried to show how a careful investigation of the temporal construals of sentences *without* overt morphological aspect can lead to novel, insightful generalizations about temporal reference in Mandarin. The key generalizations of this thesis, which any theory of tense and aspect in Mandarin should account for, are recapitulated below, as G1-G7 in Section 6.1.

We have then sought to account for these generalizations with an elegant and parsimonious set of theoretical hypotheses recapitulated below as H1-H7.

The generalizations uncovered and the proposals put forward here point towards interesting semantic variation in temporal reference both internal to Mandarin - in particular, in regard to temporal interpretation across subordinated clauses, see Section 6.2.1 below - and external to Mandarin, that is in comparison to other tenseless languages, see Section 6.2.2.

More generally, the theoretical investigation carried out here should prove to be of empirical and theoretical interest to the cross-linguitic analysis of tenselessness.

6.1 General conclusions

This thesis investigated the temporal interpretation of sentences with bare predicates (BPs) in Mandarin. The data explored at the very beginning concerning BPs in root clauses (see Chapter 3) showed that:

G1. Root clauses with stative BPs yield *stative* readings;
G2. Root clauses with eventive BPs yield *generic* construals;
G3. All stative predicates can appear without aspect;
G4. All episodic uses of eventive predicates in root clauses involve overt aspect;
G5. Time adverbials cannot by themselves fix the temporal reference of sentences with eventive BPs, yielding episodic readings.

These generalizations follow from the hypotheses that:

H1. Stative predicates are properties of times (of type<*i*,*t*>);
H2. Eventive predicates are properties of events (of type <*v*,*t*>);
H3. Aspect must be overtly marked in root clauses in Mandarin.

Since stative predicates are of type <*i*,*t*> (cf. H1), they can combine directly with a time (of type *i*), which temporally anchors the state described by the predicate, giving rise to the stative construal of the sentences (cf. G1). Stative predicates can thus form a felicitous sentence without aspect (cf. G3). H1 thus correctly predicts G1 and G3.

In contrast, if eventive predicates are of type <*v*,*t*> (cf. H2), they are expected not to combine directly with a time (of type *i*), and consequently an aspect (of type <*vt*, *it*>) is required, which maps properties of events to properties of times. This is why episodic readings are only licensed by aspect, and not time adverbs (cf. G5). Since aspect must be overt in root clauses (cf. H3) to license episodic readings for eventive predicates, there must be overt aspectual marking (cf. G4). This is how H2 correctly predicts G4 and G5.

The theoretical simplicity of the analysis should be emphasized. That is, H1 and H2 are theoretical assumptions that already exist in the literature, independently very well grounded (Katz 2003, Kratzer 1998). H3 is the only language specific hypothesis. Note also that on this proposal, the parametric difference between Mandarin and other languages is not semantic but lies merely in the morphosyntax

semantics mapping, since H3 merely requires that aspect be overtly spelled out in Mandarin.

The only remaining issue so far is G2, namely, the generic construals of sentences with eventive BPs. The proposals put forth in Chapter 4 are stated below:

H4. The generic readings of sentences with eventive BPs are derived from an overt quantification adverb or a covert operator Q.

H5. The Q-adverb and the covert operator Q are of the same semantic type (<*vt*,*it*>), that is, they take properties of eventualities denoted by the eventive BPs and return generic properties.

Note yet again that it is a standard assumption in the literature that a quantificational element contributes to the derivation of generic contruals. In particular, Wilkinson (1991) claims that some generic sentences involve quantificational adverbs. H4 and H5 above are largely inspired by the analyses put forth in Krifka et al. (1995), Paslawska & von Stechow (2003), Kaufmann (Scheiner 2003) and others (see Chapter 4, Section 4.2 for discussion). According to H4 and H5, overt Q-adverbs and the covert Q operator play a similar role to aspect: they covert <*v*,*t*> types to <*i*,*t*> types, which can then combine with a time (type *i*). This is how G2 is made to follow H4 and H5.

Finally, the last chapter of this thesis explored the "future" construals of bare sentences and pointed out an asymmetry between future time adverbs and past/present time adverbs in the temporal anchoring of bare sentences:

G6. *Past* and *present* time adverbs can fix the temporal reference of states or generic properties described by bare sentences, while *future* time adverbs cannot.

Interestingly,

G7. Sentences with eventive BPs allow episodic future readings without overt aspect.

The asymmetry between past/present *vs*. future time adverbs in G6 can be accounted for by H6, and the episodic future readings of bare sentences by H7.

H6. Mandarin has a covert tense NONFUT restricting the temporal reference of bare root clauses to non-future times.

H7. Bare root clauses yielding future construals in Mandarin are similar to futurate sentences in English: they both contain a modal ingredient involving a *plan*. Mandarin differs from English/French in that Mandarin bare future sentences asserts not a *present*, but a *non-future* plan.

Again, the proposal rests on a small set of theoretically well-grounded assumptions:

H6 extends the proposal of Matthewson (2006) and that of Jóhannsdóttir & Matthewson (2007) for other tenseless languages (St'át'imcets Salish and Gitxsan) to Mandarin, suggesting that we might be dealing here with a universal, though this would require obviously systematic large-scale investigation to establish.

As for H7, it is the null hypothesis once we assume H6 together with the natural assumptions that all languages have *futurates*. Note that the prediction would be that St'át'imcets and Gitxsan would pattern exactly like Mandarin in licensing non-future futurates.

6.2 Future research

6.2.1 Variation across embedded clauses in Mandarin

This thesis focused on the temporal interpretation of bare predicates in Mandarin *root clauses*, and has shown that root clauses with bare predicates yield either *stative* or *generic* readings, as shown in (1a) and (1b). These generalizations (stated as G1-2 above) follow from the generalization in G4 according to which all episodic uses of eventive predicates require overt aspect, illustrated in (1c).

(1) a. Lǎoshī xiànzài hěn máng.
professor now very busy
'The professor is now very busy.'

b. Nà-ge nǚháir tiào bāléiwǔ.
that-CL girl dance ballet
'That girl dances ballet.'

c. Nà-ge nǚhái *(zài) tiào bāléiwǔ.
that-CL girl PROG dance ballet
'That girl is dancing ballet.'

The properties of bare predicates in subordinate clauses, which are not examined in this thesis, would be a highly interesting topic for future research.

In particular, bare predicates in *complement clauses* like (2) show similar behaviors as those in root clauses: stative BPs allow stative readings ((2a)), and eventive BPs allow generic readings ((2b)). The episodic readings of complement clauses with eventive predicates are only licensed by overt aspect, as illustrated in (2c).

(2) a. Xiàoxiao zhīdào [lǎoshī xiànzài hěn máng].
Xiaoxiao know professor now very busy
'Xiaoxiao knows that the professor is now very busy.'

b. Xiàoxiao shuō/tīngshuō [nà-ge nǚhái tiào bāléiwǔ].
Xiaoxiao say/hear that-CL girl dance ballet
'Xiaoxiao said/heard that that girl dances ballet.'

c. Xiàoxiao shuō/tīngshuō [nà-ge nǚhái *(zài) tiào bāléiwǔ].
Xiaoxiao say/hear that-CL girl PROG dance ballet
'Xiaoxiao said/heard that that girl was/is dancing ballet.'

Notice that the English counterparts of the Mandarin complement clauses in (2) are all *tensed* complement clauses, as shown in (3).

(3) a. Xiaoxiao knows that the professor is now very busy.

b. Xiaoxiao said/heard that that girl dances ballet.

c. Xiaoxiao said/heard that that girl was/is dancing ballet.

Interestingly, bare complement clauses such as those in (4a-c) pattern differently from the bare root clauses illustrated in (2)-(3) above: eventive BPs seem to allow episodic readings in these complement clauses, and no restrictions are found in the temporal interpretation of the eventuality described by the complement: the

event time of the complement clause can either follow ((4a)), precede ((4b)) or overlap ((4c)) the matrix event time.

(4) a. Zhǔrèn shuìfú le Xiǎoxin [lái
director persuade PERF Xiaoxin come

běijing gōngzuò].
Beijing work

'The director persuaded Xiaoxin to come to work in Guangzhou.'

b. Xiǎoxin hěn hòuhuǐ [lái běijing].
Xiǎoxin very regret come Beijing
'Xiaoxin regrets coming to Beijing.'

c. Wǒmen zài tīng Xiǎoxin [jiǎng gùshi].
1PL PROG listen Xiaoxin tell story
'We are listening to Xiaoxin telling a story.'

Notice that the English counterparts of the complement clauses in (4a-c) are all *tenseless* – that is, would correspond to *non-finite* clauses in languages like English.

(5) a. The director persuaded Xiaoxin to come working in Guangzhou.

b. Xiaoxiao regrets coming to Beijing.

c. We are listening to Xiaoxin telling a story.

The contrast between the temporal construals of Mandarin complement clauses in (2) and those in (4), which correlates with the tensed / tenseless split in English complement clauses, is very interesting. We claim that one should make a connection between the examples in (2a-c) and English examples with tensed clauses in (3a-c), on the one hand, and between the examples in (4a-c) and English examples with tenseless clauses in (5a-c), on the other hand.

More investigation is needed in order to shed light on the source of this intriguing contrast as well as the correlation between Mandarin and English, thus contributing to the lively debate in the literature as to whether Mandarin has a *finite* / *non-finite* distinction (cf. Huang 1984, Li 1990, Simpson & Wu 2002, Hu, Pan, & Xu 2001).

Among the studies on temporal interpretation of Mandarin complement clauses in the literature, Li (1999) focuses on complement clauses with overt aspect markers such as *zhe*, *le* and *guo*, and argues that these aspect markers behave like relative tenses giving rise to different temporal readings of complement clauses. Lin (2003), in contrast, extends his investigation to complement clauses without overt aspect and claims that the temporal reference of complement clauses is constrained by the lexical meaning of the matrix verb. Although this claim is supported by empirical evidence, Lin gives no detailed analyses. See also Mallet-Jiang (2012) for similar proposals.

Unlike root clauses, relative clauses with bare predicates allow not only *stative* / *generic* readings but also *episodic* readings, as is extensively discussed by Sun (2015). (6) below, repeated from (5) in Chapter 1, contains a relative clause, which receives *either a generic or an episodic* reading.

(6) Mǎlì pāishè-guo [$_{NP}$ tiào bāléiwǔ de nǚhái].
Mali film-PERF dance ballet DE girl.
'Mali filmed a / the girl who dances ballet.'
'Mali filmed a / the girl who is dancing / danced / will dance ballet.'

Sun (2015:76)

The contrast observed above raises the question of why sentences containing the same bare predicate receive different temporal interpretations according to whether they are root clauses, complement clauses or relative clauses. More precisely, why do bare eventive predicates only allow generic readings in root clauses, while they also allow episodic readings in relative clauses and complement clauses? In other words, why must aspect be overt in root clauses, but not necessarily in relative clauses in licensing episodic readings?

Future insights will be gained through a careful analysis of temporal interpretation across subordinate clauses. This, however, remains beyond the scope of this thesis. Given the important variation in the properties of bare predicates across embedded clauses (as compared to root clauses), we leave these issues open for future investigation.

6.2.2 Cross-linguistic variation

Another intriguing and fundamental issue that was not developed in the current study is the issue of cross-linguistic variation in the temporal construal of bare predicates.

Bare predicates do not have uniformly the same temporal interpretation across all languages with no morphological tense (cf. Chapter 1, Section 1.1). Let's take bare activities for instance. To illustrate, Sun (2010) identifies three patterns of temporal construals of bare activity predicates across tenseless languages:

i) *generic* construals in Haitian Creole (HC), Jamaican Creole (JC) and Mandarin, as in (7);

ii) *episodic past* or *present* readings in St'át'imcets and Skwxwú7mesh, as illustrated in (8);

iii) *episodic past* readings in Capeverdean, as shown in (9).[69]

These patterns are illustrated below:

Generic readings

(7) a. Pyè vann bèf.
Pyè sell cattle
'Pyè sells cattle.'

Haitian Creole (Déchaine 1991:37)

b. Jan nyam aki.
John eat ackee
'John eats ackee.'

Jamaican Creole (Durrleman 2007:149)

c. Zhāngsān xiě xiǎoshuō.
Zhangsan write novel
'Zhangsan writes novels.'

Mandarin (Sun 2010)

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[69] More data on the variation of temporal construals of bare predicates cross languages can be found in Sun (2010).

Episodic present or past readings

(8) a. sáy'sez'-lhkan.
play-1SG.SUBJ
'I played / I am playing.'

St'át'imcets (Matthewson 2006:676)

b. chen xay-m.
1SUBJ.SG laugh-INTR
'I laughed.'/'I am laughing.'

Skwxwú7mesh (Bar-el 2005:123)

Episodic past readings

(9) Djon kanta.
Djon sing
'Djon sang.'

Capeverdean (Pratas & Hyams 2010:379)

The question then arises of how to account for the attested variation reported in Sun (2010) in the temporal interpretation of bare predicates across languages without morphological tense. Is it due to some covert tense that gives rise to differences in temporal interpretation (eg. One could stipulate that while Capeverdean zero tense would be a covert true *past* tense, St'át'imcets zero tense would be a covert *non-future* tense (Matthewson 2006))? Or is the variation due to the cross-linguistic difference in the lexical meaning (eg. While Mandarin eventive predicates would denote non-count, mass-like eventualities, just like nouns, which have been argued to be all mass in Mandarin (Chierchia 1998), Salish and Capeverdean eventive predicates would denote count eventualities)?

What is obvious is that the "default aspect" approach à la Bohnemeyer & Swift (2004), extensively discussed in Chapter 3 (Section 3.5.1), would fail to capture this variation, because if the telicity of the predicate determines the temporal interpretation of the sentence, we do not expect cross-linguistic variation in temporal readings of sentences containing bare predicates of the same class (eg. Bare activities yield generic construals in Mandarin, present/past episodic readings in St'át'imcets and Skwxwú7mesh, and past readings in Capeverdean).

Interestingly, we find similar variation in the temporal interpretation of activities in languages *with* grammatical tense: English *vs*. French. The English present-tensed sentence in (10) with an activity 'play tennis' only allows a *generic* reading, while its counterpart in French also allows an *ongoing episodic* reading, as shown in (11).

(10) He plays tennis.

(11) Il joue au tennis.
3SG play.PRES.3SG at tennis
'He plays tennis.'
'He is playing tennis.'

On this perspective, the intriguing question that arises is how to explain the cross-linguistic variation in the temporal readings of (bare) activities, be it in languages with or without tense morphology. That is, the question is not that of why and how tenseless languages differ in the distribution of temporal readings, but rather and more generally, how and why bare predicates in tenseless languages, just like present-tensed predicates in tensed languages, differ in the distribution of episodic (ongoing) *vs.* generic construals.

It goes without saying that further systematic investigation is required to answer these questions.

We hope, however, to have shown how the empirical and theoretical proposals put forth here (as recapitulated above in G1 to 7 and H1 to 7), which stem from the particular perspective adopted here, namely the choice to focus our investigation of Mandarin Tense on bare predicate sentences, can lead to novel and original insights on Mandarin temporal reference. These insights extend beyond Mandarin to other tenseless languages, and crucially also to tensed languages, raising new puzzles, questions and hypotheses for future theoretical and typological research to empirically assess and answer.

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Samenvatting in het Nederlands

Het Mandarijn wordt traditioneel beschouwd als een ‘tempusloze’ taal, omdat het geen morfologisch tijdsmarkering kent zoals dat wel het geval is in de zogenaamde ‘tempusdragende’ talen zoals het Engels. In plaats daarvan heeft het grammaticale systeem een aantal aspectuele markeerders die informatie geven over het perspectief van de door het predicaat beschreven eventualiteit.

Terwijl de temporele interpretatie van zinnen met overt morfologisch aspect in het Mandarijn in de literatuur al uitgebreid besproken is, is het onderzoek naar de temporele interpretatie van kale predicaten – d.w.z. predicaten zonder enige overte aspectuele markeerder na het werkwoord of aan het eind van de zin – onderbelicht gebleven.

Het onderzoek waarvan hier verslag gedaan wordt laat zien hoe zorgvuldig onderzoek naar de temporele interpretaties van zinnen zonder overte morfologie kan leiden tot nieuwe generalisaties over temporele referentie in het Mandarijn die niet alleen empirisch goed gefundeerd zijn, maar bovendien nieuwe inzichten opleveren.

Wat de kern van dit proefschrift is en wat het een originele bijdrage aan de discussie maakt, is dat het het eerste systematische onderzoek en de eerste gedetailleerde theoretische analyse is van de temporele interpretatie van zinnen in het Mandarijn met kale predicaten.

Het proefschrift is als volgt ingedeeld:

Hoofdstuk 1 presenteert de uitgangspunten van dit onderzoek aan de hand van een overzicht van de variatie in de temporele interpretatie van kale predicaten in verschillende talen. Een aantal voorstellen dat in de literatuur is gedaan – zowel voor het Mandarijn als voor andere talen zonder morfologisch tijdsmarkering – passeert kort de revue om te verduidelijken wat de tweedeling tempusdragend/tempusloos precies inhoudt, in zowel theoretische als empirische zin, met het oog op morfologie, syntaxis en semantiek.

Hoofdstuk 2 presenteert de theoretische achtergrond van tempus en aspect die ten grondslag ligt aan de in dit proefschrift ontwikkelde voorstellen door twee benaderingen van temporele semantiek kort te bespreken: de zogenaamde *tense logic* semantiek en de *referentiële* benadering van tempus. Hierbij worden kwesties zoals het verschil tussen lexicaal en grammaticaal aspect en interacties tussen tempus en aspect uitgebreid belicht. Wij presenteren vervolgens het *event semantics* systeem van Katz (2003) en Kratzer (1998), dat de basis vormt voor een van de kernhypotheses van dit proefschrift.

Bij hoofdstuk 3 begint ons onderzoek naar temporele referentie in kale zinnen in het Mandarijn. Hier worden de temporele interpretaties van predicaten uit de verschillende Vendleriaanse aspectuele werkwoordsklassen bekeken, waarbij een contrast tussen statische en eventieve predicaten naar voren komt: alle statische predicaten kunnen namelijk zonder aspect verschijnen, hetgeen tot statische interpretaties leidt, terwijl eventieve predicaten overt aspect nodig hebben om episodische interpretaties te krijgen en kale eventieve predicaten alleen generieke interpretaties opleveren. Vervolgens wordt dit contrast verklaard door de hypothese dat statische en eventieve predicaten niet dezelfde denotaties hebben, een voorstel dat vooral geïnspireerd is door de klassieke Davidsoniaanse benadering van argumentstructuur: eventieve predicaten drukken eigenschappen van gebeurtenissen uit, terwijl statische predicaten de eigenschappen van tijden tot uitdrukking brengen. Daarna presenteert dit hoofdstuk een aantal argumenten tegen een aantal alternatieve analyses van de temporele interpretatie van kale predicaten in het Mandarijn en bespreekt het een aantal schijnbare tegenvoorbeelden tegen de hier gepresenteerde generalisaties.

Hoofdstuk 4 bekijkt zinnen met kale eventieve predicaten om te verklaren waarom ze altijd generieke interpretaties opleveren. Na een overzicht gegeven te hebben van verschillende theoretische benaderingen – kwantificationeel, aspectueel en modaal – van genericiteit, pleiten we voor een kwantificationele benadering van generieke zinnen, waarbij de generieke interpretatie van zinnen met kale eventieve predicaten uiteindelijk worden toegeschreven aan overte kwantificationele bijwoorden of een coverte Q.

Hoofdstuk 5 onderzoekt de toekomende-tijdsinterpretatie van kale zinnen. We stellen vast dat bijwoorden die de toekomende tijd uitdrukken, in tegenstelling tot bijwoorden die verleden en tegenwoordige tijd uitdrukken, niet zelf de temporele referentie van kale zinnen kunnen bepalen. Dit hoofdstuk pleit, mede op basis van allerlei empirisch materiaal, voor een analyse die ervan uitgaat dat het Mandarijn wel tempus kent, namelijk een NONFUT-tempus dat de temporele referentie van kale zinnen beperkt tot niet-toekomende tijden (zie Matthewson 2006). De opvallende gelijkenis tussen zinnen met een 'kaal futurum' in het Mandarijn en zgn. '*futurate'* zinnen in het Engels en het Frans leidt tot de conclusie dat de futurum-interpretaties zowel in talen met morfologisch tempus als in tempusloze talen voortkomen uit dezelfde semantische component, een modaal ingrediënt dat een *plan* impliceert. Het Mandarijn verschilt van het Engels/Frans doordat Mandarijnse zinnen met een kaal futurum geen tegenwoordige tijd uitdrukken, maar eerder een *niet-toekomstig* plan.

Hoofdstuk 6 sluit het proefschrift af met een recapitulatie van de generalisaties die in de vorige hoofdstukken aan de orde zijn geweest. Hierbij wordt geresumeerd hoe deze generalisaties worden opgenomen in de voorgestelde set van hypothesen. Vervolgens worden er nieuwe perspectieven voor toekomstig onderzoek voorgesteld waarbij we vooral aandacht vragen voor variatie in de temporele interpretatie in verschillende tempusloze talen en voor de variatie in ingebedde bijzinnen in het Mandarijn zelf. Deze inzichten gelden niet alleen voor het Mandarijn maar ook voor andere tempusloze talen en – nog belangrijker – zelfs voor tempusdragende talen, waardoor nieuwe empirische generalisaties, raadsels en vragen kunnen worden geformuleerd die in toekomstig theoretisch en typologisch onderzoek op empirische wijze getoetst en beantwoord kunnen worden.

Résumé en français

Cette thèse contribue aux recherches qui portent sur le temps et les éventualités à travers les langues. Nous explorons les interprétations temporelles des prédicats dits « nus », autrement dit, les prédicats sans marquage aspectuel ou temporel, en chinois mandarin.

I. Les motivations de cette étude

Traditionnellement considéré comme une langue sans temps (Li & Thompson 1981, Gōng 1991, Klein, Li & Hendriks 2000, Mei 2002 et Lin 2006), le mandarin ne dispose pas de morphèmes temporels explicites tels que ceux que l'on trouve dans des langues avec un temps morphologique, comme le français et l'anglais.

Le contraste entre langues avec *versus* sans temps grammatical est illustré en (1) et (2). (1a) est une phrase au temps présent en français qui décrit un état (Lily ETRE HEURESUSE) présent ; autrement dit, un était (le bonheur de Lily) qui doit être vrai au moment d'énonciation (ME). En revanche, (1b), une phrase au temps passé, décrit un état passé : le bonheur de Lily (l'état Lily ETRE HEURESUSE) est vrai à un moment qui précède le ME (plus précisément, le jour avant celui du ME).

(1) a. Lily *est* très heureuse.

b. Lily *était* très heureuse hier.

La différence morphologique que l'on trouve entre (1a) et (1b) en ce qui concerne le temps verbal est perdu en mandarin : le bonheur de Lili, qu'il soit actuel ((2a)) ou passé ((2b)), est exprimé par des énoncés qui ne contiennent aucun marqueur temporel explicite, *Lìli hěn gāoxìng* 'Lili très heureux'.

(2) a. Lìli hěn gāoxìng.
Lili très heureux
'Lili est très heureuse.'

b. Zuótiān Lìli hěn gāoxìng.
hier Lili très heureux
'Lili était très heureuse hier'.

Quoique ne disposant pas de marqueurs temporels explicites, le système grammatical du mandarin dispose de marqueurs aspectuels variés, qui fournissent de l'information sur la perspective de l'éventualité (*état* ou *événement*, cf. Bach 1981) décrite par un prédicat.

Considérez (3). (3a) et (3b) contiennent le même prédicat *kàn zhèi-běn xiǎoshuō* "lire ce roman", accompagné de marqueurs d'aspect différents, et donnent des interprétations aspectuelles différentes. Avec le marqueur d'aspect perfectif *le*, (3a) décrit un événement de lecture antérieur par rapport au ME, tandis qu'avec le marqueur d'aspect progressif *zhèngzài*, (3b) décrit un événement simultané par rapport au ME.

(3) a. Wǒ shàng-zhōu kàn *le* zhèi-běn xiǎoshuō.
1SG supérieur-semaine lire PERF ce-CL roman
'J'ai lu ce roman la semaine dernière.'

b. Wǒ shàng-zhōu *zhèngzài* kàn zhèi-běn xiǎoshuō.
1SG supérieur-semaine PROG lire ce-CL roman
'Je lisais ce roman la semaine dernière.'

Dans la littérature, l'interprétation temporelle des énoncés avec des marqueurs aspectuels explicites en Mandarin a fait l'objet de nombreuses études. Des chercheurs tels que Chao (1968), Li & Thompson (1981), Smith (1991), Klein, Li, & Hendriks (2000) and Lin (2006), entre autres, se sont penchés sur la distribution des marqueurs d'aspect (le perfectif *le*, le progressif *(zhèng)zài*, le duratif *zhe* et le marqueur d'expérience *guo*). En revanche, les recherches sur l'interprétation temporelle des énoncés sans marquage aspectuel (verbal ou propositionnel), sont, elles, relativement sous-représentées (Smith & Erbaugh 2005, Lin 2006 and Klein & Li 2002).

Les études précédentes ont manifestement accordé une importance prépondérante aux marqueurs aspectuels, au détriment des prédicats nus (PNs), sans doute de par la présence prédominante de ces morphèmes dans les énoncés en mandarin et le rôle important qu'ils jouent dans l'interprétation temporelle / aspectuelle de ces

énoncés. Certaines études ont néanmoins souligné l'agrammaticalité des énoncés sans aucun marquage aspectuel. Tang & Lee (2000) constatent un effet d'incomplétude (*incompleteness effect*) des énoncés à PNs. Tsai (2008) montre en outre que ces effets d'incomplétude peuvent être éliminés par divers changements structuraux, tels que la coordination, illustrée en (4a-b).

(4) a. *Akiù ná shū.
Akiu prendre livre

b. Akiù ná shū, wǒ ná qīkān
Akiu prendre livre 1SG prendre revue
'Akiu prend des livres, et moi, des revues.'

La présente étude montre comment une enquête minutieuse de l'interprétation temporelle des phrases sans aspect morphologique explicite peut mener à de nouvelles généralisations perspicaces sur la référence temporelle en mandarin. Une des hypothèses avancées est que le contraste constaté entre prédicats statifs et événementiels dans l'interprétation temporelle des énoncés est dû à la différence de structure argumentale entre statifs et événementiels, et que l'aspect doit être, par ailleurs, explicitement marqué dans les propositions indépendantes en mandarin.

Notez que toutes les langues sans temps grammatical ne marquent pas explicitement l'aspect dans les énoncés ayant une lecture épisodique. En créoles capverdien et haïtien, par exemple, les PNs événementiels permettent une lecture du passé ((5a-b)), tandis qu'en st'át'imcets (aussi connu sous le nom de « lillooet salishéen ») et sk̲wx̲wú7mesh, ils permettent non seulement une lecture de passé mais aussi une lecture de présent ((6a-b)).

(5) a. Djon kanta.
Djon chante
'Djon a chanté.'

Créole capverdien (Pratas & Hyams 2010:379)

b. Pyè vann bèf yo.
Pyè vendre bœuf DET
'Pyè a vendu le bœuf.'

Créole haïtien (Déchaine 1991:37)

(6) a. sáy'sez'-lhkan.
joue-1SG.SUJ
'J'ai joué.' / 'Je joue (je suis en train de jouer).'

St'át'imcets (Matthewson 2006:676)

b. chen xay-m.
1SUJ.SG rire-INTR
'J'ai ri.' / 'Je ris.'

Sḵwx̱wú7mesh (Bar-el 2005:123)

Ce qui distingue les langues citées en (5) et (6) du mandarin, c'est qu'elles ont un système qui permet aux PNs événementiels de former des phrases licites sous une lecture épisodique. Alors qu'en mandarin, les phrases comme (7a) and (7b) sont mal formées en l'absence de marquage aspectuel. La référence temporelle des PNs événementiels *dǎo* 'tomber' ou encore *huà yì-fú huàr* 'dessiner un dessin' ne peut pas être fixée par un adverbe temporel seul. Un aspect explicite est nécessaire.

(7) a. Shàng-zhōu nèi-kē shù dǎo *(le).
supérireur-semaine ce-CL arbre tomber PERF
'Cet arbre-là est tombé la semaine dernière.'

b. Wǒ jiàndào Lìchuān de shíhou, tā
1SG voir Lichuan DE moment 3SG
*(zhèngzài) huà yì-fú huàr.
PROG dessiner un-CL dessin.
'Quand j'ai vu Lichuan, elle dessinait un dessin.'

Remarquez que (7a) and (7b) sont mal formées en l'absence d'aspect explicite, contrairement à (2a) et (2b), qui sont parfaitement grammaticales sans aspect. Une analyse de l'interprétation temporelle en mandarin devrait être en mesure d'expliquer le contraste entre (7) et (2) ; en d'autres termes, d'expliquer l'agrammaticalité de (7a, b) en l'absence d'aspect et la grammaticalité des phrases comme (2a, b), ainsi que la dérivation temporelle de l'interprétation de ces énoncés. Bien que l'agrammaticalité des phrases comme (7a, b) soit observée et étudiée par des chercheurs comme Tang & Lee (2000) et Tsai (2008), le contraste entre les propositions nues qui sont mal formées comme (7) et celles qui sont bien formées comme (2) n'a jamais fait l'objet d'études antérieures à notre connaissance.

De notre point de vue, la contribution essentielle et originale de cette thèse est qu'elle constitue la première étude systématique et analyse théorique détaillée des interprétations temporelles des propositions indépendantes à PNs en mandarin.

Concrètement, nous étudions dans cette thèse l'interprétation des PNs dans des propositions indépendantes. Nous montrons que:

i. Les propositions indépendantes avec des PNs statifs ont une lecture stative et ceux avec des PNs événementiels ont une lecture générique ;

ii. Tous les prédicats statifs peuvent apparaître sans aspect.

iii. La lecture épisodique des phrases avec des prédicats événementiels n'est possible qu'en présence d'un aspect grammatical ; les adverbes temporels ne fixent pas par eux-mêmes le temps de référence.

Pour rendre compte de ces observations que l'on trouve déjà dans la littérature sous une forme ou une autre (Klein et al. 2000, Tang & Lee 2000 et Tsai 2008), les hypothèses suivantes sont avancées :

H1. Les PNs statifs et événementiels sont de types sémantiques différents (Davidson 1967, Katz 1995, 2003 et Kratzer 1998). Les PNs statifs, étant des propriétés de temps, peuvent se combiner directement avec un intervalle de temps, tandis que les PNs événementiels, étant des propriétés d'événements, se combinent avec un intervalle de temps par l'intermédiaire d'un aspect ou d'un opérateur quantificationnel Q.

H2. L'aspect doit être explicitement marqué en mandarin.

Une autre question très importante et qui a fait débats dans la littérature est celle de comment dériver l'interprétation temporelle d'énoncés avec des prédicats sans aucun marqueur d'aspect. Smith & Erbaugh (2005), Smith (2008) et Lin (2006) représentent le courant le plus populaire sur le sujet. Ils attribuent l'interprétation temporelle des énoncés avec des PNs à l'aspect lexical (*l'Aktionsart*) du prédicat et à la *télicité* associée aux différentes classes Vendleriennes (Vendler 1967). Ainsi les états et les activités, étant des prédicats *atéliques*, auraient une lecture du présent par défaut. Les accomplissements et les achèvements, étant des prédicats *téliques*, auraient une lecture du

passé par défaut. Leurs hypothèses s'inspirent de l'analyse de Bohnemeyer et Swift (2004), analyse très courue dans la littérature sur l'interprétation temporelle des phrases non marquées pour l'aspect. Cependant, leurs arguments soulèvent des problèmes empiriques que nous explicitons au Chapitre 3.

II. Langues sans *vs*. avec temps

Une des questions qui a suscité de vives polémiques dans la littérature sur les langues sans temps grammatical est de savoir si une langue sans morphologie temporelle explicite peut également avoir des « temps ». Le désaccord des chercheurs sur cette question est dû, du moins partiellement, aux définitions du « temps ».

Le critère le plus classique permettant de juger si une langue a des temps morphologiques est de voir si son système grammatical contient des morphèmes de temps explicites, qui ordonne sur l'axe temporel le Temps de Référence (TR)[70] d'une éventualité par rapport au ME (Reichenbach 1947, Klein 1994). C'est le point de vue présenté dans la première section. Le temps ainsi défini correspond au *temps morphologique*.

Ainsi la langue anglaise a un morphème de temps passé *–ed* ; et le coréen, lui, a un morphème de temps présent *–nun*. Conformément à la définition classique du « temps » grammatical, le coréen et l'anglais (et probablement toutes les langues indo-européennes) seraient des langues à temps, à l'opposé du mandarin, du capverdien, du haïtien, ou encore des langues salishéenes, considérés comme des langues sans temps.

Mise à part la définition de « temps » basée sur les morphèmes temporels explicites, il existe d'autres conceptions du temps telles que le *temps syntaxique* et le *temps sémantique*. Ces deux notions, dont les définitions sont données ci-dessous, sont étroitement liées à, mais très différentes du *temps morphologique*. (Voir Chapitre 5)

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[70] La notion de « temps de référence » (*Reference time* en anglais), introduite par Reichenbach (1947), se réfère à un intervalle de temps sur lequel énoncé fait des assertions. Pour plus de détails, voir le Chapitre 2, Section 2.2.3.

Temps syntaxique : une langue a un temps syntaxique, si elle a une projection temporelle (TP) dans la syntaxe qui sert à localiser temporellement des éventualités par rapport au ME. Par conséquent, une langue n'a pas de temps syntaxique si elle n'a pas de projection syntaxique de TP.

Temps sémantique : une langue a un temps sémantique, si elle a un morphème (soit un X°, par opposition à une projection maximale XP) introduisant un élément qui ordonne sémantiquement le TR des éventualités et le ME. Par conséquent, une langue n'a pas de temps sémantique si cet élément, sujet à des conditions indexicales, est absent. (cf. Deal 2010:1).

Étant donné les définitions différentes du temps, le jugement sur l'existence ou l'absence du temps dans une langue donnée dépendent largement de la définition que l'on adopte. A travers les langues sans temps grammatical, la question d'adopter ou non une analyse postulant un temps syntaxique soulève de vives controverses.

Shaer (2003) et Bittner (2005) défendent une analyse « sans temps » pour le groenlandais de l'ouest (le *kalaallisut*), en faisant valoir que le groenlandais manque de nœud syntaxique pour le temps dans lequel l'ordre entre le TR et et le ME est codé. Tonhauser (2011) adopte une approche sans temps pour le Guarani du Paraguay. Lin (2006) présente des arguments contre l'idée de postuler une projection flexionnelle vide pour le mandarin. Pour ce dernier, il n'y a pas de projection TP en mandarin et l'interprétation temporelle est dérivée de l'aspect lexical par défaut du prédicat, en interaction avec l'aspect grammatical et des éléments pragmatiques.

Les chercheurs comme Matthewson (2006) et Sybesma (2007), au contraire, défendent une analyse « à temps » pour le st'át'imcets et le mandarin. Selon Matthewson (2006), le st'át'imcets a un temps implicite, qui restraint le TR d'un éventualité à des intervalles de temps non-futurs. Sybesma (2007) avance que le mandarin a une projection syntaxique temporelle T et que l'interprétation temporelle d'un énoncé en mandarin peut être manipulée seulement à l'aider des moyens linguistiques, et non pas par la pragmatique ou d'autre information extra-linguistique.

Enfin, cette étude met en avant des arguments à la fois pour un temps syntaxique, et pour un temps sémantique en mandarin. À la

lumière des lectures futures des phrases à prédicats nus, nous faisons l'hypothèse que le mandarin a un temps morphologique zéro, le NONFUT, qui localise le temps de référence des propositions indépendantes à des intervalles de temps non-futurs (Matthewson 2006). L'interprétation « future » des propositions sans marqueur, que ce soit aspectuel ou modal, met en jeu un élément modal implicite, c'est-à-dire un *plan*, ayant pour référence temporelle un intervalle de temps non-futur (Copley 2008b).

La thèse est organisée ainsi :

Le Chapitre 1 introduit les problématiques et les motivations de cette étude, en présentant un aperçu de la variation dans l'interprétation temporelle des prédicats nus attestée à travers les langues. Nous passons brièvement en revue les propositions avancées pour le mandarin, ainsi que pour les autres langues sans temps grammatical. Nous chercherons à comprendre et à clarifier ce que recouvre l'opposition entre configurations avec *versus* sans temps, aussi bien sur le plan théorique que sur le plan empirique, à partir de la perspective combinée de la morphologie, de la syntaxe et de la sémantique.

Le Chapitre 2 présente le cadre théorique sur le temps et l'aspect dans lequel sont développées les hypothèses avancées dans cette thèse en examinant brièvement deux approches de la sémantique du temps : la logique du temps (*tense logic*, terme emprunté de Prior (1957, 1967)) et l'approche référentielle du temps, tout en abordant des questions tels que la notion d'aspect grammatical *versus* lexical, ou encore les interactions entre le temps et l'aspect. Par ailleurs, nous présentons la sémantique des événements telle que développée notamment par Katz (2003) et Kratzer (1998), et sur laquelle se fonde l'hypothèse qui nous permet de rendre compte du contraste entre prédicats statifs et prédicats événementiels.

Le Chapitre 3 débute notre investigation de la référence temporelle des propositions sans aspect explicite en mandarin, en examinant l'interprétation temporelle des prédicats appartenant aux différentes classes aspectuelles Vendleriennes, révélant ainsi un contraste entre prédicats statifs et événementiels: alors que tous les prédicats statifs peuvent apparaître sans aspect et donner lieu à des lectures statives, les prédicats événementiels exigent un marqueur

d'aspect pour être interprétés comme des événements épisodiques, et les prédicats événementiels nus ne permettent que des lectures génériques. Ce contraste est alors expliquée par l'hypothèse selon laquelle les prédicats statifs et événementiels ont des dénotations différentes. Cette dernière proposition est largement inspirée par l'approche classique de Davidson (1967) de la structure argumentale des prédicats ('actions' *versus* 'faits' selon ses termes) : les prédicats événementiels sont des propriétés d'événements, tandis que les prédicats statifs sont des propriétés d'intervalles de temps. Ce chapitre présente des preuves contre les analyses alternatives de l'interprétation temporelle des PNs en mandarin et discute par ailleurs quelques contre-exemples (au moins en apparence) à l'analyse avancée ici en termes de structure argumentale.

Le Chapitre 4 examine les propositions avec des prédicats nus événementiels afin de comprendre pourquoi elles donnent toujours lieu à des lectures génériques. Après avoir présenté des approches théoriques de la généricité, *quantificationnelle*, *aspectuelle* et *modale*, nous donnons des arguments pour un traitement quantificationnel des propositions génériques, en attribuant la lecture générique des propositions nues à des adverbes de quantification qui sont morphologiquement réalisés, ou bien à un opérateur quantificationnel implicite.

Le Chapitre 5 explore les interprétations futures des propositions nues, en examinant notamment les interactions entre prédicats nus et adverbes temporels. Nous montrons que, contrairement aux adverbes de temps passé et présent, les adverbes de temps futur ne peuvent pas fixer la référence temporelle des propositions nues à eux seuls. Cette observation défie notre analyse initiale. Nous proposons alors une analyse temporelle pour le mandarin inspirée de celle avancée par Matthewson (2006), qui postule un morphème de temps implicite NONFUT, restreignant la référence temporelle de tout énoncé sans marqueur explicite à des intervalles de temps non-futurs. Par ailleurs, nous soulignons une similarité frappante entre les propositions nues ayant une lecture future en mandarin et les *futurates* (propositions au temps présent mais donnant lieu à une lecture future) en français et en anglais. Cette observation nous amène à conclure que la lecture future des propositions sans morphème de temps futur ou modal à travers les langues (que ce soit les langues sans ou à temps morphologique

explicite), résulte d'une même composante sémantique : un modal qui implique un *plan*. Le mandarin se distingue du français et de l'anglais par l'ancrage temporel du *plan* : les propositions futures nues en mandarin affirment non pas un plan *présent*, mais un plan *non-futur*.

Le Chapitre 6 conclut la thèse en récapitulant les généralisations découvertes sur la base des données présentées dans les chapitres précédents. Il montre comment l'ensemble des hypothèses avancées dans cette étude permet de rendre compte des généralisations mises en avant. Nous proposons alors de nouvelles pistes de réflexion pour les recherches futures, en soulignant notamment la variation dans l'interprétation temporelle aussi bien à travers les langues sans temps grammatical, qu'à travers les propositions subordonnées en mandarin. Ces observations vont au-delà du mandarin et concernent également d'autres langues sans temps grammatical, voire même des langues à temps grammatical, soulevant ainsi de nouvelles généralisations empiriques et de nouvelles problématiques pour la recherche future sur le plan théorique et typologique.

Curriculum Vitae

Hongyuan Sun was born in 1980, in Shenyang, China. She earned a BA degree in French from Dalian University of Foreign Languages in 2002, and an MA degree in French as a Foreign Language from the University of Nantes in 2006. In 2008, she completed an MA degree at the University of Nantes in Linguistics and was awarded a Research Grant for doctoral studies by the French Ministry of Education and Research. From 2008 to 2014, she was a Teaching-Assistant at the Linguistics Department of the University of Nantes. She is an Assistant Lecturer in Chinese at the Department of Applied Foreign Languages at the University of Picardie Jules-Verne.