Aspectual selection and negation in Mandarin Chinese*

JO-WANG LIN

Abstract

This paper argues that the distributions of bu *'not' and* mei *'not' in Mandarin Chinese can be accounted for in terms of their aspectual selections. I propose that while* mei *aspectually selects an event as its complement,* bu *aspectually selects as its complement a stative situation that requires no input of energy in order to obtain that situation. I show that this approach to the distributions of* bu *and* mei *better accounts for the data than previous analyses such as Huang (1988), Ernst (1995), and Lee and Pan (2001).*

1. Introduction

Bu 'not' and *mei* 'not', both translated as English *not*, are the two most frequently used negation markers in Mandarin Chinese. Although they sometimes may appear in the same linguistic contexts, they are mostly in complementary distribution. (1) and (2) are two sets of examples that illustrate their basic usages.

(1) a. Ta bu qu shangxue
         he not go school
         'He does not want to go to school./He will not go to school.'
     b. Ta mei qu shangxue
         he not go school
         'He did not go to school.'
     c. Wo bu chou yan
         I   not smoke cigarette.
         'I don't smoke.'
     d. Wo mei chou yan
         I   not smoke cigarette
         'I didn't smoke.'

(2) a. Ta mei/*bu nong-dong   zhe-ge lilun
        he not/not make-understand this-CL theory
        'He hasn't understood this theory.'
    b. Ta bu/*mei dong   zhe-ge lilun
        he not/not understand this-CL theory
        'He does not understand this theory.'

Special attention has been paid to two central facts about the above two negation markers. One is the inability of *bu* to occur with the perfective aspect marker *le* and the other is the incompatibility between *bu* and a postverbal *de* phrase (Huang 1988; Ernst 1995; Lee and Pan 2001). The two facts are illustrated by (3) and (4).

(3) a. Wo chi-le   pingguo
        I   eat-ASP apple
        'I ate apples.'
    b. Wo bu chi pingguo
        I   not eat apple
        'I do not eat apples.'
    c. *Wo bu chi-le   pingguo
        I   not eat-ASP apples
(4) a. Ta pao de hen kuai
        he run DE very fast
        'He runs very fast.'
    b. Ta pao de bu kuai
        he run DE not fast
        'He does not run fast.'
    c. *Ta bu pao de kuai
        he not run DE fast
        'He does not run fast.'

Several attempts have been made to account for the above two facts in the literature. Huang (1988) suggests that *bu* is a bound morpheme in Infl that forms an immediate construction with the first V^0 element. Thus, when *bu* is cliticized onto the following verb, the *de* phrase, which is some kind of manner expression, takes scope over it. However, this leads to a semantic anomaly because a nonevent cannot be done in some manner. The same analysis also accounts for the inability of *bu* to modify a verb with the perfective marker *le*: a nonevent cannot be perfective.

Ernst (1995), on the other hand, argues that *bu* is not a clitic attached to verbs but is a proclitic on the following adjacent word. Furthermore, it aspectually requires an unbounded situation. According to him, the incompatibility between *le* and *bu* results from a conflict between the

unboundedness requirement of *bu* and the boundedness requirement of *le*. On the other hand, by assuming that a *de* phrase is base-generated at a preverbal adjunct position and is later moved to the postverbal position, he argues that the XP trace left by the *de* phrase blocks cliticization of *bu* onto a lexical word.

Still another different account for the same facts is proposed by Lee and Pan (2001), who argue that *bu* is not a clitic element but a focus-sensitive unselective binder. Roughly, they argue that *bu* is incompatible with *le*, assumed to be a selective binder of an event variable, because *le*, having scope over *bu*, has no free variable to bind, the event variable being already bound by *bu*. Their account for the incompatibility between *bu* and a *de* phrase is along the same line of reasoning.

From the above brief summary of the different existing accounts for the distribution of *bu*, it is clear that there is still no consensus among Chinese linguists concerning how to analyze *bu* and its syntactic distribution. The lack of consensus arises not only because different authors have made different assumptions for *bu* but also because some authors — for example, Lee and Pan (2001) — even question the correctness of the cooccurrence constraint between *bu* and *le* on the one hand and *bu* and the *de* phrase on the other hand. The different assumptions made in the above-mentioned analyses of *bu* are summarized below:

(5) a.   *Bu* is a bound morpheme or clitic element (Huang 1988; Ernst 1995).
     b.   *Bu* aspectually selects a certain type of situation as its complement (Ernst 1995).
     c.   *Bu* is an unselective binder for free variables (Lee and Pan 2001).
     d.   *Bu* is a focus-sensitive element that can be associated with a variety of constituents (Lee and Pan 2001).

Among the four assumptions in (5), the assumption (5d) is possibly one that most Chinese linguists would agree with even if they may not explicitly say so. I will not question this assumption, either. But for the other three assumptions, questions can be asked as to whether a combination of two or more assumptions is really needed in order to successfully account for the distribution of *bu*. It seems quite possible that one single assumption alone might be sufficient to cover all relevant examples. Of course, there is no *a priori* answer to the question of which assumption is correct. Choice of the different assumptions is a pure empirical issue. Indeed, the main purpose of this paper is to reexamine the distribution of *bu* and to argue that the assumption (5b) alone is able to explain a wide range of data, including those already observed in the literature,

those cited as counter-examples to the two central facts about *bu*, and many other new data that are not discussed in the literature and that give rise to problems with the above-mentioned analyses of *bu*.

The remaining sections of this paper are organized as follows. Section 2 discusses the aspectual requirement of *bu* and section 3 the aspectual requirement of *mei*, as well as the inability of *bu* to occur with the perfective aspect marker *le*. Section 4 deals with the problem of the incompatibility between *bu* and postverbal *de* phrases. Section 5 discusses the problems faced by previous analyses that are avoided by the aspectual restrictions proposed in this paper. Section 6 concludes this article.

2.   Aspectual selection of *bu*

Although like Ernst (1995) I will utilize aspectual requirement to account for the distribution of *bu*, the content of my proposal is different from his original analysis. The aspectual selections of *bu* and *mei* that I will adopt are the following:

(6)   Aspectual selections of *bu* and *mei*
    a.   *Bu* aspectually selects as its complement a stative situation that requires no input of energy in order to obtain that situation.
    b.   *Mei* aspectually selects an event as its complement.

Before showing how the distinction between states vs. nonstates (events) is a better notion to characterize the licensing condition on the use of *bu*, let me first briefly review the notions of states and nonstates (events). It is now well known that eventualities can be subdivided into states and nonstates (or dynamic events), and many finer distinctions can be drawn from the two categories. Here, I will only focus on the states vs. nonstates distinction. A consensus about the characteristics of states that linguists seem to generally agree on is that states do not develop or change in time. They simply obtain in time and no conscious effort is required in order for the states they describe to obtain or go on obtaining (cf. Comrie 1976; Smith 1991; among many others). In contrast to states, nonstates or dynamic situations involve change over time and require input of energy. Dynamic situations can be further divided into processes and events (accomplishments or achievements) (Bach 1986; Vendler 1967; among others). It is the above sense of states vs. nonstates that I will adopt in what follows in this paper.

Given the above definition of states and nonstates, let us now see what the assumption in (6a) can buy for us. To begin with, this assumption straightforwardly accounts for familiar examples in which *bu* negates

stative adjectives, verbs, or modal auxiliary verbs. Sentences with these words are typical stative situations that require no input of energy. Some illustrating examples are given below.[1]

(7) a. Ta bu laoshi
         he not honest
         'He is not honest.'
     b. Wo bu ai   ni
         I   not love you
         'I don't love you.'
     c. Ta bu hui/yinggai/keyi shuo huang
         he not will/should/may tell   lie
         'He does/should/may not tell lies.'

It is worth noting that some examples that do not contain an overt stative modal may get a volitional or future modality reading and allow *bu* to appear. I assume with Huang (1988) that such sentences actually contain an empty volitional or future modal verb, and what *bu* negates in such sentences are the empty modal verbs. So examples like (8) actually obey the proposed aspectual restriction on *bu*.[2]

(8) a. Wo bu qu Taibei
         I   not go Taipei
         'I do not want to go to Taipei/I will not go to Taipei.'
     b. Ta bu bang wo xie   zuoye
         he not help me write homework
         'He does not want to help me with my homework.'

Having seen how the proposed aspectual restriction accounts for some basic data, I turn now to some more troublesome examples.

It has been sometimes claimed or assumed that progressive sentences such as *He is writing a book* are statives (Vlach 1981, 1993; Mufwene 1984; Saurer 1984; Dowty 1986; Langacker 1987; Parsons 1990; Kamp and Reyle 1993). If progressive sentences describe true states like other typical stative sentences, then the proposed aspectual requirement predicts that *bu* should be able to appear in such sentences. Interestingly, the fact seems not to be the case. The following sentences are ungrammatical.[3]

(9) a. *Ta bu zai   xi   zao
          he not PROG take bath
          'He is not taking a bath.'
     b. *Ta bu zai   gai fangzi
          he not PROG build house
          'He is not building a house.'

The negation marker for progressive sentences is *mei*, not *bu*.

(10)   Ta mei zai   xi   zao
       he not PROG take bath
       'He is not taking a bath.'

Examples such as those in (9) thus seem to constitute a problem for the proposed aspectual restriction for *bu*.

Fortunately, not every linguist agrees that progressive sentences are stative sentences. Counterarguments have been produced by Smith (1991), Bertinetto (1994), and Glasbey (1998). In particular, Bertinetto (1994) has a very detailed review of the pros and cons and rejects treating progressive sentences as statives. In his view, progressive sentences describe dynamic situations that require input of energy in order to obtain the states they describe. Indeed, this is also the view put forward by Nordlander (1997), who explicitly says that the situation described by a progressive sentence constitutes "a number of consecutive phases" that need "an ongoing supply of energy." I agree with Bertinetto (1994) and Nordlander (1997) that progressive sentences are not truly statives in the same sense as sentences such as *He is clever*, which requires no input of energy at all in order to obtain the situation. I also agree with Nordlander (1997) and Comrie (1976) that such situations are processes. If a situation described by a progressive sentence needs input of energy in order to obtain that situation, then it is predicted by the proposed aspectual selection of *bu* that such a sentence should be incompatible with *bu*. In fact, the Chinese sentence (10) can be taken as evidence for the position that progressive sentences are dynamic rather than stative as Bertinetto (1994) and Nordlander (1997) have argued.

A second type of example that might challenge the proposed aspectual restriction for *bu* has to do with locative-inversion sentences like (11), where the aspectual marker *zhe* is attached to the verb.

(11)   Qiang shang gua-zhe   yi   fu   hua
       wall   on   hang-ASP one CL picture
       'On the wall is hanging a picture.'

It has been argued that *zhe* is an imperfective durative aspectual marker or a stativizer that presents a continuous and stable situation without endpoints (Smith 1991; Jin 1991; Yuan 1993; Zhang 1996). According to Smith (1991), the basic meaning of *zhe* describes a resultative state. Thus, (11) describes the resultative state of a picture being hung on the wall. But such sentences are incompatible with *bu*. The negation marker for such sentences can only be *mei*. This is shown by the contrast between (12a) and (12b).

(12) a. *Qiang shang bu gua-zhe   yi-fu   hua
          wall   on   not hang-ASP one-CL picture
          'There is not a picture hanging on the wall.'
     b. Qiang shang mei gua-zhe   yi fu hua
          wall   on   not hang-ASP one CL picture
          'There is not a picture hanging on the wall.'

Why are examples like those in (12) ungrammatical? Isn't it true that examples like them describe states? To answer these questions, I would like to first point out two more observations about the interaction between *bu* and sentences with the aspectual marker *zhe*. The first observation is that not just locative-inversion sentences but many other non–locative-inversion sentences with *zhe* are incompatible with *bu*. This is illustrated by (13) and (14).

(13) a. Ta tui-zhe   yi-liang jiaotache
          he push-ASP one-CL bicycle
          'He is (in the state of) pushing a bicycle.'
     b. Ta mei tui-zhe   yi-liang jiaotache
          he not push-ASP one-CL bicycle
          'He is not pushing a bicycle.'
     c. *Ta bu tui-zhe   yi-liang jiaotache
          he not push-ASP one-CL bicycle
          'He is not pushing a bicycle.'
(14) a. Ta zai chuang-shang tang-zhe
          he on bed-above   lie-ASP
          'He is lying on the bed.'
     b. Ta mei zai chuang-shang tang-zhe
          he not on bed-above   lie-ASP
          'He is not lying on the bed.'
     c. *Ta bu zai chuang-shang tang-zhe[4]
          he not on bed-above   lie-ASP
          'He is not lying on the bed.'

The second observation is that sentences containing the aspectual marker *zhe* are not always incompatible with *bu*. Illustrated below are two examples in which *bu* cooccurs with *zhe*.

(15) a. Women zhijian   bu cunzai-zhe nimen suo   shuo de
          we   in-between not exist-ASP you   PAR say   REL
          wenti
          problem
          lit. 'In between us does not exist the problems that you said.'
     b. Zhe liang dang de zhenghe   bing   bu yiwei-zhe
          this two   party DE integration therefore not mean-ASP

> xunju   tamen jiu   hui ying
> election they   then will win
> 'The integration of these two parties does not therefore mean
> that they will win in the election.'

Returning to the question of why *bu* is not allowed in locative-inversion sentences and certain sentences with the aspectual marker *zhe*, consider (13a) first. This sentence clearly describes a situation that needs a continuous input of energy in order for the situation to go on obtaining. In fact, traditional Chinese linguists call *zhe* as it occurs in (13a) dynamic *zhe*. Thus, according to the proposed aspectual selection of *bu*, (13a) should be ill-formed.

Next, consider (14a), which is an example of positional sentences. It might be correct to say that such sentences describe positional states. However, in order for a positional state to obtain, there should be an input of energy first. In the case of (14a), for example, one has to first do the action of lying before the state of lying can eventually obtain. Thus, even if positional sentences describe states, their nature is still different from that of sentences such as *He is clever*, which needs no initial conscious effort and energy in order to obtain the state.

As for the examples in (15), they contrast with (13a), (14a), and progressive sentences precisely because the former need no input of energy in order to obtain the states they describe. In these examples, the verbs are truly statives and the states they describe obtain in time rather than develop over time. They are therefore predicted to be compatible with *bu* even with the presence of *zhe*.

Locative-inversion sentences such as those in (11) and (12) are quite similar to positional sentences. The states they describe are result states of events. Without the action part of the event, there is simply no result state at all. Apparently, just like positional sentences, locative-inversion sentences require initial input of energy in order to obtain the intended state. Perhaps we can call such states derived states. Such states describe one phase of a situation and thus they are different from truly stative situations, which do not involve change in time. Thus, rather than falsifying the proposed aspectual selection of *bu*, the interaction between *bu* and locative-inversion sentences actually lends support to it.

The final set of examples in support of the proposed aspectual requirement of *bu* is generic or habitual sentences indicating permanent states or truth, as illustrated by the following examples.

(16) a. Wo bu chou   yan
          I   not smoke cigarette
          'I do not smoke.'

    b. Mao bu chi zhurou
        cat   not eat pig-meat
        'Cats don't eat pork.'
    c. Taiyang bu rao   diqiu xuanzhuan
        sun   not around earth turn-around
        'The sun does not turn around the earth.'

If *bu* in such sentences is replaced by *mei*, the interpretation shifts to a single episode interpretation. For example, in contrast to (16a), *wo mei chou yan* is interpreted as 'I didn't smoke', that is, the eventuality denoted by *I smoke* did not take place.

    Following Bertinetto (1994), I will refer to sentences like those in (16) as "attitudinals" and distinguish them from habitual sentences. Like progressive sentences, generic or habitual sentences are often claimed to be statives, by scholars such as Leech (1971), Partee (1984: 270), Mufwene (1984: 31–33), Chung and Timberlake (1985: 215), Mittwoch (1988), and Rot (1987). Bertinetto (1994), however, argues that this suggestion is only partially correct. According to him, only a subset of habitual sentences, those that he calls "attitudinals" (or more precisely "attitudinal habituals") are truly stative. By attitudinals, he refers to "situations in which the repeated occurrence of a given event is taken to be the defining property of an individual or object." Such situations consist of activities that correspond to permanent attributes of that individual or object. Attitudinal predicates are thus much like individual-level predicates, which characterize stable rather than transient properties. Attitudinal sentences can be illustrated by sentences such as *John sings*, which refers to John's profession rather than his habit. In contrast, pure habituals, which can be illustrated by *John often sings*, are not purely stative situations but "may easily have a strictly eventive character" (Bertinetto 1994). Arguments for the distinction between pure habituals and attitudinals include the ability to be modified by agentive adverbs, the possibility of anchoring the situation to a single moment, and the possibility to occur in perceptual reports. I refer readers to Bertinetto (1994) for detailed argumentation.

    One point that should be clarified is in order, with regard to the level to which the property of being eventive or stative is assigned. Bertinetto seems to have taken a habitual or an attitudinal sentence as a whole as eventive or stative. However, it does not seem unreasonable to claim that in a habitual sentence only the predicative VP is eventive while the sentence as a whole is stative, as the linguists mentioned above have argued. As far as I can see, this view is fully compatible with Bertinetto's arguments and in fact I will take this position in what follows. Empirical arguments for this will be given later.

If Bertinetto's distinction between attitudinals and pure habituals is correct, an interesting prediction by the aspectual constraint on *bu* is that only attitudinals but not pure habituals may be negated by *bu*. Is this prediction borne out? The answer seems to be yes. First, consider (17).

(17) a. Ta bu chou   yan
       he not smoke cigarette
       'He does not smoke.'
    b. Ta mei chou   yan
       he not smoke cigarette
       'He did not smoke.'

(17a) has an attitudinal reading. Therefore, the (negative) property denoted by the (negative) predicate is contextually turned into a permanent stative.[5] Consequently, the negation marker is *bu* rather than *mei*. In contrast, with the negation marker *mei*, (17b) must describe an episode and the predicate here is eventive in character.

Now let us consider sentences in which a frequency adverb is combined with an activity, that is, habitual sentences. According to Bertinetto, such sentences describe pure habits and the VPs in such examples are eventive rather than stative. This then predicts that the negation marker in this type of sentence should be *mei* rather than *bu*. Very interestingly, both *bu* and *mei* may occur in habitual sentences. This is illustrated by (18).

(18) a. Xiaoming chang(chang) bu xi   zao
       Xiaoming often   not wash bath
       'It is often the case that Xiaoming does not want to take a bath.'
    b. Xiaoming chang(chang) mei xi   zao[6]
       Xiaoming often   not take bath
       'It is often the case that Xiaoming does not take a bath.'

However, the truth conditions of the above two sentences are different. For (18a) to be true, it must be the case that in each occasion where Xiaoming does not take a bath, he purposefully refuses to do it. But for (18b) to be true, the will of Xiaoming is not necessarily involved. Imagine that Xiaoming is a kid and needs help from his mother with bathing. But his mother is often too busy to do it for him. Therefore, he often does not take a bath. In such a scenario, only (18b) is felicitous but not (18a).

With the above characterization of the semantic difference between (18a) and (18b) in mind, the use of *bu* and *mei* in these two sentences can now be accounted for as follows. (18b) is grammatical because the VP in a pure habitual sentence is eventive and hence must be negated by

mei. The semantics of this sentence only says that an event of the sort as denoted by *Xiaoming xi zao* 'Xiaoming takes a bath' does not often occur; it does not claim anything about Xiaoming's volition. In contrast, the interpretation of (18a) involves the subject's volition. As mentioned, I assume with Huang (1988) that such sentences involve an empty volitional modal. Thus what *bu* really negates in (18a) is the empty modal. Since modal verbs are specified as [+stative], *bu* is used in (18a).

Regarding the interaction between negation markers and frequency adverbs, it is very interesting to point out that in addition to appearing after the frequency adverb *chang(chang)* 'often', *bu* and *mei* may also be placed before it, as the examples in (19) illustrate.

(19)   a.   Xiaoming bu chang xi   zao
              Xiaoming not often wash bath
              'It is not the case that Xiaoming often takes a bath.'
    b.   ?Xiaoming mei chang xi   zao
              Xiaoming not often take bath
              'It is not the case that Xiaoming often takes a bath.'
    c.   Xiaoming mei you chang xi   zao
              Xiaoming not have often take bath
              'It is not the case that Xiaoming often takes a bath.'
    d.   Xiaoming you chang xi   zao ma?[7]
              Xiaoming have often take bath Q
              'Does Xiaoming often take a bath?'

Unlike the contrast between (18a) and (18b), it is more difficult to tell what truth-conditional differences are between (19a) and (19b). Both (19a) and (19b) can be used in nonvolitional readings. But syntactically, (19b) seems to be somewhat worse than (19a) unless the existential verb *you* 'have' is inserted as in (19c). The grammaticality of (19a) is expected if an habitual sentence as a whole is stative, as many linguists have argued, though the VP part is eventive, as mentioned earlier. As for (19b), I suspect that (19b) is well-formed because an empty *you* is in the construction. As mentioned, the verb *you* is always negated by *mei* rather than by *bu*, regardless of the fact that *you* is a stative verb. One possible piece of evidence for this analysis comes from consideration of the question (19d), in which the existential verb *you* is used. (19b) is a very appropriate answer to (19d). Another alternative analysis might be to say that pure habitual sentences are ambiguous between stative and eventive readings. This alternative needs further examination. I will not try to decide which alternative better accounts for (19b).

I conclude that the distribution of *bu* in generic sentences, including attitudinal and habitual sentences, supports the idea that *bu* selects a stative situation that requires no input of energy.

3.   Aspectual selection of *mei*

The distribution of *mei* is closely related to the perfective aspectual marker *le*. Wang (1965) has proposed that *le* and *you*, which is optional in the presence of *mei*, are allomorphs of the same perfective morpheme. According to him, when the perfective morpheme is realized as *you*, *bu* changes to *mei* by a special morphological rule. Therefore, *you* and *le* are in complementary distribution.

(20)   a.   Ta mai-le   fangzi
              he buy-ASP house
              'He bought a house.'
       b.   Ta mei (you) mai fangzi
              he not   have buy house
              'He did not buy a house.'
       c.   *Ta mei (you) mai-le   fangzi
              he not   have buy-ASP house
              'He did not buy a house.'

I will not further pursue the issue of whether or not *you* and *le* are allomorphs, but it is clear that understanding the distribution of *le* will be very helpful in sorting out the interaction between *le*, *mei*, and *bu*.

   The literature on the aspectual marker *le* is too rich to give a complete survey here (Liu 1988; Shi 1990; Heinz 1990; Lin 2000; Klein et al. 2000; among many others).[8] What I will do is briefly summarize the situation types that occur with *le* and indicate what the resulting interpretation is.

   According to previous research, except for a small set of adjectives and verbs such as *shuyu* 'belong', *xiang* 'resemble' *le* may occur with most verbs and adjectives.[9] Putting that small set of verbs and adjectives aside, when *le* occurs with a stative predicate, the sentence gets an inchoative reading. This is illustrated by (21).[10]

(21)   a.   Zhe ke mugua shou-le
              this CL papaya ripe ASP
              'This papaya has become ripe.'
       b.   Ta pang-le
              he fat ASP
              'He has gotten fat.'

In other words, the function of *le* in (21) is to indicate a change of state. Some authors have treated inchoativity as an achievement. I will follow this treatment (cf. de Swart 1998; Heinz 1990).

   When *le* occurs with an achievement, accomplishment, or activity situation, the sentence denotes a completed or terminated event. This is illustrated by the examples in (22).

(22) a. Ta ying-le   na-chang qiu
          he win-ASP that-CL   ball
          'He won that ball game.'
      b. Ta gai-le   yi-dong fanzi
          he build-ASP one-CL house
          'He built a house.'
      c. Ta he-le   jiu, ye chang-le ge
          he drink-ASP wine also sing-ASP song
          'He drank alcohol and sang songs.'

If inchoativity is indeed a kind of achievement, then the two sets of examples in (21) and (22) indicate that the perfective aspectual marker *le* selects a bounded event as its complement. Indeed, this is exactly what Li and Thompson (1981) propose.

   Returning to *mei*, it seems that the semantics of *mei* is the opposite of *le*. When *mei* occurs with a stative predicate, it indicates that a change of state does not occur. For example, the adjective *lao* 'old' can be negated by both *bu* and *mei*.

(23) Ta kan-shangqu yi   dian dou bu lao
      he look-appear one little all   not old
      'He is not old at all in appearance.'
(24) Ta kan-shangqu yi   dian dou mei lao
      he look-appear one little all   not old
      'He hasn't become old at all in appearance.'

When the negator is *bu*, the sentence means that the subject NP does not have the property denoted by the stative predicate. But when the negator is *mei*, the focus is not on lack of the property denoted by the stative predicate but on whether or not there is a change of state described by the stative predicate. Because of this, stable properties such as those denoted by individual-level predicates are not able to be negated by *mei*, as is shown by (25).

(25) *Ta mei congming
       he not clever
       'He has not turned clever.'

Very similarly, when *mei* occurs with an achievement, accomplishment, or activity situation, it indicates that an event of the relevant sort did not occur. This is illustrated by (26).

(26)   a.   Ta mei ying na   chang qiu
           he not win that CL   ball
           'He didn't win that ball game.'
      b.   Ta mei gai   yi   dong fanzi
           he not build one CL   house
           'He didn't build a house.'
      c.   Ta mei he   jiu, ye   mei chang ge
           he not drink wine also not sing   song
           'He didn't drink alcohol nor did he sing songs.'

If a change of state represents an achievement, as mentioned, then the following generalization can be reached: *mei* is the negation marker of nonexistence or nonrealization of an event. In other words, it is the negative counterpart of the perfective marker *le*. Thus, just like *le*, *mei* also aspectually selects an event as its complement.

With the above discussion of the aspectual requirements of *le* and *mei*, it should now come as no surprise that *bu* is incompatible with *le*. *Bu* aspectually selects a situation type as its complement that has no inherent end point — states are situations that have no inherent end boundary, whereas *le* selects a situation type that is dynamic and bounded — that is, events. Thus, the aspectual requirements of these two elements are in conflict with each other: states are not perfective events and vice versa. This explains one of the two central facts about *bu* widely discussed in the literature.

4.   Postverbal *de* phrases and the distribution of *bu*

Having shown how the proposed aspectual selections of *bu* and *mei* account for a wide range of data, including the inability of *bu* to occur with the perfective marker *le*, I now turn to the other central fact about the distribution of *bu* and *mei*, namely, the incompatibility between *bu* and a postverbal *de* phrase.

In order for non-native speakers to have a better understanding of the Chinese *de* phrases, I begin with a brief discussion of verb–predicative complement constructions (VPC constructions in short). Traditionally, Chinese VPC constructions are divided into two types, according to whether the verb is immediately followed by the predicative complement, as in (27a), or the predicative complement is separated from the verb by the marker *de*, as in (27b).

(27) a. Zhe jian jiaoshi   dasao ganjing le
        this CL classroom sweep clean   ASP
        'This classroom has been swept clean.'
    b. Zhe jian jiaoshi   dasao de hen ganjing
        this CL classroom sweep DE very clean
        'This classroom has been swept such that it is very clean.'

Examples like (27a) are often referred to as verb-resultative constructions. As for constructions with the marker *de*, they are often subdivided into several types:

A. *Potential complements (*de *is infixed to a verb–verb/adjective compound)*

(28) 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 cannot understand this book.'

In (28), *kang-dong* 'read-understand' is a compound verb. The morpheme *de* is infixed to this compound verb to yield the potential reading. The negative counterparts of such constructions are derived by replacing *de* with the negation marker *bu* as is illustrated by (28b). Potential *de* complements do not allow any constituent to be inserted in between *de* and the resultative verb.

B. *Resultative complements*

Resultative *de* complements do not always take the form of VP or AP but can be a full clause. The negation marker for such constructions is *mei*, which is placed before the whole verb–*de*–XP rather than inside the *de* complement.[11] This is illustrated by (29) and (30).

(29) a. Ta wan de hen lei
        he play DE very tired
        'He played till he got tired.'
    b. *Ta wan de mei/bu (hen) lei
        he play DE not   very tired
        'He played till he didn't get tired.'

   c.   *Ta bu wan de (hen) lei
      he not play DE very tired
      'He does/did not play till he get tired.'

   d.   Ta mei wan de hen lei
      he not play DE very tired
      'It is not the case that he played till he got tired.'

(30) a.   Ta qi   de nian-se fa bai
      he angry DE face-color turn white
      'He got so angry that his face turned pale.'

   b.   Ta mei qi   de nianse   fa   bai
      he not angry DE face-color turn white
      'It is not the case that he got so angry that his face turned
      pale.'

   c.   *Ta qi   de nianse   mei/bu fa bai
      he angry DE face-color not   turn white
      'He got so angry that his face did not turn pale.'

   d.   *Ta bu qi   de nianse   fa   bai
      he not angry DE face-color turn white
      'It is not the case that he got so angry that his face turned
      pale.'

C.   *Descriptive (or extent) complements*

Descriptive complements are semantically very similar to manner adjuncts.[12] In fact, Ernst (1995) has treated them as adjuncts. Sentences with a descriptive complement are usually ambiguous between a (past) episode and a generic reading. This is illustrated by (31).

(31) Ta pao de hen kuai
     he run DE very fast
     i.   'He runs very fast.'
     ii. 'He ran very fast.'

Which negation marker is used in such constructions depends upon which reading is intended. On the generic reading, the negation marker can only be *bu*, and it must appear within the *de* complement rather than before the verb–*de*–XP constituent. On the other hand, if the episode reading is intended, both *mei* and *bu* can be used, but they appear in different positions. *Mei* appears before the whole VP phrase, whereas *bu* must appear within the *de* complement. The distribution of the negation markers is illustrated by the following examples.

(32) a. Ta pao de   bu (hen) kuai
        he run DE not very fast
        i.   'He did not run very fast.'
        ii. 'He does not run (very) fast.'
    b. *Ta bu pao de (hen) kuai
        he not run DE very fast
        i.   'He does not run very fast.'
        ii. 'He did not run very fast.'
    c. Ta mei pao de   hen kuai
        he not run DE very fast
        'He did not run very fast.'

Returning to the central question of why *bu* is not licensed before a VP consisting of verb–*de*–XP, it is of great help to first clarify what the real issue is in such constructions. To start with, I assume that potential complements are frozen expressions, which should be dealt with probably in morphology rather than in syntax. So in what follows, I will ignore potential complements and focus instead on resultative and descriptive complements, which have received much attention in the literature (see Huang 1988 and references cited there).

As we have seen above, if the *de* phrase is a resultative complement, the negation marker can only be *mei*, and it must appear before the whole verb–*de*–XP constituent rather than inside the *de*–XP complement. This fact has an easy explanation. As the name ''resultative'' suggests, the *de*–XP complement describes a resultative state of the action (event) denoted by the (main) verb. Thus, situations denoted by such constructions must be dynamic. Consequently, the negation marker can only be *mei* or the aspectual constraint of *bu* would be violated. Also, because the function of a resultative *de* complement is to describe the result state of an event, it is pragmatically less plausible to say that the result state does not exist. Therefore, the ungrammaticality of examples such as (29b) can be ascribed to semantic incoherence.

As for descriptive complements, the fact that *bu* is not licensed before the whole VP phrase on the episode reading is predicted by the aspectual selection of *bu*, because on this reading, *bu* is associated with a dynamic event rather than a stable state. What is more surprising and curious is the fact that *bu* is not licensed on the generic reading. This question is obviously related to the question of whether the predicates in generic situations are permanent statives like those in attitudinals or are eventive like those in pure habits. To this I turn my attention in what follows.

Recall that attitudinals refer to activities that are contextually turned into permanent statives. An important property of permanent statives is

that they allow no exception in the sense that the stative property must always hold of an individual or object irrespective of time and space. For example, if a man is tall, he is tall every time you see him. But this is not the case for generics. It is well known that generics allow exceptions. Thus, a man can be claimed to have the property of generally running fast even though he fails to do so in several occasions. Thus, activities associated with generic situations must not represent permanent statives or a defining property of an individual. This view is supported by the fact that, unlike permanent statives, generic sentences with a *de* complement can be combined easily with temporal modifiers such as *zongshi* 'always' or *jingchang* 'often' as pure habits can:

(33) Ta zongshi/jingchang pao de hen kuai
      he always/often   run DE very fast
      'He always/often runs very fast.'

Another difference between permanent statives and generic sentences is this. Permanent statives, as Carlson (1982) has noticed, have even tighter restrictions on their cooccurrence with locative modifiers than temporal modifiers. Thus, it is very odd to say the sentence

(34) ??John is intelligent in France but is not in America.

But sentences with a descriptive *de* complement have no such restrictions. Compare (35) with (34).

(35) Zhangsan zai guo   nei   pao de hen kuai, keshi bu zhidao
      Zhangsan in country inside run DE very fast   but   not know
      weishenme laidao guowai bisai   de-shihou pao de zheme man
      why   come abroad contest when   run DE this   slow
      'Zhangsan runs very fast in his own country but it is unknown
      why he runs so slow when he comes abroad to attend the contest.'

The above evidence shows that though sentences with a descriptive *de* complement express a property and never report a specific event, the property is only a generalization over events that is not contextually turned into a permanent stative. In view of this, it is not unreasonable to say that, unlike eventive predicates in attitudinals, which are turned into permanent statives through the loss of the event component by a special type of conversion, the eventive predicates in sentences with descriptive *de* complements do not undergo such a conversion.

It is important to note that by the above analysis I am not by any means claiming that generic sentences are not statives. I only intend to claim that the predicates in such sentences are eventive, but the whole sentences themselves can be stative, as I have indicated earlier. More

precisely, I propose that generic sentences become stative only after their event variables are quantified over by the generic operator. Before the closing of the event variables, the predicates themselves are eventive rather than stative. If this suggestion is correct, we now have a straightforward answer to the question of why *bu* may not modify a [$_{VP}$ verb–*de*–XP] constituent: its aspectual constraint cannot be respected in such environments, because the VP is eventive in character.[13]

To make my above argumentation clearer, I will make the following assumptions. I assume that the Chinese phrase structure contains a TP projection whose head specifies tense information. Moreover, the generic operator is located in tense just as are other kinds of tense operator. Temporal modifiers such as *zongshi* 'always' are treated as the specifier of TP and the negation marker *bu* heads NegP, which is located above VP and below TP by default. But NegP may also occupy a position above TP when there is overt evidence that forces it to do so.

On the above assumptions, the impossibility for *bu* to modify the VPs in generic sentences with a descriptive complement is explained schematically as follows:

(36) a. *[$_{AgrP}$ Ta [$_{TP[+stative]}$ [$_{NegP}$ bu [$_{VP[-stative]}$ pao de hen
                he   not   run DE very
           kuai]]]
           fast
     b. [$_{AgrP}$ Ta [$_{TP[+stative]}$ [$_{VP[-stative]}$ pao de [$_{NegP}$ bu [$_{AP[+stative]}$ hen
               he   run   not   very
           kuai]]]]]
           fast
     c. [$_{AgrP}$ Ta [$_{TP[+stative]}$ [$_{NegP}$ mei [$_{VP[-stative]}$ pao de hen kuai]]]]
               he   not   run DE very fast

In (36a), the complement of *bu* has the feature [−stative] rather than [+stative]; therefore its selectional restriction is not satisfied. So (36a) is ill-formed. In contrast, the selectional restrictions of *bu* and *mei* in (36b) and (36c) are satisfied. Therefore, these two examples are well-formed.

The examples in (36) do not contain a temporal modifier. Now let us also consider what happens when a temporal quantifier appears. Interestingly, grammatical judgments of negative sentences with a temporal modifier and a postverbal *de* complement depend upon the relative order between the negation marker and the temporal modifier. When the temporal modifier appears before the negation marker, the sentence is ill-formed; but when the former follows the latter, the sentence is well-formed. The situation here is very similar to what I discussed in section 2.

(37)   a.   *Ta chang/zongshi bu pao de hen kuai
            he often/always   not run DE very fast
            'It is often/always the case that he does not run very fast.'
       b.   Ta bu chang/zongshi pao de hen kuai
            he not often/always   run DE very fast
            'It is not often/always the case that he runs very fast.'

The contrast between (37a) and (37b) is predicted by the analysis that I
am proposing. The schematic representations of the above two sentences
are the following:

(38)   a.   *[$_{AgrP}$ Ta [$_{TP[+stative]}$ zongshi [$_{NegP}$ bu [$_{[-stative]}$ pao de hen
            kuai]]]]
       b.   [$_{AgrP}$ Ta [$_{NegP}$ bu [$_{TP[+stative]}$ zongshi [$_{[-stative]}$ pao de hen
            kuai]]]]

   In fact, the same account may also be extended to my earlier discussion
of progressive and locative-inversion sentences. Recall that progressive
and locative-inversion sentences do not license *bu*. Interestingly, the gram-
matical judgments are not changed even if a temporal modifier such as
zongshi 'always' is inserted before *bu* forcing the whole sentence to be
interpreted generically.

(39)   *Ta zongshi bu zai   dushu
        he always not PROG study
        'It is always the case that he is not studying.'
(40)   *Qiang shang zongshi bu gua-zhe   yi fu fa
        wall   on   always not hang-ASP one CL picture
        'It is always the case that there is not a picture hanging on
        the wall.'

However, like the examples in (37), if the relative order between the
temporal modifier and *bu* is reversed, the sentences become well-formed:

(41)   Ta bu zongshi zai   dushu
        he not always PROG study
        'It is not always the case that he is studying.'
(42)   Qiang shang bu zongshi gua-zhe   yi fu fa
        wall   on   not always hang-ASP one CL picture
        'It is not always the case that there is a picture hanging on the wall.'

On my assumptions, the logical representations of (39), (40) and (41),
(42) are (43a), (43b), and (44a), (44b) respectively:

(43)   a.   *[$_{AgrP}$ Ta [$_{TP[+stative]}$ zongshi [$_{NegP}$ bu [$_{[-stative]}$ zai du shu]]]]
       b.   *[$_{AgrP}$ Qiang shang$_i$ [$_{TP[+stative]}$ zongshi [$_{NegP}$ bu
            [$_{[-stative]}$ gua-zhe yi fu hua]]]]

(44)   a. $[_{AgrP}$ Ta $[_{NegP}$ bu $[_{TP[+stative]}$ zongshi $[_{[-stative]}$ zai du shu]]]
       b. $[_{AgrP}$ Qiang shang$_i$ $[_{NegP}$ bu $[_{TP[+stative]}$ zongshi
            $[_{[-stative]}$ gua-zhe yi fu hua]]]

Summarizing, I have argued in this section that the interaction between *bu*, *mei*, and postverbal *de* phrases can be nicely accounted for in terms of the proposed aspectual selectional restrictions of the negation markers. This result is very desirable, because it indicates that a unifying account can be given for all the relevant data on the basis of one single assumption, namely, that the negation markers *bu* and *mei* have aspectual selectional restrictions.

5.   Remarks on previous analyses

Having proposed my own analysis of the negation marker *bu* and *mei*, in this section, I will make some detailed remarks on the treatments of *bu* proposed in Huang (1988), Ernst (1995), and Lee and Pan (2001).

Huang's (1988) account for the two central facts about *bu* is based upon a principle — referred to as "principle P" — that requires that it "form an immediate construction with the first V^0 element following it." According to him, principle P can be derived as a theorem on the assumption that "*bu* is base-generated as a bound form in an Infl node which, if containing no lexical material, triggers Koopman's verb-raising rule" (Huang 1988: 286–287). On this analysis, sentences like (3c), reproduced as (45a), form a negated predicate as represented in (45b).

(45)   a.   *Wo bu chi-le   pingguo
            I   not eat-ASP apple
       b. $[[_{V^0}$ bu $[_{V^0}$ chi]] le]
            not   eat   PERF

However, (45b) is a semantically uninterpretable structure, because it is absurd to assert completion of an event that does not happen. The same analysis also explains why *bu* is incompatible with a postverbal descriptive or resultative *de* phrase in a similar vein: nonexistence of an event cannot have a result or manner.

Huang's above analysis, though quite interesting, has empirical problems. Consider (46), in which the negative morpheme *bu* is separated from the adjective (or verb) by a degree word.

(46)   Wo hai bu zenme er
       I   yet not very   hungry
       'I am not very hungry yet.'

If *bu* in (46) triggered the raising of the adjective (or verb) *er* 'hungry' to Infl, a structure similar to (45b) would be derived. This then falsely predicts that (46) should be ill-formed parallel to (3c) or (4c), because it is absurd to ascribe a degree to a nonproperty. Examples like (46) thus suggest that *bu* cannot be a verbal clitic, a conclusion that Ernst (1995) also reaches on the basis of the fact that *bu* is not always adjacent to the verb of the sentence, as (47) shows.[14]

(47)   Jinrong bu mashang   huida
       Jinrong not immediately answer
       'Jinrong doesn't answer immediately.'

In addition to examples like (47), Ernst also observes that it is not true that a perfective marker is semantically incompatible with a non-event, as Huang assumes. For example, sentences such as *John has [not come]*, where the negation marker has narrow scope with respect to the perfective experiential marker, are perfectly acceptable. I agree with this point.

Finally, Ernst offers evidence showing that *bu* clearly takes scope over not just the verb but other constituents:

(48)   Ta yiban   (dou) bu shui san-ge   xiaoshi
       he generally all   not sleep three-CL hour
       'He generally doesn't sleep for three hours.'

According to him, the duration phrase in (48) must be within the scope of negation, so the scope of *bu* cannot be restricted to the verb as Huang's analysis assumes.

Given the above problems with Huang's analysis, Ernst proposes that *bu* is a proclitic on the following word rather than a verbal clitic. Moreover, it aspectually requires an unbounded situation as its complement. As mentioned in the introduction section, Ernst's aspectual requirement accounts for the inability for *bu* to occur with *le* because a conflict in (un)boundedness exists between them. On the other hand, the proclitic analysis explains the incompatibility between *bu* and a postverbal phrase, because the trace left by the postverbal *de* phrase, assumed to have moved from a preverbal adjunct position, blocks *bu* from cliticizing onto the adjacent lexical word.

However, Ernst's solution to the distribution of *bu* has a conceptual weakness as well as many empirical problems. The conceptual problem is that unlike the unifying analysis proposed in this paper, his analysis uses two different mechanisms to account for two sets of facts, which seem to be reflections of the same phenomenon. As for empirical problems, reconsider the interaction between *bu* and progressive sentences

such as (9)–(10), locative-inversion sentences such as (11)–(12) and sentences with the durative aspectual marker *zhe* such as (13)–(15), discussed in section 2. These sentences are all unbounded sentences but their negation marker is not necessarily *bu*. The contrast between the examples (13), (14), and (15) is particularly interesting because they all describe unbounded situations but only the examples in (15) license the use of *bu*. This indicates that the crucial notion governing the distribution of *bu* cannot be the notion of (un)boundedness as Ernst suggests.

The most recent analysis of *bu* is provided by Lee and Pan (2001), who argue against Huang's and Ernst's clitic approaches to the negation marker *bu*. They point out several problems with this approach.

First, Huang's nonevent account relies on whether the relevant event exists or not, but this seems to be wrong, because sentences containing a potential *de* phrase need not describe a real event.

Second, *bu* is a focus element that may focus or negate a constituent other than the verb or the constituent immediately following it. For example, in (49), *bu* focuses *kuai* 'fast' rather than *pao* 'run', so it negates the former rather than the latter, a fact that cannot be correctly predicted by the clitic approach.

(49) (Lee and Pan 2001: 708)
      Zuotian   ta yaoshi bu pao-de name [*kuai*]^f, jiu   hui
      yesterday he if   not run DE that   fast then will
      wu-le   huoche
      miss-ASP train
      'Yesterday, if he had not run that fast, he would have missed
      the train.'

Third, *bu* can actually cooccur with a postverbal *de* phrase and perfective *le*, and this is not restricted to conditional clauses. Lee and Pan's (2001: 709–710) examples are the following:

(50) Ta yaoshi bu liu de [*kuai*]^f, jiu   gei jingcha zhua   qu   le
      he if   not run DE fast   then get police caught away SFP
      'If he had not run that fast, he would have got caught by the police.'

(51) Zhangsan guyi   bu ba [*suoyou*]^f de lanpingguo dou
      Zhangsan deliberately not BA all   DE rotten-apple all
      reng-le   weile re   ni   shengqi
      throw-LE for   make you angry
      'Zhangsan deliberately did not throw away all rotten apples so as
      to make you angry.'

(52) Ta zai jia   bu shuo de kuai, ni   na ta   yidian banfa dou
      he at-home not speak DE fast   you do him some thing all

meiyou
not-have
'He doesn't speak fast at home, and you can do nothing to him.'
(53)   Ta neng bu pao de bi   Lisi man ma?
he can   not run DE than Lisi slow SFP
'Can he not run slower than Lisi?'
(54)   Ta changchang bu shuo de hen qingchu
he often   not say   DE very clear
'He often does not speak very clearly.'

Finally, even when *bu* directly focuses the verb, the sentence is still well-formed. According to them, Huang's and Ernst's analyses fail to predict the grammaticality of (55).[15]

(55)   Yaoshi ta bu [*shuo*]^f-de hen kuai, ta [*xie*]^f-de hen kuai, ni
if   he not say DE   very fast he write DE very fast   you
yao bu yao ta
want not want him
'If he does not speak very fast but he writes very fast, do you want him?'

Although not every argument and example of Lee and Pan's are convincing, I agree with them that *bu* should not be treated as a clitic. This is particularly clear when we consider the fact that *bu* may focus and hence negate constituents in various positions.

Given the above problems with Huang's and Ernst's approaches, Lee and Pan (2001) propose to account for the inability of *bu* to occur with the perfective marker *le* and the postverbal *de* phrase on the basis of the three assumptions in (56) and the *interpretation condition* in (57).

(56)   a.   *Bu* is a focus-sensitive operator and an unselective binder that can bind any variable.
b.   Perfective *le* is a selective binder that binds an event or situation variable.
c.   A manner phrase requires a sentential subject that contains a free event or situation variable.[16]
(57)   *The Interpretation Condition (IC)* (Lee and Pan: 717):
The negator *bu* associates with the focus if there is one to its right and thus introduces a tripartite structure; otherwise it negates the adjacent word.

With the above three assumptions and IC, Lee and Pan explain the incompatibility between *bu* and *le* as follows. In examples like (3c), reproduced below, there is no focus, so *bu* negates the adjacent verb and

takes narrow scope with respect to *le*, which is assumed to have sentential scope. This then yields a Davidsonian's or Parsonian's type of logical structure like (58).

(3c)   *Ta bu chi-le   mugua
         he not eat-ASP papaya

(58)   Le [Bu$_e$ [chi(e) $\wedge$ Subject(e, ta) $\wedge$ Object (e, mugua)]]

In (58), the event variable is bound by the unselective binder *bu*, leaving the selective binder *le* nothing to bind. The representation (58) thus violates the "prohibition against vacuous quantification" (Kratzer 1991; de Swart 1993).

On the other hand, if there is a focus as in (51), *bu* is compatible with *le*, because partition of the structure into tripartite structure forces *le* to take narrow scope with respect to the focusing *bu*, which induces a set variable of alternatives (Rooth 1985). The logical representation of (51) is thus (59).

(59)   bu {[Zhangsan guyi ba P de lanpingguo dou reng-le], p = suoyou}

In (59), *le* selectively binds the event variable of the verb and *bu* binds the set variable P. Therefore (51) is well-formed.

Lee and Pan's explanation of the incompatibility between *bu* and *de* complement is quite similar to their account for the incompatibility between *bu* and *le*. In examples like (4c), reproduced below, there is no focus, so its logical representation should be (60).

(4c)   *Ta bu pao de kuai
         he not run DE fast
         'He does not run fast.'

(60)   Kuai ([Bu$_e$ [Pao(e) $\wedge$ Subject(e, ta)]])

In (60), the event variable is bound by *bu*, producing a closed proposition. Consequently, the manner phrase *kuai* 'fast' has no free event or situation variable to be predicated of. This explains the ungrammaticality of (4c). On the other hand, if there is a focus of *bu* as in (50), the story will be similar to the case of (51).

Lee and Pan's analysis is very interesting but it has no fewer problems than Huang's and Ernst's analyses. To begin with, the assumption that *bu* and *le* may close an event or situation variable seems problematic. Consider the following example with no particular focus.

(61)   Ta chi-wan-le   wanfan yihou, youshi/zongshi   hui chuqu
         he eat-finish-ASP dinner after   sometimes/always will go-out
         sansanbu
         take-a-walk
         'After he eats his dinner, he sometimes/always goes out to take a walk.'

It is now well known that adverbs of quantification such as *always*, *sometimes* may bind situation variables (Lewis 1975; Heim 1982; von Fintel 1994). Thus, (61) can be paraphrased as, 'Every situation in which he eats his dinner can be extended to a situation in which he goes out to take a walk.' However. if *le* is able to close a situation variable as Lee and Pan have assumed, then the adverb of quantification would not be able to bind the situation variable. Therefore, on Lee and Pan's assumption, (61) should also be a case in violation of the prohibition against vacuous quantification, just like his analysis of (3c) and (4c), which is obviously wrong.[17]

The assumption that *bu* closes a proposition also runs into problems in examples with multiple negation:

(62)   a.   Ta bu hui bu lai[18]
             he not will not come
             'It will not be the case that he won't come.'
        b.   Bu [Hui [Bu_e [lai(e) $\wedge$ Subject(e, ta)]]]

As shown by (62b), when the event variable introduced by *lai* 'come' is bound by the closest negation operator, it will no longer be available for binding. Consequently, the outside *bu*, and possibly *hui* 'will' as well, has nothing to bind, in violation of the prohibition against vacuous quantification. But (62) is a perfect example.

Still another problem with Lee and Pan's analysis of *bu* is related to the fact that it can negate constituents other than the verb, as in the sentence *Ta bu chang lai* 'he not often come' with no particular focus. In such examples, it is hard to imagine that the adverb *chang* 'often' introduces a variable that is bound by *bu*, because *chang* itself is a quantifier that binds variables. It should also be noted in passing that in this example *bu* cannot bind the event variable introduced by the verb, because this will give a wrong semantics for the sentence.

Lee and Pan's explanation of (3c) also has a flaw. Recall that they assume that *bu* is a focusing element and is able to unselectively bind any variable. In particular, they also assume that *bu* can bind variables introduced by bare nouns in Chinese. Now, imagine that (3c) is uttered with a focus on the object NP *pingguo* 'apples'. On this reading, the logical representation should be as follows:

(63)   bu {[ta chi-le p], p $=$ apples}

In this logical representation, *le* can bind the event variable introduced by the verb and *bu* binds the set variable *p* introduced by the object NP. Thus, the prohibition against vacuous quantification is not violated, but

(3c) with a focus on the object NP is as ill-formed as when there is no focus at all.

As for Lee and Pan's example (51), in which *le* occurs with *bu*, it is not clear that this is a true counter-example. It has been observed that in addition to marking the aspect of a sentence, *le* has another usage, similar in function to the resultative complement *diao* 'off', as in *mai-diao* 'sell off' or *chi-diao* 'eat off' (Heinz 1990, among others). According to Heinz (1990), only a small set of verbs, including *wang* 'forget', *reng* 'throw away', *chi* 'eat', etc., that is, verbs with a "disposal meaning," can have this usage. Evidence for the nonaspectual usage of *le* comes from several considerations. Here I will only give two, discussed by Heinz (1990). First, replacement of *le* with *diao* 'off' in such examples does not change the meaning of the sentence. Second, the aspectual marker *le* is in complementary distribution with *mei* 'not' (Wang 1965; Chao 1968), but *le* occurring with the above set of disposal verbs is not subject to this restriction, just as normal resultative complements are not. Compare the following examples:

(64) a. Lisi da-le   Zhangsan
        Lisi hit-ASP Zhangsan
        'Lisi hit Zhangsan.'

    b. *Lisi mei da-le   Zhangsan
        Lisi not hit-ASP Zhangsan
        'Lisi did not hit Zhangsan.'

    c. Lisi mei da Zhangsan
        Lisi not hit Zhangsan
        'Lisi did not hit Zhangsan.'

(65) a. Lisi da-*si*-le   Zhangsan
        Lisi beat-dead-ASP Zhangsan
        'Lisi killed Zhangsan.'

    b. Lisi *mei* da-*si*-(*le)   Zhangsan
        Lisi not beat-dead-ASP Zhangsan
        'Lisi didn't kill Zhangsan.'

(66) a. Ta (dao xianzai) hai *mei* wang-*le*   nei jian shi
        he until now   still not forget-LE that CL matter
        'Until now, he still hasn't forgotten that matter.'

    b. Ni dao xianzai hai *mei* reng-*le*   nei jian yifu a
        you until now   still not throw-LE that CL cloth PAR
        'How come you haven't thrown away that cloth until now?'

If Heinz is correct, then Lee and Pan's example (51) is not a true counter-example to the generalization that *bu* may not occur with *le*, because the *le* in this example is a resultative complement equivalent to *diao* 'off' in

meaning. Notice that if the verb *reng* 'throw' in (51) is replaced by some other verb, such as *mai* 'buy', the sentence becomes unacceptable. This confirms the analysis that the *le* in (51) is better treated as a resultative complement. Also notice that (51) has a strong volitional meaning.

In fact, I would like to claim that none of Lee and Pan's examples in (49)–(55) is a true counter-example to the generalization that *bu* may not occur with *le* and a postverbal *de* complement. The examples in (49) through (55) all have a volitional or future modality reading and the actions denoted by the verbs are controllable by the subject NPs. Take (49), for example. The negation marker for the conditional clause can actually be *mei* or *bu*, but the implication is different depending upon which negation marker is used. When the negation marker is *bu*, the subject NP's volition is clearly involved, though this is not necessarily the case for *mei*. In view of this, I assume that (49)–(55) are all analyzed as containing an empty volitional or future modal verb, as Huang (1988) suggests.

Further evidence supporting the above view comes from the following consideration. When one replaces the [+controllable] verbs in (49)–(55) with a [−controllable] verb, making the volitional reading impossible, those sentences with an adverb of quantification all become unacceptable, no matter what constituent *bu* is intended to focus:

(67)   *Ta zongshi bu ying de name piaoliang
         he always not win DE that   beautiful
         'It is always the case that he does not win beautifully.'

(68)   *Ta chang bu bing de name lihai
         he often not sick DE that   serious
         'It is often the case that he is not sick that seriously.'

(69)   *Jiali de shi,   ta zongshi bu zhidao de name qingchu
         home DE matter he always not know   DE that   clear
         'As for matters of our(his) home, it is always the case that he
         does not know that clearly.'

(70)   *Zhe zhong bing yiban   bu quanyu de hen kuai[19]
         this kind   illness generally not recover DE very fast
         'It is generally the case that from this kind of illness one does
         not recover fast.'

Observe that all the ungrammatical examples in (67)–(70) have the adverb of quantification preceding the negation marker. As before, if the order is reversed, the sentences become fully grammatical:

(71)   Ta bu zongshi ying de name piaoliang
         he not always win DE that   beautiful
         'It is not always the case that he wins beautifully.'

(72) Ta bu   chang bing de name lihai
      he often not   sick DE that serious
      'It is not often the case that he is sick that seriously.'

(73) Jiali de shi,   ta bu zongshi zhidao de name qingchu
      home DE matter he not always know DE that   clear
      'As for matters of our(his) home, it is always the case that he does
      not know them that clearly.'

Another relevant fact that should be pointed out here is that conditional clauses may seem to allow *bu* to modify a nonvolitional verb that takes a *de* complement, as (74) illustrates.

(74) Wo de jiao yaoshi bu tong de name lihai   de-hua, wo jiu
      I   DE leg if   not hurt DE that serious if   I   then
      gen ni yiqi   qu
      with you together go
      'If my leg does not hurt that seriously, I will go with you together.'

However, such conditional clauses always have the same kind of modality force expressed by *hui* 'will'.[20] If we assume that there is indeed an empty *hui* 'will', as in Huang's analysis, then examples like (74) are not a problem, because stative modals license the use of *bu*, as we have seen. There is no doubt that it is a very complicated issue when an empty modal can be licensed. However, discussing this issue is beyond the scope of this paper. So I will leave it to another occasion.

6. Conclusions

In this paper I have argued that the distributions of *bu* 'not' and *mei* 'not' can be accounted for in terms of their aspectual selections. I have proposed that while *mei* aspectually selects an event as its complement, *bu* aspectually selects as its complement a stative situation that requires no input of energy in order to obtain that situation. I have shown that this approach to the distributions of *bu* and *mei* not only avoids many problems that previous analyses such as Huang (1988), Ernst (1995), and Lee and Pan (2001) face but also provides a single unifying account for a wide range of data already discussed and not discussed in the literature.

Notes

* Part of this paper was presented at the Workshop on Formal Syntax and Semantics, National Chiao Tung University, Hsinchu, September 22, 2001. I would like to thank the participants at the workshop, especially Kuang Mei, Ting-chi Tang, Weitian Tsai, and Yongli Zhang for their useful comments and suggestions. I am also very grateful to two anonymous referees' help with the reorganization of this paper, as well as their valuable suggestions for some points. As usual, the author alone is responsible for any possible error in this article. Correspondence address: Department of Foreign Languages and Literatures, National Chiao Tung University, 1001 Ta Hsueh Road, Hsinchu 30050, Taiwan. E-mail: jowang@cc.nctu.edu.tw.

1. An exception to the cooccurrence restriction between *bu* and stative predicates is the verb *you* 'have'. When the verb is *you* 'have', *mei* must be used instead of *bu*. This is illustrated by (i).

   (i)   Ta mei/*bu you qian
         he not/not have money
         'He is not rich.'

   The exception in question is due to an idiosyncratic property of *you* and should not be dealt with by general rules.

2. Notice that the volitional or future modality reading of *bu* is not available for just any predicate. For example, in contrast to the examples in (8a) and (8b), the example (ia) sounds quite odd.

   (i) a. *Ni/ta bu gao qingchu wenti   chu zai nali
            you/he not make clear   problem out in where
            'You/he does/did not make clear what the problem is.'
        b. Ruguo ni/ta   bu gao qingchu wenti   chu zai nail, …
            if   you/he not make clear   problem out in where
            'If you/he does not (want to) make clear what the problem is, …'

   But the same negative proposition becomes acceptable when it is embedded into a conditional clause as is shown by (ib). It is not clear to me why conditional clauses license a volitional or future modality reading more easily than normal declarative clauses and I will not further pursue this issue.

3. Ernst (1995) has cited (i) as a grammatical sentence to support his unboundedness requirement.

   (i)   Hongmei bu zai   shuo hua
         Hongmei not PROG say   speech
         'Hongmei isn't speaking.'

   However, he says that use of *bu* in sentences like (i) is only characteristic of southern speakers, while *mei* is more common for speakers of northern Mandarin. I know nobody from Taiwan who accepts examples like (i), though many of them speak the southern dialect; nor have I read any paper that says that sentences like (i) are grammatical, but there are references that report that such sentences are ungrammatical, Guo (1997), a mainland speaker, for example. Therefore, in this paper, I will assume that sentences like (i) above are ungrammatical. Also because Ernst does not provide a way to explain the variation that he reports, I take my dialect to be a problem with Ernst's analysis.

4. Examples like (i) are acceptable, but their interpretations are volitional. In other words, what *bu* negates here is an empty stative modal.

    (i) Ni bu zai chuang shang tang-zhe, ni yao qu nali?
         you not on bed   on   lie-ASP   you want go where
         'You don't (want to) lie on the bed. Where do you want to go?'

5. It is interesting to point out that if a (negative) property is very unlikely to be contextually turned into a permanent stative, then even if *bu* is used, the sentence cannot be understood as an attitudinal. For example, the property of not taking a bath is very unlikely to be contextually turned into a permanent property of an individual. Thus, (i) cannot be understood as an attitudinal, though the negation marker *bu* is used. Instead, it is construed as a volitional or future-tense sentence.

    (i) Wo bu xi   zao
         I   not take bath
         'I do not want to take a bath.'

6. An anonymous reviewer says that (18b) is odd, because *mei* seems to modify quite specific episodes and is thus not compatible with adverbial modifiers. This is not true. (18b) can be easily understood as a generic sentence, when some more words are added, as in (i) below.

    (i) Xiaoming changchang mei xi   zao jiu qu shuijiao
         Xiaoming often   not take bath then go sleep
         'It is often the case that Xiaoming does not take a bath and goes to sleep.'

7. The use of *you* in this sentence is grammatically correct in the Taiwanese variety of Mandarin Chinese but is not accepted by mainland speakers.
8. For a review of the most recent analysis of *le* put forth by Klein et al. (2000), see Lin (forthcoming).
9. Chinese has a sentence-final *le*, which is homophonous with the verbal *le*, as is illustrated in (i).

    (i) Ta chi fan le
         he eat rice ASP
         'He has eaten his meal.'

    In this paper, I will only discuss the verbal *le*.
10. It is also possible that the *le* in (21a) and (21b) is the sentence-final *le*. But it is difficult to argue for or against it.
11. There are examples where *bu* appears in a resultative *de* complement, as (i) below shows.

    (i) Ta qi   de bu shuo hua
         he angry DE not say word
         'He was so angry that he did not want to speak.'

    However, in such examples, *mei* can still negate the verb–*de*–complement as a whole.

    (ii) Ta mei qi   de bu shuo hua
          he not angry DE not say   word
          'He was not so angry that he did not want to speak.'

12. Normally, adjuncts in Chinese only appear in a preverbal position, as is illustrated by (i).

(i) a. Ta henkuai-de likai-le
         he quickly   leave-ASP
         'He left quickly.'
     b. *Ta likai-le   henkuai-de
         he leave-ASP quickly
         'He left quickly.'

13. There are examples with a *de* complement that seem to be stative but cannot be modified by *bu*, as illustrated in (i). (I thank Dylan Tsai for letting me think about this kind of example.)

(i) a. Ta gaoxing de shuo bu chu hua lai
         he happy   DE say   not out word come
         'He is so happy that he cannot utter a word.'
     b. *Ta bu gaoxing de shuo bu chu hua lai
         he not happy   DE say   not out word come
         'He is not so happy that he cannot utter a word.'
     c. ?Ta mei(you) gaoxing de shuo bu chu hua lai
         he not   happy   DE say   not out word come
         'It is not the case that he is so happy that he cannot utter a word.'

However, I believe that examples like (ib) are not true counter-examples to the analysis that I am proposing. Notice that in addition to being construed as a resultative complement, the *de* complement can also be simultaneously understood as indicating the degree or extent of happiness — this is supported by the fact that *de* in this example can be replaced by *dao* 'arrive/reach'. In other words, the *de* complement sets up an extent limit for happiness. Due to this limitation on the state, the state is turned into an event in the same way as when a normal stative sentence is limited by an amount durational phrase. Thus, the grammatical judgments for the examples in (i) are parallel to those in (ii).

(ii) a. Wo bu renshi ta
         I   not know him
         'I do not know him.'
     b. *Wo bu renshi ta   wu nian
         I   not know him five year
         'I do not know him for five years.'
     c. ?Wo (hai) mei(you) renshi ta   wu nian
         I   yet not have know him five year
         'I haven't known him for five years.'

14. (47) is actually not a good example to argue against *bu* as a verbal clitic, because it is a volitional sentence. According to Huang, volitional sentences involve an empty modal verb. Therefore *bu* is arguably cliticized onto the empty modal in (47), as Huang would assume. Notice also that if (47) is transformed into a passive sentence, the sentence becomes ungrammatical:

(i) *Zhege wenti   bu mashang   bei   huida
      this   question not immediately PASS answer

The ungrammaticality of (i) supports the view that (47) is acceptable because it is volitional.

15. Although (55) is cited as grammatical by Lee and Pan, I find this sentence odd. Many other native speakers that I checked with also said that this sentence is not natural.

16. The phrase structure of constructions containing *de* is quite controversial. Here Lee and Pan assume that the *de* phrase is the main predicate of the sentence, whereas the string before *de* is the subject. On the other hand, Huang (1988) argues that the verb in verb–*de*–XP is the main predicate of the sentence. I refer readers to Huang for a more detailed discussion.

17. It is possible for Lee and Pan to say that adverbs of quantification may quantify over times. However, it is difficult for one to successfully distinguish quantification over times from quantification over situations, as situations take time to obtain. Also, there are many arguments in the literature that the verbal *le* in Chinese quantifies over times (see Lin 2000, for example).

18. One referee says that this example sounds odd, but it sounds quite acceptable to me. In fact, it is not difficult to find examples with multiple negation in the literature. For example, Tang (1994: 102) has cited (i) as grammatical and I agree with him.

    (i) Tamen bu keneng bu hui bu lai   gen ni shangliang
        they   not likely   not will not come with you consult
        'It is not possible that it will not be the case that he will not consult you.'

19. Some people may feel that this example is somewhat better. This might be because the empty modal *hui* is more easily available in this example. (70), if grammatical, is completely identical to (i) in meaning.

    (i) Zhe zhong bing yiban   bu hui quanyu de hen kuai
        this kind   illness generally not will recover DE very fast
        'It is generally the case that from this kind of illness one will not recover fast.'

20. Notice that if the sentence **Wo de jiao bu tong de name lihai* 'My leg does not hurt that seriously' is not embedded in a conditional clause, it is ungrammatical. This indicates that the modal force in (59) indeed originates from the conditional clause.

References

Bach, Emmon (1986). On time, tense and aspect: an essay on English metaphysics. In *Radical Pragmatics*, Peter Cole (ed.), 62–81. New York: Academic Press.

Bertinetto, Pier Marco (1994). Statives, progressives, and habituals: analogies and differences. *Linguistics* 32, 391–423.

Carlson, Gregory N. (1982). Generic terms and generic sentences. *Journal of Philosophic Logic* 11, 145–181.

Chao, Yuen-ren (1968). *A Grammar of Spoken Chinese*. Berkeley: University of California Press.

Chung, Sandra; and Timberlake, Alan H. (1985). Tense, aspect and mood. In *Language Typology and Syntactic Description*, Timothy Shopen (ed.). Grammatical Categories and the Lexicon. Cambridge: Cambridge University Press.

Comrie, Bernard (1976). *Aspect: An Introduction to the Study of Verbal Aspect and Related Problems*. Cambridge: Cambridge University Press.

de Swart, Henriette (1993). *Adverbs of Quantification: A Generalized Quantifier Approach*. New York: Garland.

—(1998). Aspect shift and coercion. *Natural Language and Linguistic Theory* 16, 347–385.

Dowty, David R. (1986). The effects of aspectual class on the temporal structure of discourse: semantics or pragmatics. *Linguistics and Philosophy* 9, 37–61.

Ernst, Thomas (1995). Negation in Mandarin Chinese. *Natural Language and Linguistic Theory* 13, 665–707.

Glasbey, Sheila (1998). Progressives, states and backgrounding. In *Events and Grammar*, Susan Rothstein (ed.), 105–124. Dordrecht: Kluwer Academic.

Guo, Rui (1997). Process and non-process: two extrinsic temporal types of Chinese predicative constituents. *Zhongguo Yuwen* 3, 162–175 (in Chinese).

Heim, Irene (1982). The semantics of definite and indefinite noun phrases. Unpublished doctoral dissertation, University of Massachusetts at Amherst.

Heinz, Michael (1990) The semantics of the inchoative and cessative aspect in Mandarin and classical Chinese. Unpublished doctoral dissertation, University of Wisconsin.

Huang, C.-T. James (1988). Wo pao de kuai and Chinese phrase structure. *Language* 64, 274–311.

Jin, Fengming (1991). Zhuci "zhe" de jiben yufa yiyi. *Hanyu Xuexi* 4, 23–28 (in Chinese).

Kamp, Hans; and Reyle, Uwe (1993). *From Discourse to Logic: Introduction to Modeltheoretic Semantics of Natural Language, Formal Logic and Discourse Representation Theory*. Dordrecht: Kluwer Academic.

Klein, W.; Li Ping; and Hendriks, Henriette (2000). Aspect and assertion in Mandarin Chinese. *Natural Language and Linguistic Theory* 18, 723–770.

Kratzer, Angelika (1991). The representation of focus, In *Semantik/Semantics: An International Handbook of Contemporary Research*, A. von Stechow and D. Wunderlich (eds.), 804–825. Berlin: Walter de Gruyter.

Langacker, Ronald W. (1987). Nouns and verbs. *Language* 63, 53–94.

Lee, Po-lun Peppina; and Pan, Haihua (2001). The Chinese negation marker *bu* and its association with focus. *Linguistics* 39, 703–731.

Leech, Geoffrey (1971). *Meaning and the English Verb*. London: Longman.

Lewis, David (1975). Adverbs of quantification. In *Formal Semantics of Natural Language*, Edward Keenan (ed.), 3–15. Cambridge: Cambridge University Press.

Li, Charles; and Thompson, Sandra A. (1981). *Mandarin Chinese: A Functional Reference Grammar*. Berkeley: University of California Press.

Lin, Jo-wang (2000). On the temporal meaning of the verbal *le* in Chinese. *Language and Linguistics* 1(2), 109–133.

—(forthcoming). Temporal reference in Chinese. *Journal of East Asian Linguistics*.

Liu, Xunning (1988). Xiandai hanyu ciwei "le" de yufa yiyi. *Zongguo Yuwen* 5, 321–330 (in Chinese).

Mittwoch, Anita (1988). Aspects of English aspect: on the interaction of perfect, progressive and durative phrases. *Linguistics and Philosophy* 7, 243–286.

Mufwene, Salikoko S. (1984). *Stativity and Progressive*. Bloomington: Indiana University Linguistics Club.

Nordlander, Johan (1997). *Towards a Semantics of Linguistic Time*. Uppsala: Swedish Science Press.

Parsons, T. (1990). *Events in the Semantics of English*. Cambridge, MA: MIT Press.

Partee, Barbara H. (1984). Nominal and temporal anaphora. *Linguistics and Philosophy* 7, 243–286.

Rooth, Mats E. (1985). Association with focus. Unpublished doctoral dissertation, University of Massachusetts at Amherst.

Rot, S. (1987). On aspect–tense–temporal reference in present-day English. *Acta Linguistica* 37, 243–286.

Saurer, Werner (1984). *A Formal Semantics of Tense, Aspect and Aktionsart*. Bloomington: Indiana University Linguistics Club.

Shi, Zhiqiang (1990). Decomposition of perfectivity and inchoativity and the meaning of the particle *le* in Mandarin Chinese. *Journal of Chinese Linguistics* 18, 95–124.

Smith, Carlota (1991). *The Parameter of Aspect*. Dordrecht: Kluwer.

Tang, Ting-chi (1994). *Hanyu Cifa Jufa Wuji* [Chinese Syntax and Morphology V]. Taipei: Students Book Company.

Vendler, Zeno (1967). *Linguistics and Philosophy*. Ithaca: Cornell University Press.

Viach, Frans (1981). The semantics of the progressive. In *Tense and Aspect*, P. J. Tedeschi and A. E. Zaenen (eds.), 271–292. Syntax and Semantics 14. New York: Academic Press.

—(1993). Temporal adverbs, tenses and the perfect. *Linguistics and Philosophy* 16, 231–283.

von Fintel, Kai (1994). Restrictions on quantifiers' domains. Unpublished doctoral dissertation, University of Massachusetts at Amherst.

Wang, William S.-Y. (1965). Two aspect markers in Mandarin. *Language* 41, 457–470.

Yuan, Yulin (1993). *Hanyu Qushiju Yanjiu*. Beijing: Beijing University (in Chinese).

Zhang, Li (1996). "Zhe" de yuyi fenbu ji qi yufa yiyi. *Yuwenyanjiu* 1, 6–12 (in Chinese).