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## Mandarin *hen* and the syntax of declarative clause typing\*

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### Abstract

Under some conditions, gradable adjectives in Mandarin must co-occur with overt degree morphology (most neutrally, *hen* ‘very’) when used predicatively. While two recent analyses argue that this is because gradable adjectives in Mandarin are of the wrong semantic type to combine directly with a subject, this paper presents data casting doubt on such an approach: it is shown that overt degree morphology is obligatory only when the adjective is the entire predicate of a matrix-level, declarative clause. Taken together with independent research uncovering a link between aspect and assertion in Mandarin event-denoting predicates, it is argued that matrix-level assertions in Mandarin are headed by a complementizer which is phonologically null but which requires support in the form of an overt VP-external functional head: when the predicate is event-denoting, aspectual morphology typically provides this support, and when the predicate denotes a gradable state, degree morphology can be used instead. This requirement is formalized in terms of syntactic agreement, suggesting that agreement exists as a strategy for formally marking declarative clauses, in addition to the previously attested cross-linguistic strategies of head movement (e.g., Germanic V2) and base generation of a dedicated declarative complementizer (e.g., Korean *-ta*).

### 1 Introduction

Under some conditions, gradable adjectives in Mandarin must co-occur with an overt degree expression (the most neutral of which is *hen* ‘very’) for positive interpretation; otherwise, the utterance is infelicitous out of context and felicitous only

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in a context in which there is a salient standard of comparison, in which case the adjective has a comparative rather than a positive meaning:

- (1) a. zhangsan gao.  
Zhangsan tall  
'Zhangsan is taller (than someone known from context).'  
NOT: 'Zhangsan is tall.'
- b. zhangsan **hen** gao.  
Zhangsan very tall.  
'Zhangsan is tall.' (Sybesma 1999:27)

This phenomenon is crosslinguistically unexpected since ordinarily it is the positive rather than the comparative form of the adjective that is unmarked (Klein 1980; e.g., in English: *tall*, *taller*), and although it is often mentioned in descriptive grammars (e.g., Chao 1968; Li and Thompson 1981; Yip and Rimmington 2004), and in some theoretical works (e.g., Smith 1991; He 1992; Sybesma 1999; Xiang 2005), it has been subject to very little detailed analysis (Liu 2005; Huang 2006).

This paper shows that the traditional characterization of this phenomenon—based largely on data limited to that like (1) above—is at once too general and not general enough. It is too general in the sense that, as I will show, it is only when the adjective is the entire predicate of a matrix-level declarative clause that an overt degree expression is required for positive interpretation of the adjective. This fact is not fully appreciated in previous approaches to the phenomenon, and yet it is crucial to our understanding of it—it suggests that the phenomenon is not due to a property of adjectives *per se* in Mandarin as is traditionally thought but rather a consequence of the way matrix-level assertions in Mandarin are realized.

At the same time, the traditional characterization of the phenomenon is not general enough in the sense that another line of as yet unrelated research has shown that other kinds of predicates in Mandarin besides gradable adjectives must also occur with overt functional morphology for felicitous use in matrix-level assertions; namely, event-denoting predicates must co-occur with overt aspectual morphology (Klein et. al 2000). Here we see a constraint on matrix-level assertions in yet another class of predicates.

In light of this increased data set, I argue that matrix-level declarative clauses in Mandarin are headed by a complementizer which is phonologically null but which obligatorily enters into an agreement relation with a phonologically overt VP-external functional head. For sentences in which the predicate denotes a gradable state, the semantically bleached degree adverb *hen* is available to perform this function, and for sentences in which the predicate denotes an event, it is typically aspectual morphology such as the perfective marker *le* that performs this function.

To explain this requirement, I propose (appealing to Cheng’s (1991) Clausal Typing Hypothesis) that it is one among a number of crosslinguistically available strategies used to mark clauses as declarative. It has been suggested (Brandner 2004) that declarative clause typing is achieved in some languages via an overt assertion complementizer (e.g., Korean *-ta*), and in others via I-to-C movement (Germanic V2 languages). I add to this picture Mandarin and English, which I argue employ I-C agreement. This straight-forwardly captures (for Mandarin) the distribution of obligatory degree and aspect marking and (for English) the insights of Klein (1998, 2006) linking assertion and tense. In addition, I account for why bare predicative adjectives as in (1a) *can* have a comparative meaning in an appropriate context by arguing that there is an elided standard of comparison involved, and I show how this phenomenon fits into my overall analysis when we adopt Xiang’s (2005) analysis of Mandarin comparatives. Specifically, I argue that the adjective in this construction has raised to a VP-external functional head position in the structure so that it is itself capable of entering into an agreement relation with C.

This analysis has several important implications. First, despite the puzzle in (1), gradable adjectives in Mandarin have fundamentally the same semantics as adjectives in other languages. Second, although Mandarin, like most other languages, does not have an overt assertion complementizer, positing a null assertion complementizer accounts for a wide range of otherwise puzzling data, thus suggesting that assertion complementizers are a universal feature of language even when their effects are seen only indirectly. Furthermore, in the course of the data considered in motivating the analysis, we uncover some interesting parallels in Mandarin between degree expressions and aspect markers: they are parallel syntactically in that they are in complementary distribution, semantically in that they both serve as scale restrictors (scales associated with a gradable property in the case of degree and scales associated with temporality in the case of aspect), and pragmatically in the way they contribute to assertive illocutionary force. This may point to a deep similarity between the two grammatical concepts that likely has effects in other languages as well, pending further investigation.

The organization of this paper is as follows. Section 2 lays out the relevant data on gradable adjectives and spells out the descriptive generalization that will inform my analysis. Section 3 reviews previous approaches to the gradable adjective puzzle exemplified in (1) and discusses their shortcomings. Against this backdrop, Section 4 lays out the assumptions I make about the semantics of gradable adjectives in Mandarin. In Section 5, I present my core analysis for Mandarin gradable adjectives, and in Section 6, I extend my analysis to event-denoting predicates—in both cases, I argue, there is a syntactic dependency between a null matrix-level assertion complementizer and a phonologically overt VP-external functional head. Section 7 formalizes this dependency in terms of agreement and situates the phenomenon

within a larger crosslinguistic theory of clause-typing. In Section 8, I present data motivating further refinement to the analysis, including my account for why (1a) above can have a comparative meaning in an appropriate context. Finally, Section 9 presents conclusions and open questions for further investigation.

## 2 Laying out the data

As stated in the Introduction, there are some conditions under which gradable adjectives in Mandarin must combine with an overt degree expression for positive interpretation, as exemplified in (2) (repeated from (1) above):

- (2) a. zhangsan gao.  
Zhangsan tall  
'Zhangsan is taller (than someone known from context).'  
NOT: 'Zhangsan is tall.'
- b. zhangsan **hen** gao.  
Zhangsan very tall.  
'Zhangsan is tall.' (Sybesma 1999:27)

While *hen* 'very' is the most semantically bleached degree expression used for this purpose,<sup>1</sup> a variety of other semantically contentful expressions can also fulfill this role, including other degree adverbs such as *feichang* 'extremely' (3), extent phrases (4), measure phrases (5), and reduplicative morphology (6):

- (3) zhangsan **feichang** gao.  
Zhangsan extremely tall  
'Zhangsan is extremely tall.'
- (4) zhangsan gao **de neng mozhao tianpeng**.  
Zhangsan tall DE can touch ceiling  
'Zhangsan is so tall that he can touch the ceiling.' (Sybesma 1999:27)
- (5) zhangsan **liang mi** gao.  
Zhangsan two meter tall  
'Zhangsan is two meters tall.'
- (6) zhangsan gao-**gao-de**.  
Zhangsan tall-RED-DE  
'Zhangsan is really tall.' (Liu 2005:3)

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<sup>1</sup>Some authors (e.g., Li and Thompson 1981) claim that *hen* is ambiguous between a bleached meaning and an intensifying meaning on a par with the English *very* (see also Chui 2000 for relevant discussion). A question for further investigation is whether the meaning of *hen* is systematically *less* bleached in contexts where a degree expression is not obligatory.

The use of any these expressions precludes the use of any other as applied to the same adjective; i.e., they are all in complementary distribution with respect to each other.

In this section, I show that the traditional wisdom that adjectives in Mandarin have a comparative meaning unless modified in one of the above ways is too strong a generalization. In particular, I will defend the following descriptive claim:

- (7) A gradable adjective in Mandarin requires a degree expression for positive interpretation only when the adjective is the **entire** predicate of a **matrix-level, declarative** clause.

I defend this claim by showing that when the adjectival predicate contains extra material (Section 2.1), when the relevant clause is embedded (Section 2.2), or when the relevant clause is not declarative (Section 2.3), no overt degree expression is required, and yet the adjective still has a positive (i.e., non-comparative) meaning. Where not otherwise attributed, the data cited come from personally collected native speaker judgments. In Section 2.4, I provide further evidence for the generalization by reporting quantitative results from an Internet-based corpus study.

## 2.1 Predicates with extra material

When the adjectival predicate contains extra material, no degree expression is required for positive interpretation, as the following three examples illustrate:

- (8) zhangsan **bu** gao.  
Zhangsan NEG tall  
'Zhangsan is not tall.' (Liu 2005:2)
- (9) zhangsan **you** gao **you** zhuang.  
Zhangsan again tall again strong  
'Zhangsan is both tall and strong.' (Liu 2005:2)
- (10) zhangsan gao **le** (liang cun).  
Zhangsan tall PRF two inch  
'Zhangsan grew (two inches).'

In (8), the negative marker *bu* combines directly with the adjective *gao* 'tall' to yield negation of the *positive* meaning of the adjective. In (9), two adjectives are coordinated via the correlative coordination construction *you...you*, and both adjectives have a positive meaning in this context. Finally, in (10), the addition of the perfective aspect marker *le* (plus an optional differential phrase) yields an eventive interpretation for the predicate. In each case, we see a suspension of the requirement that adjectives in Mandarin must combine with overt degree morphology. Note also

that although a degree expression is not required in any of these contexts, it is permissible in examples (8) and (9) but not in (10). The impossibility of a degree expression in (10) is a point I return to in Section 6 below.

## 2.2 Non-matrix-level clauses

Whenever the clause containing the adjective is syntactically embedded, this also results in a suspension of the degree expression requirement. Note that in all of the examples presented in this subsection, the relevant adjective can *optionally* occur with an overt degree expression. The crucial point is that the degree expression is not *obligatory* in any of these embedded contexts.

There are at least five ways in Mandarin in which a clause can be embedded. First, a clause can be embedded as complement to a verb, as in the (b) sentences in the following two examples, both of which are judged to be appropriate responses to the utterances in (a).

- (11) a. zhangsan 2.5 mi gao.  
Zhangsan 2.5 meter tall  
'Zhangsan is 2.5 meters tall.'
- b. aiya! wo zhidao [zhangsan gao], dan mei xiangdao ta  
wow 1SG know Zhangsan tall but NEG.PRF think 3SG  
zheme gao.  
this tall  
'Wow! I knew Zhangsan was tall, but I didn't know he was this tall.'
- (12) a. zhangsan gao ma?  
Zhangsan tall Q  
'Is Zhangsan tall?'
- b. dajia dou renwei [zhangsan gao], buguo wo juede ta  
everyone all think Zhangsan tall however 1SG believe 3SG  
bing bu gao.  
actually NEG tall  
'Everyone thinks Zhangsan is tall, but I think he's actually not.'

In both of the (b) examples, the bracketed clause contains a gradable adjective in predicative position with no overt modification, and yet, given that they are felicitous responses to the respective (a) sentences, they still have a positive meaning in these contexts.

Second, a clause can be embedded in an adjunct, as in the (b) examples below, both of which are judged to be appropriate responses to the (a) sentences:

- (13) a. ban li you xin sheng, jiao zhangsan.  
class inside have new student call Zhangsan  
'There's a new student in class; his name is Zhangsan.'
- b. ruguo [zhangsan gao] dehua, ta yinggai da lanqiu.  
if Zhangsan tall if 3SG should play basketball  
'If Zhangsan is tall, he should play basketball.'
- (14) a. zhangsan da lanqiu zenmeyang?  
Zhangsan play basketball how  
'How is Zhangsan at playing basketball?'
- b. suiran [zhangsan gao], danshi ta lanqiu da de bu tai hao.  
although Zhangsan tall but 3SG basketball play DE NEG too good  
'Although Zhangsan is tall, he does not play basketball very well.'

Again, in both of these cases, the adjective in the bracketed clause requires no overt modification for positive interpretation.

Third, a clause can be embedded as a subject, as in the (b) example below which is judged to be an appropriate response to (a):

- (15) a. zhangsan zenme name gao?  
Zhangsan how so tall  
'How come Zhangsan is so tall?'
- b. [zhangsan gao] shi yinwei ta xiao shihou chi le hen duo shucai.  
Zhangsan tall COP because 3SG small time eat PRF very much vegetable  
'Zhangsan is tall because he ate a lot of vegetables when he was a kid.'

Here, the bracketed clause *zhangsan gao* 'Zhangsan tall' combines with a predicate headed by the copula *shi*, and again, the adjective has a positive interpretation despite the lack of overt modification.

Fourth, clauses can be embedded as predicates (see Teng 1974 for a detailed investigation of this construction):

- (16) zhangsan [gezi gao].  
Zhangsan height tall  
'Zhangsan is tall.'

Here, the clause *gezi gao* (literally, ‘height (is) tall’) serves as the predicate to the subject *zhangsan* to yield the meaning ‘Zhangsan is tall’. As in the previous examples, this syntactic embedding seems to allow the adjective to have a positive meaning despite the lack of overt modification.

Finally, I will follow Sproat and Shih 1988, Sybesma 1999, and others in taking apparently “attributive” uses of adjectives in Mandarin as actually being instances of relative clauses (see Section 6 below for further discussion). These thus constitute another kind of embedded clause, and as the following data (all taken from Li and Thompson 1981:118–122) show, in this construction there is also no requirement that there be a degree expression for positive interpretation:

- (17) hong (de) hua  
red DE flower  
‘a red flower’ / ‘a flower that is red’
- (18) xiao (de) juzi  
small DE orange  
‘a small orange’ / ‘an orange that is small’
- (19) shufu de yizi  
comfortable DE chair  
‘a comfortable chair’ / ‘a chair that is comfortable’
- (20) gao de nan haizi  
tall DE male child  
‘a tall boy’ / ‘a boy that is tall’

Thus we can conclude that adjectives in relative clauses do not require a degree expression for positive interpretation.<sup>2</sup>

### 2.3 Non-declarative clauses

A third condition under which an adjective does not require a degree expression for positive interpretation is when the clause containing the adjective is not declarative. We see this most obviously in polar interrogative clauses. There are two primary strategies in Mandarin for forming such clauses; one is to use the sentence-final interrogative particle *ma*, and the other is to reduplicate the verb or adjective and

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<sup>2</sup>An orthogonal issue here is determining the conditions under which the particle *de* is omissible in prenominal adjectives (in the above examples it is omissible in (17) and (18) but not in (19) or (20)). This may bear on the status of the adjective as a relative clause versus an attributive modifier (see Paul 2005a for a recent discussion). Here I simply show that regardless of the presence of *de* and regardless of our analysis of prenominal adjectives, degree expressions are not required in this environment.



infix the negative marker *bu* in between (the so-called *A-not-A* question form). In both cases, the adjective does not need to be modified, and yet it is still the *positive* meaning of the adjective that is being questioned<sup>3</sup>:

- (21) zhangsan gao **ma**?  
Zhangsan tall Q  
'Is Zhangsan tall?' (Liu 2005:2)
- (22) zhangsan gao bu gao?  
Zhangsan tall NEG tall  
'Is Zhangsan tall?'

Next we turn to imperatives, which, along with declaratives and interrogatives, constitute the three most common formally distinguished sentence types cross-linguistically (Sadock and Zwicky 1985). Predicative adjectives are generally used to describe stative situations, which are often odd in imperative constructions for independent reasons (cf e.g. Smith 1991:42–3); a relevant example is, however, found in Li and Thompson 1981:451:

- (23) guai!  
good  
'Be good! (referring to the behavior of children)'

Here we see that no degree adverb is necessary when adjectives are used imperatively.

Finally, we also see a suspension of the degree expression requirement in a class of utterances which I will call EXPRESSIVES (following Searle 1975):

- (24) shengri kuaile!  
birthday happy  
'Happy birthday!'
- (25) xinnian hao!  
new-year good  
'Happy New Year!'

Both of these examples are clause-like in that they exhibit canonical subject-predicate word order, and yet they are not assertions; rather, they are expressives. Following Searle's (1975) classification of speech acts, this means that they express a psychological state of the speaker and in fact presuppose the truth of the expressed

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<sup>3</sup>That it is indeed the *positive* meaning of the adjective that is being questioned can be seen by the fact that appropriate answers to these questions include *ta hen gao* 'he is tall' and *ta bu (tai) gao* 'he is not (too) tall', both of which would be odd responses if the adjective in the question had a comparative meaning.

proposition (or for the present examples, they presuppose a *wish* that the expressed proposition be true). This non-declarative force seems to correlate with the fact that the adjectives do not require overt modification.

## 2.4 Corpus study

The corpus study results reported here provide quantitative support for the generalization defended above.

In a Google search conducted in October 2006, I collected the first 100 unique instances of the string *ta piaoliang* ‘she<sup>4</sup> beautiful’ and the first 100 unique instances of the string *ta hen piaoliang* ‘she very beautiful’ in which (*hen*) *piaoliang* functioned as predicate to the subject *ta*.

After separating out the instances in which the context made it clear that the adjective had a comparative interpretation, I sorted the remaining tokens based on whether they appeared in syntactic isolation as matrix-level declarative clauses, in most cases as judged by surrounding punctuation. Those that did not fell into four groups: interrogative clauses, clauses in which the adjective was coordinated with one or more other adjectives, clauses embedded under a verb, and clauses embedded under other subordinators. The results are given in Table 1.

	<i>ta piaoliang</i>	<i>ta hen piaoliang</i>
<b>comparative</b>	6	0
<b>positive</b>		
syntactically isolated	4	41
interrogative	15	4
coordinated	7	6
embedded under verb	57	34
otherwise embedded	11	15
TOTAL	100	100

**Table 1: Corpus study results**

Considering positive uses only and collapsing all the non-syntactically-isolated environments yields the summary of the data in Table 2.

<sup>4</sup>Though the third-person singular pronoun *ta* is gender-neutral in speech, written Mandarin employs distinct characters to indicate gender. I used the feminine form in this corpus study because of its more frequent co-occurrence with the predicate *piaoliang* ‘beautiful’.

	<i>ta piaoliang</i>	<i>ta hen piaoliang</i>
isolated	4	41
non-isolated	90	59

**Table 2: Condensed corpus study results**

This distribution is extremely significant as determined by a chi-square test ( $P < 0.0001$ ), and strongly suggests that while SUBJ *hen* ADJ has a roughly even distribution across the relevant syntactic contexts, SUBJ ADJ is largely restricted to contexts in which the predicate contains additional material, or in which the clause is embedded or non-declarative.

## 2.5 Interim summary

In the preceding subsections I have argued for the following descriptive generalization (repeated from (7) above):

- (26) A gradable adjective in Mandarin requires a degree expression for positive interpretation only when the adjective is the **entire** predicate of a **matrix-level, declarative** clause.

The analysis developed in this paper is designed to capture this generalization. Before proceeding with my analysis, however, in the next section I discuss some previous approaches to the Mandarin degree expression requirement and show how they fall short of capturing this generalization.

## 3 Previous approaches

The observation that bare predicative adjectives in Mandarin (bare in the sense of not being modified by a degree expression, not coordinated, and not reduplicated) have a comparative or contrastive meaning goes back at least as far as Zhu 1956, and the phenomenon is often mentioned in descriptive grammars (e.g., Chao 1968; Li and Thompson 1981; Yip and Rimmington 2004) and in some theoretical works as well (e.g., Smith 1991; He 1992; Sybesma 1999; Xiang 2005). Nonetheless, the phenomenon has received very little attention in theoretical literature, and I am aware of only two detailed formal accounts: Liu 2005 and Huang 2006. This section reviews each of the two approaches in turn.

### 3.1 Liu 2005

Liu 2005 follows Kennedy and McNally 2005 and much previous work in taking adjectives to denote function of type  $\langle d, et \rangle$  (where  $d$  = degree). The adjective *tall*,

for example, has the following denotation:

$$(27) \quad [[\text{tall}]] = \lambda d \lambda x. \mathbf{tall}(x) \geq d$$

Because of the unsaturated degree argument, an adjective cannot combine directly with an individual-denoting expression. Consequently, in a sentence like *John is tall*, the adjective first combines with a null morpheme (called POS(ITIVE)) which has the following denotation:

$$(28) \quad [[\text{POS}]] = \lambda G \lambda x. \exists d [\mathbf{standard}(d)(G)(\mathbf{C}) \wedge G(d)(x)]$$

The combination of the adjective with POS results in a function of type  $\langle \text{et} \rangle$  which combines with an individual  $x$  and return the value TRUE if and only if there is some degree  $d$  that counts as positive in the discourse context and  $x$  is at least  $d$ -tall:

$$(29) \quad \begin{array}{l} \text{a. } [[\text{POS}]][[\text{tall}]] = \lambda x. \exists d [\mathbf{standard}(d)([[\text{tall}]]) (\mathbf{C}) \wedge \mathbf{tall}(x) \geq d] \\ \text{b. } = \text{'True if and only if there is some degree } d \text{ that counts as } \mathbf{tall} \text{ in context } \\ \quad \mathbf{C}, \text{ and } x \text{ is at least } d\text{-tall.}' \end{array}$$

The essence of Liu's proposal is that Mandarin lacks the null morpheme POS and hence must rely on a number of other strategies in order to turn an adjective into a function of type  $\langle \text{et} \rangle$ . For Liu, these strategies include the use of overt degree morphology such as *hen*, reduplicative morphology, the particle *le*, and contrastive focus, as illustrated below, respectively:

- (30) a. zhangsan **hen** gao.  
Zhangsan very tall  
'Zhangsan is very tall.'
- b. zhangsan gao-**gao-de**.  
Zhangsan tall-RED-DE  
'Zhangsan is really tall.'
- c. zhangsan gao **le**.  
Zhangsan tall PRF  
'Zhangsan has become tall.'
- d. zhangsan gao, **lisi ai**.  
Zhangsan tall Lisi short  
'Zhangsan is tall, but Lisi is short.'

While it is insightful to treat the semantically bleached degree expression *hen* as essentially an overt realization of the null morpheme POS whose existence has

been independently motivated based on analyses of other languages, Liu’s approach raises several questions, both theoretical and empirical.

Theoretically, this account entails that Mandarin is (as far as we know) typologically unique in lacking the null morpheme POS. In all other known languages, it is the positive rather than the comparative form of the adjective that is simpler in form. Why should Mandarin exhibit the reverse pattern?

Empirically, Liu does not capture the generalization that degree expressions are in fact required only when the adjective is the entire predicate of a matrix-level declarative clause, as I have shown in the previous section. In a footnote, Liu does observe that no degree expression is required in interrogative clauses or when the adjective is negated as in (31) and (32) respectively, and he suggests that these can be analyzed as involving contrastive focus as in (30d) above, but does not work out the details of such analysis.

(31) zhangsan gao **ma**?  
Zhangsan tall Q  
‘Is Zhangsan tall?’ (Liu 2005:2)

(32) zhangsan **bu** gao.  
Zhangsan NEG tall  
‘Zhangsan is not tall.’ (Liu 2005:2)

Liu does not present any data on embedded clauses or on clauses that have imperative or expressive force, all of which are contexts in which degree expressions are not obligatory and hence would require further modification to Liu’s analysis. Furthermore, I will present evidence in Section 8 below that (30d) involves more than just contrastive focus—that it is in fact a collocation of two elliptical comparative constructions and should actually be translated as “Zhangsan is taller [than Lisi] and Lisi is shorter [than Zhangsan].”

### 3.2 Huang 2006

Huang’s (2006) approach to the puzzle is similar to Liu 2005 in that *hen* is analyzed as being introduced in order to avoid a type mismatch. Huang proposes that bare adjectives in Mandarin are individual-denoting, i.e., of type e. The evidence provided for this is that unlike adjectives in many Western languages, adjectives in Mandarin can appear in bare form in argument position, as seen in the (b) sentences below:

(33) a. ta hen qinfen.  
3SG very diligent  
‘She is very diligent.’

- b. qinfen shi yi ge meide.  
 diligent COP one CL virtue  
 ‘Diligence is a virtue.’ (Huang 2006:349)
- (34) a. tamen nei ge diqu hen pinqiong.  
 3PL that CL region very poor  
 ‘Their region is very poor.’
- b. women yao zhansheng pinqiong.  
 1PL want overcome poor  
 ‘We want to wipe out poverty.’ (Huang 2006:350)

Under this account, then, bare predicative adjectives in Mandarin are disallowed because they result in a type mismatch—an attempt to combine two expressions of type *e*. *hen* is in turn analyzed as a type shifter of type  $\langle e, et \rangle$ —it turns an individual-denoting expression into a property-denoting expression.

Theoretically, this account is attractive because it is in harmony with previous work arguing that bare nouns in Mandarin are also type *e* and require classifiers in order to yield type  $\langle et \rangle$  (Krifka 1995, Chierchia 1998).

Empirically, however, Huang’s account raises the same questions as Liu 2005 as reviewed in the previous subsection. There is no explanation for why a degree expression is required only when the adjective is the entire predicate of a matrix-level declarative clause. If the function of *hen* were to repair a type mismatch, we would expect that it would be needed to repair the mismatch regardless of whether the clause containing the adjective is embedded and regardless of whether it is declarative. Furthermore, there is no explanation for why bare predicative adjectives are possible in a context in which they have a comparative meaning, other than a suggestion that stress on a bare adjective resulting in a contrastive reading is a special case of degree modification.

It could be the case that bare adjectives in Mandarin are under some conditions type *e*, but the data from the previous section show that it is not necessarily *hen* or other degree morphology that license their use as predicates; rather, it seems likely that they are ambiguous between type *e* when used in argument position and type  $\langle d, et \rangle$  when used predicatively. An analysis along these lines has in fact been proposed for English color terms in unpublished work by Kennedy and McNally.<sup>5</sup>

#### 4 Semantic preliminaries

Following Kennedy and McNally 2005, Liu 2005 (see Section 3.1 above), and much previous work, I take gradable adjectives to be functions of type  $\langle d, et \rangle$  which must

<sup>5</sup>“Color, Context, and Compositionality”, available (as of 9/15/08) at <http://semantics.uchicago.edu/kennedy/docs/km-color.pdf>

combine with a null POS morpheme when not otherwise modified. It is the null POS morpheme that gives the adjective its positive interpretation. (35) illustrates the denotation for a sample adjective *tall*, and (36) provides the denotation for POS:

$$(35) \quad [[\text{tall}]] = \lambda d \lambda x. \mathbf{tall}(x) \geq d$$

$$(36) \quad [[\text{POS}]] = \lambda G \lambda x. \exists d [\mathbf{standard}(d)(G)(\mathbf{C}) \wedge G(d)(x)]$$

When a gradable adjective combines with POS, the result is a function of type  $\langle \text{et} \rangle$  which can combine with an individual-denoting expression  $x$  to yield a truth value:

$$(37) \quad \text{a. } [[\text{POS}]][[\text{tall}]] = \lambda x. \exists d [\mathbf{standard}(d)([[\text{tall}]]) (\mathbf{C}) \wedge \mathbf{tall}(x) \geq d]$$

b. = ‘1 iff there is some degree  $d$  that counts as **tall** in context  $\mathbf{C}$ , and  $x$  is at least  $d$ -tall.’

Note that everything I say in what follows would also be consistent with an account in which POS is actually a type-shifting rule rather than a null morpheme. This is not crucial to the analysis.

Following Liu 2005, I take Mandarin *hen* to be an overt realization of POS, since, as we saw in the Introduction, it seems to be necessary in Mandarin under some conditions for no other reason than to provide a positive interpretation for the adjective it combines with. Contra Liu 2005, however, I maintain that Mandarin also has the null counterpart POS. In other words, Mandarin has both of the following lexical items available:

$$(38) \quad [[\text{hen}]] = \lambda G \lambda x. \exists d [\mathbf{standard}(d)(G)(\mathbf{C}) \wedge G(d)(x)]$$

$$(39) \quad [[\text{POS}]] = \lambda G \lambda x. \exists d [\mathbf{standard}(d)(G)(\mathbf{C}) \wedge G(d)(x)]$$

Both *hen* and its null equivalent POS have the same meaning, the only difference being that the former is pronounced *hen* and the latter has no pronunciation. The availability of the null version POS provides a parsimonious account of the data considered in Section 2, in which we saw that in many environments, adjectives in Mandarin can have positive interpretation even without overt modification. Furthermore, this analysis brings Mandarin in line with other more studied languages that have been argued to have POS.

The question now becomes: why is it that POS must be realized overtly as *hen* just in case the adjective it combines with is the entire predicate of a matrix-level declarative clause? This is the question I now turn to.

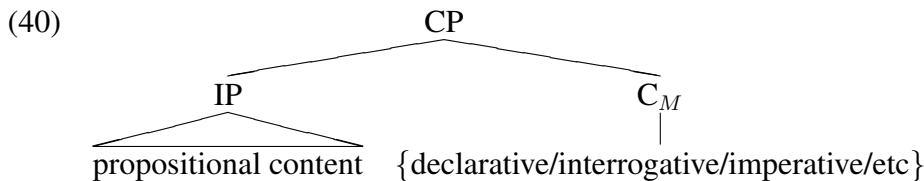
## 5 The core proposal: *hen* as a consequence of C

Because one of the necessary conditions for *hen* to be obligatory is that the clause it appears in be *declarative*, we need to establish some theoretical tools that will give us access to this notion.

It has been known since Austin 1962 that the meaning of an utterance cannot be characterized by that of its propositional content (i.e., truth conditions) alone; in addition, language users perform various kinds of illocutionary acts in making an utterance, such as making an assertion, asking a question, or issuing a command. The proper characterization of illocutionary force within formal linguistic theory is a source of much debate; see Sadock 1988 for relevant discussion.

Here I will follow a tradition going back to Searle 1969 in which illocutionary acts are of the general form  $F(p)$  where  $F$  indicates illocutionary force and  $p$  is a proposition. In some theories of syntax, this schema is cashed out by taking C (i.e., the head of CP) to be the locus of illocutionary force (Rizzi 1997; see also Cinque 1999 and Speas and Tenny 2003 for similar proposals). Such a proposal is in line also with the performative hypothesis of generative semantics (see e.g. Sadock 1974).

I will employ a special subclass of C called  $C_{M(atrix)}$  to be the head of **matrix**-level clauses. This works as illustrated in (40):<sup>6</sup>



As seen in (40), a (matrix-level) sentence is headed by  $C_M$ , which stands for a family of complementizers including for example  $C_{M-Q(uestion)}$  which heads interrogative sentences and  $C_{M-ASSERT(ion)}$  which heads declarative sentences. Semantically,  $C_M$  is an illocutionary force operator which takes a proposition and returns a speech act (Krifka 1999).

In Mandarin, the  $C_M$  associated with polar interrogatives can be realized overtly as the sentence-final particle *ma* (Cheng 1991, Ernst 1994, Gasde and Paul 1996, Paul 2005b). That *ma* is an instantiation of  $C_M$  is evidenced by the fact that it is used only for matrix questions, not for embedded questions, as illustrated in (41):

- (41) a. ni bu zhidao [ta lai bu lai]  
 2SG NEG know 3SG come NEG come  
 ‘You don’t know whether or not s/he’s coming.’
- b. ni bu zhidao [ta lai] ma  
 2SG NEG know 3SG come Q  
 ‘Do you not know that s/he’s coming?’  
 NOT: ‘You don’t know whether or not s/he’s coming.’ (Li and Thompson 1981:556–7)

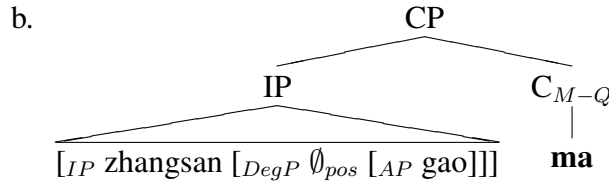
<sup>6</sup>The linear ordering of IP and C in this illustration is in anticipation of the Mandarin data considered later in this section.



In (41a), the interrogative status of the embedded clause is signaled via the *A-not-A* question form, and in (41b), we see that when the interrogative particle *ma* is used instead, it is necessarily construed as applying to the whole matrix-level sentence rather than to the embedded clause alone.<sup>7</sup>

The sentence in (42a) (repeated from (21) above), then, is analyzed as in (42b):

- (42) a. zhangsan gao **ma**?  
 Zhangsan tall Q  
 ‘Is Zhangsan tall?’



In (42b), the IP<sup>8</sup> contains the subject *zhangsan* and a DegP consisting of the null POS morpheme and the adjective *gao* ‘tall’. Note that I adopt a functional head analysis of adjectives in which Deg(ree) heads project over APs (Abney 1987, Corver 1997). This will be important in my analysis. The IP composes with  $C_{M-Q}$  (pronounced *ma*), which provides the interrogative illocutionary force of the utterance.

As observed in Paul 2005b, Mandarin has no overt  $C_M$  associated with assertions. To account for the obligatory presence of *hen* in a sentence like (44a), however, I propose the following principle:

- (43) **Mandarin Assertion Principle:** Although  $C_{M-ASSERT}$  is phonologically null in Mandarin, it is nonetheless present in the syntax and must find within its complement IP support in the form of an overt VP-external (or AP-external) functional head.

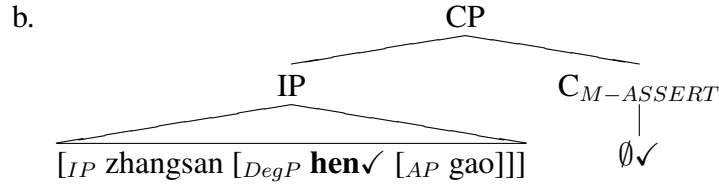
This principle is meant to be purely descriptive at this point; in Section 7 below I show how it can be derived from features of agreement.

For sentences in which the predicate is a gradable adjective, as in (44a), *hen*—being an overt realization of POS—is able to fulfill the principle in (43), as seen in (44b):

<sup>7</sup>The same has been noted for the Albanian polar interrogative particle *a* (Merchant 2007). See Ross 1973 and Merchant 2007:29–30 for examples of other matrix-only syntactic phenomena that have been observed in several languages.

<sup>8</sup>Here and throughout, I use IP as a shorthand to subsume the full inventory of functional heads in the inflectional layer of Mandarin, whatever we may ultimately decide them to be. See Ernst 1994 for an investigation of the Mandarin inflectional layer.

- (44) a. zhangsan **hen** gao.  
Zhangsan very tall.  
'Zhangsan is tall.'



This proposal captures the data considered so far: *hen* is obligatory only when the adjective is the entire predicate of the clause because other VP-external functional heads (such as those indicating negation, coordination, and aspect) can also provide the necessary support to  $C_M$ ; it is obligatory only in matrix-level clauses because  $C_M$  occurs only at the matrix level, and it is obligatory only for declarative clauses because it is only  $C_{M-ASSERT}$  that requires overt morphological support.

In Section 7 below, I formalize the dependency between *hen* and  $C_{M-ASSERT}$  in terms of agreement and situate the phenomenon within a larger theory of clause typing that brings to bear data from other languages. First, however, in Section 6, I turn to an important question: if this analysis is on the right track, how does  $C_{M-ASSERT}$  get its morphological support in sentences for which degree morphology is not an option, i.e., in sentences in which the predicate denotes an event rather than a gradable state?<sup>9</sup>

## 6 Extending the analysis to event-denoting predicates

In this section, I argue that just as Mandarin gradable-state-denoting predicates require degree morphology for felicitous use in assertions, event-denoting predicates require overt aspectual morphology. Evidence comes from the apparent syntactic

<sup>9</sup>There are also two other important kinds of state-denoting predicates that I have not discussed here, namely, non-gradable states, and gradable states denoted by transitive verbs, as exemplified in (i) and (ii), respectively:

- (i) zhangsan shi zhongguoren.  
Zhangsan COP Chinese  
'Zhangsan is Chinese.'
- (ii) zhangsan (hen) xihuan lisi.  
Zhangsan very like Lisi  
'Zhangsan likes Lisi.'

Since nongradable states require use of the copula *shi*, I conclude that *shi*, as a functional head, is what provides support to  $C_{M-ASSERT}$ . For gradable states denoted by transitive verbs, see Section 8.

complementarity of degree and aspect in Mandarin clause structure, and from the work of Klein et al. (2000) linking aspect in Mandarin to assertion.

As argued before (McCawley 1992; Sackmann 1996, and others), (gradable) adjectives in Mandarin are syntactically indistinguishable from verbs. For my purposes, there are two crucial arguments. First, gradable adjectives do not require a copula when used predicatively. In (45a), we see *hen gao* ‘very tall’ as a predicate with no intervening copula, just like the uncontroversially VP predicate *hen xihuan lisi* ‘very (much) likes Lisi’ in (45b):

- (45) a. zhangsan [hen gao].  
Zhangsan very tall  
‘Zhangsan is (very) tall.’  
b. zhangsan [hen xihuan lisi].  
Zhangsan very like Lisi  
‘Zhangsan really likes Lisi.’

Second, the “attributive” function of adjectives is analyzable as a relative clause (Sproat and Shih 1988). In (46a), we see *de* being used to mark the right edge of the prenominal modifier *pang* ‘fat’. In (46b), the same linking particle *de* is used for what is uncontroversially a relative clause<sup>10</sup>:

- (46) a. [pang **de**] ren  
fat PRT person  
‘fat people’ / ‘people who are fat’ (Li and Thompson 1981:122)  
b. [qi zixingche **de**] ren  
ride bicycle PRT person  
‘people who ride bicycles’ (Li and Thompson 1981:116)

Hence in discussing Mandarin I will use the term “verb” to subsume both gradable adjectives and verbs in the traditional sense.

Verbs in Mandarin do, however, fall into distinct *semantic* classes (Tai 1984; Smith 1991; He 1992; Lin 2004, and others). One way in which we see this is that verbs that canonically denote gradable states such as *gao* ‘tall’ are incompatible with some aspect markers. Although they can be used with the perfective aspect marker *le* to yield an eventive interpretation, they cannot be used with the progressive aspect marker *zai*:

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<sup>10</sup>Paul 2005a argues against a relative clause analysis of attributive adjectives in Mandarin, but crucially, all of his relevant data comes from *nongradable* adjectives. My claim is only about gradable adjectives. I also avoid here discussion of prenominal modification without *de*; see Paul 2005a for discussion.

- (47) a. zhangsan gao **le**.  
 Zhangsan tall PRF  
 ‘Zhangsan grew.’  
 b. \*zhangsan **zai** gao.  
 Zhangsan PROG tall  
 Intended: ‘Zhangsan is growing.’

On the other hand, as we would expect, verbs that canonically denote events are compatible with a greater range of aspect markers, but not with degree morphology:

- (48) a. zhangsan chi **le** fan.  
 Zhangsan eat PRF food  
 ‘Zhangsan ate.’  
 b. zhangsan **zai** chi fan.  
 Zhangsan PROG eat food  
 ‘Zhangsan is eating.’  
 c. \*zhangsan **hen** chi fan.  
 Zhangsan very eat food

In fact, degree and aspect in Mandarin are in complementary distribution. As has already been illustrated, *gao* ‘tall’ is compatible with degree morphology, as in (49a), and with perfective aspect morphology, as in (49b); crucially, however, it cannot combine with both kinds of morphology simultaneously, as seen by the ungrammaticality of (49c):

- (49) a. zhangsan **hen** gao.  
 Zhangsan very tall.  
 ‘Zhangsan is tall.’  
 b. zhangsan gao **le** (liang cun).  
 Zhangsan tall PRF two inch  
 ‘Zhangsan grew (two inches).’  
 c. \*zhangsan **hen** gao **le** (liang cun).  
 Zhangsan very tall PRF two inch

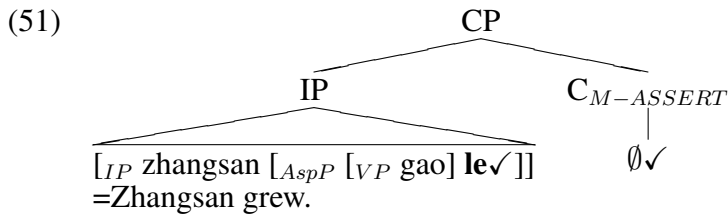
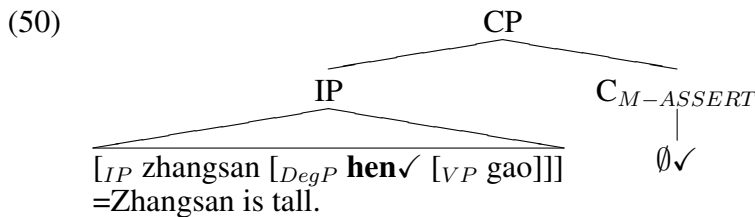
One interpretation of these facts (and the one I will pursue here) is that degree and aspect occupy the same functional position in Mandarin clause structure.

I follow Wang 1965, Cheng 1991, Ernst 1994, Lin 2004 and others in taking *le* and other Mandarin aspect markers as heading a VP-external aspectual projection (though see Sybesma 1999 for an alternative approach). Given the unity of VP and AP in Mandarin and the status of Deg as heading an AP-external projection (Abney 1987; Corver 1997), it is not surprising that degree and aspect are also syntactically

unitary: the idea is that there is only one slot in a given clause for either a degree expression or an aspect marker, depending on the aspectual interpretation of the eventuality in question.

Not only is there syntactic evidence for a unitary slot for degree and aspect in Mandarin, there is also, I suggest, a deep semantic similarity between degree and aspect in that they both function as scale restrictors. Just as degree morphology serves to pick out a point or range on a scale associated with a gradable property (Kennedy and McNally 2005), so can aspect morphology be thought of as serving to pick out a temporal range on a scale associated with some eventuality (Smith 1991).<sup>11</sup>

I propose, then, that aspect morphology provides the same support to  $C_{M-ASSERT}$  for event-denoting predicates as degree morphology does for gradable-state-denoting predicates. Thus in (50), *hen* ‘very’ provides support to  $C_{M-ASSERT}$ , just as in (51), the perfective aspect marker *le* provides this support.



This analysis makes the prediction that sentences which have an event-denoting predicate yet which do not have overt aspectual morphology should not be interpretable as assertions, since  $C_{M-ASSERT}$  is not supported. This prediction is borne out in the work of Klein et al. 2000, who, following several scholars before them

<sup>11</sup>This parallel between temporal extent and degree is also noted in Sybesma 1999 in discussing Mandarin resultative constructions such as the following:

- (i) zhangsan ku de shoujuan shi le.  
Zhangsan cry DE handkerchief wet PRF  
‘Zhangsan cried the handkerchief wet.’ (Sybesma 1999:9)

Sybesma observes that a sentence like this can be understood as meaning either that the temporal extent of Zhangsan’s crying was such that it lasted until the handkerchief became wet, or that the intensity/degree of Zhangsan’s crying was such that the handkerchief became wet.

(they cite Chu 1976, Spanos 1979, Chu and Chang 1987, and Yong 1997), note that sentences in Mandarin without aspectual morphology are often interpreted as something other than assertions. The following sentence, for example, in the absence of aspectual morphology in either of the two conjoined clauses, is interpreted as a suggestion or a weak imperative rather than an assertion:

- (52) ni kan zhe ben shu, wo kan nei ben.  
 2SG look this CL book 1SG look that CL  
*Lit.* ‘You read this book, I read that one.’ (Chu 1976, by way of Klein et al. 2000:733)  
 ≈ ‘Why don’t you read this book, and I’ll read that one?’

Sometimes, sentences without aspect marking are even reported as being ungrammatical, for example, when the verb is *si* ‘die’:

- (53) zhangsan si \*(le).  
 Zhangsan die PRF  
 ‘Zhangsan died.’ (Klein et al. 2000)

This judgment is presumably a result of the difficulty of construing the proposition ZHANGSAN DIE as a suggestion or weak imperative, at least without more surrounding context.

Klein et al. propose therefore that “[aspect markers] serve to mark which part of the sentence’s descriptive content is asserted” (p. 723). In my view, this cannot be quite right, however, because aspect markers can be used in utterances other than assertions, for example in questions:

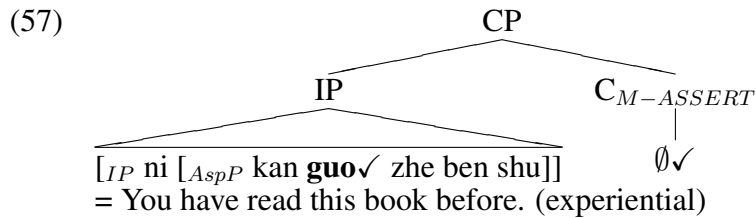
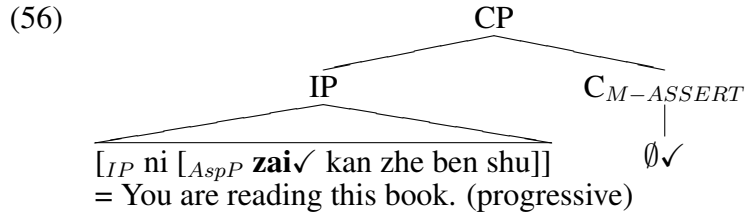
- (54) ni kan le zhe ben shu ma?  
 2SG look PRF this CL book Q  
 ‘Did you read this book?’

In (54), we see that the perfective aspect marker *le* is acceptable even in a question, which does not have assertive illocutionary force.

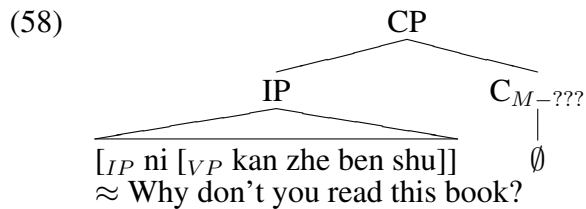
Under my account, in contrast, aspect markers do not themselves convey illocutionary force; rather, they provide necessary support for  $C_{M-ASSERT}$ . In (55), for example, the perfective aspect marker *le* provides the support, and in (56) and (57), the progressive aspect marker *zai* and the experiential aspect marker *guo*, respectively, provide the support:

- (55)
- 
- $$\begin{array}{c} \text{CP} \\ \swarrow \quad \searrow \\ \text{IP} \qquad \qquad \text{C}_{M-ASSERT} \\ \swarrow \quad \searrow \quad \quad \quad \downarrow \\ \text{[IP ni [}_{AspP} \text{ kan le zhe ben shu]]} \quad \emptyset \end{array}$$

= You read this book. (perfective)



Examples like these are in contrast to something like (58) in which no aspectual morphology is present,  $C_{M-ASSERT}$  is therefore unsupported, and the utterance is concomitantly interpreted as a suggestion or a directive rather than an assertion:



One possibility here is that the imperative interpretation is available as a last resort when  $C_M$  is not projected; another possibility is that there is a null  $C_M$  morpheme for imperatives which does *not* require overt morphological support.<sup>12</sup> Both of these options are consistent with the observation that crosslinguistically, imperatives tend to be relatively short in form (see Zanuttini 2008 and references therein).

Further empirical support for the close link between aspect and assertion in Mandarin comes from Xiao and McEnery 2004. In a large corpus-based study of aspect in Mandarin, the authors find that there are typically three contexts in Mandarin in which aspect is unmarked: stative situations, irrealis modality, and utterances in which the surrounding discourse context makes it clear that perfective aspect is intended. The first of these two contexts are consistent with my analysis: for stative situations, it is degree rather than aspectual morphology that provides

<sup>12</sup>There is no special form in Mandarin for imperatives, though the sentence-final particle *ba* is sometimes used to soften a command (Li and Thompson 1981).

support to  $C_{M-ASSERT}$ , and for irrealis modality,  $C_{M-ASSERT}$  is presumably not projected at all. As for the third context, the authors provide the following as an example:

- (59) yi ge bairen qingnian [chuangru yi ge jiaji zhensuo],  
 one CL white youngster rush-into one CL family-planning clinic  
 [yong buqiang xiang limian de ren saoshe], ranhou [taozou le].  
 use rifle at inside DE people strafe then escape PRF  
 ‘A white youngster rushed into a family planning clinic, and strafed people there with his rifle, and then ran away.’ (Xiao and McEnergy 2004:237)

Here, two aspectually unmarked clauses are followed by a clause marked with perfective aspect, and all three are construed as sequential events in a narration. One possible explanation for this is that all three clauses are joined under one projection of  $C_{M-ASSERT}$ , which is supported by the perfective aspect marker *le* in the final clause.

## 7 Agreement and clause typing

The purpose of this section is to formalize the Mandarin Assertion Principle as stated in (43) of Section 5 above, and to relate it to phenomena known in other languages.

Recall that overt, base-generated complementizers in Mandarin, such as the polar interrogative particle *ma*, surface sentence-finally:

- (60) zhangsan gao **ma**?  
 Zhangsan tall Q  
 ‘Is Zhangsan tall?’

As I have shown in the preceding sections, there is no phonologically overt base-generated complementizer for assertions, but there is a requirement in Mandarin that assertions contain an overt, VP-external functional head, such as the bolded items in the following examples:

- (61) zhangsan **hen** gao.  
 Zhangsan very tall  
 ‘Zhangsan is tall.’
- (62) zhangsan **bu** gao.  
 Zhangsan NEG tall  
 ‘Zhangsan is not tall.’



- (63) zhangsan **shi** zhongguoren.  
Zhangsan COP Chinese  
'Zhangsan is Chinese.'
- (64) zhangsan **zai** kan zhe ben shu.  
Zhangsan PROG look this CL book  
'Zhangsan is reading this book.'
- (65) zhangsan kan **le** zhe ben shu.  
Zhangsan look PRF this CL book  
'Zhangsan read this book.'
- (66) zhangsan kan **guo** zhe ben shu.  
Zhangsan look EXP this CL book  
'Zhangsan has read this book before.'

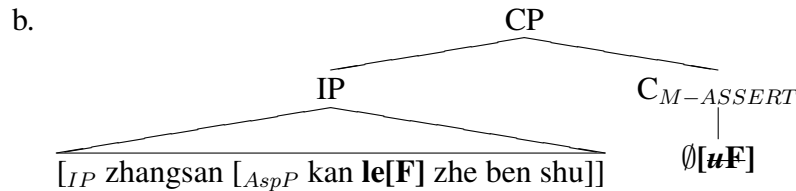
These facts suggest that there is a syntactic dependency between a null assertion complementizer and some overt functional head F lower in the structure. There are various ways we might encode this dependency; *a priori* possibilities include movement, selection, and agreement:

- (67) a. Movement hypothesis: F head-moves to  $C_{M-ASSERT}$ .  
b. Selection hypothesis:  $C_{M-ASSERT}$  selects for an IP that obligatorily contains F.  
c. Agreement hypothesis:  $C_{M-ASSERT}$  has an uninterpretable feature that must be checked by F.

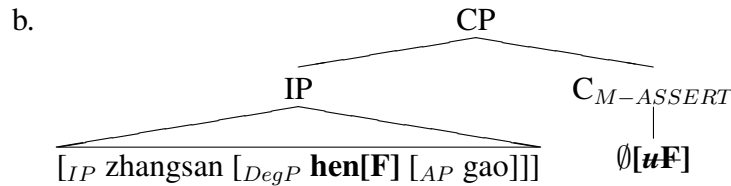
Movement is not a viable option since there is no evidence that the bolded items in the above examples actually move to C; rather, they appear in the same canonical position in which they appear in embedded clauses. Furthermore, following Grimshaw's (2005) Extended Projection hypothesis, selection is not an option either, since under this hypothesis, functional heads do not actually select for the elements below them but rather form a chain of the same category.

Hence I will pursue the Agreement hypothesis, which can be implemented by positing that  $C_{M-ASSERT}$  comes with an uninterpretable feature  $\mu F$  that can be checked only by a constrained set of lexical items, namely, the class of phonologically overt VP-external functional heads. (68a) is analyzed as (68b), and (69a) is analyzed as (69b):

- (68) a. zhangsan kan **le** zhe ben shu.  
Zhangsan look PRF this CL book  
'Zhangsan read this book.'



- (69) a. zhangsan **hen** gao.  
Zhangsan very tall.  
'Zhangsan is tall.'



What exactly is this feature F, and what might be its motivation? Toward an explanation, I appeal to Cheng's (1991) Clausal Typing Hypothesis, which holds that all clauses must be typed, i.e., (at the matrix level) specified for illocutionary force. Cheng's investigation of interrogative clauses found that in some languages, including Mandarin, there is a dedicated morpheme base-generated in C that indicates that a clause is interrogative, whereas other languages employ *wh*-movement as a means of marking interrogative clauses.

Extending Cheng's work, Brandner (2004) shows that for declarative clauses, some languages again employ a dedicated morpheme base-generated in C, for example, Korean:

- (70) ku-ka seoul-e ka-ass-ta.  
3SG-NOM Seoul-to go-PAST-DECL  
'He went to Seoul.' (Brander 2004:109)

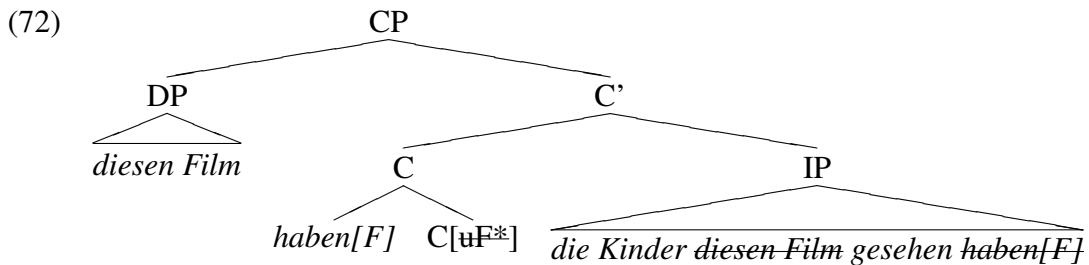
Still other languages, Brandner shows, employ head movement of the verb to C. This is the phenomenon in many Germanic languages known as V2, whose connection to assertive illocutionary force was originally proposed in Wechsler 1991. In German, for example, embedded clauses—which may have an overt complementizer such as *daß*—generally exhibit SOV word order (as in (71a)), but in main clauses (as in (71b)), the surface word order suggests that the finite verb has raised to C which in turn selects for its own specifier from lower in the clause:

- (71) a. Er sagt, [**daß** die kinder diesen Film gesehen haben].  
he says that the children this film seen have  
'He says that the children have seen this film.'

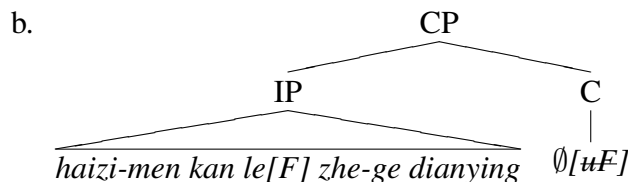
- b. Diesen Film **haben** die Kinder gesehen.  
 this film have the children seen  
 ‘The children have seen this film.’ (Vikner 1995:43)

Beyond these cases, the picture is not so clear: Brandner suggests, in fact, that in languages that lack a dedicated morpheme and that are not V2, declarative clauses are not formally marked as such.

I propose instead that in at least some of the languages in which  $C_{M-ASSERT}$  is apparently inactive (in the sense of not being filled by overt material, whether through base generation or head movement), C makes its presence known indirectly through agreement with overt morphology from the next level down, the inflectional layer, and thereby types the clause in accordance with the Clausal Typing Hypothesis. Adopting the view that head movement is driven by the presence of a strong uninterpretable feature on the landing site of the moved head (Roberts 2001), the difference between Germanic V2 and the Mandarin phenomenon at issue here is simply one of feature strength: in Germanic  $C_{M-ASSERT}$  has the strong version of the feature F and hence employs head movement whereas in Mandarin,  $C_{M-ASSERT}$  has the weak counterpart of F and hence it is checked by agreement with the lower material without overt movement. Compare the tree for the German sentence (71b) with its Mandarin equivalent in (73) (\* indicates that a feature is strong):



- (73) a. haizi-men kan le zhe-ge dianying.  
 child-PL see PRF this-CL movie  
 ‘The children saw this movie.’



In the German example in (72), the feature F on C is strong and hence attracts overt movement of the finite verb, whereas in the Mandarin example in (73), the equivalent feature is weak and hence the aspectual marker *le* checks it while remaining in situ.

English, in fact, may be another example of the Mandarin-style clause typing in which  $C_{M-ASSERT}$  manifests itself through agreement. In English, matrix-level declarative clauses are obligatorily finite; this can be straightforwardly captured by positing that  $C_{M-ASSERT}$  in English has the uninterpretable feature F and that the only available candidate for checking it is T[+FIN]. There is both syntactic and semantic evidence that  $C_{M-ASSERT}$  and finiteness in English are linked. One piece of syntactic evidence is that in embedded clauses, where C is sometimes overt, two distinct complementizers are used depending on the finiteness of the embedded clause (Grimshaw 2005):

- (74) a. We arranged for him to leave at 6. (\*left)  
 b. We thought that he left at 6. (\*to leave) (Grimshaw 2005:19)

Embedded *that*, just like  $C_{M-ASSERT}$ , is associated with finite clauses, and *for* with nonfinite clauses.

Semantic evidence for the close link between assertion and finiteness comes from the work of Klein (1998, 2006). Klein (1998) provides five arguments that in English, assertion is structurally linked to the finite component of a verb. I repeat just one of these arguments here, the so-called contrastive intonation argument. Klein observes that in a sentence like (75a), stressing the finite verb can have two different effects: one is to emphasize the time at which the book was on the table (75b), and the other is to emphasize the claim itself (75c).

- (75) a. The book WAS on the table.  
 b. The book is on the table. - No, the book WAS on the table (but it isn't any longer).  
 c. The book was not on the table. - That's wrong, the book WAS on the table. (Klein 1998:227)

It is the latter reading that we are interested in here: the fact that placing contrastive intonation on the finite component emphasizes the claim being made suggests that assertion and finiteness are linked.

It is also noteworthy that in English, when the verb itself cannot bear tense, the result is *do*-support. *do* in English is a semantically bleached verb just as *hen* in Mandarin is a semantically bleached degree head.

Just as Mandarin  $C_{M-ASSERT}$  ensures that the IP layer be positively specified for aspect, degree, or some other VP-external functional head, in English,  $C_{M-ASSERT}$  ensures that the IP layer be positively specified for tense. The reason for this difference between Mandarin and English is that Mandarin lacks overt

grammatical tense (Hu et al. 2001)<sup>13</sup> and hence the required support must come from elsewhere in the functional structure.

This state of affairs makes sense from a functional perspective: in English, locating an event in time is a necessary condition for asserting its truth. In Mandarin, which lacks tense, delimiting an event's internal structure, whether through aspect (in the case of a dynamic event), degree (in the case of a gradable state), or negation or some other IP-level operator, has the same effect.<sup>14</sup>

## 8 Extensions

In the preceding sections, I have argued that assertions in Mandarin must come with phonologically overt VP-external (i.e., IP-layer) functional morphology, often realized by aspect and degree morphology. In this section I discuss three apparent classes of counterexamples to this generalization: comparatives that lack an overt standard, transitive state-denoting verbs, and habitual sentences:

- (76) a. zhangsan gao.  
Zhangsan tall  
'Zhangsan is taller (than someone known from context).'
- b. zhangsan xihuan lisi.  
Zhangsan like Lisi  
'Zhangsan likes Lisi.'
- c. zhangsan chouyan.  
Zhangsan smoke  
'Zhangsan smokes.'

I argue that all of these cases involve movement of the verb to the inflectional layer where it acquires the necessary feature F to check  $C_{M-ASSERT}$ , and that the relevant feature shared by all these constructions that allows for this is the presence of an external argument.

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<sup>13</sup>Whether or not Mandarin clauses project a T node is a matter of debate (see Sybesma 2007 for a recent argument that T is projected); what is generally agreed on, though, and what is important for my account, is that T in Mandarin is not overt.

<sup>14</sup>The component in the IP layer that supports  $C_{M-ASSERT}$  may not necessarily play this double role in all languages for which this analysis is appropriate, though; Duffield (2007) argues that in Vietnamese, there is a morpheme (*có*) that sits in the inflectional layer which is associated with assertive illocutionary force and nothing else.

## 8.1 Comparatives without an overt standard

I have built up an account for why the adjective in (77) (repeated from the Introduction) does not have a positive meaning, but not for why it *can* have a comparative meaning in an appropriate context:

- (77) zhangsan gao.  
Zhangsan tall  
'Zhangsan is taller (than someone known from context).'
- NOT: 'Zhangsan is tall.'

This is a puzzle that any account of the semantics of adjectives in Mandarin needs to address. In addition, my account in particular needs to show how it is that  $C_{M-ASSERT}$  is licensed under the comparative reading of (77) given the lack of any overt functional morphology in the sentence. In the account I develop here, (77) has a comparative reading because it can be construed as containing an elided standard of comparison, and  $C_{M-ASSERT}$  is supported because (based on Xiang's (2005) analysis of Mandarin comparatives) the adjective *gao* 'tall' has raised to a VP-external functional position in the structure where it acquires the F feature necessary to support  $C_{M-ASSERT}$ .

The appeal of an elliptical account for the comparative reading of (77) is that it explains both why the utterance is infelicitous when taken out of context, and how it is that part of the meaning of the utterance is computed from an element which is not overtly present but which must be contextually supplied. Namely, the utterance is infelicitous out of context because it is in need of ellipsis resolution, and part of the meaning of the utterance is computed from a missing element because although the element is phonologically deleted, it is still present in the syntax (see Merchant 2001 for background on the theoretical assumptions I am making about ellipsis).

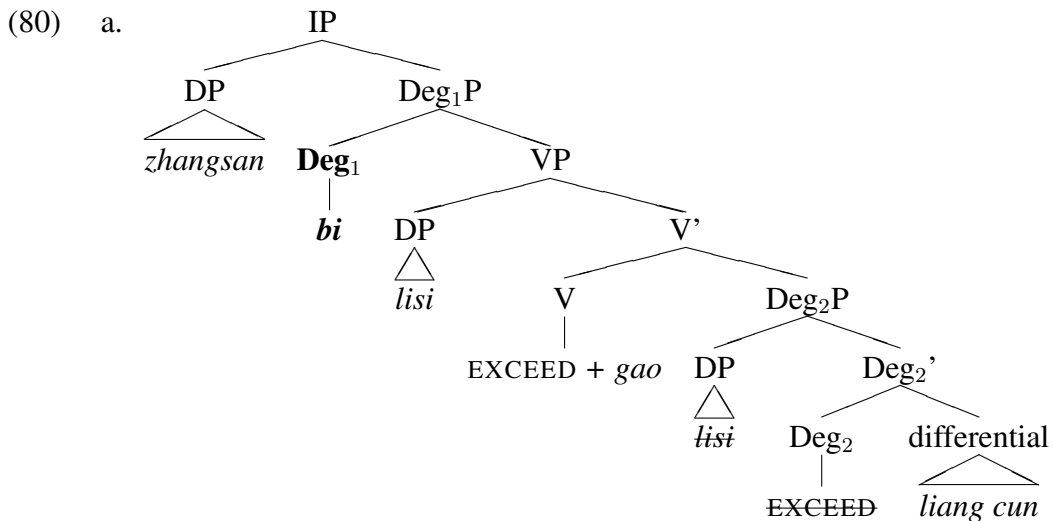
An important question to ask is what the non-elliptical counterpart of a sentence like (77) would be. There are two primary strategies in Mandarin for making comparisons with overt standards, one that uses a standard marker *bi*, and one that does not. Following Grano and Kennedy 2008 (unpublished ms.), I call the former kind "*bi* comparatives" and the latter kind "transitive comparatives":

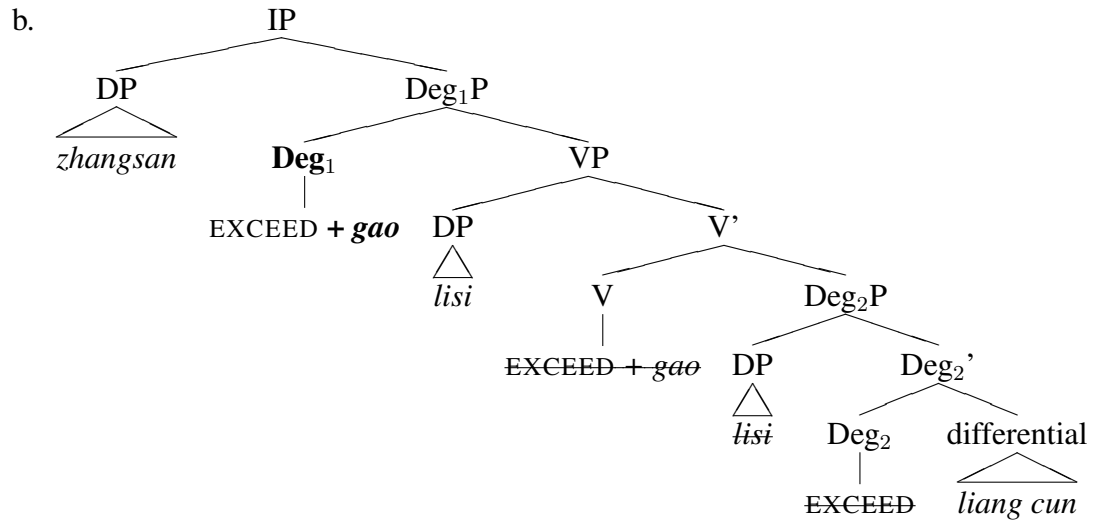
- (78) a. zhangsan bi lisi gao (liang cun).  
Zhangsan SM Lisi tall two inch  
'Zhangsan is (two inches) taller than Lisi.'
- b. zhangsan gao lisi \*(liang cun).  
Zhangsan tall Lisi two inch  
'Zhangsan is two inches taller than Lisi.'

A differential phrase is optional in the construction in (78a) but obligatory in the construction in (78b) (Xiang 2005). Ignoring for now this differential phrase, there are *a priori* two possible sources for (77):

- (79) a. zhangsan ~~bi~~-lisi gao.  
 Zhangsan SMLisi tall  
 ‘Zhangsan is taller [than Lisi].’  
 b. zhangsan gao lisi.  
 Zhangsan tall Lisi  
 ‘Zhangsan is taller [than Lisi].’

Is there evidence for choosing one source over the other? Xiang’s (2005) analysis of Mandarin comparatives relates the two constructions in (78) by positing a structure containing a null morpheme EXCEED which selects for a (sometimes optional) differential argument and for a standard of comparison and then raises to merge with the verb (or in Xiang’s terms, the adjective). A higher Deg head introduces the external argument, and here, insertion of *bi* results in the *bi* comparative in (78a) (= tree in (80a)) whereas verb-raising results in the transitive comparative in (78b) (= tree in (80b)):

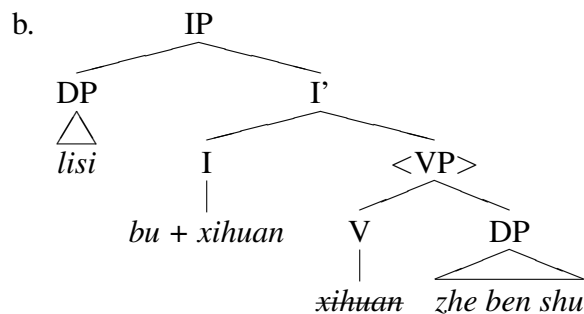




The problem with trying to derive (77) from a source like (79a) is that the putative elided portion *bi lisi* does not form a syntactic constituent under Xiang's analysis<sup>15</sup> and thus should be unavailable for ellipsis.

This leaves us with (79b) as the proper source sentence. The structure in (79b) is reminiscent of null-object data like that in (81a). Huang (1988) analyzes the bracketed clause in (81a) as the result of raising of the matrix verb to form an immediate constituent with the negation marker *bu*, followed by ellipsis of the VP, as in (81b):

- (81) a. zhangsan xihuan zhe ben shu, [*lisi bu xihuan*].  
 Zhangsan like this CL book Lisi NEG like  
 'Zhangsan likes this book, (but) Lisi doesn't.' (Huang 1988:288)



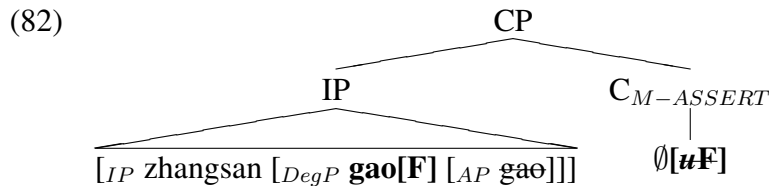
I propose that (79b), then, involves the same operation: the verb *gao* raises out of the VP layer, and ellipsis of the VP results in the desired surface form *zhangsan gao*. The presence of this missing VP in the syntax results in the correct meaning,

<sup>15</sup>The same is true of the analysis of *bi*-comparatives in Erlewine 2007.



namely, “Zhangsan is taller than Lisi (or some other contextually specified individual).”<sup>16</sup>

How is  $C_{M-ASSERT}$  supported in this utterance? In (80b),  $Deg_1$ , a VP-external functional head position, is occupied by the phonologically overt *gao*, resulting in the necessary feature F to support  $C_{M-ASSERT}$ . This gives us the tree in (82):



Finally, it is worth noting that my proposal correctly captures the truth conditions of a sentence like (83).

- (83) zhangsan gao, lisi ai.  
 Zhangsan tall Lisi short  
 [free translation omitted because meaning of utterance is at issue]

<sup>16</sup>A potential problem for this analysis is that while a sentence like (ia) requires a contextually understood standard of comparison, it does not require a contextually understood differential measure, even though its putative nonelliptical counterpart in (ib) is ungrammatical without such a measure phrase:

- (i) a. zhangsan gao.  
 Zhangsan tall  
 ‘Zhangsan is taller.’  
 b. zhangsan gao lisi \*(liang cun)  
 Zhangsan tall Lisi two inch  
 ‘Zhangsan is two inches taller than Lisi.’

Furthermore, when the gradable predicate is incompatible with a measure phrase, the transitive comparative structure is not licensed at all, even though its elliptical counterpart is:

- (ii) a. zhangsan gaoping.  
 Zhangsan happy  
 ‘Zhangsan is happier (than someone known from context).’  
 b. \*zhangsan gaoping lisi (yi dian).  
 Zhangsan happy Lisi a little  
 Intended: ‘Zhangsan is (a little) happier than Lisi.’

A solution to both of these problems is sketched in Grano and Kennedy 2008 (unpublished ms.), where it is proposed that measure phrases are obligatory in transitive comparatives because they are needed to assign case to the standard of comparison. In the absence of an overt standard, as in (ia) and (iia), there is no case requirement, and hence no need for a measure phrase in the underlying syntax.

Sentences like (83) are sometimes translated in previous literature as “Zhangsan is tall, but Lisi is short” (for example, in Liu 2005) as though *gao* ‘tall’ and *ai* ‘short’ have their positive meanings in this context and all that is needed to license their use as bare predicates in this context is the contrastive focus set up by the conjoining of the clauses. If my proposal is correct, however, each of the conjoined clauses in (83) contains an elided standard of comparison. Naturally in this context the most salient standard of comparison for *zhangsan gao* is Lisi and the most salient standard for *lisi ai* is Zhangsan. Thus the sentence should mean “Zhangsan is taller than Lisi and Lisi is shorter than Zhangsan,” and this is true in any context in which Zhangsan’s height exceeds Lisi’s height, regardless of whether one or both of them would count as “tall” or “short” by common standards and regardless of how minute their difference in height may be. I asked a Mandarin informant to judge whether (83) is true or false under five different conditions in which Zhangsan’s height and Lisi’s height were altered to test all of these various scenarios, and the results are indicated in Table 3.

	Zhangsan’s height	Lisi’s height	Truth value of (83)
Condition 1	2.0M	1.5M	True
Condition 2	2.5M	2.0M	True
Condition 3	1.5M	1.0M	True
Condition 4	2.5M	2.4M	True
Condition 5	1.5M	1.4M	True

**Table 3: Investigating the truth conditions of (83)**

Thus my prediction is borne out: (83) is true under any condition in which Zhangsan’s height exceeds Lisi’s height. This suggests that the sentence involves true comparative meaning rather than simply contrastive focus, and ellipsis provides a straightforward way of accounting for this comparative meaning. The felicity of (83) under Conditions 4 and 5, in particular, in which the difference in height between Zhangsan and Lisi is small, support the view that (83) is a genuine comparative construction, since indirect strategies for making comparisons that involve positive-form semantics are usually incompatible with such fine grained distinctions (the so-called CRISP JUDGMENT effect; see Kennedy 2007).

## 8.2 Transitive stative verbs and habitual sentences

Another class of predicates that do not require overt VP-external functional morphology for felicitous use in assertions is transitive stative verbs:

- (84) zhangsan xihuan lisi.  
 Zhangsan like Lisi

‘Zhangsan likes Lisi.’

This suggests that the head movement analysis of the comparative construction outlined above generalizes to all cases in which more than one argument is involved: just as comparative constructions involve both a target and a (possibly implicit) standard, transitive verbs involve both a subject and object, and this double argument capacity may correlate with the ability of the verb to raise into the IP-layer.

Such an account predicts, then, that event-denoting verbs should also be able to raise into the IP-layer and hence occur in assertions without overt functional morphology. In this domain, the generalization seems to be that both transitive and unergative verbs without functional morphology are felicitous under a habitual interpretation, whereas unaccusative verbs without functional morphology are simply ungrammatical:

- (85) a. zhangsan he jiu.  
Zhangsan drink alcohol  
‘Zhangsan drinks.’  
b. zhangsan gongzuo.  
Zhangsan work  
‘Zhangsan works.’
- (86) a. \*zhangsan si.  
Zhangsan die  
b. \*chuan chen.  
boat sink  
c. \*boli sui.  
glass shatter

Adopting the idea that the subject of an unaccusative verb originates in object position whereas the subject of an unergative verb is introduced via a light verbal head, the data suggest that it is the presence of an external-argument-introducing light verbal head that allows the verb to escape through head movement into the IP layer and provide the necessary support to  $C_{M-ASSERT}$ . In other words, a light verbal head provides the right kind of intermediate structure for the verb to move through in order to escape into the IP layer. In the absence of a light verbal head, the verb is stuck in the VP layer and the IP-level support must be base generated in the form of e.g. degree or aspect morphology.

## 9 Conclusions

Two conclusions are warranted. First, despite their odd behavior in matrix-level declarative clauses, gradable adjectives in Mandarin have fundamentally the same semantics as adjectives in other languages; that is, the facts are consistent with an account in which gradable adjectives denote functions of type  $\langle d, et \rangle$  which can combine either with a null POS morpheme or with overt degree morphology. This is a welcome result given that adjectival meaning seems to be a basic component of language and thus unlikely to be subject to crosslinguistic variation. Moreover, under this analysis, Mandarin no longer seems to run against the universal markedness generalization that the comparative form of an adjective is at least as complex as the positive form.

Second, the more intriguing conclusion is that assertions in Mandarin require overt support from a VP-external functional head such as degree or aspect. This result provides further support for Cheng's Clausal Typing Hypothesis and reveals that in some languages, clausal typing is achieved through agreement. This expands our knowledge of cross-linguistically available strategies for formally marking declarative clauses, which was already known to include I-C head movement and base generation of a complementizer.

In addition, a number of open questions remain. Perhaps the most important question concerns uncovering the full range of functional elements which can provide the necessary support to  $C_{M-ASSERT}$ . While I gave special prominence to degree and aspect in this paper, I do not mean to claim that they are always necessary for well-formed assertions; as alluded to briefly in Section 5, morphology indicating negation and coordination are two other ways of providing the support, and in addition, preliminary evidence suggests that the copula *shi*, auxiliary verbs, as well as functional elements that show up in more complex clauses in Mandarin can also provide the necessary support. Closer attention to such functional elements under the proposal presented in this paper should result in a more sophisticated understanding of Mandarin syntax and its interfaces with both semantics and pragmatics.

## References

- Abney, S. (1987). *The English noun phrase in its sentential aspect*. (Ph.D. Dissertation, MIT)
- Austin, J. (1962). *How to do things with words*. Cambridge: Harvard University Press.
- Brandner, E. (2004). Head-movement in minimalism, and V2 as FORCE-marking.

- In H. Lohnstein & S. Trissler (Eds.), *Syntax and semantics of the left periphery* (pp. 97–138). Berlin: Mouton de Gruyter.
- Chao, Y.-R. (1968). *A grammar of spoken Chinese*. Berkeley: University of California Press.
- Cheng, L. L.-S. (1991). *On the typology of wh-questions*. New York: Garland Publishing.
- Chierchia, G. (1998). Reference to kinds across languages. *Natural Language Semantics*, 6, 339–405.
- Chu, C. C. (1976). Some semantic aspects of action verbs. *Lingua*, 40, 43–54.
- Chu, C. C., & Chang, W. V. (1987). The discourse function of the verbal suffix *-le* in Mandarin. *Journal of Chinese Linguistics*, 15, 309–334.
- Chui, K. (2000). Morphologization of the degree adverb *hen*. *Language and Linguistics*, 1(1), 45–59.
- Cinque, G. (1999). *Adverbs and functional heads: A cross-linguistic perspective*. Oxford: Oxford University Press.
- Corver, N. (1997). Much-support as a last resort. *Linguistic Inquiry*, 28, 119–164.
- Duffield, N. (2007). Aspects of Vietnamese clausal structure: separating tense from assertion. *Linguistics*, 45, 765–814.
- Erlewine, M. (2007). *A new syntax-semantics for the Mandarin bi comparative*. (M.A. Thesis, University of Chicago)
- Ernst, T. (1994). Functional categories and the Chinese Infl. *Linguistics*, 32, 191–212.
- Gasde, H.-D., & Ernst, T. (1996). Functional categories, topic prominence, and complex sentences in Mandarin Chinese. *Linguistics*, 34, 263–294.
- Grimshaw, J. (2005). *Words and structure*. Stanford: CSLI Publications.
- He, B. (1992). *Situation types and aspectual classes of verbs in Mandarin Chinese*. (Ph.D. Dissertation, The Ohio State University)
- Hu, J., Pan, H., & Xu, L. (2001). Is there a finite vs. nonfinite distinction in Chinese? *Linguistics*, 39, 1117–1148.
- Huang, C.-T. J. (1988). *Wo pao de kuai* and Chinese phrase structure. *Language*, 64, 274–311.
- Huang, S.-Z. (2006). Property theory, adjectives, and modification in Chinese. *Journal of East Asian Linguistics*, 15, 343–369.
- Kennedy, C. (2007). Vagueness and grammar: the semantics of relative and absolute gradable adjectives. *Linguistics and Philosophy*, 30, 1–45.
- Kennedy, C., & McNally, L. (2005). Scale structure, degree modification, and the semantics of gradable predicates. *Language*, 81, 345–381.
- Klein, E. (1980). A semantics for positive and comparative adjectives. *Linguistics and Philosophy*, 4, 1–45.
- Klein, W. (1998). Assertion and finiteness. In N. Dittmar & Z. Penner (Eds.), *Issues*

- in the theory of language acquisition: Essays in honor of Jürgen weissenborn* (pp. 225–245). Bern: Lang.
- Klein, W. (2006). On finiteness. In V. V. Geenhoven (Ed.), *Semantics in acquisition* (pp. 245–272). Dordrecht: Springer.
- Klein, W., Li, P., & Hendriks, H. (2000). Aspect and assertion in Mandarin Chinese. *Natural Language & Linguistic Theory*, 18, 723–770.
- Krifka, M. (1995). Common nouns: A contrastive analysis of Chinese and English. In G. Carlson & F. Pelletier (Eds.), *The generic book* (pp. 398–411). Chicago: University of Chicago Press.
- Krifka, M. (1999). Quantifying into question acts. In T. Matthews & D. Strolovitch (Eds.), *Salt ix* (pp. 181–198). Ithaca, NY: Cornell University.
- Li, C. N., & Thompson, S. A. (1981). *Mandarin Chinese: A functional reference grammar*. Berkeley: University of California Press.
- Lin, J. (2004). *Even structure and the encoding of arguments: The syntax of the Mandarin and English verb phrase*. (Ph.D. Dissertation, Massachusetts Institute of Technology)
- Liu, C.-S. L. (2005). *Chinese adjectives are unrestricted*. (Ms., National Chiao Tung University, Taiwan)
- McCawley, J. (1992). Justifying part-of-speech assignments in Mandarin Chinese. *Journal of Chinese Linguistics*, 20, 211–245.
- Merchant, J. (2001). *The syntax of silence: Sluicing, islands, and the theory of ellipsis*. Oxford: Oxford University Press.
- Merchant, J. (2007). *Three kinds of ellipsis: Syntactic, semantic, pragmatic?* (Ms.)
- Paul, W. (2005a). Adjective modification in Mandarin Chinese and related issues. *Linguistics*, 43, 757–793.
- Paul, W. (2005b). Low IP area and left periphery in Mandarin Chinese. *Recherches linguistiques de Vincennes*, 33, 111–133.
- Rizzi, L. (1997). The fine structure of the left periphery. In L. Haegeman (Ed.), *Elements of grammar: Handbook in generative syntax* (p. 281–337). Dordrecht: Kluwer Academic Publishers.
- Roberts, I. (2001). Head movement. In M. Baltin & C. Collins (Eds.), *The handbook of contemporary syntactic theory* (pp. 113–147). Oxford: Blackwell.
- Ross, J. R. (1973). The penthouse principle and the order of constituents. In C. Corum, T. Smith-Stark, & A. Weiser (Eds.), *You take the high node and I'll take the node* (pp. 397–422). Chicago: Chicago Linguistic Society.
- Sackman, R. (1996). The problem of “adjective” in Modern Chinese. In R. Sackman (Ed.), *Theoretical linguistics and grammatical description: Papers in honour of Hans-Heinrich Lieb on the occasion of his 60th birthday* (pp. 257–275). Philadelphia: John Benjamins.

- Sadock, J. M. (1974). *Toward a linguistic theory of speech acts*. New York: Academic Press.
- Sadock, J. M. (1988). Speech act distinctions in grammar. In F. J. Newmeyer (Ed.), *Linguistics: The Cambridge survey, Volume II* (pp. 183–197). Cambridge: Cambridge University Press.
- Sadock, J. M., & Zwicky, A. M. (1985). Speech act distinctions in syntax. In T. Shopen (Ed.), *Language typology and syntactic description: Clause structure* (p. 155–196). Cambridge: Cambridge University Press.
- Searle, J. R. (1969). *Speech acts: An essay in the philosophy of language*. Cambridge: Cambridge University Press.
- Searle, J. R. (1975). A taxonomy of illocutionary acts. In K. Gunderson (Ed.), *Language, mind, and knowledge* (pp. 344–369). Minneapolis: University of Minnesota Press.
- Smith, C. (1991). *The parameter of aspect*. Dordrecht: Kluwer Academic Publishers.
- Spanos, G. (1979). Contemporary Chinese use of *-le*: A survey and a pragmatic proposal. *Journal of Chinese Language Teachers Association*, 14(1), 36–70.
- Speas, P., & Tenny, C. (2003). Configurational properties of point of view roles. In A. M. D. Sciullo (Ed.), *Asymmetry in grammar, Volume I* (pp. 315–344). Amsterdam: John Benjamins.
- Sproat, R., & Shih, C. (1988). Prenominal adjectival ordering in English and Mandarin. In J. Blevins & J. Carter (Eds.), *Nels 18* (pp. 465–489). Amherst, Mass.: GLSA.
- Sybesma, R. (1999). *The Mandarin VP*. Dordrecht: Kluwer Academic Publishers.
- Sybesma, R. (2007). Whether we tense-agree overtly or not. *Linguistic Inquiry*, 38, 580–587.
- Tai, J. H.-Y. (1984). Verbs and times in Chinese: Vendler's four categories. In D. Testen, V. Mishra, & J. Drogo (Eds.), *Papers from the parasession on lexical semantics* (pp. 289–296). Chicago: Chicago Linguistic Society.
- Teng, S.-H. (1974). Double nominatives in Chinese. *Language*, 50, 455–473.
- Vikner, S. (1995). *Verb movement and expletive subjects in the Germanic languages*. Oxford: Oxford University Press.
- Wang, W. S.-Y. (1965). Two aspect markers in Mandarin. *Language*, 41, 457–470.
- Wechsler, S. (1991). Verb second and illocutionary force. In K. Leffel & D. Bouchard (Eds.), *Views on phrase structure* (pp. 177–191). Dordrecht: Kluwer Academic Publishers.
- Xiang, M. (2005). *Some topics in comparative constructions*. (Ph.D. Dissertation, Michigan State University)
- Xiao, R., & McEnery, T. (2004). *Aspect in Mandarin Chinese: A corpus-based study*. Amsterdam: John Benjamins Publishing Company.

- Yip, P.-C., & Rimmington, D. (2004). *Chinese: a comprehensive grammar*. London: Routledge.
- Yong, S. (1997). The grammatical functions of verb complements in Mandarin Chinese. *Linguistics*, 35, 1–24.
- Zanuttini, R. (2008). Encoding the addressee in the syntax: evidence from English imperative subjects. *Natural Language and Linguistic Theory*, 26, 185–218.
- Zhu, D.-X. (1956). Xiandai hanyu xingrongci yanjiu [Studies of Modern Chinese adjectives]. *Yuyan Yanjiu*, 1, 83–112.