TOWARD A UNITARY ACCOUNT OF DIVERSE SHI CONSTRUCTIONS IN MANDARIN CHINESE*

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ABSTRACT

The morpheme *shi* (the fourth tone) in Mandarin has four major uses: as a copula verb, a verum focus marker and an associate of argument/adjunct focus, and it is also involved in elliptical sentences. These uses have been well-observed in the literature, and many previous attempts have been made to provide a unitary theoretical characterization of these uses. In this paper, a revisit is paid to these uses of *shi* and it is argued that some of the latest unitary theoretical accounts of this morpheme are problematic. A novel unitary theoretical account of these uses is formulated from a parsing perspective in the framework of Dynamic Syntax, wherein sentences are viewed as left-to-right word-by-word monotonic processes of constructing propositions. It is proposed that *shi* always contributes a predicate of identity relation which combines with a corresponding formula of some logical type. Whether the presence of *shi* in a sentence gives rise to pragmatic effects or not depends on *shi* and the syntactic properties of the expression following *shi*.

Key words: *shi*, copula, focus marker, Dynamic Syntax

1.   INTRODUCTION

The morpheme *shi* (the fourth tone) in Mandarin is one of the most intensively studied grammatical units in Chinese linguistics. Various efforts (Chao 1968; Li and Thompson 1981; Hashimoto 1969; Cheng 2008; Paul and Whitman 2008) have been made to describe and theoretically characterize *shi*. This morpheme has three most discussed uses, which are briefly described as follows. First, *shi*, which is traditionally called a copula verb, and a noun phrase jointly function as the grammatical predicate of a sentence (1a). Without the presence of *shi*, what is left is ungrammatical (1b). [1]

(1)   a.   Zhangsan shi laoshi.
            Zhangsan shi teacher
            'Zhangsan is a teacher.'
       b. * Zhangsan laoshi.
            Zhangsan laoshi
            'Zhangsan is a teacher.' (intended)

In some cases, *shi* does not have to appear before a noun phrase which functions as a semantic predicate but *shi* must appear if a sentence is negative (Chao 1968)[2]

(2)   a.   Zhangsan xiaoren.
            Zhangsan villain
            'Zhangsan is a villain.'

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[1] The following abbreviations are used in glossing examples: asp=aspect; neg=negative; prt=particle:1sg=first person singular; 2sg=second person singular; 3sg=third person singular; 3pl=third person plural.

[2] Noun phrases exhibit diversity with regard to their requirement of the obligatory appearance of *shi* when they are used as grammatical predicates. Exploring the difference between various types of noun phrases is beyond the scope of the current study.

    b. *Zhangsan bu xiaoren.
       Zhangsan neg villain
     'Zhangsan is not a villain.' (intended)
    c.   Zhangsan bu shi xiaoren.
       Zhangsan neg *shi* villain.
     'Zhangsan is not a villain.'

In contrast to nouns, adjectives and verbs can function on their own as grammatical predicates. But they can also be preceded by *shi*, which is prosodically stressed (written in bold letters henceforth). In the latter case, sentences obtain a verum focus reading. Compare (a) and (b) sentences in (3) and (4).

(3)   a.   Zhangsan shuai.
         Zhangsan handsome
       'Zhangsan is handsome.'
     b.   Zhangsan **shi** shuai.
         Zhangsan shi hansome
       'It is true that Zhangsan is handsome.'

(4)   a.   Zhangsan xihuan Lisi.
         Zhangsan like Lisi
       'Zhangsan likes Lisi.'
     b.   Zhangsan **shi** xihuan Lisi.
         Zhangsan shi like Lisi
       'Zhangsan does like Lisi.'

Without the presence of *shi*, the verum focus reading disappears.[3] Therefore, it is reasonable to take *shi* in such cases as a verum focus marker. Similarly, *shi* can also occur with an argument or adjunct focus. In this case,

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[3] If *shi* is not stressed prosodically, a sentence sounds unnatural unless a post-*shi* expression in the sentence is stressed, such as *xihuan* or *Lisi* in (4b).

shi either immediately precedes an argument or an adjunct that is focussed and is prosodically stressed, as shown in (5) and (6), or appears somewhere before a focussed argument or adjunct, which is prosodically stressed, as shown in (7) and (8).

(5)   Shi **Zhangsan** gaoxing.
         shi Zhangsan happy
         'It is Zhangsan that is happy.'

(6)   Zhangsan shi **zuotian** lai-guo.
         Zhangsan shi yesterday come-asp
         'It was yesterday that Zhangsan came.'

(7)   Zhangsan shi zuotian gen **wo** lai-guo.
         Zhangsan shi yesterday with 1sg come-asp
         'It was with me that Zhangsan came yesterday.'

(8)   Zhangsan shi qunian gen wo qu-guo **Shanghai**.
         Zhangsan shi last.year with 1sg go-asp shanghai
         'It was Shanghai that Zhangsan visited with me.'

Furthermore, *shi* cannot appear postverbally even if a postverbal expression is focussed.

(9)   *Zhangsan xihuan shi **Lisi**.
         Zhangsan like shi Lisi
         'It is Lisi that Zhangsan likes .' (intended)

But *shi* can appear preverbally when a postverbal argument is focussed.

(10)   Zhangsan shi xihuan **Lisi**.
         Zhangsan shi like Lisi
         'It is Lisi that Zhangsan likes.'

For the focusing effect on argument/adjunct, the presence of *shi* is just optional, since the focussed expression is always prosodically stressed and can be recognized without *shi*. Based on this observation, I take *shi* to be an associate of focus.[4]

Now, I digress for a while, turning attention to the so-called *shi...de*. In this digression, I argue that the syntactic study of *shi* does not have to include *de*, although they co-occur on many occasions. *Shi* is often, if not always, discussed together with *de* (Cheng 2008; Paul and Whitman 2008), and the two morphemes are even claimed to be two components of the so-called *shi...de* construction, in which an expression between *shi* and *de* is focussed. The latest construction-based analysis is proposed by Zhan and Sun (2013), who analyse *shi* as a copula verb and the sentence-final *de* as a nominalizer (see also Shen 2008) or a relativizer (see also Yuan 2003). I do not review these latter works in detail, for my refutation of Zhan and Sun (2013) also applies to them.

Zhan and Sun (2013) adopt the framework of Construction Grammar and propose that in Standard Mandarin Chinese there is an overarching construction [XP COP XP], which has two sub-constructions, [NP COP NP] and [NP COP NOM]. [NP COP NP] is instantiated by those sentences where the subject is a noun phrase and the post-*shi* phrase is also a noun phrase, for example.

(11)   Zhangsan shi laoshi.
         Zhangsan shi teacher
         'Zhangsan is a teacher.'

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[4] Traditionally, *shi* in this use is called a focus marker. This address is misleading because *shi* is not grammatically obligatory for the focusing effect. To call it a focus-sensitive particle is also misleading because the presence of *shi* does not add any special meaning; therefore, it is different from those real focus-sensitive particles such as *zhi* 'only' in this language. *shi* is only associated with a focus (Paul and Whitman 2008; Hole 2011; Long 2013) and helps to strengthen the effect of emphasis. Therefore, simply calling *shi* an associate of focus is free of the known prejudice.

The [NP COP NOM] construction is instantiated by a sentence where the post-*shi* phrase is not a noun phrase but rather an adjectival phrase (ADJP) or a verbal phrase (VP), as is illustrated below.

(12)   Wo xihuan de shi da lanqiu.
          1sg like de shi play basketball
         'What I like is playing basketball.'

(13)   Ta shi piaoliang.
          3sg shi piaoliang
         'She is pretty.'

Their line of thought is that since in most cases what follows *shi* is a noun phrase, then those phrases which follow *shi* and are typically not recognized as NPs in other contexts are converted into NPs somehow, such as by the sentence-final *de* (Paris 1979). The nominalized phrase expresses a restricted and non-referential set, a member of which is specified by the pre-*shi* NP. The problem with Zhan and Sun's theory can be revealed by examining their analysis of the following empirical facts.

(14)   a.   Ta zuotian shi qu de Shanghai.
              3sg yesterday shi go de Shanghai.
            'It was Shanghai that he visited yesterday.'
       b. * Ta zuotian shi qu de Shanghai de.
              3sg yesterday shi go de Shanghai de
          'It was yesterday that he visited Shanghai.' (intended)

(15)   a.   Ta shi qunian sheng de nüer.
              3sg shi last.year give.birth.to de daughter
             (i) 'It was last year that she gave birth to a daughter.'
             (ii) 'She was a daughter that was born last year.'

    b. *Ta shi qunian sheng de nüer de.
      3sg shi last.year give.birth.to de daughter de
    'It was last year that she gave birth to a daughter.' (intended)

(14a) is acceptable but (14b) is not. Attention should be drawn to the fact that (14a) only involves the postverbal *de* but (14b) involves the postverbal *de* and the sentence-final *de*. Zhan and Sun (2013) treat the postverbal *de* as a relativizer and believe that the absence of the sentence-final *de* serves the purpose of avoiding redundancy since the nominalizer and the relativizer are the same functionally, which can explain why (14b) is unacceptable. On the other hand, however, they claim that (15b) is acceptable and argue that it is acceptable because the sentence-final *de* can help avoid ambiguity (i.e. without its presence, the subject of the sentence may be understood either as a mother that gave birth to a daughter or a daughter who was born). This is where the problem with their analysis lies. I have checked the acceptability of both (14b) and (15b) with 18 native speakers of Mandarin Chinese with different dialectal backgrounds, and 16 of them reject these sentences and detect no effect of disambiguation of the sentence-final *de* in (15b) although they acknowledge that (15a) is acceptable and ambiguous. If my informants are reliable, then Zhan and Sun's claim is empirically challenged. But this is only part of the story.

    Besides, Zhan and Sun's (2013) analysis suffers a theoretical problem. If, as they claim, the postverbal-*de* is only a relativizer, then (15a) cannot be ambiguous because the relative clause *qu nian sheng de* 'last year give.birth.to de' can only be the modifier of *nüer* 'daughter' and the grammatical subject *ta* is unlikely to be interpreted as its potential head, because a transitive clause in Mandarin allows only one constituent to be relativized.[5] If the grammatical subject of *ta* is a relativized constituent, *nüer* 'daughter', then, cannot be a relativized element and therefore is dangled. This restriction can be observed in (16). (16a) is a simple transitive sentence for readers's reference; (16b) is a NP, the head of which is the

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[5] I hypothesize that this restriction is a language universal.

relativized grammatical object of (16a); (16c) is a NP, the head of which is a relativized grammatical subject of (16a); (16d) is an ill-formed NP, the head of which is intended to be the grammatical subject of (16a).

(16)   a.   Na-ge ren zhaodao liang-ben shu.
                that-cl person find two-cl book
                'That person once saw two books.'
        b.   na-ge ren zhaodao de liang-ben shu
                that-cl person find de two-cl book
            'the two books which that person found'
        c.   zhaodao liang-ben shu de na-ge ren
                find two-cl book de that-cl person
                'that person who found two books'
        d. *zhaodao de liang-ben shu de na-ge ren
                find de two-cl book de that-cl person

The ill-formedness of (16d) supports my argument that the subject *ta* cannot be a potential relativized head of *qu nian sheng de*. And the ambiguity of (15a), therefore, cannot be caused by the ambiguous interpretation of relativization, i.e., the subject relativization and the object relativization. The ambiguity arises from the fact that the postverbal *de* can be interpreted either as a relativizer, in which *nüer* 'daughter' is modified by a relative clause, or as something else, such as a tense marker (Simpson and Wu 2002), in which case the NP *nüer* 'daughter' is only an ordinary grammatical object and is not modified by any relative clause. In a word, the unacceptability of (14b) cannot be caused by the so-called redundancy resulting from the co-occurrence of a relativizer and a nominalizer. Since there is no redundancy caused by the co-occurrence of the postverbal *de* and the sentence-final *de* in (14b), I wonder why the sentence-final *de* is forbidden. This makes it doubtable that *shi* and the sentence-final *de* are two integral parts of a so-called [NP COP NOM] construction. If the

sentence-final *de* is not part of a construction, there is no need to consider *de* in probing the syntax of *shi*.[6]

To recapitulate, Zhan and Sun's suggestion is that a VP or ADJP following *shi* is assumed to be nominalized is unconvincing, although I cannot claim that they are wrong. If *de* is not a nominalizer, there is no morpho-syntactic evidence that a *shi*-following VP or ADJP is nominalized. The assumption that a VP or ADJP in this position is nominalized is made only analogously, based on the observation that in most cases, as Zhan and Sun's (2013) statistics shows, phrases that follow *shi* are NP. The analogy is unreliable or even misleading in that the two authors have not clearly indicated what criteria are used to distinguish a VP or ADJP from an NP. If functioning as the follower of *shi* is not an exclusive defining feature of an NP, VP and ADJP , there is no guarantee that VP and ADJP are nominalized when following *shi* simply because the constituent following *shi* is typically an NP.[7]

In a word, Zhan and Sun's argument that [NP COP NOM] is a construction where *shi* and the sentence-final *de* co-occur is unconvincing if not wrong, and accordingly the foundation of their attempt to unify such clefts with simple copula sentences as two sub-constructions under the construction [XP COP XP] is undermined.

There is further evidence that *shi* and *de* are not two integral components of a fossilized construction. The evidence is that the presence of *shi* is optional where *de* appears, and the absence of *shi* does not result in the loss of the focussing effect. See the following examples

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[6] But I welcome any study on the semantic/pragmatic effect that the co-occurrence of *shi* and the sentence-final *de* results in.

[7] Zhu (1980) argues that a VP or ADJP that appears in the syntactic position of an argument is not nominalized and he also argues that a VP-*de* or ADJP-*de* is nominal. I think it should be clarified that a VP/ADJP-*de* being nominal does not mean a VP/ADJP becomes nominal through nominalization. Zhan and Sun (2013) wrongly use the examples where a VP/ADJP appears in an argument position as the evidence that a VP/ADJP-*de* is nominal. I do not argue that a VP/ADJP-*de* cannot be nominal but I argue that treating *shi⋯de* as two components of a fossilized construction, as Zhan and Sun (2013) insist, is not on the right track.

(17) a.   (Shi) **Zhangsan** zuotian kanjian Lisi de.
        shi Zhangsan yesterday see Lisi de
       'It was Zhangsan who saw Lisi yesterday.'
    b.   (Shi) **Zhangsan** zuotian kanjian de Lisi.
        shi Zhangsan yesterday see de Lisi
     'It was Zhangsan that saw Lisi.'

(18) a.   Zhangsan (shi) **zuotian** kanjian Lisi de.
       Zhangsan shi yesterday see Lisi de
       'It was yesterday that Zhangsan saw Lisi.'
    b.   Zhangsan (shi) **zuotian** kanjian de Lisi.
       Zhangsan shi yesterday see de Lisi
       'It was yesterday that Zhangsan saw Lisi.'

In the literature, the case wherein *de* does without *shi* is called the bare-*de* construction (Paul and Whitman 2008) and is analysed as a special case of the *shi···de* construction with *shi* dropped. I would argue that since *shi* can be dropped, the co-occurrence of *shi* is not fossilized and therefore the *shi···de* construction is a delusion, unless the concept 'construction' is used loosely, simply meaning the co-occurrence of some linguistic units.[8]

Not only can *de* do without *shi* but also *shi* can do without *de*, whether *de* appears in the postverbal position or in the sentence-final position. Previously, I have argued that *shi* and the sentence-final *de* do not have to co-occur; now I show that *shi* does not have to occur with the postverbal *de*[9]

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[8] In treating the bare *shi* construction or the bare *de* construction as two special cases of the *shi...de* construction, one needs to resort to the concept of 'implicit form' or 'unpronounced morpheme'. But I daresay that such a concept, which has been recognized as a major contribution of Chomskyan generative linguistics, has been abused. It is wildly used anywhere a theorist believes something should exist but actually is not observable.

[9] What the postverbal *de* is remains controversial. In the current discussion, I prefer to regard it as a tensed aspect marker (Simpson and Wu 2002) and reject the complementizer theory that Hole (2011) proposes. The reason for rejecting Hole's analysis of the postverbal *de* as a

complementizer lies in the problem with this analysis in explaining why aspect markers such as *le* and *guo* cannot occur with the postverbal *de*. My reasons are given below.

Hole (2011:1713) assumes that *de* in V O *de* and V *de* O are the same morpheme and it always appears in the C* position, which is the head of C*P. In order to explain why *de* can appear in the two surface positions, Hole assumes that the two surface constructions are derived through two different derivational processes. In these processes, *de* remains in the same base-generation position and everything else moves around it. Not treating the postverbal *de* as a tensed aspect marker, Hole has to explain why modal words and aspect markers cannot occur in V *de* O. She explains why modal words cannot appear in V *de* O by using two PF linearization true restrictions: (i) verbs must precede objects and (ii) tense/aspect/modal words must precede verbs. The application of the two restrictions helps her successfully explain why modal verbs cannot appear in V *de* O. But she notes that the two restrictions cannot explain why aspect markers such as *le* and *guo* cannot appear therein. Then she turns to other theories. Her explanation goes as follows:

⋯object shift targets Spec, Asp in our account, the verb cannot target the same position, which it would have to do to form a V+Asp sequence. The argument can be established no matter whether multiple specifiers are assumed or not. If there is just a single specifier of Asp, then its being filled by the shifted object immediately explains the ban on aspect-triggered verb movement. If multiple specifiers are allowed, the verb would have to move to a second specifier of Asp. The first specifier will be occupied by the shifted object. This would lead to a linearization V O Asp-marker. This linearization does not allow for the necessary suffixation of the aspect marker to the verb under adjacency. Verbs in the V *de* O pattern may thus bear no aspectual suffixes at all. This derives the second half of the TAM restrictions found with V *de* O clefts.(Hole 2011:1723)

This explanation seems to be successful on the surface; nevertheless, it is faced with a rather serious hidden problem. According to this explanation the verb has no chance to arrive at a position immediately above the head position of an AspP and therefore V + aspect marker sequence cannot be derived. However, this goes against the empirical fact that V aspect-marker O is fully grammatical both in open sentences and in V O *de* clefts. To explain why V aspect-marker O is grammatical in open sentences, she needs to assume that there exists some intermediate phrase structure between the aspect head position and the base-generation position of the verb. This assumed position can be targeted by the verb rather than by the object so that the verb is exclusively allowed to appear on it, resulting in the V-aspect marker sequence in the surface structure. But such an assumption requires empirical justification or is derivable theoretically; otherwise it is an ad hoc stipulation. Unconvinced by Hole's theory that the postverbal *de* is a complementizer, I take it to be a tensed-aspect marker, similar to, though different from, *le*.

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(19) a. Zhangsan shi **zuotian** si de.
            Zhangsan shi yesterday die de
            'It was yesteday that Zhangsan died.'
     b. *Zhangsan shi **zuotian** si le.
            Zhangsan shi yesterday die asp
          'It was yesterday that Zhangsan died.' (intended)

(20) a. Zhangsan shi **zuotian** lai de.
            Zhangsan shi yesterday come de
            'It was yesteday that Zhangsand came.'
     b. Zhangsan shi **zuotian** lai guo.
            Zhangsan shi yesterday come asp
            'It was yesterday that Zhangsan came.'

(21) a. Zhangsan shi **zuotian** mai de/le zheiben shu.
            Zhangsan shi yesterday buy de/asp this book
            'It was yesterday that Zhangsan bought this book.'
     b. Zhangsan shi **zuotian** mai *de/le yiben shu.
            Zhangsan shi yesterday buy de/asp one book
            'It was yesterday that Zhangsan bought a book.'

The above sentences are called bare-*shi* sentences (Paul and Whitman 2008). The existence of bare-*shi* sentences is also the evidence that the co-occurrence of *shi* and *de* are not fossilized as a construction. Similarly, if the absence of *de* is simply assumed to be a case of implicit existence (e.g. in Zhan and Sun 2013), the concept 'construction' loses its theoretical substance.[10] In a word, the co-occurrence of *shi* and *de* is not obligatory and there is no need to consider *de* in a theoretical characterization of *shi*.

Getting out of the digression on the so-called *shi...de* construction, I turn

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[10] The relationships among bare-*shi* sentences, bare-*de* sentences and sentences where *shi* and *de* co-occur stand outside of the scope of this paper.

to a fourth use of *shi*. This morpheme can also appear in elliptical sentences, as is shown below (Xu 2003).

(22)   Zhangsan xihuan youyong, wo ye shi.
       Zhangsan like swimming, 1sg also shi
       'Zhangsan likes swimming. I do too.'

I shall return to the use of *shi* in elliptical sentences in my refutation of a previous theoretical account of *shi* in the framework I shall adopt, for that account relies heavily on the use of *shi* in elliptical sentences.

To summarize, the morpheme *shi* has various uses; four uses are considered in this paper: It is required by a noun phrase to make a grammatical predicate. It is obligatorily present before the grammatical predicate when a verum focus reading is part of the reading of a sentence. The morpheme optionally appears to the left of the main verb of a sentence, in which there is a focussed argument or adjunct which appears to the right of *shi*. And it can also appear in elliptical sentences.

The aim of this paper is to propose a unitary theoretical account of the above mentioned uses of *shi* from a parsing perspective in the framework of Dynamic Syntax (Kempson et al. 2001; Cann et al. 2005). The rest of the paper unfolds as follows. In section 2, a brief introduction is made to the framework of Dynamic Syntax first, then a previous study of *shi* in the framework is examined, which reveals that it suffers a few problems. To solve these problems, a new analysis of *shi* is proposed, which can account for its uses in the copula sentence, verum focus sentence, argument/adjunct focus sentence and elliptical sentence. In this section, two complex cases will also be discussed. In one case, two different uses of *shi* co-occur in a sentence; in the other, *shi* appears in a special position. Section 3 is the conclusion to the paper.

2. A UNITARY THEORETICAL ACCOUNT OF SHI IN DYNAMIC SYNTAX

2.1 The Basics of Dynamic Syntax

In Dynamic Syntax, a sentence is a goal-driven parsing process. The process starts with the ultimate goal of constructing a propositional formula. This goals splits hierarchically into a series of sub-goals, which are to be achieved through lexical input and/or contextual input. A sentence-parsing process is technically represented as the growth of a logic proof tree that bifurcates binarily, on which various nodes are annotated initially with the ultimate goal and sub-goals. As lexical and/or contextual information is input, sub-goals are achieved one by one in an order that is allowed by the grammar of a language, which consists of both general rules and lexically-encoded rules. When all sub-goals are achieved, the semantic formula on sister nodes combine through logical computation, through which the ultimate goal is finally achieved and the parsing process is successfully completed. The parsing process cannot be successfully completed if there is any single sub-goal unachieved.

Dynamic Syntax defines a pack of commands that can be used to define general syntactic rules and lexical information (dubbed as lexical actions). The most frequently used commands include the following:

• node making command make(); its function is to make a new tree node.

• pointer moving command go(); its function is to move the pointer to a designated tree node.

• node annotating command put(); its function is to annotate a current node with some information.

Dynamic Syntax also prepares a pack of modalities, which are employed to describe relations between different tree nodes. The modalities to be employed in this paper are given as follows:

• $<\downarrow_0>$, an argument daughter node of a current node;

• $<\downarrow_1>$, a functor daughter node of a current node;

• $<\uparrow_0>$, the mother node of a current argument node;

• $<\uparrow_1>$, the mother node of a current functor node

In Dynamic Syntax, syntax is defined as some general transitional rules and word-specific rules that are applied to drive the growth of a logical proof tree. The growth process starts with setting the ultimate goal, which is also the first current stage of a parsing process. A current stage is indicated by the presence of the pointer, $\diamond$. Next, I use the sentence *Zhangsan da-le Lisi* (Zhangsan hit-asp 'Zhangsan hit Lisi.') as an example to show how Dynamic Syntax works as a model of natural language grammar.

Setting the ultimate goal

$$?t, \diamond$$

Applying the Introduction rule

• The definition of Introduction

|		
IF	$?t$	trigger
THEN	$put(<\downarrow_0>e,<\downarrow_1>?e\rightarrow t)$	actions
ELSE	stayput	the pointer stays where it is

In the definition of the Introduction rule, the IF line is a triggering condition. If the triggering condition is satisfied, the lexical actions given in the THEN line are taken. If the triggering condition is not satisfied, the lexical actions given in the ELSE line are taken. In this paper, all the general syntactic rules (or general parsing stage-transitional rules) and lexically encoded syntactic rules are defined in this form. The application of the Introduction rule has the effect of introducing two sub-goals $?e$ and $?e\rightarrow t$ on the current node.

Applying the Prediction rule

• Defintion of Prediction

IF	$?t<\downarrow_0>e,<\downarrow_1>e\rightarrow t$
THEN	$make(<\downarrow_1>);go(<\downarrow_1>);put(?e\rightarrow t);$
	$go(<\uparrow_1>);make(<\downarrow_0>);go(<\downarrow_0>);put(?e)$
ELSE	stayput

This rule is applied to make two daughter nodes below the root node and move the pointer finally to the logical subject node. The effect is shown as the following growth of the partial tree.

$$?t$$
$$?e,\diamond \qquad\qquad ?e{\rightarrow}t$$
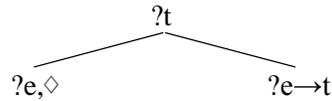
The requirement ?e on the current node can be satisfied through parsing the word *Zhangsan*. *Zhangsan* contributes the following lexical information.

• Lexical actions of *Zhangsan*

IF	?e	trigger
THEN	put(zhangsan':e,[⊥])	actions
ELSE	abort	the process is aborted

The lexical actions of the word *Zhangsan* consists of three parts, the trigger introduced by IF, the lexical actions introduced by THEN and the aborting action introduced by ELSE. If the triggering condition is satisfied, the formula zhangsan':e is put on the current node; if the condition is not satisfed, the parsing process is aborted. Lexical information is always defined in this form.[11] The effect of parsing *Zhangsan* is shown as follows.

$$?t$$
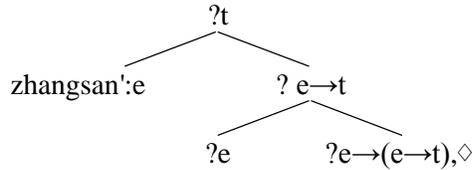$$zhangsan':e,\diamond \qquad\qquad ?e{\rightarrow}t$$
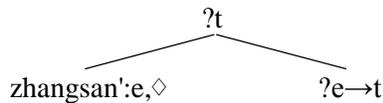
Next, the pointer moves to the functor node.

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[11] ⊥ is the symbol of bottom restriction, indicating that no nodes can be constructed below the node on which it appears.

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                          ?t
              _____/    _____
        zhangsan':e                    ?e→t,◇
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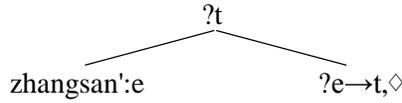
Applying the Transitivity rule

• Definition of the Transitivity rule

IF	?e→t
THEN	make ($<\downarrow_0>$);go($<\downarrow_0>$);put(?e);go($<\uparrow_0>$);
	make($<\downarrow_1>$);go($<\downarrow_1>$);make($<\downarrow_1>$);go($<\downarrow_1>$);
	put(?e→(e→t))
ELSE	stayput

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                          ?t
               _____/   _____
        zhangsan':e                 ? e→t
                              _____/   _____
                            ?e              ?e→(e→t),◇
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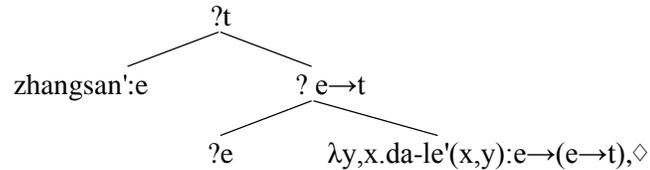
Next is the parse of *Zhangsan da-le*. For simplification, I provisionally treat *da-le* as a word, leaving out the aspect information that *le* contributes.
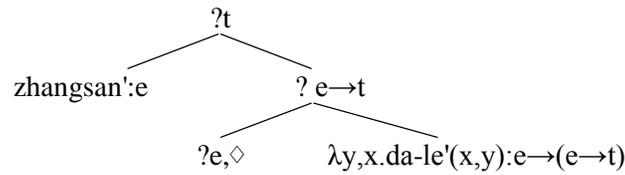
• Lexical actions of *da-le*

IF	?e→(e→t)
THEN	put(λy,x.da-le'(x,y):e→(e→t),◇
ELSE	abort

Parsing *Zhangsan da-le*

```
                        ?t
             _____/   _____
      zhangsan':e                ? e→t
                          _____/   _____
                        ?e          λy,x.da-le'(x,y):e→(e→t),◇
```

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Next, the pointer moves to the logical object node, as is shown below.

```
                    ?t
          ┌──────────┴──────────┐
    zhangsan':e              ? e→t
                       ┌────────┴────────┐
                     ?e,◇      λy,x.da-le'(x,y):e→(e→t)
```

Parsing *Zhangsan da-le Lisi*

```
                    ?t
          ┌──────────┴──────────┐
    zhangsan':e              ? e→t
                       ┌────────┴────────┐
                    lisi':e,◇   λy,x.da-le'(x,y):e→(e→t)
```

Completing the tree

```
            da-le'(zhangsan',lisi'):t,◇
          ┌──────────┴──────────┐
    zhangsan':e          λx.da-le'(x,lisi'):e→t
                       ┌────────┴────────┐
                    lisi':e     λy,x.da-le'(x,y):e→(e→t)
```
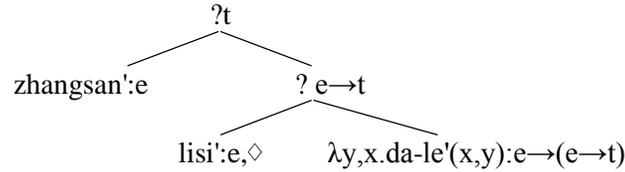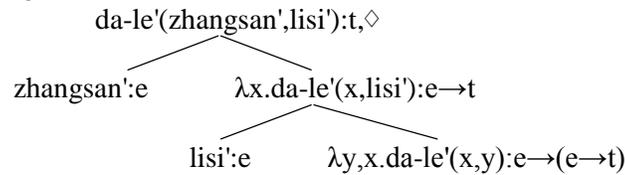
Having introduced the basics of Dynamic Syntax, I shall next examine a previous theoretical account of *shi* in this framework and then propose a novel unitary theoretical account of this morpheme.

2.2 A Previous Account of *shi* in Dynamic Syntax

A recent theoretical characterization of *shi* in Dynamic Syntax is formulated by Wu (2011). Based on the fact *shi* can appear in elliptical sentences and the fact that the form *shi* was once a pronoun in ancient Chinese, Wu treats *shi* as a pro-form and assumes that *shi* always contributes

a metavariable of type e→t (Wu 2011). A metavariable, in Dynamic Syntax is a placeholder which is to be replaced by some contentful formula coming from lexical input or from context. Wu's definition of *shi* is quoted below.

- *shi*

IF	?e→t
THEN	put(**SHI**:e→t)
ELSE	abort

On the basis of this definition, Wu attempts to account for three types of sentences, including the copula sentence, the verum focus sentence, and the *shi*-elliptical sentence. I shall demonstrate that Wu's account suffers some deficiencies.

Firstly, the theoretical account faces two empirical problems. Wu argues that noun phrases in Chinese can function alone as grammatical predicates. This is not true. Undeniably, some so-called noun phrases can do so but many more cannot. Wu's definition of the lexical information of *shi* can by no means explain why so many noun phrases require *shi* to occur with them to constitute grammatical predicates. And he does not propose a theory of noun phrases that can explain this.

Without a theory of noun phrases, Wu's account cannot distinguish the copula construction from the verum construction because in his account the noun phrase following *shi* in the copula construction and the verb phrase following *shi* in the verum construction are equally treated as expressions that provide contentful formulae replacing the metavariable contributed by *shi*.

Another empirical challenge comes from *shi*-elliptical sentences. I repeat example (22) below to facilitate the following discussion.

(23)   Zhangsan xihuan youyong, wo ye shi.
        Zhangsan like swimming, 1sg also shi
        'Zhangsan likes swimming. So do I.'

Wu's theory predicts that *shi* can appear in an answer to a yes-no question. Unfortunately, the prediction is not empirically borne out.

(24)   A: Ni xihuan youyong ma? B: *Wo shi.
       A: 2sg like swimming prt   B: 1sg shi
       A: 'Do you like swimming?'
       B: '(Yes), I do.' (intended)

Still, the theory predicts that *shi* can appear in the following unacceptable sentence (25b).

(25)   a.   Zhangsan xihuan youyong, Wangwu ye xihuan youyong,
            Zhangsan like swimming, Wangwu also like swimming,
            tamen dou xihuan youyong.
            3pl both like swimming
          'Zhangsan likes swimming; Lisi likes swimming; they both like
            swimming.'
       b. * Zhangsan xihuan youyong, Wangwu ye xihuan youyong,
            Zhangsan like swimming, Wangwu also like swimming,
            tamen dou shi.
            3pl both shi
          'Zhangsan likes swimming; Lisi likes swimming; they both like
            swimming.' (intended)

More empirical challenges against Wu's theory come from the co-occurrence of the negative *bu* and *shi* in elliptical sentences. In a compound sentence, if a verb phrase is negated by *bu* in the first clause, *shi* in the second clause is understood as the negated verb phrase as is shown in (26a), and cannot be just understood as the verb phrase, as is shown in (26b) (Xu 2003; Wei 2010).

(26)   a.   Zhangsan bu xihuan Lisi, Wangwu ye shi.
            Zhangsan neg like Lisi, Wangwu also shi
            'Zhangsan does not like Lisi, Wangwu does not either.'
       b. *Zhangsan bu xihuan Lisi, Wangwu ye bu shi.
            Zhangsan neg like Lisi, Wangwu also neg shi
            'Zhangsa does not like Lisi, Wangwu does not either.' (intended)

In contrast, in a compound sentence, if a verb phrase is negated by *bu* in the first clause, the second clause, if intended to be affirmative, only allows the verb (and its object) to be repeated (27a) and does not allow *shi* to appear therein (27b) (Soh 2007:180).

(27)   a.   Zhangsan bu xihuan Lisi, dan Wangwu xihuan.
            Zhangsan neg like Lisi, but Wangwu like
            'Zhangsan does not like Lisi, but Wangwu does.'
       b. *Zhangsan bu xihuan Lisi, dan Wangwu shi.
            Zhangsan neg like Lisi, but Wangwu shi
            'Zhangsan does not Lisi, but Wangwu does.' (intended)

Similarly, in a compound sentence, if the first clause is an affirmative clause and the second clause a negative one, then the second clause only allows the verb in the first clause to be repeated (28a) but does not allow *shi* to appear therein (28b).

(28)   a.   Zhangsan xihuan Lisi, dan Wangwu bu xihuan.
            Zhangsan like Lisi, but Wangwu neg like
            'Zhangsan likes Lisi, but Wangwu does not.'
       b. *Zhangsan xihuan Lisi, dan Wangwu bu shi.
            Zhangsan like Lisi, but Wangwu neg shi
            'Zhangsan likes Lisi, but Wangwu does not.' (intended)

When the first clause is a negative copula clause, the second clause has to be a negative elliptical copula clause. Compare (29a) and (29b).[12]

(29)   a. *Zhangsan bu shi meiguoren, Wangwu ye shi.
             Zhangsan neg shi American, Wangwu also shi
             'Zhangsan is not an American, Wangwu is not either.' (intended)

---

[12] An anonymous reviewer kindly points out that *shi* in (26)-(28) and *shi* in (29) may occupy different syntactic positions. Specifically, as is argued in Soh (2007), *shi* is used as an auxiliary in (26)-(28) but is used as a verb in (29). I have to clarify that I do not distinguish them because syntactic position only means linear position in Dynamic Syntax which I choose to work in. There is no need to recognize two *shi* morphemes since they are both devoid of content semantically and they both precede some contentful expressions. They are just two uses of the same morpheme. The difference between the two uses of *shi*, as I can argue, lies in what follows *shi* rather than *shi* itself, which will be shown in the following sections. In fact, even if following the convention of generative grammar, I can still argue that it is not a necessary choice to assume the co-existence of an auxiliary *shi* and a verbal *shi*. This distinction is made in Soh (2007) mainly on the basis of the observation that in some cases *shi* appears before/above the negative *bu*, wherein the morpheme is recognized as an auxiliary, and in other cases *shi* appears behind/below the negative *bu*, wherein it is recognized as a dummy verb. However, the distinction is not always clear, for there is evidence that even the so-called auxiliary *shi* can follow the negative *bu* as well, which is illustrated below.

(i)   Zhangsan bu shi bu xihuan Lisi
         Zhangsan neg shi neg like Lisi
         'It is not that Zhangsan does not like Lisi.'

Recognizing *shi* as an auxiliary in some cases but as a verb in other cases is a structuralist tradition. But actually, it can always be shown that the different uses of *shi* are tightly interwoven rather than clear-cut. Crosslinguistically, such a tradition makes bigger troubles. For example, assuming that there is an auxiliary *shi*, one may regard it the same as the English auxiliary *do* in terms of lexical category (Soh 2007). However, there are more differences between *shi* in Chinese and *do* in English than between the so-called auxiliary *shi* and the so-called verb *shi*.

b.   Zhangsan bu shi meiguoren, Wangwu ye bu shi.
     Zhangsan neg shi American, Wangwu also neg shi
     'Zhangsan is not an American, Wangwu is not either.'

If *shi* was a pro-form, its behaviour in (26a) and (29a) would be surprising, for in (26) it takes *bu xihuan Lisi* 'neg like Lisi' as its antecedent but in (29a) it cannot take *bu shi meiguoren* 'neg shi American' as its antecedent.

Furthermore, if *shi* is a pro-form, the following sentences are expected to be acceptable; however, they are outright unacceptable although the assumed antecedent of *shi* is available in context.

(30)   a. *Zhangsan ganji Lisi, yinwei shi bang Zhangsan zhao-le gongzuo.
          Zhangsan be.grateful.to Lisi; because shi help Zhangsan find-asp
          job.
          'Zhangsan was grateful because it was Lisi that helped Zhangsan
          find a job.' (intended)
     b.*Zhangsan shi zuotian jiao-le lunwen; Lisi ye shi jiao-le lunwen.
          Zhangsan shi yesterday submit thesis; Lisi also shi submit thesis.
          'It was yesterday that Zhangsan submitted his thesis; and it was
          also yesterday that Lisi submitted his thesis.' (intended).

Briefly, analysing *shi* as a pro-form is empirically problematic. Instead, I argue that analysing such sentences as elliptical sentences could be a better choice:

First, an elliptical sentence is acceptable and its corresponding full sentence is acceptable as well, as shown below.

(31)   Zhangsan bu shi meiguoren, Wangwu ye bu shi (meiguoren).
        Zhangsan neg shi American, Wangwu also neg shi (American)
   'Zhangsan is not an American, Wangwu is not an American either.'

(32)   Zhangsan xihuan youyong, wo ye shi (xihuan youyong).
        Zhangsan like swimming, 1.sg also shi (like swimming)
       'Zhangsan likes swimming. I also like swimming.'

(33)   Zhangsan bu xihuan Lisi, Wangwu ye shi (bu xihuan Lisi).
        Zhangsan neg like Lisi, Wangwu also shi (neg like Lisi)
       'Zhangsan does not like Lisi, Wangwu does not either.'

Second, an elliptical sentence is unacceptable and its corresponding full sentence is unacceptable as well. See the following examples.

(34)   A: Ni xihuan youyong ma?   B: Wo shi *(*xihuan youyong).
        A: 2sg like swimming *prt*   B: 1sg shi   (like swimming)
        A: 'Do you like swimming?'   B: '(Yes), I do.' (intended)

(35)   Zhangsan xihuan youyong, Wangwu ye xihuan youyong,
        Zhangsan like swimming, Wangwu also like swimming,
        tamen dou shi *(*xihuan youyong).
        3pl both shi (like swimming)
       'Zhangsan likes swimming; Lisi likes swimming; they both like swimming.' (intended)

(36)   Zhangsan bu xihuan Lisi, Wangwu ye bu shi *(*xihuan Lisi) .
         Zhangsan neg like Lisi, Wangwu also neg shi   (like Lisi)
        'Zhangsa does not like Lisi, Wangwu does not either.' (intended)

(37)   Zhangsan bu xihuan Lisi, dan Wangwu shi *(*xihuan Lisi).
         Zhangsan neg like Lisi, but Wangwu shi   (like Lisi)
        'Zhangsan does not Lisi, but Wangwu does.' (intended)

(38)   Zhangsan xihuan Lisi, dan Wangwu bu shi *(*xihuan Lisi).
         Zhangsan like Lisi, but Wangwu neg shi   (like Lisi)
        'Zhangsan likes Lisi, but Wangwu does not.' (intended)

(39)   Zhangsan bu shi meiguoren, Wangwu ye shi *(*meiguoren).
         Zhangsan neg shi American, Wangwu also shi (American)
      'Zhangsan is not an American, Wangwu is not American either.' (intended)

Furthermore, Wu's account suffers a serious theoretical problem. Wu's characterization of the sentence-initial *shi* as an associate of argument involves a sentence-medial adjunct. To characterize the parsing of the adjunct, Wu assumes that the pointer goes back to the root node and above the root node is constructed a new node, which can be illustrated by the following two partial trees (See Wu 2011:864-865, for the original trees).[13]
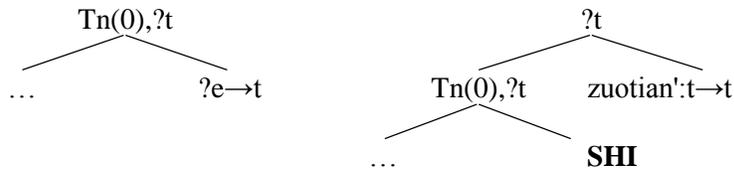
This is a fatal error according to Dynamic Syntax because in this framework the growth of a partial semantic tree is a monotonic process, in which nothing that has already been fixed can be cancelled. Building a new root node above the root node brutally violates the principle of monotonicity because it changes the address of a fixed node.

2.3 Toward a Unitary Account of *shi*

I propose that *shi* always contributes an identity relation formula of a range of logical types, written as $\lambda U.U$, where U is a metavariable ranging over variables of type X, with X being a member of the set$\{e, e \to t\}$.

The lexical actions of *shi* can be unitarily defined as follows.

---

[13] In Wu's original paper, he first provides the node address of the root node and later on conveniently omits it when he assumes a node higher than the root node is built.

- *shi*

IF	?X,X∈ { e, e→t }
THEN	IF ?↑? e→t
	THEN abort
	ELSE make($<\downarrow_1>$);go($<\downarrow_1>$);
	put($\lambda U.U$);go($<\uparrow_1>$);
	make($<\downarrow_0>$);go($<\downarrow_0>$);put(?X)
ELSE	abort

The tree structure that arises through parsing *shi* is given as follows:

$$?X,X\in \{ e, e\rightarrow t \}$$

?X $\lambda U.U$: X∈ { e, e→t }
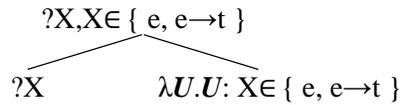
Given this definition of the lexical informaiton of *shi*, I can account for all the *shi* constructions described above.

2.4 *Shi* in the Copula Sentence

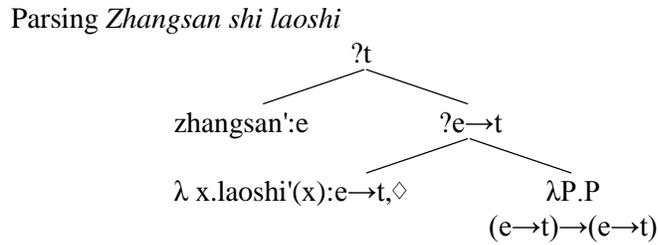The parsing of a copula sentence is illustrated below. The following sentence serves as an example:

(40)   Zhangsan shi laoshi.
        Zhangsan shi teacher
       'Zhangsan is a teacher.'

Parsing *Zhangsan*

$$?t$$

$$\text{zhangsan':e} \qquad ?e{\to}t,\diamond$$

Parsing *Zhangsan shi*

$$?t$$

$$\text{zhangsan':e} \qquad ?e{\to}t$$

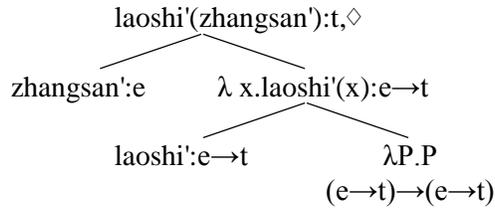$$?e{\to}t,\diamond \qquad \lambda P.P{:}(e{\to}t){\to}(e{\to}t)$$
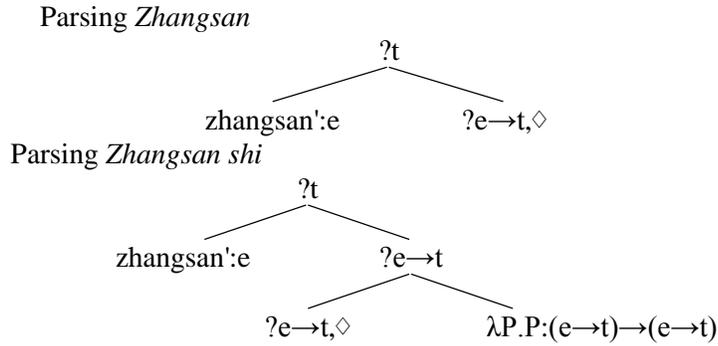
Next, *laoshi* is parsed. The lexical actions of *laoshi* are given below, where I assume with Cann (p.c.) that the trigger of common nouns in Chinese is $?e{\to}t$.

- *laoshi*

IF	$?e{\to}t$	
THEN	IF	$\uparrow_1?t$
	THEN	abort
	ELSE	put($\lambda x.$laoshi'(x)$:e{\to}t$
ELSE	abort	

Parsing *Zhangsan shi laoshi*

$$?t$$

$$\text{zhangsan':e} \qquad ?e{\to}t$$

$$\lambda x.\text{laoshi'(x)}{:}e{\to}t,\diamond \qquad \lambda P.P$$
$$(e{\to}t){\to}(e{\to}t)$$

Completing the tree

$$\text{laoshi'(zhangsan'):t,}\diamond$$

zhangsan':e λ x.laoshi'(x):e→t

laoshi':e→t λP.P
(e→t)→(e→t)

In this account, *shi* is parsed when the pointer stays on the functor node annotated with ?e→t, which is one of the candidate types given in the lexical information of *shi*.

2.5 *Shi* in the Verum Focus Sentence

Now I treat *shi* in the verum focus construction. I compare the following two sentences.

(41)   a.   Zhangsan shuai.
             Zhangsan handsome.
           'Zhangsan is handsome.'
       b.   Zhangsan shi shuai.
             Zhangsan shi handsome
           'It is true that Zhangsan is handsome.'
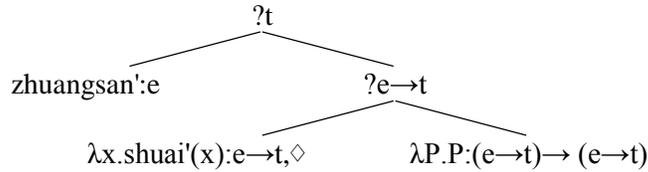
I assume *shuai* has the following lexical actions.

  • *shuai*
  | IF   ?e→t
  | THEN   put(λx.shuai'(x):e→t)
  | ELSE   abort

Parsing *Zhangsan shuai*

$$?t$$

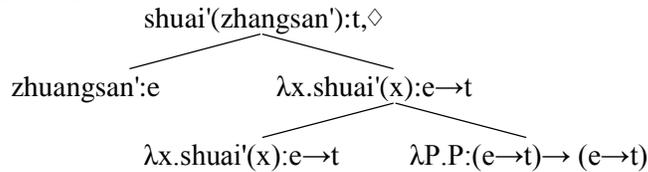zhangsan':e $\lambda x.shuai'(x):e \rightarrow t, \diamond$
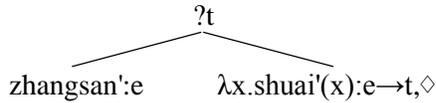
The morpheme *shi* can turn up before an adjective, in which case the sentence obtains a verum focus reading. The effect of verum focus can be explained as a result of the extra step of computation that the input of *shi* results in.

Parsing *zhangsan shi shuai*

$$?t$$

zhuangsan':e $?e \rightarrow t$

$\lambda x.shuai'(x):e \rightarrow t, \diamond$ $\lambda P.P:(e \rightarrow t) \rightarrow (e \rightarrow t)$

Completing the tree

shuai'(zhangsan'):t,$\diamond$

zhuangsan':e $\lambda x.shuai'(x):e \rightarrow t$

$\lambda x.shuai'(x):e \rightarrow t$ $\lambda P.P:(e \rightarrow t) \rightarrow (e \rightarrow t)$
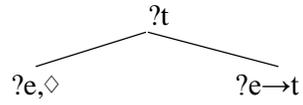
2.6 *Shi* as an Associate of Argument/Adjunct Focus

Arguments and adjuncts are different with respect to their semantic relationships to verbs. In this section, I treat them separately but my account of *shi*, as will be shown, remains consistent.
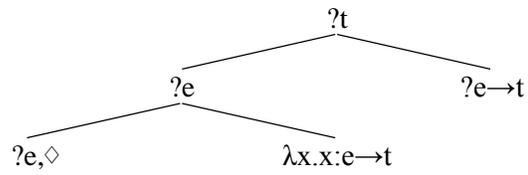
As an associate of argument focus, *shi* contributes a semantically underspecified formula $\lambda x.x:e \rightarrow t$, which is required to combine with a semantically contentful formula contributed by the noun following *shi*. The parsing process of *shi Zhangsan gaoxing* can be characterized as follows.
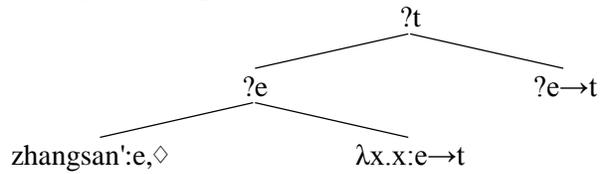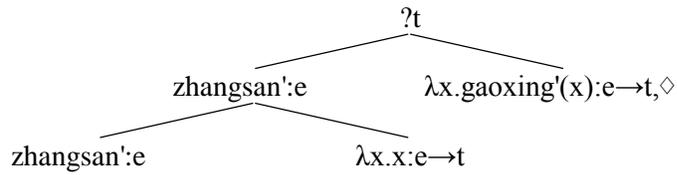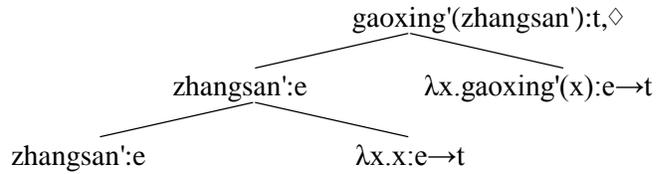
Applying Introduction and Prediction

```
                    ?t
            ?e,◇           ?e→t
```

Parsing *shi*

```
                    ?t
           ?e                ?e→t
      ?e,◇      λx.x:e→t
```

Parsing *shi Zhangsan*

```
                    ?t
          ?e                ?e→t
  zhangsan':e,◇      λx.x:e→t
```

Parsing *shi Zhangsan gaoxing*

```
                    ?t
      zhangsan':e        λx.gaoxing'(x):e→t,◇
  zhangsan':e      λx.x:e→t
```

Completing the tree

```
              gaoxing'(zhangsan'):t,◇
      zhangsan':e        λx.gaoxing'(x):e→t
  zhangsan':e      λx.x:e→t
```

The propositional formula that is achieved through parsing this sentence is exactly the same as the one that is achieved through parsing *Zhangsan gaoxing* 'Zhangsan happy'. The current tree involves the creation of two additional daughter nodes and an additional step of computation. The additional tree node creating operations delays the input of *Zhangsan*, giving rise to an effect of informational suspense, increasing listeners' expectation, intensifying the effect of emphasis on *Zhangsan*.

Now I shift attention to the case where *shi* acts as an associate of adjunct focus. First, I need to provide a theory of adjunct in Dynamic Syntax. Marten (2002) proposes three alternative Dynamic Syntax theories of adjuncts in English, one of which is that adjuncts are predicates. I adopt a revised version of this theory in the current account of *shi* although Marten himself argues that this theory is not optimal for his account of adjunts in English and Swahili. I propose that adjuncts have the following template of lexical actions.
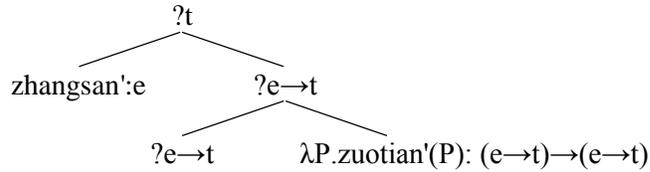
- Template of Adjunct[14]

IF	$\uparrow_1\uparrow_1^* ?t, ?e{\to}t$
THEN	make($<\downarrow_1>$);go($<\downarrow_1>$);
	put($\lambda P.ADJUNCT(P):(e{\to}t){\to}(e{\to}t)$);
	go($<\uparrow_1>$);make($<\downarrow_0>$);go($<\downarrow_0>$);put($?e{\to}t$)
ELSE	abort

Parsing *Zhangsan*
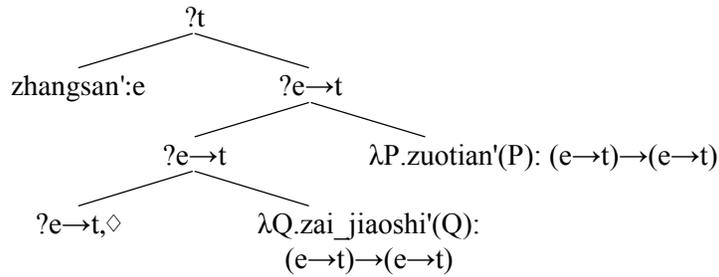
$$?t$$

zhangsan':e $?e{\to}t, \diamond$

---
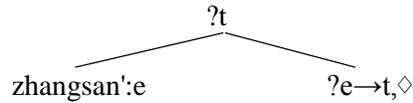
[14] In this definition, the $\uparrow_1\uparrow_1^*$ symbol represents such a relationship between the current node and a tree node annotated with ?t that the current node is somewhere below the ?t-annoted node and between the current node and all the intermediate nodes, if there are any, are functor nodes.
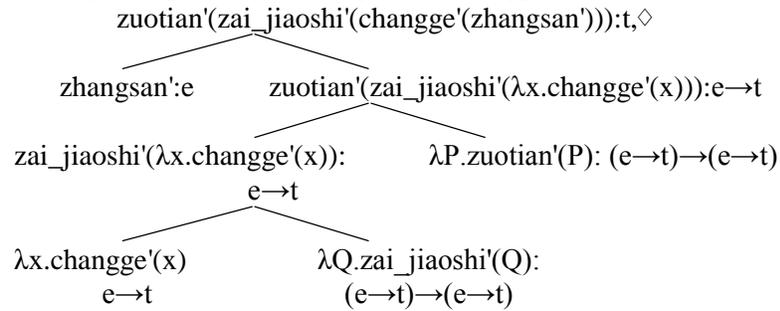
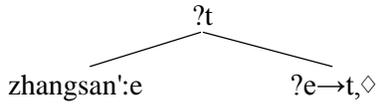Parsing *Zhangsan zuotian*

```
                    ?t
        ┌───────────┴───────────┐
   zhangsan':e              ?e→t
                    ┌────────┴────────┐
                  ?e→t       λP.zuotian'(P): (e→t)→(e→t)
```

Parsing *Zhangsan zuotian zai jiaoshi*

```
                    ?t
        ┌───────────┴───────────┐
   zhangsan':e              ?e→t
                    ┌────────┴────────┐
                  ?e→t       λP.zuotian'(P): (e→t)→(e→t)
          ┌─────────┴─────────┐
       ?e→t,◇        λQ.zai_jiaoshi'(Q):
                       (e→t)→(e→t)
```

Parsing *Zhangsan zuotian zai jiaoshi changge*

```
        zuotian'(zai_jiaoshi'(changge'(zhangsan'))):t,◇
        ┌───────────┴───────────┐
   zhangsan':e      zuotian'(zai_jiaoshi'(λx.changge'(x))):e→t
                    ┌───────────┴───────────┐
   zai_jiaoshi'(λx.changge'(x)):       λP.zuotian'(P): (e→t)→(e→t)
              e→t
        ┌─────────┴─────────┐
   λx.changge'(x)      λQ.zai_jiaoshi'(Q):
        e→t               (e→t)→(e→t)
```
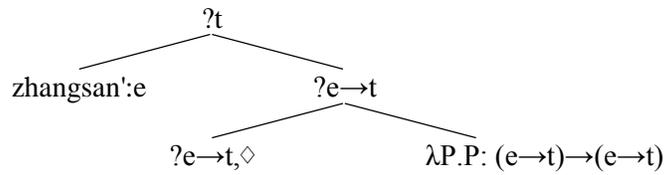
Having worked out the way adjuncts are parsed, I now present my account of *shi* as an associate of adjunct focus. This account is rather similar to that of *shi* as an associate of argument focus. Actually, it is the same as that of *shi* as a verum focus marker. I take *Zhangsan shi zuotian bukaxin* 'Zhangsan shi yesterday unhappy' for example.
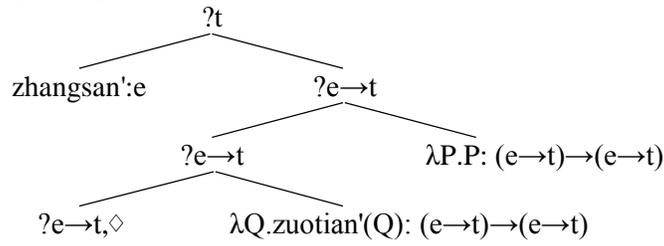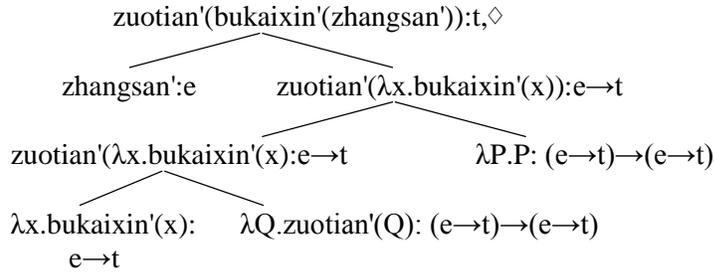
Parsing *Zhangsan*

```
                        ?t
             zhangsan':e        ?e→t,◇
```

Parsing *Zhangsan shi*

```
                  ?t
       zhangsan':e        ?e→t
                    ?e→t,◇        λP.P: (e→t)→(e→t)
```

Parsing *Zhangsan shi zuotian*

```
                ?t
      zhangsan':e        ?e→t
                 ?e→t              λP.P: (e→t)→(e→t)
           ?e→t,◇    λQ.zuotian'(Q): (e→t)→(e→t)
```

Parsing *Zhangsan shi zuotian bukaixin*

```
              zuotian'(bukaixin'(zhangsan')):t,◇
      zhangsan':e        zuotian'(λx.bukaixin'(x)):e→t
  zuotian'(λx.bukaixin'(x):e→t              λP.P: (e→t)→(e→t)
 λx.bukaixin'(x):   λQ.zuotian'(Q): (e→t)→(e→t)
      e→t
```
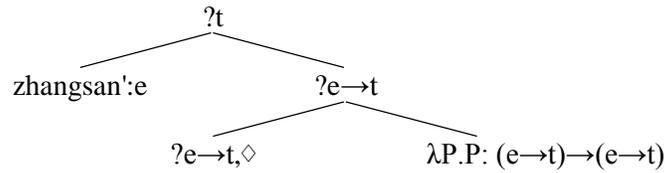
Toward the end of Section 1, it is shown that *shi* can be a distant associate of focus, i.e. *shi* does not stand immeidately before a focus. I
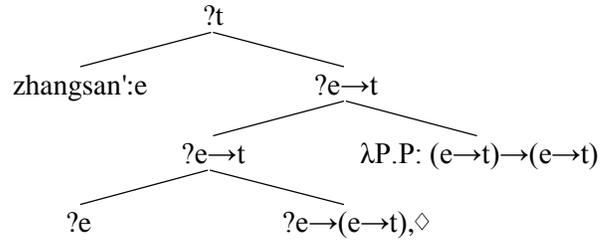
assume that *shi* takes all that appears to its right as its scope of association but only one part of its scope is the real focus. I use the following sentence as an example.

(42)   Zhangsan shi xihuan **Lisi**.
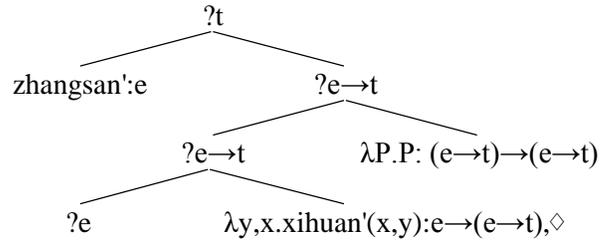   Zhangsan shi like Lisi
      'It is Lisi that Zhangsan likes.'

Parsing *Zhangsan shi*

$$?t$$

zhangsan':e   ?e→t

?e→t,◇   λP.P: (e→t)→(e→t)

Applying Transitivity

$$?t$$

zhangsan':e   ?e→t

?e→t   λP.P: (e→t)→(e→t)

?e   ?e→(e→t),◇

Parsing *Zhangsan shi xihuan*

$$?t$$

zhangsan':e   ?e→t

?e→t   λP.P: (e→t)→(e→t)

?e   λy,x.xihuan'(x,y):e→(e→t),◇

Parsing *Zhangsan shi xihuan Lisi*

```
                          ?t
            _____
      zhangsan':e                  ?e→t
                          _____
                      ?e→t            λP.P: (e→t)→(e→t)
                   _____
              lisi':e,◇      λy,x.xihuan'(x,y):e→(e→t)
```

Completing the tree

```
              xihuan'(zhangsan',lisi'):t,◇
            _____
      zhangsan':e        λx.xihuan'(x,lisi'):e→t
                     _____
      λx.xihuan'(x,lisi'):e→t     λP.P: (e→t)→(e→t)
            _____
        lisi':e      λy,x.xihuan'(x,y):e→(e→t)
```
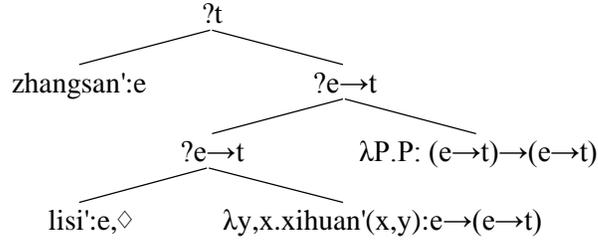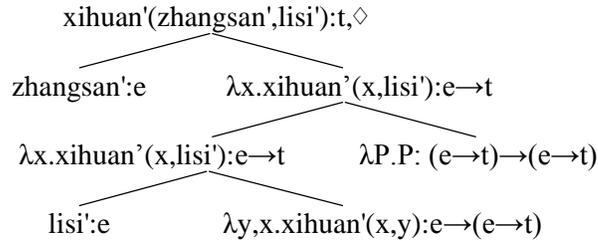
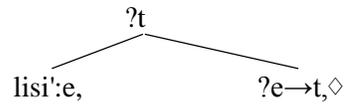## 2.7 *Shi* in the Elliptical Sentence

As has been shown in my criticism of Wu's account, the use of *shi* in elliptical sentences cannot be a pro-form as Wu assumes, and such sentences involve real ellipsis. To characterize this phenomenon, I assume that a metavariable is put on the argument node contributed by *shi*. I use the following example to show how an elliptical sentence is parsed.

(43)   Zhangsan bu shi meiguoren, Lisi shi.
        Zhangsan neg shi American, Lisi shi
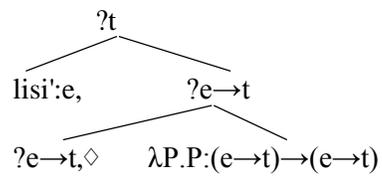   'Zhangsan is not an American; Lisi is.'

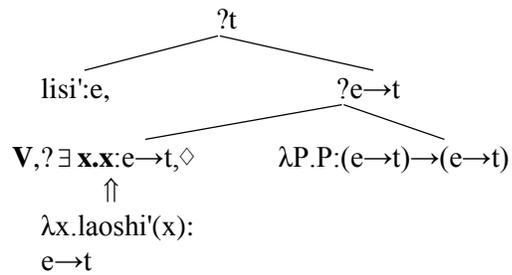I skip the parsing of the first clause and directly demonstrate the parsing of the second clause.

Parsing *Lisi*

```
                    ?t
            ┌────────┴────────┐
     lisi':e,                ?e→t,◇
```
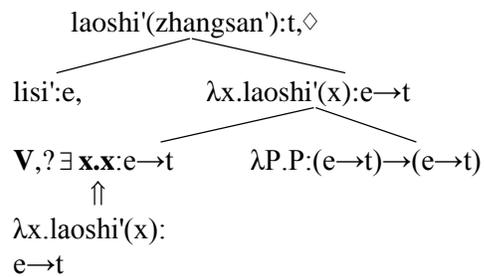
Parsing *Lisi shi*

```
                    ?t
            ┌────────┴────────┐
     lisi':e,                ?e→t
                      ┌────────┴────────┐
                   ?e→t,◇      λP.P:(e→t)→(e→t)
```

Metavariable Insertion and Substitution

```
                         ?t
            ┌─────────────┴─────────────┐
     lisi':e,                          ?e→t
                                ┌────────┴────────┐
     V,?∃x.x:e→t,◇          λP.P:(e→t)→(e→t)
            ⇑
     λx.laoshi'(x):
     e→t
```

Completing the tree

```
              laoshi'(zhangsan'):t,◇
            ┌────────────┴────────────┐
     lisi':e,              λx.laoshi'(x):e→t
                          ┌──────────┴──────────┐
     V,?∃x.x:e→t        λP.P:(e→t)→(e→t)
            ⇑
     λx.laoshi'(x):
     e→t
```

2.8 Two Complex Cases

I now consider two complex cases.[15] One is the case where the verum marker *shi* appears in an 'adverbial' position (44). The other is the case where the verum focus marker *shi* is followed by the copula *shi* (45). I shall show that these complex cases can be as straightforwardly characterized in Dynamic Syntax as the simple cases mentioned above.

(44)   Zhangsan **shi** changchang bu lai bangongshi.
        Zhangsan shi often neg come office
     'It is true that Zhangsan often does not come to the office.'

(45)   Zhangsan **shi** bu shi haoren.
        Zhangsan shi neg shi good.man.
     'It is true that Zhangsan is not a good man.'

The two cases seem to be complex but can be reduced to simple cases, as is briefed below. The lexical information of *shi* includes the actions of creating a node annotated with ?e→t. This is the trigger of the adverbial *changchang* 'often'. The lexical information of *changchang* also includes the actions of creating a node annotated with ?e→t. Once *changchang* is parsed, everything following it can be parsed just as shown in section 2.6.2. In the second case, a negated copula follows the verum focus marker. I assume that the trigger in the lexical information of *bu* is ?e→t and the node building actions include making a functor node of (e→t)→(e→t) bearing the semantics of negation and making a corresponding argument node annotated with ?e→t, which allows the parsing of *shi*. Then, the rest of the parsing process goes as in all the cases shown above. In a word, the co-occurrence of the verum focus marker *shi* and the copula *shi* or the appearance of *shi* before an adverbial element can be straightforwardly characterized in Dynamic Syntax

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[15] I am grateful to an anonymous reviewer for pointing out these complex cases.

3. CONCLUSION

In this paper, drawing upon the literature, I present a description of four cases where *shi* appears. By using the tools in Dynamic Syntax, I provide a unitary theoretical account of these uses from a parsing perspective. My account is not restricted to the traditional view that *shi* is a verb or an auxiliary because it behaves like verbs in some cases and like auxiliaries in others. In this account, it is proposed that *shi* contributes a package of lexical information, including tree node creating actions and a functor formula of identity relation, which is a representation of the semantic void of *shi* and ensures that its combination with the semantics of the expression following it is the same as that of the following expression. The parsing of *shi* puts off the parsing of an expression that does not require the preceding parsing of *shi*, adding an extra step of combination, at least partly explaining the pragmatic effects that the appearance of *shi* produces in its use as a verum focus marker or an associate of argument/adjunct focus.

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現代漢語中諸多 "是" 字結構的統一闡釋

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現代漢語中的語素 "是" 有四種主要用法：系詞、肯定焦點標記及論元或附加語焦點輔助成分。除此之外，它還可以用於省略句中。前賢已對 "是 "的這些用法做過較好的觀察。以往試圖對這些用法做出統一刻畫的努力不在少數。本文重新審視 "是" 的這些用法，并論證近期對于 "是" 所提出的一些統一理論闡釋存在問題，并嘗試在動態句法理論框架內從句子解析的角度對這些用法做出新的統一闡釋。在動態句法中，句子是從左到右逐詞加工構建命題的單調過程。本文提出，在語義構建過程中， "是" 始終貢獻一個等同關係謂詞，該謂詞與其他某種邏輯類型的表達式組合。 "是" 在句子中的出現是否會導致某種語用效果的產生取決于 "是" 以及 "是" 之後出現的成分。

關鍵字：是、系詞、焦點標記、動態句法