# Selectional restrictions of tenses and temporal reference of Chinese bare sentences

## Jo-wang Lin

*Department of Foreign Languages and Literatures, National Chiao Tung University,*
*1001 Tahsueh Road, Hsinchu 30050, Taiwan*

## Abstract

This paper discusses temporal reference of Chinese bare sentences without any time adverb or tense-like marker. We argue that temporal reference of such sentences can be resolved by selectional restrictions of two empty tenses, i.e., covert present tense and covert past tense. We show that while covert present tense must select a homogeneous situation as its complement, covert past tense must select a heterogeneous situation as its complement. We also argue that covert tenses must be distinguished from empty tenses that agree with time adverbs, because the latter do not have selectional restrictions.
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## 1. Introduction

A great difference between Mandarin Chinese and the Indo-European languages lies in grammaticalization of tense morphology. To express the location of an event or state in time axis, the Indo-European languages often make use of verbal inflections. For example, English uses the verbal suffix -ed to express past tense and -e(s) to indicate present tense. In comparison, Chinese does not have verbal inflections corresponding to English -ed and -e(s). In other words, tense morphology in Mandarin Chinese is not grammaticalized. If temporal reference in Mandarin Chinese is not indicated by verbal morphology, how is it determined? A common assumption is

*E-mail address:* jowang@cc.nctu.edu.tw (J. Lin).

that Mandarin Chinese expresses its temporal reference by temporal adverbs such as <u>zuotian</u> 'yesterday', <u>ming nian</u> 'next year' or by aspectual markers such as <u>le</u> and <u>guo</u>, or by the context in which a given sentence is uttered. There is no doubt that time adverbs, aspectual markers and the context of utterance play a very important role in resolving temporal reference of Chinese sentences. However, if we carefully look at the data, we will find that a large number of Chinese sentences contain neither time adverbs nor aspectual markers. Nor is it necessary to resort to the context of utterance to determine their temporal reference. For example, independently of any context, the sentences in (1) can be easily construed as present tense sentences and those in (2) as past tense sentences.

(1) a. Wo shi xuesheng
       I     be student
       'I am a student.'
   b. Ta hen chengshi
       he very honest
       'He is very honest.'
   c. Wo xiangxin ta hui   lai
       I   believe   he will come
       'I believe he will come.'
(2) a. Ta song wo yi ben shu
       he give me one CL book
       'He gave me a book.'
   b. Ta ma wo bendan
       he call me idiot
       'He called me an idiot.'
   c. Ta quan   wo xuan   lingwai   yi ge   timu
       he advise me choose another one CL topic
       'He advised me to choose another topic.'

   In this paper, we will refer to sentences like those in (1) as covert present tense sentences and sentences like those in (2) as covert past tense sentences. We will use the cover term 'bare sentences' to refer to sentences with a covert tense. Bare sentences do not contain a time adverb or tense-like element such as <u>le</u> and <u>guo</u>, which provide important information that helps resolve temporal reference of the sentence. We will come back to the temporal semantics of <u>le</u> and <u>guo</u> later.
   The use of covert tenses is not only a major characteristic of Mandarin Chinese but also a typological distinguishing feature between the Chinese dialects and the Indo-European languages. It is a pity, however, that previous studies of temporal reference in the Chinese dialects have paid little attention to this phenomenon, let alone account for how covert tenses are interpreted. The major purpose of this paper is to fill this gap by proposing a plausible theory that may systematically explain when a covert tense gets which interpretation. Our theory mainly consists of two hypotheses:

(A) Covert present tense must select a homogeneous situation as its complement.
(B) Covert past tense must select a heterogeneous (quantized) situation as its complement.

In the text, we will provide more linguistic facts to support the above two hypotheses. We will also discuss other relevant tense phenomena, showing that there are two kinds of empty tenses in Chinese, one being covert tenses, which are subject to selectional restrictions, and the other being agreement tenses, which are not subject to selectional restrictions.

This paper is organized as follows. After explaining what tenses mean in Section 2, we will in Section 3 discuss the different sentence patterns that manifest covert present and covert past tense. Then in Section 4, we will propose a theory that may account for the interpretations of covert tenses. In Section 5, we will extend our analysis to temporal reference of bare sentences with a de-complement. Section 6 will examine issues related to future tense. Section 7 will focus on time adverbs and their relation to tenses as well as the differences between covert tenses and agreement tenses. In Section 8, we will make some comments on Smith and Erbaugh's recent analysis about temporal information of Chinese sentences. Finally Section 9 is a conclusion of this article.

## 2. The meaning of tenses

Traditionally, tenses are understood as the location of an event or state in time axis relative to a reference time, which is usually the speech time. When an event or state takes place or holds before the speech time, the tense is past tense; when the situation is reversed, the tense is a future tense; when a process or state overlaps with the speech time, the tense is a present tense. It is this sense of absolute tense that we mean when we say that a covert tense is a present or past tense. However, tense can also be relative rather than absolute, when the reference time is not necessarily the speech time (Comrie, 1985).

## 3. Sentence patterns of covert tenses

In this section, we will discuss some typical sentence types that manifest covert present and past tenses.

### 3.1. Covert present tense

The most typical bare sentences manifesting covert present tense are those that contain a stative adjective, verb or modal auxiliary.

(3) Stative Adjectives
   a. Ta hen congming
     he very clever
     'He is very clever.'

   b. Wo hen gaoxing  ni    lai
     I   very happy      you come
     'I am very happy that you come.'
   c. Ta bi   ni   gao
     he than you tall
     'He is taller than you.'

(4) Stative Verbs
   a. Wo xiangxin ni
     I   believe   you
     'I   believe you.'
   b. Ta renwei ni   cuo      le
     he think    you wrong ASP
     'He thinks that you are wrong.'
   c. Zhe ge pijia  shuyu    wo-de
     this CL purse belong   me-DE
     'This purse belongs to me.'

(5) Stative Modal Auxiliaries/Verbs
   a. Ta hui xie   zi
     he can write character
     'He can write characters.'
   b. Ni   yinggai bang ta
     you should   help him
     'You should help him.'
   c. Ni   chezi keyi ting zai zheli
     you car    may stop in here
     'You may stop your car here.'

A second type of bare sentence that has covert present tense interpretation is generic or habitual sentences.

(6) a. Diqiu rao taiyang xuanzhan
     earth turn sun     around
     'The earth turns around the sun.'
   b. Ni   da   lanqiu    ma?
     you play basketball Q
     'Do you play basketball?'
   c. Ta zi          xie   de hen   piaoliang
     he character write DE very beautiful
     'He writes characters beautifully.'

A third type of bare sentence is those sentences containing an activity VP and a locative PP headed by the preposition <u>zai</u> 'in', as is illustrated in (7).

(7)  Ta zai fangjian du   shu
     he in   room    study book
     'He is studying in his room.'

The interpretation of this type of sentence is completely identical to that of a progressive sentence.

Finally, sentences with the progressive marker <u>zai</u> or the durative (continuative) marker <u>zhe</u> may also get the covert present tense reading.

(8) a. Ta zai   xi   zao
       he Prog take bath
       'He is taking a bath.'
    b. Ta chuan-zhe yi-jian xin   waitao
       he wear-ASP one-CL new coat
       'He wears a new coat.'

Some remarks are in order to clarify why sentences with the progressive marker <u>zai</u> and the durative marker <u>zhe</u> are bare sentences. In this paper, we contrast sentences containing <u>zai</u> and <u>zhe</u> with sentences containing the perfective maker <u>le</u> and the experiential marker <u>guo</u>. While the first type of sentence is analyzed as bare sentences, the second type of sentence is not. Thus, in contrast to (8a) and (8b), (9a) and (9b) are not treated as bare sentences, though <u>zai</u>, <u>zhe</u>, <u>le</u> and <u>guo</u> have all traditionally been assumed to be aspectual markers by Chinese linguists.

(9) a. Ta mai-le     yi-ben shu
       he buy-ASP one-CL book
       'He (has) bought a book.'
    b. Ta chi-guo maidanglao hanbao
       he eat-ASP McDonald hamburger
       'He has had an experience of eating a McDonald hamburger.'

Although <u>le</u>, <u>guo</u>, <u>zai</u> and <u>zhe</u> have all traditionally been assumed to be aspectual markers, they are different in that <u>zai</u> and <u>zhe</u> are pure aspectual markers but <u>le</u> and <u>guo</u> involve not only an aspectual meaning but also contribute to temporal location of the eventuality that they modify. In fact, <u>le</u> and <u>guo</u> are sometimes treated as a tense-like element—more precisely, a relative past tense marker (e.g. Shi,1990; Ross, 1995; Zhang, 1998a, b; Lin, 2000). The claim that <u>zai</u> and <u>zhe</u> do not make a contribution to the temporal location of an eventuality but <u>le</u> and <u>guo</u> do is supported by the fact that the former are compatible with time adverbs indicating past, present or future time but the latter are more restricted in their co-occurrence with time

adverbs or tense-like elements such as <u>hui</u> 'will'. This difference can be illustrated by the contrast between the following two sets of examples.


(10) a. Zaoshang liu dian   de-shihou, wo hai zai   shuijiao
         morning six o'clock when        I    still Prog sleep
         'I was still sleeping at six o'clock this morning.'
     b. Ta xianzai zai   shuijiao
         he now    Prog sleep
         'He is sleeping now.'
     c. Xiawu      san dian,     wo keneng  hai zai      gongzuo
         afternoon three o'clock I   probably still Prog work
         'I will probably still be working at three o'clock this afternoon.'
     d. Ta zuotian   chuan-zhe   yi-jian xin   yifu (qu canjia wuhui)
         he yesterday wear-DUR   one-CL new dress go attend party
         'He wore a new dress yesterday (to attend a party).'
     e. Ta xianzai hai baochi-zhe   mei tian zuo yundong de xiguan
         he now    still keep-DUR   every day   do exercise DE habit
         'He now still keeps the habit of doing exercises every day.'
     f. Wo mingtian hui   dai-zhe   wo de   xiaohai yiqi   qu
         I tomorrow will bring-DUR I   DE child   together go
         'Tomorrow I will bring my child to go together.'
(11) a. Ta zuotian mai-le   yi ben   xin shu
         he yesterday buy-PERF one-CL new book
         'He bought a new book yesterday.'
     b. Wo xianzai zu-le   yi-jian gongyu,  (gen pengyou yiqi   zhu)
         I   now   rent-PERF one-CL apartment with friend   together live
         'I now have rented an apartment (and lived together with a friend).'
     c. *Wo mingtian   hui mai-le   yi-ben xin shu
         I   tomorrow will buy-ASP one-CL new book
         'I will have bought a new book tomorrow.'
     d. Ta shang-ge yue     qu-guo   meiguo
         he last-CL   month go-EXP America
         'He went to America last month.'
     e. *Ta xianzai zu-guo     yi-jian gongyu
         he now    rent-EXP one-CL apartment
         'He now has rented an apartment.'
     f. *Ta ming nian hui qu-guo   meiguo
         he next year will go-EXP America
         'He will have been to America next year.'


   The examples in (10) clearly show that the only component of meaning of <u>zai</u> and <u>zhe</u> is to convey the progressiveness or continuation of a durative situation. They say nothing about the temporal location of the situation. Thus, they are able to

occur with a time adverb with any time specification. So, sentences with zai and zhe are treated as bare sentences.

In contrast, the examples in (11) show that le and guo are more inclined to occur with a time adverb indicating a past time location.[1] This is quite evident for guo, as the ungrammaticality of (11e) and (11f) indicate. As for le, although it seems to have a present tense interpretation in some context as in (11b), the initial subinterval of the situation must precede the speech time in order for the sentence to be true as Lin (2000) has argued. Thus, the meaning of le in (11b) still involves some kind of past. We agree with this view. In fact, Shi (1990), Ross (1995) and Lin (2000, in press) have proposed that le expresses relative anteriority of a situation, though their details differ. The view that le is tense-sensitive is further supported by the fact that future time adverbs are not allowed in locative inversion sentences, though it has been sometimes claimed that le and zhe may alternate in such constructions, as a referee pointed out to us. Compare (12) with (13).

(12) a. Qiang shang gua-le        yi fu hua
        wall    on    hang-PERF one CL painting
        'On the wall hangs a painting.'
    b. Qiang shang gua-zhe      yi    fu hua
        wall    on    hang-DUR one CL painting
        'On the wall hangs a painting.'
(13) a. *Mingtian   qiang shang (hui) gua-le        yi    fu hua
        tomorrow   wall   on      will hang-PERF one CL painting
        'On the wall hangs a painting tomorrow.'
    b. Mingtian qiang shang hui   gua-zhe   yi   fu hua

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[1] Guo and le may actually occur in a future context, but it must be embedded to a subordinate clause as the examples in (i) and (ii) show.

(i)  Deng ni   ting-guo   ta tan   gangqin yihou, ni   jiu   hui zhidao ta de   jiqiao
     wait   you hear-EXP he play piano   after   you then will know he DE skill
     you   duo hao
     have how good
     'After you have heard him play piano, you will know how good his skill is.'
(ii) Deng ni   bi-le-ye yihou,     wo hui mai yi-bu   che gei ni
     wait you graduate-PERF after I will buy one-CL car for you
     'After you have graduated, I will buy a new car for you.'

These examples are accommodated under a relative past tense analysis proposed in Lin (2000). Also notice that le occurs with a future time adverb in contexts like the following:

(iii) Mingtian   zhege shihou   wo yinggai yijing likai-le   nanjing
      tomorrow this   moment    I should already leave-PERF Nanjing
      'I should have already left Nanjing by this moment tomorrow.'

However, in such examples, the future time adverb specifies a reference time rather than an event time. For a detailed analysis of why le is allowed in (iii), see Lin (2000) for a detailed discussion.

    tomorrow wall   on   will hang-DUR one CL painting
    'On the wall will hang a painting tomorrow.'


   If the above discussion is correct, then the nature of le and guo are clearly different
from zai and zhe, because the meaning of le and guo involves not only an aspectual
component but also a component in locating a situation to the past relative to a
reference time (Lin, 2000). It is precisely for this reason that sentences containing le
and guo are excluded from the category of bare sentences. We refer readers to Lin
(in press) for a more detailed analysis of these four tense-aspectual elements.

## 3.2. Covert past tense

   As mentioned at the outset of this article, not every bare sentence in Chinese is
construed as a present tense sentence. Many bare sentences are interpreted as having
a past tense. We give more examples below.


(14)  Ta dapuo yi   ge hua   ping
      he break one CL flower vase
      'He broke a flower vase.'
(15)  Ta ba   wo gang-chu jiaoshi
      he BA me drive-out   classroom
      'He drove me out of the classroom.'
(16)  Ta zai Shanghai   chu-sheng
      he in   Shanghai give-birth
      'He was born in Shanghai.'
(17)  Wo zai lu   shang yujian yi   wei lao taitai,   shuo ta yishi pibao
      I   in   road on   meet   one CL old woman say   she lose purse
      'I met an old woman in a street, who said she lost her purse.'
(18)  Ta dakai shubao,   na-chu   yi   die chaopiao   gei wo kan
      he open schoolbag take-out one pile paper-money give me see
      'He opened the schoolbag and took out a pile of paper money, and showed it to me.'
(19)  Ta gen wo shuo Lisi bu qu
      he to   me say Lisi not go
      'He told me that Lisi wouldn't go.'
(20)  Ta qiangpuo wo xiu   ta-de ke
      he force   me take his   class
      'He forced me to take his class.'
(21)  Didi   bang wo xiang-dao yi-ge   hen hao   de fangfa
      brother help me think-of   one-CL very good DE method
      'Brother thought of a very good idea for me.'
(22)  Ta jujyue huida   wo-de wenti
      he refuse answer my   question
      'He refused to answer my question.'

The above examples show that both simplex and complex bare sentences may get a covert past tense interpretation. They also indicate that examples with a covert tense are not exceptions but are a quite general phenomenon. Therefore, systematic principles are needed to explain when a covert tense may obtain a past tense interpretation and when it may obtain a past tense interpretation.

Although covert tense is a common phenomenon in Mandarin Chinese, it is not true that every sentence may employ covert tense to express temporal reference. For example, all the sentences below are ungrammatical regardless of whether they are construed as having a present or past tense.

(23)  *Ta si
       he  die
(24)  *Wo gai   yi        dong fangzi
        I   build one CL   house
(25)  *Ta xiuli nabu che
        he fix   that  car
(26)  *Ta yang yi-tiao   yu
        he raise one-CL  fish
(27)  *Ta mai mianbao
        he buy bread

In order for the above sentences to express a certain tense, one has to add an aspectual marker or modal verb such as le, guo, zai or hui, bixu, etc.

(28) Ta si-le
     he die-PERF
     'He died.'
(29) Wo gai-le   yi   dong fangzi
     I build-PERF one CL   house
     'I built a house.'
(30) Ta xiuli-guo nabu che
     he fix-PERF    that car
     'He fixed that car before.'
(31) Ta yang-guo   yi-tiao yu
     he raise-PERF one-CL fish
     'He raised a fish before.'
(32) Ta zai   mai mianbao
     he PROG buy bread
     'He is buying bread.'

Honestly, we do not understand why sentences like (23)–(27) may not use covert tense to express temporal reference; nor is it clear to us when an aspectual marker is

obligatory or optional or even impossible. There are some discussions of this issue in the literature as in Zhang (1998a,b) and Lin (2002). Although this issue is related to the use of covert tenses, it is an issue independent of what covert tenses mean. So, we will not try to review Zhang's and Lin's discussions. Our focus will be on the question of what interpretation a covert tense should get when it is permitted.

## 4. Selectional restrictions of covert tenses

In the last section, we pointed out that there exist a large amount of sentences in Mandarin Chinese which use covert tenses to express temporal reference. For some of these sentences, the meaning of a covert tense is similar to that of English past tense marker—ed; for some other sentences, the meaning of a covert tense is very close to that of the English present tense marker—e(s). Given that a covert tense may be interpreted as past tense sometimes and as present tense some other times, the question arises as to when a covert tense should get which interpretation. Notice that bare sentences are generally not ambiguous. This indicates that the interpretation of a covert tense must be subject to some rules. The question is what the rules are.

To begin with, let us look at the bare sentences in (3)–(8) again. These examples all get a covert present tense meaning. What property do these sentences have in common? To answer this question, let us first explore some analyses of progressive and generic/habitual sentences in the literature. Many scholars have analyzed both types of sentences as stative sentences. For progressive sentences, we have at least Vlach (1981, 1993), Mufwene (1984), Saurer (1984), Dowty (1986), Langacker (1987), Mittwoch (1988), Parsons (1990); for generic/habitual sentences, we have at least Leech (1971), Mufwene (1984), Partee (1984), Chung and Timberlake (1985), Rot (1987), Smith (1991). If both progressive and generic/habitual sentences are stative sentences, the common property among (3)–(8) should be stativity. Is this conclusion correct? Unfortunately, not every linguist accepts the criteria of treating progressive and generic/habitual sentences as stative sentences. For example, Bertinetto (1994) has argued against analyzing progressive sentences as stative sentences and against treating all generic/habitual sentences as stative sentences. Glasbey (1998) also opposes analyzing progressive sentences as stative sentences. Bertinetto has carefully reviewed all arguments for treating progressive and generic/habitual sentences as stative sentences that are available in the literature and counter-argued against them. According to his discussions, among all pieces of evidence, there is probably only one piece of them that is more cogent. This piece of evidence is provided by Vlach (1981). He pointed out that in sentences like (33), there is one common property that progressive and typical stative sentences share but event sentences lack; namely, both (33a) and (33b) imply that the state has already obtained before my arrival, but (33c) does not have this implication.

(33) a. Max was here when I arrived.
    b. Max was running when I arrived.
    c. Max ran when I arrived.

Despite the above similarity between progressive and stative sentences, Bertinetto points out that there are also divergences between them. One of the four divergences discussed by him has to do with adverbs of "temporal graduality" such as <u>little by little</u>. According to him, while progressives are compatible with such adverbs, true statives are not, hence the contrast between (34a) and (34b) (Bertinetto, 1994: 404).

(34)  a. Little by little, the snow was covering the land.
      b. *Little by little, John was hungry.

Bertinetto takes the above contrast to indicate that progressives are dynamic development of situations and thus admit of adverbs indicating the gradual becoming of a telic event, whereas states are truly stative and hence do not admit of such adverbs.

We agree with Bertinetto that there is no adequate linguistic evidence in treating progressives as stative sentences. In fact, even in Mandarin Chinese, there exist significant divergences between progressives and true states. For example, the negation marker for true stative sentences is <u>bu</u>, but progressives use <u>mei</u> as the negation marker. Compare (35) and (36).

(35)  Ta bu xiangxin wo-de hua.
      he not believe   my   word
      'He does not believe me.'
(36)  Ta mei zai  du   shu
      he not PROG study book
      'He is not studying.'

Wang (1965) has proposed that <u>mei</u> is the negation counterpart of the perfective aspect marker <u>le</u>, because <u>mei</u> and <u>le</u> are in complementary distribution. This analysis, together with the fact that <u>le</u> can only appear with a dynamic situation leads to the conclusion that progressives must be dynamic rather than stative situations.[2]

As for generic or habitual sentences, Bertinetto has argued that only a small set of them can be regarded as truly statives—the set which he calls "attitudinals". The other habitual sentences should not be treated as such. On his analysis, when a habitual predicate characterizes an individual's permanent attribute, that habitual predicate is like an individual-level predicate and hence is a permanent stative. For

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[2] When <u>le</u> appears in a stative situation as in (i) below, the focus is on the change of state. Since a change of state can be regarded as an achievement, <u>le</u> in (i) still occurs with a dynamic situation.

(i) Ta pang-le
    he fat-PERF
    'He has become fat.'

example, when the sentence John sings is understood as referring to John's profession as a singer, the sentence counts as a true stative sentence. But pure habituals are eventive in character and therefore should be kept apart from true statives. He provides many arguments for doing so. First, while habitual sentences are compatible with adverbs of agentive control, true stative sentences are not. Second, it is possible to anchor a state of affairs to a single point, but this is impossible for habituals. Third, only habituals, but not staives, can serve as the complement of a perceptual verb. These divergences between habituals and true statives are illustrated below (Bertinetto, 1994: 408–409).

(37) a.  Whenever he comes, John willingly/deliberately washes the dishes, in order to appear cooperative [=habitual].
  b.  *John willingly/deliberately understand the matter [=stative].
(38) a.  *At the precise moment when John broke his leg, they used to eat dinner [=habitual].
  b.  At the precise moment when John broke his leg, Ann was at work [=stative].
(39) a.  The witness saw the accused bring a present every day to the victim [=habitual].
  b.  *The witness saw the accused hate the victim [=stative].

In view of the above evidence, it seems not conclusive to say that habitual sentences are all stative sentences.

If syntactic and semantic evidence is not reliable in picking out states, progressives and habituals as a natural class, is there any other concept that may accomplish this? Fortunately, Herweg's (1991) article provides such a clue. He has proposed to distinguish the conceptual categories of events and states in terms of their logical properties. He has argued that though their minimum duration can be specified by measure phrases, the eventualities falling under the conceptual category of states– including true states, progressives and generics/habituals, may not be counted and treated as individuals from a logical point of view, because they have a "uniform internal part structure" and form "a continuous collection of overlapping entities". He calls predicates in such eventualities homogeneous predicates. Homogeneous predicates exhibit the properties of distributivity and cumulativity. Distributivity means that if a predicate applies to an entity, it applies to the parts which form the entity as well. Cumulativity means that two neighboring entities satisfying the same predicate can be combined into a more complex entity which may satisfy the predicate again. Take the sentence Peter stood on the beach or Peter was walking along the shore, for example. If the eventuality in question lasts two hours, then all segments of the two-hour period are also times at which the eventuality holds. Conversely, if any two segments of that two-hour period satisfy the eventuality and are next to each other in time axis, then the combination of those two segments should satisfy the eventuality as well.

In contrast to states, events can be counted and hence are individuals from the logical point of view. He calls predicates in such eventuality descriptions heterogeneous

predicates. Such predicates have the property that when an entity satisfies them, any proper part of that entity may not satisfy them again. Take the sentence <u>Peter built a house</u> for example. The event of building a house consists of many constituent subevents such as laying bricks, roofing, and so on. But none of those constituent subevents is the same event referred to by <u>Peter built a house</u>.

In more formal terms, Herweg (1991: 983, 988) proposes that homogeneity is captured by homogeneous properties of times as stated in the two axioms in (40) and heterogeneity is captured by event-types as the axiom in (41) shows.

(40) Homogeneity
     For all state predicates S:
     a. distributivity:
        $\forall t_1 t_2 (S(t_1) \wedge t_2 \subseteq t_1 \rightarrow S(t_2))$
     b. cumulativity:
        $\forall t_1 t_2 (S(t_1) \wedge S(t_2) \rightarrow S(t_1 \oplus t_2))$, in case $t_1 \oplus t_2$ exists.
(41) Heterogeneity
     For all event-type predicates E:
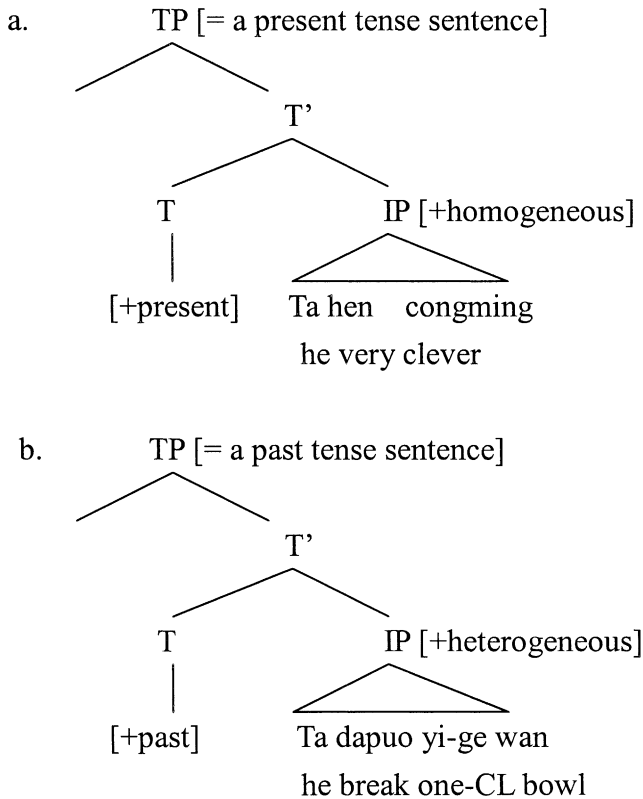        $\neg \exists e_1 e_2 (E(e_1) \wedge E(e_2) \wedge e_1 \subset e_2)$

Herweg's conceptual classification of eventualities in terms of logical properties of mereological structure avoids the problems of uncertainty that the previous approaches face. Also using mereological structures, de Swart (1998) has made a similar classification of eventuality descriptions, though he uses the term "quantized" instead of "heterogeneous". We will adopt their arguments for classifying states, progressives (process) and habituals as falling under the same conceptual category of eventuality.

After having discussed Herweg's conceptual distinction between states and events, we can now return to our original question regarding what property the examples in (3)–(8) have in common. If Herweg's analysis is correct, the answer should be obvious now. All the bare sentences with a present covert tense in (3)–(8) describe homogeneous situations. On the other hand, we also find that the bare sentences with a covert past tense in (14)–(22) all describe heterogeneous situations. On the basis of this, we propose the following selectional restrictions for covert tenses in Mandarin Chinese.

(42) a. Covert present tense must select a homogeneous situation as its complement.
     b. Covert past tense must select a heterogeneous (quantized) situation as its complement.

More precisely, we hypothesize that like English phrase structure, Chinese phrase structure also contains a tense phrase (TP) headed by tense, the difference being that

the former does not allow projections of covert tenses, whereas the latter does. Moreover, Chinese covert tenses have two kinds: covert present tense and covert past tense. These two different covert tenses impose a different requirement upon their complement as to situation types. To illustrate with two concrete examples, consider (43):

a.    TP [= a present tense sentence]

             T'

     T          IP [+homogeneous]

  [+present]    Ta hen   congming
                he very clever

b.    TP [= a past tense sentence]

             T'

     T          IP [+heterogeneous]

  [+past]    Ta dapuo yi-ge wan
            he break one-CL bowl

This explains why bare homogeneous sentences always get a present tense interpretation and bare heterogeneous sentences always get a past tense interpretation. On the other hand, if the selectional restriction of a covert tense is not met as in the configuration $[_{TP}[t'_{[+present]}[ip$ <u>ta dapuo yige wan</u>$]]$, the sentence will get no interpretation due to a feature clash.

It is worth pointing out here that selectional restrictions of tenses are not unique to Mandarin Chinese or the Chinese dialects but are a cross-linguistic phenomenon. For example, de Swart (1998) has shown that there are two past tenses in French, Passé Simple and Imparfait. The former selects an event as its complement, whereas

the latter selects a homogeneous state as its complement. In a similar vein, Schmitt (2001) has shown that English and Portuguese present tenses must select homogeneous situations as their complements, though with some minor parametric variation.

## 5. Temporal reference of bare sentences with a <u>de</u>-complement

### 5.1. Three types of predicative de-complements

In this section, we will discuss one more sentence type that makes use of covert tenses, i.e., constructions with the so-called predicative <u>de</u>-complement. We begin with a brief discussion of verb-predicative complement constructions. Traditionally, Chinese verb-predicative complement constructions are classified into two categories, depending upon whether the verb is immediately followed by the predicative complement as in (44a) or the verb is separated from the predicative complement by the marker <u>de</u> as in (44b).

(44) a.  Zhe jian jiaoshi   dasao ganjing le
         this CL classroom sweep clean   PERF
         'This classroom has been swept clean.'
     b.  Zhe jian jiaoshi   dasao de   hen ganjing
         this Cl classroom sweep DE very clean
         'This classroom was swept to the extent that it is very clean.'

Constructions with a predicative <u>de</u>-complement are further subdivided into several types. The first type is called potential <u>de</u>-complements, which are illustrated by (45). In such constructions, the marker <u>de</u> functions like an infix inserted to a verb–verb or verb–adjective compound and its meaning is very close to that of the English modal auxiliary <u>can</u> indicating ability. An important characteristic of potential <u>de</u>-complements is that their negative counterparts are formed by directly replacing the infix <u>de</u> with the negation marker <u>bu</u> as is shown by (45b).

(45) a.  Ta kan-de-dong   zhe ben shu
         he read-DE-understand this CL book
         'He can understand this book.'
     b.  Ta kan-bu-dong   zhe ben shu
         he read-DE-understand this CL book
         'He can not understand this book.'

Bare sentences with a potential <u>de</u>-complement always get a present tense interpretation.

A second type of de-complement is often referred to as resultative (and/or extent) de-complements, which are illustrated in (46). In this type of construction, the de-complement describes a resultative state ensuing from the action or state denoted by the main verb, i.e., the verb preceding de. Resultative de-complements do not always take the form of VP or AP but can be a full clause as is shown by (46f).

(46)  a.  Ta na   dong fangzi gai   de   hen piaoliang
          he that CL   house build DE very beautiful
          'He built that house such that it is very beautiful.'
      b.  Ta zhe jian yifu zuo de tai   da (le)
          he this CL dress do DE too big PERF
          'He made this dress such that it is too big.'
      c.  Xiaoming bian   de hen tiaopi
          Xiaoming change DE very naughty
          'Xiaoming has become very naughty.'
      d.  Ta gaoxing de shuo-bu-chu hua
          he happy    DE say-not-out word
          'He is so happy that he cannot say a word.'
      e.  Ta mang de lian chi   fan shijian dou mei you
          he busy DE even eat-meal time   all not have
          He is so busy that he even does not have time to eat
          his meal.'
      f.  Yu xia de wo fang-si   le
          rain fall DE I   bored-death PERF
          'The rain keeps falling so that I am bored to death.'
      g.  Ta ku de   wo hao xinteng
          he cry DE   I very heartbroken
          'He is crying to such an extent that I feel heartbroken.

Very interestingly, temporal reference of constructions with a resultative de-complement is closely related to the predicate type of the matrix VP. When the matrix VP is an accomplishment or achievement predicate, it gets a past tense interpretation as in (46a)–(46c). When the matrix predicate is a stative predicate, it obtains a present tense interpretation as in (46d) and (46e). Likewise, when the matrix predicate is an activity predicate, the sentence obtains a present tense interpretation as in (46f) and (46g). Some people may also get a past tense reading for (46f) and (46g).

A third type of de-complement is often referred to as descriptive de-complements, which are functionally very close to manner adjuncts. Temporal reference of constructions with a descriptive de-complement also exhibits very interesting properties. First consider (47a), in which a transitive verb is followed by a common noun. This sentence is three-way ambiguous between the generic, present progressive and past

tense readings.[3] The first reading corresponds to the bare plural translation of the bare noun object <u>gaozi</u> 'manuscript'. In the other two readings, the bare noun object is construed as a definite NP equivalent to English noun phrase <u>the manuscript</u>. If a bare noun object does not have a definite reading as in (47b), the sentence gets only the generic reading. When the predicate is intransitive and denotes an activity as in (47c), the sentence gets a present (progressive) tense reading. But when the intransitive predicate denotes an achievement as in (47d), the sentence gets a past tense reading. Transitive achievement verbs are like intransitive achievement verbs. Therefore (47e) has a past tense reading. Finally, (47f) shows that when the verb of the sentence is an accomplishment verb, the sentence may get a present progressive tense reading, in addition to the past tense reading.

(47) a. Ta gaozi jiao de hen man
　　　　he manuscript proofread DE very slowly
　　　　(i) 'He proofreads manuscripts very slowly.'
　　　　(ii) 'He is proofreading the manuscript and the
　　　　speed is very slow.'
　　　　(iii) 'He proofread the manuscript and the speech
　　　　was very slow.'
　　b. Ta hanyu shuo de hen liuli
　　　　he Chinese speak DE very fluently
　　　　'He speaks Chinese very fluently.'
　　c. Ta ku de hen shangxin
　　　　he cry DE very sad
　　　　'He is crying very sadly.'
　　d. Ta shu de hen can
　　　　he lose DE very miserably
　　　　'He lost miserably.'
　　e. Ta zhe fu fua wancheng de hen kuai
　　　　he this CL painting complete DE very fast
　　　　He finished this painting very fast.'
　　f. Ta zhe fu fua hua de hen/tai man
　　　　he this CL picture paint DE very/too slow
　　　　(i) 'He is painting this picture and the speed is
　　　　very slow.'
　　　　(ii) 'He painted the picture too slowly.'

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[3] The past tense reading might not be obvious for some speakers, but it is readily available in the following sentence.

(i)　　　Ni gaozi zenme jiao de zheme man? Jintian cai na gei wo
　　　　you manuscript how-come proofread DE this slow today until bring to me
　　　　'How come you proofread the manuscript so slowly that you did not give it to me until today?'

## 5.2. *An account for tense variability of constructions with a de-complement*

We have seen that bare sentences with a de-complement show variability with regard to their temporal reference. In this section, we will argue that such variability can be accounted for by selectional restrictions of covert tenses as proposed in (42).

First, consider potential de-complements. We assume that a resultative compound verb with the infix de or bu is specified with the feature [+stative] and hence bare sentences with a potential de-complement describe homogeneous situations. Consequently, they obtain a present tense interpretation by the selectional restriction of covert present tense stated in (42a).

Next, consider bare sentences with a resultative de-complement. When the matrix predicate, i.e., the predicate preceding the de-complement, is an accomplishment or achievement predicate, the dynamic event denoted by it must first culminate before the state denoted by the resultative de-complement obtains. Therefore the whole sentence must denote a heterogeneous event. It follows from the selectional restriction of covert past tense in (42b) that the examples in (46a)–(46c) should obtain a past tense reading. On the other hand, when a state or activity has caused some other resultative state to obtain, this does not mean that the original state or activity has ceased to obtain or is terminated in order to obtain the resultative state. Instead, the original state or activity can coexist with the resultative state. Let us refer to a state or activity coexisting with another resultative state as a macro-state or macro-activity. Like a state or activity, a macro-state or macro-activity is homogeneous by de Swart's criterion. Therefore, it is predicted by (42a) that the examples in (46d)–(46g) are construed as having a present tense.

As mentioned, some speakers said that they can get a past tense reading for (46d)–(46g). Our intuition is not very clear. For us, the most natural reading is the present tense reading. Suppose that (46d)–(46g) have a past tense reading. How can this reading be accommodated? Our idea is that the past tense reading arises because we are not looking at the macro-state or macro-activity but take the rise of the resultative state as a change from a simplex eventuality to a complex eventuality. Viewed this way, the sentences in (46d)–(46g) can be analyzed as heterogeneous as well. If this is correct, the two different tenses actually reflect different focuses on the eventuality on the part of the speaker.

The situation for bare sentences with a descriptive de-complement is somewhat similar to that for bare sentences with a resultative de-complement albeit with some more complexity. Consider (47b) and (47c) first. The predicates hanyu shuo de hen liuli 'speak Chinese very fluently' and ku de hen shangxin 'cry very sadly' are homogeneous predicates by de Swart's criterion. Thus, it is correctly predicted that both (47b) and (47c) have a present tense reading. When a person speaks a language fluently, he speaks it fluently all the time. Therefore, (47b) must have a generic rather than a progressive reading. In contrast, it is quite impossible to ascribe the property of crying sadly, a stage-level property, to a person permanently. This explains why (47c) has a present progressive reading.

(47d) and (47e) involve an achievement verb and hence denote heterogeneous telic events. Thus, by the selectional restriction of (42b), the two sentences in question obtain a past tense reading, which is correct.

In contrast to (47b)–(47e), temporal reference of (47f) is somewhat puzzling. As mentioned, this sentence has both a present progressive and past tense reading. The past tense reading is expected, because the predicate hua zhe fu fua 'paint the picture' is traditionally analyzed as a heterogeneous accomplishment predicate. Thus, by (42b), (47f) should get a past tense reading. But the present tense reading is surprising. (47a) poses a similar problem on the definite reading of the bare noun object. On the definite reading of the bare noun object gaozi 'manuscript', the predicate jiao gaozi 'proofread the manuscript' in (47a) should count as a heterogeneous accomplishment predicate. Therefore, the selectional restriction of covert past tense predicts that (47a) has a past tense reading, but it does not predict that it also has a present tense reading. Where does the present tense reading of (47a) and (47f) come from? To answer this question, we would like to first make a detour to discussions of situation types in the literature, in particular the distinction between activity and accomplishment.

It is now a well known fact that direct object may influence the aktionsart of a sentence. This is particularly true for accomplishment verbs, as Dowty has pointed out:

> Accomplishment verbs which take direct objects unexpectedly behave like activities if an indefinite plural direct object or a mass-noun direct object is substituted for the definite (or indefinite singular) one. (Dowty, 1979: 62)

Activities and accomplishments are traditionally distinguished by the type of time adverbials they take according to Vendler (1967). Activities may occur with durative adverbials like for an hour, whereas accomplishments take durative time adverbials like in an hour. This is illustrated by the following examples, where the symbol "#" indicates ungrammaticality on the intended reading.

(48)  a.  John wrote letters for an hour.
      b.  #John wrote letters in an hour.
(49)  a.  #John wrote a/the letter for an hour.
      b.  John wrote a/the letter in an hour.

The above contrast shows that combination of a definite or indefinite singular object NP with an accomplishment verb constitutes an accomplishment predicate, in contrast to bare plurals, which when combined with an accomplishment verb form an activity predicate.

Very interestingly, He (1992) has observed that the behavior of definite object NPs in Chinese seems to be different from that of English definite object NPs in that Chinese definite object NPs pattern with bare or mass nouns instead of with indefinite object NPs with a specified quantity. To show this, let us first see how time adverbials like in an hour and for an hour in English are expressed in Chinese and their interaction with different situation types. According to Tai (1984), He (1992)

and Kang (1999), completive time adverbials appear in a preverbal position in accomplishment situations and they are not used in activity situations, whereas durative time expressions indicating the duration of an activity appear in a post-verbal position. This is illustrated by the following examples adapted from He (1992).

(50) a. Ta yi  ge zhongtou du-le       liang ben shu
         he one CL hour   read-PERF two   CL book
         'He read two books in an hour.'
     b. *Ta du-le       yi  ge zhongtou liang ben shu
         he read-PERF one CL hour   two CL book
(51) a. *Ta yi   ge zhongtou du-(le)   shu
         he one CL hour   read-PERF book
     b. Ta du-le   yi   ge zhongtou (de) shu
         he read-PERF one CL hour   DE picture
         'He read books for an hour.'
(52) a. *Ta yi   ge zhongtou du-le   zhe ben shu
         he one CL hour   read-PERF that Cl   book
     b. Ta du-le   yi ge   zhongtou zhe ben shu
         he read-PERF one CL hour   this CL book
         'He read that book for an hour.'

As we can see from (52), an accomplishment verb with a definite direct object behaves like activities rather than accomplishments. From the above examples, He (1992) argues that quantified direct objects are goal-oriented, whereas definite direct objects may not be. This conclusion is further supported by the following sentences with frequency adverbs.

(53) a  Ta changchang du   shu
         he often          read book
         'He reads often.'
     b. Ta changchang du   nei (san) ben shu
         he often          read that three CL book
         'He reads that/those book(s) often.'
     c. *Ta changchang du yi/san ben shu
         he often          read one/three book   (He, 1992: 181)

According to He, for goal-oriented situations, once the goals have been attained, they cannot be repeated; but for non-goal-oriented activities, they can be repeated. The fact that (53b) is grammatical thus supports the position that an accomplishment verb with a definite direct object NP can be an activity.

Still, another piece of evidence for He's position is provided by Kang (1999). He has observed that while the perfective form of an accomplishment verb with a definite object NP allows a non-culminated reading, this cannot be the case for an indefinite object NP. Hence the contrast between (54) and (55).

(54) a. Wo xie-le        na   feng xin
        I   write-PERF that CL   letter
        'I wrote that letter.'
     b. ?Wo xie-le       na   feng xin,   keshi mei xie-wan
        I   write-PERF that CL   letter but   not write-finish
        'I wrote that letter, but did not finish it.'
     c. Na feng xin, wo xie-le,        keshi mei xie-wan
        that CL letter I write-PERF but   not write-finish
        'I wrote that letter, but did not finish it.'
(55) a. Wo xie-le         yi feng xin
        I   write-PERF one CL letter 'I wrote that letter.'
     b. *Wo xie-le        yi   feng xin,   keshi mei xie-wan
        I   write-PERF one CL   letter        not write-finish
        'I wrote a letter, but did not finish it.' (Kang, 1999: 45)

A similar conclusion can be reached from the examples below, which show that an accomplishment verb with a definite object NP can in fact be ambiguous between a culmination reading and an activity reading.

(56) a. Na feng xin, wo xie-le   yi-ge xiaoshi, keshi hai mei xie-wan
        that CL letter I write-PERF one-CL hour   but   yet not
        write-finish
        'I wrote that letter for an hour, but I have not finished it yet.'
     b. Na feng xin, wo xie-le   yi-ge   xiaoshi, cai xie-wan
        that CL letter I write-PERF one-CL hour   then write-finish
        'It took me an hour to finish writing that letter.'

Again, (56) supports He's view that an accomplishment verb with a definite object NP need not be goal-oriented even with a perfective aspect.

Returning to the question of why (47f) and (47a) have a present tense reading, we now have a possible answer to it. In (47f), the (preposed) object NP is a definite object NP rather than an indefinite object NP. Therefore, the sentence can be understood as an activity just like the sentences in (54c) and (56a). Consequently, by the selectional restriction of covert present tense, (47f) may get a present tense reading. (47a) is similar to (47f) except that the (preposed) object NP is a bare noun. As noted, bare nouns in Chinese can be understood as a

definite NP. Therefore, (47a) can be understood as an activity and gets a present tense reading.

## 5.3. Descriptive complements with a reduplicated adjective

We have seen above that the tense interpretation of a VP containing a descriptive complement may get a past, present or generic reading when the object NP is a bare noun. However, a referee has pointed out that the present and generic readings seem to disappear when the descriptive complement is made up of a reduplicated adjective, as the following examples indicate.

(57) a. Ta shuo de   mingmingbaibaide
   he say   DE clearly
   'He said it/expressed himself very clearly.'
  b. Ta ba hua   shuo de qingqingchuchude
   he BA word say   DE clear
   'He said/put it very clearly.'

On the other hand, both a past and present tense interpretation seem possible for (58), even though the complement also contains a reduplicated adjective.

(58)   Ta ba   beizi ju   de   gaogaode
   he BA glass raise DE high
   'He holds/held the glass high up.'

How are these facts to be accounted for?

To begin with, let us note that it is not true that verbs of saying with a reduplicated adjective always preclude a present and generic tense reading. For example, (59a) does have a generic tense reading and (59b) a present progressive reading.

(59) a. Ta hua   jiang de   jiejiebabade, ni   bu yao gen ta tan
   he word speak DE jabbering   you   with him talk
   'He speaks jabberingly. You don't talk with him.'
  b. Ni   hua ganma jiang   de jiejiebabade? haohaode jiang
   you word why   speak DE jabberingly   well   speak
   'Why are you speaking jabberingly? Speak it well.'

In fact, even for the verb <u>shuo</u> 'say', it is possible to get a generic reading when the descriptive complement is a reduplicated adjective. (60) is such an example.

(60) Ta de   yingwen shuo de   puopuolanlande, jingran   ye xiang qu
he DE English   speak   DE poorly   to one's surprise also want go
canjia bisai
attend contest
'He speaks English very poorly; yet he also wants to attend the contest.'

One more example with a generic reading is given below which contains a descriptive complement with a reduplicated adjective.

(61) Ta shu   dou du   de zizixixide
he book all   read DE careful
'He reads all books very carefully.'

So there is in fact no problem for a descriptive complement with a reduplicated adjective to get a present or generic tense reading. It must be something else that forces the referee's examples in (57) to only get a past tense reading. The problem is what that something is.

Honestly, we do not know exactly the answer but we speculate that the answer lies in the semantics of the reduplicated adjective mingmingbaibaide 'clear' and qin-qingchuchude 'clear'. Although these two reduplicated adjectives have been taken to be descriptive complements by the referee, it seems also possible to say that they have a resultative meaning (possibly simultaneously). Thus, (57) can be understood as 'He said it in a very clear way and as a result what he said is very clear.' In fact, qingchu 'clear' has been said to have both a resultative and descriptive meaning (e.g. Liu, 1992). Another point worth noting about (57) is that (57b) uses the BA-construction. This type of construction always get a past tense reading (when no overt time expression appears) whether or not the sentence contains a de-complement. The reason for this may be related to Liu's (1997) recent analysis of such constructions. She has suggested that a BA-construction is licensed only if the BA-sentence denotes a bounded situation. Because a BA-sentence is bounded, by the selectional restriction of covert past tense, (57b) must have a past tense reading. Perhaps the same account can be extended to (57a) if one assumes that this sentence contains an implicit BA–NP.

As for sentences like (58), which involve a positional verb, they can be explained as follows. For positional verbs like ju 'raise', zuo 'sit', tang 'lay', their semantics all involve an action and a resultative state and both are referred to by the same phonetic form. Thus, in a sense such verbs may be said to be ambiguous. If one understands the verb as a dynamic verb involving a change of state, then (58) represents a bounded heterogeneous situation and hence can be understood as a past tense sentence. On the other hand, if one understands the sentence as the resultative state, then (58) is a homogeneous situation and hence may obtain a present tense reading.

## 6. Future tense

In our above discussion, we have shown that covert tenses can be either present tense or past tense and have provided a theory for them. A question that remains unanswered is why a covert tense is never interpreted as a future tense.[4] This is because future tense in Mandarin Chinese must contain an expression indicating a future time as has already been pointed out by Zhang (1998a, b). The expression can be a modal auxiliary such as <u>hui</u> 'will', <u>jiang</u> 'will' or time adverbs such as <u>kuai</u> 'soon', <u>mingtian</u> 'tomorrow'. This is illustrated by the following examples.

(62)  a.  Ta hui   bang ni
          he will help you
          'He will help you.'
      b.  Ta jiang   shengren yuanzhang
          he be-going-to promote   dean
          'He is going to be promoted as the dean.'
(63)  a.  Ta kuai si   le
          he soon die PERF
          'He is going to die.'
      b.  Wo mingtian   qu Taibei
          I   tomorrow   go Taipei
          'I will go to Taipei tomorrow.'

We analyze modal auxiliaries such as <u>hui</u> 'will' and <u>jiang</u> 'will' as the head of Tense, though this claim is not absolutely necessary for us. As for time adverbs, we propose that they are specifiers of TP. Time adverbs bear a specific relation to the head of TP. Namely, they must agree with Tense in terms of time features. Therefore, if a sentence contains only time adverbs but no overt tense, we assume that an empty tense is in the structure. We will refer to the (empty) tense that agrees with a time adverb as (empty) agreement tense. Notice that the treatment of time adverbs as the specifier of TP is not novel. Alexiadou (1997, 2000) has already provided arguments for this analysis in other languages. She has offered data which have clearly shown that time adverbs in [SPEC,TP] agree with the head Tense.

Three questions with regard to the above discussion have been raised by one referee of this paper. He/she has pointed out that in some cases as in a conditional, an overt expression is not necessary in order to express a future tense as (64) illustrates.

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[4] By this claim, we are restricting ourselves to declarative clauses. Imperative sentences may be analyzed as having a future tense but this can be explained by the speech act. In this article, we will not discuss imperative sentences.

(64)  (Ruguo) ni   bu qu, wo ye   bu   qu
       if        you not go I   also not go
       'If you don't go, I won't go.'

Examples like (64) are not too serious a problem. It has been suggested in many places that when a conditional sentence does not contain an overt modal expression, it must contain an implicit one (Heim, 1982; von Fintel, 1994; among many others). Thus, sentences like (64) do contain a modal expression, though implicit, whose meaning explains why the sentence is understood as referring to a future time. From this example, we can conclude that for a Chinese sentence to express a future time reference, the sentence must contain something, be it overt or covert, that may indicate future time reference.

A second question raised by the referee is that time adverbs in Chinese have a very free distribution and this may pose a problem with the proposed spec-head agreement analysis. Consider (65), provided by the referee.

(65)  (Mingtian) ta (mingtian) yao        (mingtian) qu Taibei
       tomorrow he tomorrow want/will tomorrow go Taipei
       'He will go to Taipei tomorrow.'

We do not think that the free distribution of time adverbs is a real problem with the proposed spec-head agreement analysis. Let us assume that the second position for mingtian 'tomorrow' in (65) is the specifier position of TP (with AgrsP higher than TP). Then the first position of mingtian 'tomorrow' can be derived by topicalization. As for the third position of mingtian 'tomorrow', it can be explained away by assuming that modal verbs in Chinese are matrix verbs as Lin and Tang (1995) have argued. On this analysis, the third position of mingtian 'tomorrow' is in the specifier position of TP of the embedded clause.

Finally, the referee wonders why a future-oriented time adverb is not enough to make a sentence grammatical without a modal auxiliary in a focusing shi...de constructions, as (66) indicates.

(66)  Wo shi   *(hui) mingtian lai   ni   jia de
       I   SHI   will tomorrow come you home DE
       'I will for sure come to your place tomorrow.'

However, we do not think that the observation is correct. A future-oriented time adverb alone may make a shi...de construction grammatical. For example, the following sentences provided to me by my student Yaqi Zhang, are perfectly acceptable.

(67) a. Baoming   riqi shi xia   zhousan     jiezhi de
        enrollment date be next Wednesday end   DE
        'The deadline for enrollment will end on next Wednesday.'
     b. Xuenke         shi xia ge   yue   kaishi de
        class-selection be next CL month begin DE
        'Class selection will for sure begin next month.'

In fact, even (66) becomes much improved when <u>lai</u> 'come' is replaced with <u>qu</u> 'go' and is perfect when there is a contrast as is shown by (68).

(68)   Wo shi   mingtian   qu ni   jia   de,   bu shi houtian
       I   SHI tomorrow go you home DE not SHI the-day-after-tomorrow
       'I will for sure go to your place tomorrow, not the day after tomorrow.'

## 7. Differences between covert tenses and agreement tenses

We have hypothesized that if a time adverb appears in a sentence, that time adverb occupies the specifier position of TP and the head Tense agreeing with it is an agreement tense. Although an agreement tense can also be phonologically empty as a covert tense, there are reasons to believe that empty agreement tenses are not the same as covert tenses, because the former do not display properties of selectional restrictions. Consider the following sentences, which contain a time adverb but no overt modal or aspectual marker.

(69) a. Ta congqian hen   tiaopi
        he before       very naughty
        'He was very naughty before.'
     b. Wo mingtian   qu taibei
        I   tomorrow go Taipei
        'I will go to Taipei tomorrow.'

If the tense in (69a) were a covert tense, that covert tense would be construed as a present tense, because (69a) is a typical stative sentence. But then the temporal reference of this tense would conflict with the time denoted by the time adverb, making the sentence uninterpretable. On the other hand, we cannot assume that the empty tense in (69a) is a covert past tense, either, because a covert past tense selects a heterogeneous situation, not a homogeneous situation, as its complement.

A similar remark applies to (69b). No matter whether we assume that the tense is a covert present or past tense, a contradiction between the time adverb and the tense

is unavoidable. Examples like (69a) and (69b) indicate that agreement tenses are not the same as covert tenses and are not subject to selectional restrictions.

The view that agreement tenses do not have selectional restrictions gains further support from the following examples:

(70) a. Ta zuotian   hen   mang
      he yesterday very busy
      'He was very busy yesterday.'
   b. Ta xianzai hen mang
      he now      very busy
      'He is very busy now.'
   c. Wo mingtian   hen mang
      I     tomorrow very busy
      'I will be very busy tomorrow.'
(71) a. Wo ganggang qu ji   xin
      I just-now      go send letter
      'I went to send the letter just now.'
   b. Wo xianzai qu   ji   xin
      I   now   go send letter
      'I now go to send the letter.'
   c. Wo shi fenzhong hou   qu ji   xin
      I   ten minute   after   go send letter
      'I will go to send the letter in ten minutes.'

The predicates of the three examples in (70) are the same stative predicate <u>hen mang</u> 'very busy'; and the predicates of the three examples in (71) are the same eventive predicate <u>qu ji xin</u> 'go to send the letter'. However, rather than having a fixed temporal reference, the temporal reference of each of the above two sets of examples varies with the time adverb that the sentence contains. This clearly indicates that agreement tenses are compatible with both homogeneous and heterogeneous situations and their temporal meanings are determined by the time adverbs with which they agree.

## 8. Smith and Erbaugh's (2001) analysis

It is very interesting to point out that our two hypotheses about temporal reference of Chinese bare sentences are strikingly similar to Smith and Erbaugh's (2001) recent proposal about temporal information in Chinese sentences, though the data we have examined are different and they do not particularly focus on bare sentences.[5] According to them, there is a generalized deictic pattern of tense interpretation across languages, which is stated as follows:

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[5] Smith and Erbaugh's paper is not known to us until the paper is finished. We thank them for sending their paper to us.

(72) Generalized deictic pattern of temporal interpretation
    a. Unbounded eventualities are located at Speech time.
    b. Bounded events are located before Speech time.
    c. Explicit temporal information overrides a and b.

(72a) is equivalent to our rule for covert present tense and (72b) to the rule for covert past tense. As for (72c), it plays almost the same role as our agreement tense and the relative past tense marker <u>le</u> and <u>guo</u>. Given this similarity between their proposal and our theory, it can be said that this paper further confirms Smith and Erbauth's analysis and corroborates an approach for temporal reference in Chinese in terms of aspectual information provided by the clause.

Despite the similarity between Smith and Erbaugh's analysis and ours, the two approaches actually utilize different characterizations of aspectual information. While Smith and Erbauth's analysis is based on the distinction between boundedness and unboundedness, our theory is based on the distinction between homogeneity and non-homogeneity. The question then is whether boundedness vs. unboundedness is completely equivalent to homogeneity vs. non-homogeneity. If they are not equivalent, they should make different predictions. Indeed, we would like to show that though the predictions are mostly the same, it is possible to find examples which distinguish the two theories.

Smith and Erbaugh do not define what they mean by boundedness and unboundedness. However, from the discussions of Declerck (1989, 1991) and Depraetere (1996), we know that the notion of (un)boundedness should be kept apart from the notion of (a)telicity. Depraetere (1996) has provided the following definition for (un)boundedness, attributed to Declerck (1989: 277; 1991: 121):

> (A)telicity has to do with whether or not a situation is described as having an inherent or intended endpoint; (un)boundedness relates to whether or not a situation is described as having reached a temporal boundary.

(I)   + inherent/intended endpoint
    (a)  + endpoint reached: + temporal boundary
    (b)  − endpoint reached: − temporal boundary
(II)  − inherent/intended endpoint
    (a)  + temporal boundary
    (b)  − temporal boundary   (Depraetere, 1996: 7)

Here are some examples from Depraetere (1996: 9, 30) that illustrate the distinction between (a)telicity and (un)boundedness.

(73) a. John has already left. (telic bounded)
    b. He has pushed the cart into the barn. (telic bounded)

    c. He will eat an apple. (telic bounded)

(74) a. John is leaving. (telic unbounded)

    b. He was pushing the cart into the barn. (telic unbounded)

    c. He will be eating an apple. (telic unbounded)

(75) a. I ate an apple. (bounded telic)

    b. I was eating an apple. (unbounded telic)

    c. John eats an apple everyday. (unbounded atelic)

(76) a. John lived in London for a year. (bounded atelic)[6]

    b. John is living in London. (unbounded atelic)

    c. John lives in London. (unbounded atelic)

(77) a. I've been playing in the mud. (bounded atelic)

    b. She's been crying. (bounded atelic.)

    c. John has lived near the Tower. (bounded atelic)

Among the above examples, we would like to particularly call the reader's attention to those sentences in (77). (77a) and (77b) show that not all progressive sentences are unbounded. In fact, according to Depraetere (1996, 30–31), sentences with a present perfect tense are always bounded regardless of their (a)telicity. Although situations denoted by examples like (77) are likely to continue after the speech time, it is important to emphasize that ''what matters is how the situations are represented in the sentence and not the actual duration of the situation itself'' (Depraetere, 1996: 31). The situations denoted by these sentences are represented as having the speech time as right hand boundary.

Given Declerck's and Depraetere's arguments and definitions for (un)boundedness, let us now consider the following Chinese sentence, which corresponds to an English present perfect sentence.

(78)     Ta yijing zai shuijiao (le), ni bu yao qu chao ta[7]

        he already PROG sleep ASP you not want go wake-up him

        'He has already been sleeping. Don't wake him up.'

Here we would like to pay special attention to the word <u>yijing</u> 'already', which requires that a state or event holds up to a reference time. Thus, although the word <u>yijing</u> 'already' does not directly determine the tense interpretation of the sentence, it provides a right-hand boundary for the eventuality description with which it

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    [6] It seems to us that this sentence should be bounded telic rather than bounded atelic. We don't know if this is a typo of Depraetere's.

    [7] <u>Le</u> in this sentence is optional. It is added here to show that the semantics of this sentence is indeed equivalent to English present perfect.

combines.[8] For example, (78) is a claim about a situation which starts in the past and leads up to now. Given this, (78) should be as bounded as the sentences in (77) by Depratere's definition. Consequently, Smith and Erbaugh's (2001) analysis predicts that (78) should be understood as a past tense sentence, which seems to be wrong. In contrast, our theory predicts that (78) has a present tense, because (78) is about a homogeneous situation despite the boundedness set up by the reference time provided by yijing 'already'.

Another problem with Smith and Erbaugh's analysis is a conceptual one. Smith and Erbaugh have suggested that the generalized deictic pattern of temporal interpretation applies to tense languages such as English as well as tenseless languages such as Chinese. Now suppose that Depraetere is correct that tense, in particular present tense and present perfect tense, influences (un)boundedness of a sentence. Then, it would be circular for Smith and Erbaugh to claim that (un)boundedness determines tense interpretations. In contrast, our theory is not subject to this criticism, because (non-)homogeneity determines tense interpretation, which in turn determines (un)boundedness.

## 9. Conclusions

In this paper, we have examined Chinese bare sentences without any aspectual marker or temporal adverbs and argued that their temporal reference can be resolved by postulating two empty tenses, which are referred to as covert present tense and covert past tense. These two covert tenses are subject to different selectional restrictions. Covert present tense must select a homogeneous situation as its complement, whereas covert past tense must select a heterogeneous situation as its complement. In addition, we have argued that covert tenses must be distinguished from empty agreement tenses, i.e., empty tenses which agree with time adverbs, because the latter do not have selectional restrictions. If the above conclusions are correct, they have a very important theoretical implication; namely, although Chinese does not have the same sort of morphological tenses as English or other Indo-European languages, it does not lack syntactic tenses. The syntactically null tenses in Chinese are semantically active and display some properties similar to those of other languages which have grammaticalized morphological tenses.

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[8] Notice that the tense interpretation of (78) cannot be ascribed to the word yijing 'already', because this word is compatible with any tense as the following examples show.

(i)  Wo dao   de-shihou, ta yijing   zou   le
     I   arrive when   he already leave PERF
     'When I arrived, he had already left.'
(ii) Dao mingtian,   ta jiu yijing zou   le
     until tomorrow he then already leave PERF
     'He will have already left by tomorrow.'

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