

Functional Head Properties of the Degree Word *Hen* in Mandarin Chinese

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Abstract Drawing on syntactic evidence, this paper shows that the functional projection DegP is attested in Mandarin Chinese, and the degree word *hen* ‘very’ heads DegP. The former finding is based on the fact that the string *hen*-XP exhibits a different distribution from XP. The latter finding is based on the facts that *hen* and adjective reduplication are in complementary distribution, and that *hen* can be stranded at the sentence-final position, like some other head elements in the language.

Keywords: degree word; reduplication; stranding; DegP; modifier; Mandarin Chinese

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1. Introduction

This paper probes the syntax of the degree word *hen* ‘very’ in Mandarin Chinese, as in (1).

- (1) Dawei hen gao.
David very tall
‘David is (very) tall.’

I will propose that *hen* heads the functional projection DegreeP (DegP), and thus it is not a non-head element, such as an adverbial or modifier of another element. The research is significant against the background of three facts. First, many arguments so far for establishing DegP in the literature (e.g., Corver 1990; 1997b; Zwarts 1992; Neeleman et al. 2004) seem to be unavailable in Mandarin Chinese (e.g., various types of overt WH movement in adjective constructions). In the traditional grammar, degree words are treated as modifiers of APs or stative VPs. So long as the traditional analysis remains unchallenged in some languages, we are not confident in the generalities of DegP, and thus the nature of the functional category. I will show that in Mandarin Chinese, the degree word *hen* must head a functional projection, and thus the functional category Deg is attested by new facts in this language.

Second, because of certain language-specific properties, degree words in English and Dutch are classified into an adjunct group (e.g., *more* in English) and a functional head element group (e.g., *too* in English) in Neeleman et al. (2004) (see also Jackendoff 1977: 165; Abney 1987: 298; Corver 1991: 36). Importantly, Neeleman et al. (2004: Section 3) point out that the division does not match any semantic division. It thus remains a research issue what the syntactic status of each degree word is in Mandarin Chinese. My research starts with *hen*.

Third, *hen* has been claimed to be the almost unique positive marker (or POS marker) in the world languages (see Grano 2012 for a review of the literature). Therefore, the semantic properties of *hen* have seen an upsurge of interest in recent years (especially Kennedy 1999, S. Huang 2006, Liu 2010, Grano 2012), however, its syntactic properties have not, to my knowledge, been subject to serious scrutiny. A detailed study of the syntax of *hen* may lead us to see more about the structural properties of positive constructions.

In this introduction section, I first introduce two basic properties of *hen*, and then briefly review how the previous analyses of *hen* have not clarified the syntactic status of this word, and then rule out a predicative analysis. In Section 2, I make my proposal. In Section 3, showing that XP and the string *hen*-XP may have different distributions, I argue that DegP is an independent category. In Section 4, from the perspective of the interaction with adjective reduplication, I argue for the head status of *hen*. In Section 5, I make the same argument from a *hen*-stranding fact. Section 6 concludes the paper and mentions a hidden complexity of the notion of POS, against the background that *hen* has been widely assumed to be a POS marker.

1.1 *Hen* occurs with gradable statives only

The degree word *hen* occurs with elements of different categories. In addition to adjectives such as *gao* ‘tall’ in (1), *hen* also precedes a stative VP, as in (2a) (Li & Thompson 1981: 340), a passive verbal phrase, as in (2b), a deontic modal, as in (2c), and an epistemic modal, as in (2d).¹

- | | | | |
|--------|---|----|---|
| (2) a. | Dawei hen xihuan mao.
David very like cat
‘David likes cats very much.’ | b. | Dawei hen bei ren qiaobuqi.
David very PASS person look.down
‘David is very much looked down upon.’ |
|--------|---|----|---|

¹ Abbreviations in the Chinese examples: BA: causative marker; CL: classifier; DE: associative marker or secondary-predicate marker; COMP: comparative; INCH: inchoative; IMP: imperative; PASS: passive; PRF: perfect aspect; PRT: sentence-final aspect particle; Q: question; RED: reduplicant.

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|----|--|----|---|
| c. | Dawei hen hui xia qi.
David very can play chess
'David can play chess well.' | d. | Dawei hen keneng qu-le Riben.
David very might go-PRF Japan
'It is very likely that D has gone to Japan.' |
|----|--|----|---|

The wide range of co-occurring categories distinguishes *hen* from the word *very* in English. When *very* occurs with categories other than adjectives and adjective-like adverbs (most of them end in *-ly*; see Doetjes 2008: 123), it needs the support of another element *much* (e.g., Corver 1997a; Neeleman et al. 2004: 12). In this sense, the distribution of *hen* is similar to that of *erg* 'very' in Dutch, which occurs with both adjectives and stative verbs.

We can see that *hen* is combined with a gradable predicate of any category. Other degree words in the language exhibit the same wide distribution. If *hen* is replaced with *bijiao* 'COMP' in each of the examples in (2), and the sentence is preceded by a phrase that means 'compared with X', the comparative construction is still acceptable. Similarly, if *hen* is replaced with *zui* 'most' in each of the examples in (2), and the sentence is preceded by a phrase that means 'among those Xs', the superlative construction is still acceptable.²

On the other hand, *hen* (as well as *bijiao* and *zui*) does not occur with any eventive expressions, such as *shuijiao* 'sleep', as seen in (3a). *Hen* is thus different from *a lot*, which may occur in an eventive predicate, as seen in (3b) (Solt 2014; also see Doetjes 2008: 122 for other degree expressions that may occur in eventives in other languages).

- | | | | | | |
|--------|--|----|----------------|----|-----------------------------|
| (3) a. | *Dawei hen tiaowu.
Dawei very dance | b. | I slept a lot. | c. | Joe appreciates Lisa a lot. |
|--------|--|----|----------------|----|-----------------------------|

However, like degree words in many other languages, *hen* (as well as *bijiao* and *zui*) occurs with gradable expressions only.³ The property *xihuan mao* 'like cats' is gradable, and thus it may occur with *hen* in (4a). In (4b), however, *huozhe* 'alive' is not gradable, and thus it may not occur with *hen*. Other non-gradable statives such as *xue-bai* 'snow-white' may not occur with *hen*, either (Lü et al. 1980) (see a distribution list of *hen* in Chao 1968: 665; also see Bittner 2014: 102-103 for more examples of "predicates of gradable states" in Mandarin Chinese, which are the only elements that allow "degree-modifier").

- | | | | |
|--------|---|----|---|
| (4) a. | Dawei hen xihuan mao.
David very like cat
'David likes cats (very much).' | b. | Dawei hai (*hen) huozhe.
David still very alive
'David is still alive.' |
|--------|---|----|---|

One way to distinguish gradable statives from other elements, as mentioned by a reviewer, is the possibility to occur in a *bi...geng* 'than...more' comparative construction. The VP *xihuan mao* 'like cat' may occur in the construction, as in (5a), whereas *huozhe* 'alive'

² I do not discuss the use of *hen* with the adverb *xianran* 'obviously', as in (ia). The adverb may not occur with any other degree word, including *feichang* 'very', *bijiao* 'COMP', *geng* 'even more', or *zui* 'most'. Another speaker-oriented adverb, *xingkui* 'fortunately', as in (ib), may not occur with any degree word.

(i) a.	(hen) xianran, Dawei sheng bing le. very obviously David get sick PRT '(Very) obviously, David has got sick.'	b.	(*hen/*feichag) xingkui, Dawei sheng bing le. very/very fortunately David get sick PRT 'Fortunately, David got sick.'
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³ Li & Thompson (1981: 144) state that *hen* "may occur with certain absolute (nonscalar) adjective also," such as *dui* 'correct' and *yuan* 'round'. They give the examples in (i). One reviewer mentions that these two words can be gradable but have a closed scale (Kennedy & McNally 2005: 352), like the adjectives in (ii).

(i) a.	Nei ge penzi hen yuan. that CL bowl very round 'That bowl is very round.'	b.	Ta shuo de hen dui. 3SG speak DE very correct 'What s/he said is quite correct.'
(ii) a.	The glass is {half/mostly} full.	b.	Her eyes were {half/most} of the way closed.
c.	These images are {half/mostly} invisible.		

may not, seen in (5b).

- (5) a. Dawei bi Lili geng xihuan mao. b. *Dawei bi Lili (hai) geng huozhe.
 David than Lili more like cat David than Lili still more alive
 ‘David likes cats more than Lili does.’

A negation word may precede or follow *hen*, as in (6a) and (6b), respectively. The negation word *bu* ‘not’ is not word-internal in (6b). The different positions of *bu* mark different negation scopes. The flexibility shows that the form of a gradable stative may vary, and it may contain a negation word. In (6a) and (6b), *hen* selects a gradable stative.

- (6) a. Lili bu hen xihuan jidan. b. Lili hen bu xihuan jidan.
 Lili not very like egg Lili very not like egg
 ‘It’s not the case that L likes eggs very much.’ ‘L dislikes eggs very much.’

Gradability is observed in various categories (see Solt 2014: Sec. 3.1 for a survey), and thus the wide range of *hen*’s selection is normal. One semantic approach to gradability is that a gradable (or scalar) predicate belongs to the type $\langle d, \langle e, t \rangle \rangle$, whereas a non-gradable predicate belongs to the type $\langle e, t \rangle$. The former has an unsaturated degree *d* argument (or variable), whereas the latter does not (Seuren 1973; Cresswell 1976; Kennedy and McNally 2005, among many others). If *hen* is $\langle \langle d, \langle e, t \rangle \rangle, \langle e, t \rangle \rangle$ (e.g., Grano 2012: 532), the combination of a degree word and a gradable XP, such as *hen gao* ‘tall’ in (1), expresses a property. The gradability constraint on the element that occurs with *hen* suggests that *hen* s-selects $\langle d, \langle e, t \rangle \rangle$ elements only. It is degree words, rather than elements of any other categories, that have this selection.

Examples such as (3a) show that *hen* s-selects statives rather than eventive expressions. As for the semantic representation of statives, the syntactic analysis of *hen* proposed in this paper makes no new claim.

1.2 The occurrence of *hen* rules out a comparative reading

Degree words express, specify or limit the degree of a gradable property. In English, for instance, *as* is for an equal degree, *too* is for an excessive degree, *more* or *-er* is for a comparative degree, *most* or *-est* is for a superlative degree, and *very* is for a high degree (e.g., Doetjes 2008: 126). However, *hen* ‘very’ has two uses (Li & Thompson 1981: 143). In one use, it functions as an intensifier, denoting a high degree, like the English word *very*, as shown by (7a) and (8a) in its first reading. In this use, it may bear stress, and may have the suffix *-wei* ‘for’ if it precedes a disyllabic word, as in (7b) (Hou 1998: 280).⁴ In the other use, it does not express a high degree. In this latter use, it neither bears stress nor takes *-wei*, as seen in the second reading of (8a). Chui (2000: 51) treats *hen* in this use as a clitic.⁵

⁴ The complex form *hen-wei* ‘very’ sounds formal and archaic. The *-wei* part also occurs in other degree words, such as *ji-wei* ‘extremely’, *shen-wei* ‘very’, *po-wei* ‘quite’, *you-wei* ‘especially’, including the comparative forms *jiao-wei* ‘COMP’ and *geng-wei* ‘more’. Lü et al. (1980 [1999: 551]) claim that *-wei* in this use is a suffix that follows a monosyllabic form and precedes a modified disyllabic adjective or verb. The phonological constraint on *-wei* suggests that it helps to form a sequence of two disyllabic phonological words.

⁵ When *zenme* ‘how’ occurs with a gradable stative, as in (7a) in the text, it means ‘very’ (Lü et al. 1980 [1999: 652]), rather than introducing a question, and it is a negative polarity item. Thus, compared with (ia), (ib), in which no negation word occurs, is not acceptable. In contrast, the comparative *bijiao* ‘COMP’ may not occur in the domain of negation (Lü et al. 1980 [1999: 75]), as seen in (ic).

- (i) a. Dawei bu zenme gao. b. *Dawei zenme gao. c. *Dawei bu bijiao gao.
 David not how tall David how tall David not COMP tall
 ‘David is not very tall.’

- (7) a. Zhe duo hua hen hong, keshi nei duo jiu bu-zenme hong. (Dong 2005: 10)
 this CL flower very red but that CL then not-how red
 ‘This flower is very red, but that one is not very red.’
 b. Chanpin hen-wei fengfu.
 product very-for rich
 ‘The products are very rich.’
- (8) a. Dawei hen gao.
 David very tall
 ‘David is very tall.’ (*hen* is stressed)
 ‘David is tall.’ (*hen* is not stressed)
 Not: ‘David is taller.’
 b. Dawei gao.
 David tall
 ‘David is taller than others.’
 Not: ‘David is tall.’
 c. Dawei bijiao gao.
 David COMP tall
 ‘David is taller than others.’
 Not: ‘David is tall.’

The second use of *hen* has attracted many semantic studies (e.g., Kennedy 1999; S. Huang 2006; Liu 2010; Grano 2012). Li & Thompson (1981: 143, 340) claim that “if *hen* is not heavily stressed, its meaning ‘very’ may be bleached.” It needs to be clarified that the occurrence of *hen* is never vacuous semantically, since its presence in either use rules out a comparative reading. If one asks between David and Lili, who is taller, the question can be answered by (8b), which has no overt comparative marker, or by (8c), which has the comparative marker *bijiao*, but not by (8a) (also see Gu 2007: 30). Moreover, *hen* in both uses s-selects a gradable stative and thus has the same type-shifting function.

(8b) has no degree word, and a comparative reading emerges, although the compared standard is in the discourse rather than being expressed in the sentence. Examples like (8b) show that in certain contexts, as claimed by Grano (2012), Chinese Deg with a comparative reading can be null. The word *bijiao* ‘COMP’ in (8c) is an overt form of a comparative marker (Y. Liu 2013). On the other hand, as well-recognized in the literature (e.g., Sybesma 1999: 27), a bare adjective with a positive reading is not acceptable in certain contexts, and thus (8b) never means “David is tall”. Thus, in order to express a positive reading in such contexts, *hen*, or some other degree word such as *xiangdang* ‘quite’, is obligatory.

1.3 An unsettled issue in the previous analyses

Hen has been generally treated as a POS marker, which is used to label a positive adjective construction (Sybesma 1999: 26; Kennedy 1999, 2005; Liu 2010). Among the advocates of this approach, Liu clearly assumes that the syntactic position of a POS marker is the head of DegP; however, like other advocates of the approach, he does not give syntactic evidence to show why *hen* cannot be an adverbial or modifier. He claims that the null version of POS is a polarity item, but the relation between a polarity item and a functional head is not his concern.

S. Huang (2006) proposes a predicate-forming analysis, claiming that Chinese simple adjectives denote nominalized properties and belong to the semantic type *e*, and they are changed into the type $\langle e, t \rangle$, that of a regular predicate, by *hen*, which is a type-lifter ($\langle e, et \rangle$). S. Huang does not make any claim about whether *hen* is a functional head element or a modifier in syntax.

Dong (2005) treats *hen* as an imperfective viewpoint aspectual marker, to satisfy an assumed aspect requirement of a clause. If *hen* is indeed an aspect marker, we need to see whether it is a functional head or an aspectual adverb such as *yijing* ‘already’. This is not clarified.

Gu (2007) treats *hen* as an adverb that satisfies a tense requirement of a clause. She claims that *hen* is an adverb that does not play the role of a modifier; instead, it is a necessary element for the well-formedness of the sentence (Gu 2007: 32). Gu does not discuss how to distinguish such an obligatory adverb from a functional head element.

From an event structure aspectual perspective, Chen (2010) treats *hen* as a boundedness marker, and assumes that the requirement of *hen* for a positive reading in certain contexts is to satisfy an assumed boundedness aspectual requirement of a clause. Specifically, he claims that *hen* is base-generated at the head of DegP, and it remains there if it functions as an intensifier, but it surfaces at Asp in its non-intensifier use, specifying the situation type as stative. However, no argument is given for the functional head status of *hen*.

Grano (2012) proposes a V-provider analysis of *hen*, claiming that as the head of DegP, *hen* projects a V-feature for AP, and thus DegP has the feature [V], to satisfy a tense requirement of a clause. Like Liu (2010), Grano also assumes that *hen* heads DegP, but his assumption is solely based on the literature on degree words in other languages (Abney 1987; Corver 1990, 1997a).

Degree words have been generally treated as modifiers of APs or stative VPs. None of the above analyses has addressed the issue how to distinguish an adjunct analysis from a functional head analysis of *hen*. The task to make this distinction, based on the evidence drawn from Chinese syntax, will be taken in this paper. However, before doing so, in the rest of this section, I clarify that *hen* cannot be a predicate.

1.4 Against a predicative analysis

Some degree words in other languages have been analyzed as predicates in Corver (2000), such as *extremely* and *incredibly* in English, and their counterparts in Romanian and Italian. Corver argues that the relation between a gradable adjective and such a degree word is that between a subject and a predicate in a small clause, and the surface order in which the degree word precedes the adjective is derived by predicate inversion. In Mandarin Chinese, I have found words such as *guofen* ‘excessive, overly’ can be used either as a predicate, as in (9a), or as a degree word, as in (9b). It needs another study to find out whether the degree word use of *guofen* is also a kind of predicative use.

- | | | | |
|--------|--|----|--|
| (9) a. | Tai guofen le!
too excessive PRT
‘That’s gone too far!’ | b. | Dawei guofen xihuan tianshi.
David overly like sweets
‘David likes sweets too much.’ |
|--------|--|----|--|

However, *hen* is not a predicate, because of the following facts.

First, *hen* may not have an A-not-A question form, whereas verbs and adjectives may. A-not-A questions are yes-no questions, formed by the reduplication of the initial syllable of a predicate or a larger prosodic unit of the predicate phrase, and an appropriate negation word (*bu* ‘not’ or *mei* ‘not’) between the reduplicant (RED) and the base. For instance, in (10a), the adjective *gao* ‘tall’ is in an A-not-A form, and in (10b), the verb *ai* ‘love’ is in an A-not-A form. An A-not-A form is licensed by a question feature in Infl/C (J. Huang 1982). The unacceptable A-not-A forms of *hen* in (11) do not support a predicative analysis of *hen*.

- | | | | |
|---------|--|----|--|
| (10) a. | Dawei gao-bu-gao?
David tall-not-tall
‘Is David tall?’ | b. | Dawei ai-bu-ai ni?
David love-not-love 2SG
‘Does David love you?’ |
| (11) a. | *Dawei hen-bu-hen gao?
David very-not-very tall | b. | *Dawei hen-bu-hen ai ni?
David very-not-very love 2SG |

Second, *hen* may not undergo reduplication (**hen-hen*), whereas a predicate may (*gao-gao* ‘tall-RED’; see Section 4). Other functional elements, such as the causative marker *ba*, the progressive aspect marker *zai*, the passive marker *bei*, and the light verb *bian* ‘become’, may not undergo reduplication, either (e.g., **ba-ba*).

Third, a modal verb selects a predicative element, but not *hen*. This is shown by the contrast between (12a) and (12b).

- (12) a. Shufen hui piaoliang.
Shufen will pretty
‘Shufen will be pretty.’
b. *Shufen hui hen.
Shufen will very

Fourth, *hen* alone may not be used to answer a question, whereas a predicate may, as shown by the contrast between (13a) and (13b).

- (13) a. Ni xihuan Dawei ma? Xihuan.
2SG like David Q like
‘Do you like David?’ ‘Yes.’
b. Dawei hen gao ma? {Hen gao /*Hen}.
David very tall Q very tall/very
‘Is David (very) tall?’ ‘Yes.’

The unacceptability of (12b) and (13b) does not mean that *hen* must be followed by some phonological material. Sentences like (14) are acceptable (Lü et al. 1980). Such examples will be discussed in Section 5.

- (14) Dawei cuxin de hen.
David sloppy DE very
‘David is very sloppy.’

The above properties of the degree word *hen* (很) are not phonological, since the homophonic adjective *hen* (狠) ‘furious, cruel’, which has a different written form in modern Chinese, may undergo reduplication, as in (15a), take the aspect marker *le*, and be preceded by a degree word *tai* ‘too’, as in (15b), and also have an A-not-A form, as in (15c).⁶

- (15) a. Dawei hen-hen de deng-le wo yiyan.
David furious-RED DE look-PRF 1SG once
‘David had a look at me furiously.’
b. Dawei de xin tai hen-le.
David DE heart too cruel-PRF
‘David’s heart is too cruel.’
c. Ni shuo ta zhei zhao hen-bu-hen?
2SG say 3SG this trick cruel-not-cruel
‘Don’t you think his trick is cruel?’

2. A new proposal: *hen* is a realization of the functional head Deg

A gradable expression may occur with a standard-denoting expression, such as *bi Lili* ‘than Lili’ in (16a), and a possible differential expression, such as *san gongfen* ‘three centimeters’ in (16a), to form a differential comparative construction. A gradable expression may also occur with a standard-denoting expression, such as *gen Lili* ‘as Lili’ in (16b), and some parameter marker (e.g., Haspelmath and Buchholz 1998), such as *yiyang* ‘same’ in (16b), to form an equative construction. Furthermore, a gradable expression can also occur with a plural standard-denoting expression, such as *zai quan-jia-ren dangzhong* ‘among the whole family’

⁶ According to Ōta (1958: Sec. 18.2.1), old Chinese had the verb or adjective *hen* (狠) only. Later, the degree word use started from the interaction between the northern Han people and Mongolians in the Yuan Dynasty (A.D. 1206-1368), and it was written as 很 and 诨, as well as 狠. Also see Chao (1968: 443).

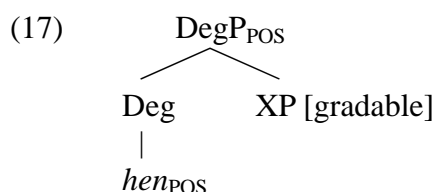
in (16c), and with a certain superlative degree words, such as *zui* ‘most’, to form a superlative construction. A construction like (16d) is called a positive, in which no standard-denoting expression occurs (e.g., Bartsch and Vennemann 1972).

- | | | |
|---------|--|--------------------------|
| (16) a. | Dawei bi Lili gao (san gongfen).
David than Lili tall three centimeter
‘David is (three centimeters) taller than Lili.’ | differential comparative |
| b. | Dawei gen Lili yiyang gao.
David as Lili same tall
‘David is as tall as Lili.’ | equative |
| c. | Zai quan-jia-ren dangzhong, Dawei zui gao.
at whole-family-person in David most tall
‘Among the whole family, David is the tallest.’ | superlative |
| d. | Dawei hen gao.
David very tall
‘David is (very) tall.’ | positive |

One major syntactic contrast between a positive and the other constructions is the absence of a standard-denoting degree expression. But the construction does encode some degree relatively compared high to the contextual standard (e.g., Cresswell 1976; Kennedy 1999). Syntactically, it has been recognized that in the other constructions, the degree word selects not only a gradable expression, but also a standard-denoting expression, e.g., a *than*-phrase in English. There are different analyses of the syntactic representation of the two obligatory elements for a differential comparative construction. For some scholars (e.g., Abney 1987), the AP is the complement of Deg and the *than*-phrase is the Specifier of Deg; whereas for some other scholars (e.g., Lechner 2004), the *than*-phrase is the complement of Deg and the AP is the Specifier of Deg. Also, for Bhatt & Pancheva (2004), a *than*-phrase in a comparative, or an *as*-phrase in an equative, is integrated into the structure by Late Merger.

In the literature, the label POS is used to distinguish a positive construction, which has no syntactically encoded standard, from other constructions (see 6.2 for my note on POS). The use of the descriptive term POS is parallel to the use of the convenient label “middle”, which is for a construction that is semantically transitive but syntactically intransitive, since the agent argument is not syntactically represented (e.g., *Bureaucrats bribe easily*). The term “middle” is a label for a certain construction, rather than a primitive formal feature in syntax. In the adopted Minimalist syntactic theory, constructions are the result of syntactic operations, rather than atoms of the operations (e.g., Chomsky 1995: 170). Nevertheless, following the tradition, I use this label for convenience.

Hen has been assumed to be a POS marker, since it occurs in positive constructions only. I propose that it heads the functional DegP, s-selecting a gradable XP, as shown in (17).



If DegP surfaces in a predicative position, it parallels to another extended projection, vP, in the sense that its Specifier position is the base-position of the subject (see J. Huang 1993 for the raising of a subject from an extended projection of VP in Mandarin Chinese).

A predicate headed by *hen* patterns with predicates of other categories in the language.

(18) a. Zhangsan xihuan wenxue, Lisi ye shi.
Zhangsan like literature Lisi also be
'Zhangsan likes literature, and so does Lisi.'

b. Zhangsan de lian xue-bai, Lisi de lian ye shi.
Zhangsan DE face snow-white Lisi DE face also be
'Zhangsan's face is snow-white, and so is Lisi's.'

c. Zhangsan yijing daxuesheng le, Lisi ye shi.
Zhangsan already university-student PRT Lisi also be
'Zhangsan is already a university student, and so is Lisi.'

d. Zhangsan hen gao, Lisi ye shi.
Zhangsan very tall Lisi also be
'Zhangsan is (very) tall, and so is Lisi.'

(19) a. *Dawei hen-bu-hen gao?
David very-not-very tall

b. Dawei shì-bu-shì mai-le shu?
David be-not-be buy-PRF book
'Did David buy books?'

c. *Dawei shǐ-mei-shǐ ni gaoxing?
David make-not-make 2SG happy

(20) a. Dawei hen gao, Lili ye hen *(gao).
David very tall Lili also very tall
'David is (very) tall, and so is Lili.'

b. *Dawei shǐ wo hen gaoxing, Lili ye shǐ.
David make 1SG very pleased Lili also make

In Section 3, I will argue for the independence of DegP, and in Section 4 and Section 5, I show that *hen* behaves like a head element, in its interaction with the form of the associated stative and with respect to the relative position to the associated stative.

The goal of this section is to argue that the category of the phrase that hosts *hen* is different from the category of the stative that *hen* is associated with. Thus, if a gradable stative is an AP

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(or VP), the combination of *hen* with that stative cannot be AP (or VP). Instead, it must be a different category. Then, Chinese syntax also provides the evidence that degree words not only exhibit their unique selection (1.1), but also introduce a unique syntactic category, DegP.

3.1 *Hen* and nominal-exclusive positions

I now report my observation that a degree word expression may not occur in a position that is exclusively for a nominal in the language, including the causee position following the causative marker *ba*, as seen in (21a), the position preceding a raising verb, such as *haoxiang* ‘seem’ in (21b) and *kan-qilai* ‘see-INCH’ (Shyu et al. 2013) in (21c), the position following a preposition that introduces a topic, such as *duiyu* ‘as for’, as seen in (21d), and the position following a classifier such as *zhong* ‘kind’, as seen in (21e).⁸

- (21) a. Wo ba (*hen) chengshi dang-zuo yi zhong meide.
I BA very honest regard-as one CL virtue
‘I regard being honest as a virtue.’
b. (*hen) yonggan haoxiang bing bu-nan.
very brave seem rather not-difficult
‘To be brave seems to not be difficult.’
c. (*hen) xuwei kan-qilai ling ren yanwu.
very hypocritical see-INCH make person disgusted
‘Hypocrisy seems to cause disgust from people.’
d. Duiyu (*hen) minzhu, Dawei yixiang hen zhongshi.
as.for very democratic David always very value
‘As for democracy, David always values it.’
e. Wo renwei zhe shi yi zhong (*hen) yonggan.
1SG think this be one kind very brave
‘I regard this as a kind of bravery.’

In the above examples, in the nominal-exclusive positions, a bare AP may occur, but the combination of *hen* and the same AP may not. The examples in (22) further show that in the nominal-exclusive positions, a bare VP may occur, but the combination of *hen* and the same VP may not:

- (22) a. Wo ba (*hen) xihuan shige dang-zuo yi zhong youdian.
I BA very like poem regard-as one CL merit
‘I regard liking poems as a merit.’
b. Duiyu (*hen) zhongshi jichu-xunlian, Dawei genben bu kaoli.
as.for very emphasize basis-training David at.all not consider
‘As for emphasizing the basic training, David does not consider it at all.’

In the examples in (21) and (22), *hen* is rejected, regardless of whether it functions as an intensifier or not; also, if we replace *hen* with any other degree word (e.g., *tai* ‘too’, *bijiao* ‘COMP’), the result is still unacceptable.

A similar constraint is seen in other languages. In the French example in (23a), *très* ‘very’ occurs in the complement of the verb *avoir* ‘have’, and the position of the complement

⁸ A degree expression may occur in a subject or object position, as in (i) (S. Huang 2006: 356). Such positions can host a CP or some other category, as well as a DP. They are thus not considered as DP-exclusive positions.

(i) Tai pang bu heshi.
too fat not suitable
‘Too fat is not suitable.’

is not a DP-exclusive position. In (23b), *très* is associated with the adjective *grand* ‘big’, rather than the noun. In (23c), however, the indefinite article *un* heads a DP, where *très* is banned (Carmen Dobrovie-Sorin, p.c.). The French examples in (24), the German examples in (25) (Volker Gast, p.c.), and the Spanish examples in (26) (Luis Lopez, p.c.), all show the same constraint.

- | | |
|---|---|
| <p>(23) a. J’ai très froid.
1SG#have very cold
‘I am very cold.’
c. *J’ai un très froid.
1SG#have a very cold</p> | <p>b. J’ai un [très grand] froid.
1SG#have a very big cold
‘I have a very big cold.’</p> |
| <p>(24) a. J’ai très peur.
1SG#have very fear
‘I have a big fear.’
c. *J’ai une très peur.
1SG#have a very fear</p> | <p>b. J’ai une [très grande] peur.
1SG#have a very big fear
‘I have a very big fear.’</p> |
| <p>(25) a. Ich habe großen Hunger.
1SG have big hunger
‘I am very hungry.’
c. *Ich habe einen sehr Hunger.
1SG have a very hunger</p> | <p>b. Ich habe [sehr großen] Hunger.
1SG have very big hunger
‘I am very hungry.’</p> |
| <p>(26) a. Tengo mucho frío.
have.1 much cold
‘I am very cold.’
c. *Tengo un muy frío.
have.1 a very cold</p> | <p>b. Tengo un frío muy grande.
have.1 a cold very big
‘I am very, very cold.’</p> |

Doetjes (2008) discusses the fact that some degree words may occur in nominals whereas others may not, in certain Romance and Germanic languages. We have seen that *hen* and the degree words in (23) through (26) belong to the latter type.

3.2 A syntactic implication of the distributional constraint on *hen*

I have just reported the fact that XP may, but *hen*-XP may not, occur in nominal-exclusive positions, regardless of the reading of *hen*. A degree word is rejected in such contexts not because of the gradability of the adjective (it is gradable). This fact leads us to the following generalization:

- (27) The cluster *hen*-XP may not occur in certain positions where XP may.

According to McNally (To appear: (4)), a modifier is “an expression that combines with an unsaturated expression to form another unsaturated expression of the same type”. If *hen* were a modifier of XP, *hen*-XP and XP should belong to the same semantic type. They should also belong to the same “form class”, according to Bloomfield’s (1933: 195) theory on modification. If so, wherever XP occurs, *hen*-XP should also be able to occur, if no other contextual conflict exists. Syntactically, if an element is a modifier or specifier of XP, its combination with XP should have the same distribution as that of XP. If Z c-selects XP, it does not care about whether XP contains a specifier or modifier. In the Minimalist syntax, it has been assumed that a projection inherits all the properties of its head and nothing else, a principle that Brody (1998: 371) refers to as Uniqueness (also see Chomsky 1995: 244). According to this principle, the properties of a non-head element should not affect the

distribution of the whole projection. If *hen* were a modifier of an AP, the string *hen*-AP should also be an AP; and then, the fact stated in (27) would be unexpected. This fact challenges the AP (or VP) modifier analysis of *hen*. In other words, a lexical category approach is not able to account for (27).

Let us consider adverbs and their occurrence in nominals. Different types of adverbs behave differently. The VP-level adverbs (or event-internal adverbs) *guyi* ‘deliberately’ and *zixi* ‘carefully’ occur in the nominals in (28a) and (28b), respectively, and the English adverb *voluntarily* occurs in the nominal in (28c) (Fu et al. 2001: 555). Thus, this type of adverb may occur in a position where *hen* may not.⁹

- (28) a. Dawei ba guyi sharen bianhu-wei guyi shanghai.
David BA intentional killing defend-as intentional injury
‘David defended the intentional killing as intentional injury.’
b. Dawei ba zixi jiancha shenti dangzuo ben zhou weiyi yao zuo de shi.
David BA careful check body regard.as this week only want do DE thing
‘David regards checking his health carefully as the only thing he wants to do this week.’
c. Collaboration of the witnesses voluntarily has greatly sped up the process.

In contrast, sentential adverbs (or non-VP level adverbs), such as *qishi* ‘actually’ and *jingran* ‘unexpectedly’, as well as the English adverbs such as *fortunately* and *surprisingly*, may not occur in nominals. In (29a), *jingran* ‘unexpectedly’ is combined with the VP *da xiaohai* ‘beat kids’; but the same combination may not follow *ba*, as seen in (29b).

- (29) a. Naxie ren jingran da xiaohai.
those person unexpectedly beat kid
‘Unexpectedly, those people beat kids.’
b. Dawei ba (*jingran) da xiaohai dang-zuo zuinie.
David BA unexpectedly beat kid regard-as sin
‘David regards beating kids to be a sin.’

As stated in Fu et al. (2001: 556-560), process nominals may host low-levelled adverbs, such as those in (28). Adverbs such as *fortunately* and *surprisingly* need to be hosted by functional projections such as CP (or some more specific functional projections much beyond VP; see Cinque 1999), and such functional projections are too high to occur in a nominal. In other words, the latter type of adverbs is not modifiers of VP. Similarly, I conclude that *hen* must be hosted by certain category that is different from AP, VP, or their nominalized category. The string *hen*-XP thus shows its categorial independence. The category of *hen*-XP must be different from that of XP. A unique category should be established for degree words, i.e., DegP.

In this approach, DegP is recognized as an independent category, not only from the restriction on the element that a degree word is combined with (i.e., the selection of the degree word), but also from the restriction on the element that is combined with the phrase that hosts a degree word.

If *hen* is hosted by DegP, there are still various ways to capture the distributional constraint seen in 3.1. If *hen* is not the head of DegP (it can be at Spec or an adjunct of DegP), one may claim that D does not select DegP at all. If *hen* heads DegP, there are still two

⁹ To answer an inquiry raised by a reviewer, I clarify that *guyi* ‘deliberately’ is not a verb, since it never takes any aspect marker in any context (**guyi*-{*zhe*/*guo*/*le*}) and may not undergo A-not-A formation (**gu*-*bu*-*guyi*).

choices: either D does not select DegP or the head of DegP must be null when it is selected by D. The hypothesis that D does not select DegP might be compatible with Constantinescu's (2011) claim, which is argued from very different perspectives, that nouns lack degree structure entirely. In contrast, one reviewer states that "The nominalizations seem to have the positive reading semantics, which seems to support the second view." But pure semantics is not sufficient to support the projection of a functional category. Therefore, the available positive reading alone is not enough for DegP. On the other hand, the absence of a positive reading does not correlate with the absence of DegP (e.g., in (82b), DegP is projected, and the d argument is saturated by the measure phrase; but there is no positive reading). But I will focus on the main goals of this paper: to find out whether DegP is available in Chinese and whether *hen* is a head element. I have just accomplished the first one, and I am moving to the other one in the next two sections.

4. *Hen* and adjective reduplication

4.1 A complementary distribution

Gradable adjectives in Mandarin Chinese can be reduplicated. This is shown by *gao-gao* 'tall-RED' in (30a) and *laolao-shishi* 'honest-RED' in (30b) (see Liu 2013: 103 for a further discussion of reduplicated adjectives and the references therein; also see Liu et al. 1996: 115 and Gu 2007: 33 for a discussion of the clitic *de* that follows a reduplicated adjective).

- | | | | |
|---------|--|----|---|
| (30) a. | Dawei gezi gao-gao de.
David height tall-RED DE
'David's height is tall.' | b. | Dawei laolao-shishi de.
David honest-RED DE
'David is honest.' |
|---------|--|----|---|

Hen may not occur with a reduplicated adjective (Lü et al. 1980), as shown in (31).

- (31) Dawei gezi {gao-gao de/hen gao/*hen gao-gao de}.
- David height tall-RED DE/very tall/ very tall-RED DE
- 'David, his height is tall.'

Both *hen* and reduplicated adjectives belong to degree-related expressions in Grano (2012: 526). I claim that *hen* and a reduplicant (RED) are in complementary distribution relation when they occur with an adjective, and that this relation shows that both are realizations of the same functional head Deg that takes an AP as a complement, as in (17).

The following facts support the complementary distribution relation between the two.

First, they show the same s-selection restriction, i.e., neither may occur with a non-gradable adjective. Neither (32a), where *hen* occurs with the non-gradable *huozhe* 'alive', nor (32b), where *huozhe* is reduplicated, is acceptable.

- | | | | |
|---------|---------------------------------------|----|---|
| (32) a. | *Dawei hen huozhe
David very alive | b. | *Dawei huohuo-zhezhe de.
David alive-RED DE |
|---------|---------------------------------------|----|---|

Second, neither is compatible with a degree expression, such as a measure phrase. Neither (33a), where *hen* occurs with *liang me* 'two meters', nor (33b), in which the same measure phrase occurs with the reduplicate *gao* 'tall', is acceptable.

- | | | | |
|---------|---|----|---|
| (33) a. | *Dawei hen gao liang mi.
David very tall two meter | b. | *Dawei gaogao de liang mi.
David tall-RED DE two meter |
|---------|---|----|---|

Third, both reject another degree word. Neither (34a), where *hen* occurs with *feichang*

‘very’, nor (34b), in which the reduplicate *gao* occurs with the same degree word, is acceptable.

- (34) a. *Dawei feichang hen gao. b. *Dawei feichang gao-gao de.
 David very very tall David very tall-RED DE

The above three shared properties indicate that in a predicate, they have the same type-shifting function, to change an element of type <d, <e,t>> into an element of type <e,t>.

Fourth, both occur in a positive construction, rather than a comparative, equative, or superlative adjective construction. For instance, in the presence of the standard-denoting expression introduced by *bi* ‘than’, neither the comparative construction with *hen* in (35a), nor the one with a reduplicated adjective in (35b), is acceptable.

- (35) a. *Dawei bi Lili hen gao. b. *Dawei bi Lili gao-gao de.
 David than Lili very tall David than Lili tall-RED DE

Fifth, a nominal-exclusive position rejects *hen* (3.1) and an adjectival RED equally. In the post-*ba* position in (36), for instance, neither *hen* nor *laolao-shishi* ‘honest-RED’ may occur.

- (36) Youxie-ren yixiang ba {laoshi/*hen laoshi/*laolao-shishi} dang-zuo yuchun.
 some-people always BA honest/very honest/honest-RED regard-as foolish
 ‘Some people always view honesty as foolish.’

The above five shared properties indicate that *hen* and an adjective RED have the same distribution.

Sixth, both refer to a degree which exceeds a contextual standard. They thus have the same semantic effect. For instance, in the absence of *hen* and a RED for the adjective, the first sentence in (37a) can be followed by *Tai ai le* ‘too short’. The possible combination of the two sentences indicates that the first sentence does not express a meaning that the degree of the property denoted by the adjective *gao* ‘tall’ exceeds a contextual standard. However, in (37b), the *hen*-sentence may not be followed by *Tai ai le*. Since *hen* expresses a meaning that David’s height is relatively high compared to the contextual standard, it is contradictory to use the negative *Tai ai le* to deny the meaning. The reduplicated adjective in (37c) has the same semantic effect: it may not be followed by *Tai ai le*.

- (37) a. Dawei gao yi mi. Tai ai le.
 David tall one meter too short PRT
 ‘David is one meter tall. He is too short.’
 b. Dawei hen gao. #Tai ai le. c. Dawei gao-gao de. #Tai ai le.
 David very tall too short PRT David tall-RED DE too short PRT
 ‘David is (very) tall. #He is too short.’ ‘David is tall. #He is too short.’

The above facts show that *hen* and an adjective RED are in distributive complementary relation, which in turn shows that they compete for the same syntactic position.

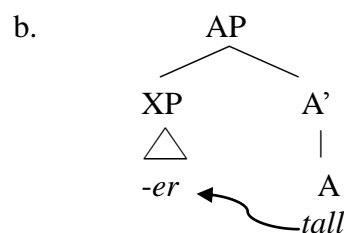
Next, what is the position exactly? Is it a head position, or a non-head position?

4.2 An account for the complementary distribution

Corver (1997a) uses a similar correlation between the bound form of the comparative morpheme *-er*, and its correlated free form *more* (also the bound form *-est* and the free form

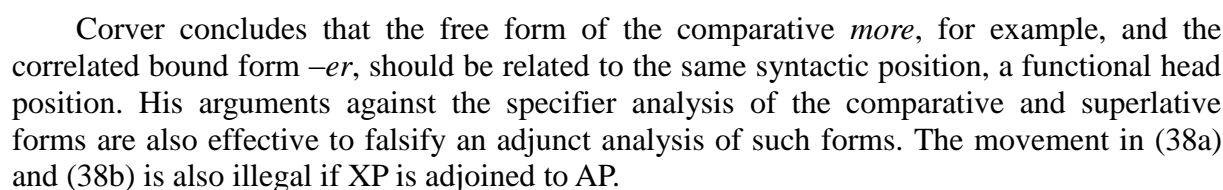
(38) a.

```
graph TD
    AP --> XP
    AP --> A_prime[A']
    XP --> Triangle[△]
    XP --> er[-er]
    A_prime --> A[A]
    A --> tall[tall]
    er --> tall
```



(39)

The diagram shows a syntax tree for the phrase 'taller'. The root node is 'FP', which branches into 'F' and 'AP'. The 'F' node has the suffix '-er' below it. The 'AP' node branches into 'A' and 'XP'. The 'A' node has the word 'tall' below it. A curved arrow points from the 'tall' node up to the '-er' node, indicating a morphological operation like affixation.



The complementary distribution between *hen* and an adjectival RED gives a parallel argument for their functional head status in a positive construction. The relation between *hen* and a RED suggests that they are different realizations of the same functional head, Deg. They are thus neither specifiers nor adjuncts. I claim that while *hen* surfaces at the position of Deg directly, and is thus not part of an adjective, a RED is integrated into the word form of an adjective morphologically.

- [illegible]

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4.3 More about reduplicate predicates in the language

Reduplication is a morphological operation. Morphological operations are sensitive to categorial features. It is thus not a surprise that unlike adjectives, stative verbs do not reduplicate in the language (e.g., *xihuan* ‘like’ => **xihuan-xihuan*/**xixi-huanhuan*).

The same kind of morphological operation may be implemented in different ways for different categories. In Mandarin Chinese, for a disyllabic base, gradable adjectives exhibit the pattern of AABB (e.g., *gao-da* 'tall-big' => *gaogao-dada*), but eventive verbs exhibit either the pattern of ABAB (e.g., *xuexi* 'study' => *xuexi-xuexi* 'to try to study a bit'), to encode a tentative or paucal aspect (Ōta (1958: sec. 16.2.2; Chao 1968: 204; Li & Thomson 1981: 232-236; Zhu 1982: 26-27, 57), or the pattern of AABB (e.g., *lai-wang* 'come-go' => *lailai-wangwang* 'come and go a lot'), to encode event pluractionality.

We thus see that the same AABB pattern of reduplication is found both with gradable adjectives, to play the same role of *hen*, and with eventive verbs, to play the role of a pluractionality marker. A similar situation is seen in the degree word *más* ‘very’ in Puerto Rican Spanish. According to Padilla-Rivera & Gutiérrez-Rexach (2014), when this degree word is combined with a gradable adjective, it is a POS marker, as seen in (41a), but when it is combined with a verb, it can be a pluractionality marker, as seen in (41b).

- (41) a. Tu nuevo apartamento es más bonito.
your new apartment is very pretty
'Your new apartment is very pretty.'
b. Fred corrió más.
Fred ran very
'Fred ran many times' (one of the readings)

In addition to the simple adjective reduplication, as in (42a), Mandarin Chinese also allows the reduplication of the combination of *hen* and an adjective, as seen in (42b) (as pointed out by a reviewer), and the reduplication of a stative in which the d argument has been saturated, as in (42c). In (42c), the base of the reduplication is *xue-bai* ‘snow-white’. In this expression, the d argument of *bai* ‘white’ is saturated by the degree depictive *xue* ‘snow’. Words like *bi-zhi* ‘pen-straight’ and *gun-re* ‘boil-hot’ all may undergo the ABAB reduplication.

- (42) a. Dawei gao-gao de.
David tall-RED DE
'David is tall.'
- b. Dawei hen gao hen gao.
David very tall very tall
'David is very very tall.'
- c. Xiao niao de yumao xuebai-xuebai de.
small bird DE feather snow-white-snow-white DE
'The feather of the small bird is snow-white.'

However, there are at least two major differences between the reduplication type in (42a) on the one side, and that in (42b) and (42c) on the other. First, the phonological form of the adjective base in the former pattern can vary, and thus is unmarked, whereas that in the latter pattern must be monosyllabic. The reduplication of the combination of *hen* and the disyllabic adjective in (43b) is not acceptable.

- (43) a. Dawei gao-gao-xing-xing de. b. *Dawei hen gaoxing hen gaoxing.
David happy-RED DE David very happy very happy
'David is happy.'

Second, for a disyllabic base, the reduplication pattern is AABB for a gradable adjective, as seen in (43a) (also (30b), cf. **laoshi-laoshi*), but ABAB for the other type, as seen in (42b) and (42c) (cf. **henhen-gaogao*, **xuexue-baibai*).

The complementary distribution of *hen* and an adjectival RED is established on their relation to an adjective alone. The base of the RED in examples like (42b) is the combination of *hen* and an adjective, rather than an adjective alone. The reduplication is applied to a higher level in such examples. I thus claim that the existence of such examples does not affect the complementary distribution of *hen* and an adjectival RED, although more research is needed, to study this higher-level reduplication. I leave the issue aside from this paper.

5. Hen-stranding

5.1 The sentence-final *hen*

Hen can be stranded at the sentence-final position, as seen in (44a, b) (Ōta 1958 [2003: 161]; Lü et al. 1980 [1999: 268]; Hou 1998: 280).¹⁰

- | | | | |
|---------|--|----|---|
| (44) a. | Na du qiang gao de hen.
that CL wall tall DE very
'That wall is very tall.'
Not: 'That wall is tall.' | b. | Dawei shou-huanying de hen.
David receive-welcome DE very
'David is very much welcomed.'
Not: 'David is welcomed.' |
| (45) a. | Na du qiang hen gao.
that CL wall very tall
A: 'That wall is very tall.'
B: 'That wall is tall.' | b. | Dawei hen shou-huanying.
David very receive-welcome
A: 'David is very much welcomed.'
B: 'David is welcomed.' |

Lü et al. (1980 [1999: 268]) specify that the stranding use of *hen* expresses a high degree of the property denoted by the stative. Thus only reading A of (45a, b) is synonymous to (44a, b). I find two more differences between the *hen*-stranding forms in (44a, b) and their canonical counterparts in (45a, b). First, the stranding forms are more colloquial, whereas the canonical forms are stylistically neutral. Early examples of the stranding construction were seen in novels and plays in the Yuan Dynasty (Ōta 1958 [2003: 161]). Even today, the stranding construction is rarely seen in formal settings of communication. Second, the stranding constructions may not contain a modal or be in a conditional (although they may contain a negation or occur as a question, as seen later in (70c) and (72c)). The acceptable examples in the canonical order in (46a) and (47a) contrast with the unacceptable *hen*-stranding forms in (46b) and (47b).

¹⁰ The intensifier *hen-wei* 'very', as in (7b), must be followed by a disyllabic expression and is thus never stranded. The degree words *ji* 'extremely', *lihai* 'terribly', and *huang* 'very' (Lü et al. 1980) may also occur sentence-finally, as in (ia) and (iia). But unlike *hen*, they do not have an exact counterpart in a non-final position. The particle *le* is obligatory in (ia), but may not occur in (ib); *de* does not occur in (ia) (cf. (44a), (iia)). The word *lihai* (also *huang*) may not occur in a non-final position, as seen in (iib). A similar expression is the sentence-final *tou le*, as in *huai tou le* 'thoroughly bad'. The sentence-final *ji-le* and *tou-le* usually occur in exclamatives (Chao 1968: 451). The idiosyncratic properties of these words do not represent the general pattern, and I thus do not discuss these words here.

- | | | | |
|---------|--|----|---|
| (i) a. | Shucai xinxian ji *(le).
vegetable fresh extremely PRT
Both: 'The vegetables are extremely fresh.' | b. | Shucai ji xinxian (*le).
vegetable extremely fresh PRT |
| (ii) a. | Tian re de lihai.
sky hot DE terribly
'The weather is terribly hot.' | b. | *Tian lihai re.
sky terribly hot |

- (46) a. Dawei keneng hen gao.
David might very tall
'David might be (very) tall.'
b. *Dawei keneng gao de hen.
David might tall DE very
- (47) a. ruguo Dawei hen gao, ...
if David very tall
'If David is (very) tall, ...'
b. *ruguo Dawei gao de hen, ...
if David tall DE very

However, I will not try to explain these contrasts in this paper; instead, I will try to see whether there is any derivational relation between the two *hen*-constructions.

Any syntactic constraint on *hen* in the canonical construction remains in the stranding construction. For instance, the rejection of a measure phrase seen in (48a) is kept in (48b).

- (48) a. *Na du qiang hen gao san gongchi.
that CL wall very tall three meter
b. *Na du qiang gao san gongchi de hen.
that CL wall tall three meter DE very

In the language, two types of adverbials seem to allow the alternation between a preverbal position and the right-edge position: a manner expression, as seen in (49) (Ernst 2002), and a locative or temporal PP, as seen in (50).

- (49) a. Dawei fei-kuai de xie.
David fly-fast DE write
Both: 'David wrote fast.'
b. Dawei xie de fei-kuai.
David write DE fly-fast
- (50) a. Dawei yu Aomen chusheng.
David in Macau born
Both: 'David was born in Macau.'
b. Dawei chusheng yu Aomen.
David born in Macau

As in Ernst (2002), I do not assume that the enclitic *de* plays a role in the alternation. I assume that its presence correlates with the phonological realization of a certain functional head, rather than the availability of syntactic operations, I thus ignore *de* in my discussion.

One syntactic distinction between these adverbial alternations and the *hen*-alternation is that in the former, a pre-verbal and a post-verbal adverbial may co-occur in the same clause, as seen in (51a, b), but *hen* may not occur with another degree word in the same clause. In (51c), the two positions for degree words may never be filled at the same time, even though the two instances of *hen* might correlate with its two uses, an intensifier use and a non-intensifier use (1.2).

- (51) a. Dawei xingfen de xie de fei-kuai.
David excited DE write DE fly-fast
'David wrote fast and excitedly.'
b. Dawei yu 1980 nian chusheng yu Bali.
David in 1980 year born in Paris
'David was born in Paris in 1980.'
c. *Dawei hen gao de hen.
David very tall DE very

Another syntactic distinction between these adverbial alternations and the *hen*-alternation is that in a relative clause, both orders are found in the former, as seen in (52), whereas only the canonical order is seen in the latter, as seen in (53).¹¹

¹¹ One reviewer wondered whether gapless relatives allow the *hen*-stranding order, mentioning that the acceptability of (i) varies. I leave a more extensive investigation of the issue, with more data, for future research.

(i) Zhangsan gaoxing de hen de shihou ...
Zhangsan happy DE very DE time
'When Zhangsan is very happy...'

- (52) a. [_ yu Aomen chusheng] de ren b. [_ chusheng yu Aomen] de ren
 in Macau born DE person born in Macau DE person
 Both: ‘the persons who were born in Macau’
- (53) a. [_ hen xihuan Aomen] de ren b. *[_ xihuan Aomen de hen] de ren
 very like Macau DE person like Macau DE very DE person
 ‘the persons who like Macau very much’

These contrasts tell us that the syntax of the *hen*-final construction is different from that of adverbial-final constructions.

5.2 A movement analysis

If *hen* selects an XP, it should precede the XP if no movement occurs. Plausibly, the stranding forms are derived from the canonical forms. One theory that can capture the possible derivation is den Dikken’s (2006) linker theory. In this theory, first, a subject and its predicate are base-generated in RelatorP (RP), and the head of RP can be realized by any head element (and thus RP can be any category); second, RP can be the complement of a functional head (F), and F can be realized by a linker; and third, the predicate in RP can move, landing at the Specifier of FP. This is illustrated in (54).

- (54) [FP XP_{predicate} [F’ F_{Linker} [RP DP_{subject} [R’ R <XP_{predicate}>]]]]

One possible derivation of the *hen*-stranding construction is the raising of the stative XP, leaving *hen* in its base-position. Specifically, I assume that RP is realized as DegP, and thus, as in (17), the complement of Deg is the stative XP, which is a predicate, and Specifier of Deg is for the subject, which is a *pro* (see 5.4 for more about this *pro* subject). I also assume that *de* is a linker, a realization of the functional head F that takes DegP as its complement, and the sentence-initial DP is an external subject, which is co-indexed with the *pro* (again, see 5.4 for more about this issue). Assume that the base-positions of *hen* and *gao* ‘tall’ of both (55a) (= (44a)) and (55b) (= ((45a)) are structured as in (56a). After FP, which is headed by *de*, is projected, the AP *gao* moves to Spec position of FP, as shown in (56b). Then the DP *na du qiang* ‘that CL wall’ is merged as an external subject in (56c). The surface order of (55a) is thus derived.

- (55) a. Na du qiang gao de hen.
 that CL wall tall DE very
 ‘That wall is very tall.’
 Not: ‘That wall is tall.’
- b. Na du qiang hen gao.
 that CL wall very tall
 A: ‘That wall is very tall.’
 B: ‘That wall is tall.’
- (56) a. [DegP *pro* [Deg’ hen [AP gao]]]
 very tall
- b. [FP gao [F’ de [DegP [*pro* [Deg’ hen <gao>]]]]]
- c. [na du qiang]_i ... [FP gao [F’ de [RP=DegP *pro*_i [Deg’ hen <gao>]]]]]
- that CL wall

In this analysis, I keep den Dikken’s vague label FP for the projection that hosts the raised predicate (also see Eguren & Pastor 2014: 480). It could be some specific category in this degree word construction, and it could be some other functional category in another predicate-raising construction.¹²

¹² Corver (1997a,b) claims that in English, there could be a DegP-QP-AP series (Q is for Quantifier). One

This predicate-raising analysis accounts for the contrasts between the adverbial alternations and the *hen*-alternation presented in the previous sub-section. First, if the two adverbial positions are not linked by movement, the fact that they can be taken by different adverbials in the same clause, as in (51a) and (51b), is expected; but if the two positions of *hen* are the result of the movement of the stative XP, the unacceptability of (51c) is expected syntactically, as well as semantically, since *hen* has only one syntactic position, regardless of its meaning, and thus it may not occur twice, in the same clause.

Second, it is generally assumed that a relative clause is derived by an A-bar movement of an element related to the gap position of the relative clause, regardless of whether the element is a null operator or a nominal. Den Dikken (2006: 117, 213; also see Eguren & Pastor 2014: 474) claims that if a predicate is raised from an RP to FP, the subject in the RP becomes unable to move. I have assumed that the subject in the DegP in (56) is a *pro*. If this *pro*, or a null operator related to this *pro*, is not able to move, there is no way to form a relative clause construction, and the unacceptability of (53b) is thus explained. In (52a) and (52b), since no predicate raises, there is no problem to form a relative clause construction.

In fact, not only the subject, but also the object, of the *hen*-stranding construction may not be relativized:

- (57) a. [Dawei hen xihuan] de shu b. *[Dawei xihuan de hen] de shu
 David very like DE book David like DE very DE book
 ‘the book that David likes very much’

The same constraint is seen in another predicate movement construction, such as (58) (J. Huang 1993). Since it is a modal that is stranded in the construction, I call the construction modal-stranding construction henceforth.

- (58) Piping ta-ziji, Dawei bu yuanyi.
 criticize 3SG-self David not want
 ‘Criticize himself, David does not want to.’

As seen in the contrast between (59a) and (59b), it is impossible to relativize the object of the fronted predicate in (59b). This is the so-called freezing effect, which states that in certain constructions, nothing may move out of a moved constituent (*X [_Y...<X>...] <Y>; Müller 1998: 124). In (57b), if the gap of the relative clause is in the fronted VP, we see the same constraint as in (59b). This shared constraint further supports our movement analysis of the *hen*-stranding construction.

- (59) a. [Dawei bu yuanyi [piping _]] de ren
 David not want criticize DE person
 ‘the person that David does not want to criticize’

reviewer asked me to consider whether “*hen* is a Q head, with AP landing in Spec of DegP or QP”, in deriving the *hen*-final construction, as shown in (ia) and (ib). We can see that in (ia), if AP does not move, DegP will be projected vacuously, as seen in (ic); and in (ib), DegP is always projected vacuously.

- (i) a. [_{DegP} AP_i [_{Deg'} Deg [_{QP} [_{Q'} *hen* t_i]]]] b. [_{DegP} [_{Deg'} Deg [_{QP} AP_i [_{Q'} *hen* t_i]]]]
 c. [_{QP} [_{Q'} *hen* AP]]

If DegP is not projected in the canonical *hen*-AP string, we will have QP for degree word expressions. Then we need to distinguish this QP from other kinds of QP or Quantity Phrase which does not select a gradable XP (e.g., Borer’s 2005:72 QP, which is for a telic eventuality). Even if this alternative analysis is proved to be true, it also shows that *hen* is a head element and its complement moves, to derive the *hen*-final construction. This said, I do think more work needs to be done after this initial study on the *hen*-final construction.

- b. *[[piping _i] [Dawei bu yuanyi t_i] de ren
criticize David not want DE person

5.3 Two kinds of short-distance head-stranding

In the language, predicate-raising is also seen in other constructions. For instance, the verb *qu* ‘go’ can be stranded, if it takes verbal phrase as its complement, as in (60b), compared with (60a). The two examples mean the same: the action of buying books follows the action of going. The interpretation tells us that *mai shu* ‘buy book’ is in the domain of *qu* ‘go’, and thus should be base-generated lower than the latter. I thus assume that the VP *mai shu* is base-generated in the complement domain of *qu*, and that the order of (60b) is derived by the raising of the VP to a position higher than *qu*, as shown in (60c) (irrelevant details of the structure are not shown).

- (60) a. Dawei qu [mai shu] le.
David go buy book PRT
Both: ‘David has gone to buy books.’
b. Dawei [mai shu] qu le.
David buy book go PRT
c. Dawei_i ... [FP [mai shu] [F' Ø [RP=DegP pro_i [R' qu <mai shu>]]]] le

Since the two verbs occur in (60a) without any connecting element, the construction can be treated as the so-called “serial verb construction”. There are various types of serial verb constructions in Chinese (Li & Thompson 1981: 594-621) and many other languages. The syntactic relation between the series of verbs or VPs can be either a coordinate or subordinate relation (Collins 1997: 462; Huang et al. 2009: 163). As pointed out by Payne (1985: 26), the coordinate type emerges in the absence of an overt conjunction. (61a) (Li & Thompson 1981: 595) is an example of the coordinate type, in which *chang ge* ‘sing songs’ is coordinated with *xie xin* ‘write letters’. The subordinate type can be further divided into modification and complementation types. (61b) (see Li & Thompson 1981: 597) is an example of the modification type, in which *wanshang chuqu* ‘go out at night’ is a temporal modifier of *dai shoudian* ‘bring a flashlight’.

- (61) a. Ta tian-tian chang ge xie xin.
3SG day-day sing song write letter
‘S/He sings songs and writes letters everyday.’
b. Wo wanshang chuqu dai shoudian.
1SG evening exit bring flashlight
‘When I go out at night, I bring a flashlight.’

In (60a), *qu* ‘go’ takes the VP *mai shu* ‘buy book’ as its complement, and thus the example belongs to the complementation type of serial verb construction. In the two *hen* examples in (45), *hen* also takes the whole string to its right as its complement. In both the *qu*- and *hen*-stranding constructions, the complement of the head surfaces to the left of the head.

One difference between the *hen*-stranding and the *qu*-stranding construction is that the former has *de*, whereas the latter does not. However, as stated in Corver (2000: 172), “although predicate inversion often triggers the appearance of a linking element, it does not seem to be a necessary property.” Also see den Dikken (2006: 150) for a discussion of the situations in which predicate inversion occurs without an overt linker. I have assumed that the occurrence of *de* is an issue of the phonological realization of a certain functional head, rather than the availability of syntactic operations. Even for degree word-stranding constructions, the occurrence of *de* can be inconsistent (see footnote 10). I thus leave an account for this *de* difference for future research.

In addition to *qu* ‘go’, *lai* ‘come’ may also be stranded, as seen in (62b) (from Lü et al. 1980 [1999: 346]). As in the case of the *qu*-constructions in (60a) and (60b), the denoted coming action must precede the other action, i.e., the action of supporting you, in both (62a) and (62b).

- (62) a. Women lai zhiyuan nimen le. b. Women zhiyuan nimen lai le.
 1PL come support 2PL PRT 1PL support 2PL come PRT
 Both: ‘We have come to support you.’

Lai and *qu* share many properties in this respect. In the following, in order to restrict the comparing factors, I compare the *hen*-construction with the *qu*-construction only.

One basic shared property of the two head-stranding constructions is that they both fail in the relativization of either the subject or the object. The *qu*-constructions in (63) are parallel to the *hen*-constructions in (53), with respect to subject relativization. The *qu*-constructions in (64) are parallel to the *hen*-constructions in (57), with respect to object relativization.

- (63) a. [_ qu mai shu] de ren b. *[_ mai shu qu] de ren
 go buy book DE person buy book go DE person
 ‘the persons who go to buy books’
- (64) a. [[Dawei qu mai _] de shu] dou hen gui.
 David go buy DE book all very expensive
 ‘The books that David goes to buy are all expensive.’
- b. *[[Dawei mai _ qu] de shu] dou hen gui.
 David buy go DE book all very expensive
 Intended: ‘The books that David goes to buy are all expensive.’ (= that of (64a))
 Available but irrelevant reading: ‘The books that David has bought away are all expensive.’ (In this reading, the argument of *qu* is *shu*, not *Dawei*.)

Another basic shared property of the two head-stranding constructions is that the distance of the complement movement is short, compared with that in the modal-stranding construction. This is seen in several aspects. First, in a modal-stranding construction, as shown in (58), the fronted element occurs at the left-edge of the clause, but in the *hen*- and the *qu*-stranding constructions, the raised element may not surface at the edge position, as shown by (65b) and (66b), compared with (65a) and (66a), respectively.

- (65) a. Dawei mai na ben shu qu le. b. *Mai na ben shu, Dawei qu le.
 David buy that CL book go PRT buy that CL book David go PRT
 ‘David has gone to buy that book.’
- (66) a. Dawei xihuan na ben shu de hen. b. *Xihuan na ben shu, Dawei de hen.
 David like that CL book DE very like that CL book David DE very
 ‘David likes that book very much.’

Second, the *hen*- and *qu*-alternations are found below an adverb such as *zhende* ‘really’, *queshi* ‘indeed’, and *yiding* ‘surely’.

- (67) a. Zhe ge pingguo zhende [hen tian]. b. Zhe ge pingguo zhende [tian de hen].
 this CL apple really very sweet this CL apple really sweet DE very
 Both: ‘This apple is really very sweet.’

- (68) a. Dawei zhende [qu mai shu] le. b. Dawei zhende [mai shu qu] le.
 David really go buy book PRT David really buy book go PRT
 Both: ‘David has really gone to buy books.’

Third, the landing site of the movement in the *hen*- and *qu*-stranding constructions may not be higher than a negation word. In (69b), the VP *mai shu* ‘buy book’ is to the left of *bu* ‘not’, and the sentence is not acceptable. This contrasts with both (69a) and (69c), where the VP follows *bu*. Similarly, in (70b), *gao* ‘tall’ is to the left of *bu* ‘not’, and the sentence is not acceptable. This contrasts with both (70a) and (70c), where *gao* follows *bu*.

- (69) a. Dawei bu qu mai shu. b. *Dawei mai shu bu qu.
 David not go buy book David buy book not go
 ‘David is not going to buy books.’
 c. Dawei bu shi mai shu qu (ta shi qu youyong).
 David not be buy book go he be go swim
 ‘David is not going to buy books. He is going to swim.’
 (70) a. Na du qiang bu hen gao. b. *Na du qiang gao de bu hen.
 that CL wall not very tall that CL wall tall DE not very
 ‘That wall is not very tall.’
 c. Na du qiang bing bu shi gao de hen.¹³
 that CL wall rather not be very DE tall
 ‘That wall is not very tall.’

In contrast, in the modal-stranding construction, as in (58), the fronted predicate is higher than the negation word *bu* ‘not’.

Fourth, the landing site of the movement in the *hen*- and *qu*-stranding constructions may not be higher than an A-not-A word. In (71b), the VP *mai shu* ‘buy book’ is to the left of the A-not-A form, regardless of whether it is *shi-bu-shi* ‘be-not-be’ or *qu-bu-qu* ‘go-not-go’, and the sentence is not acceptable. This contrasts with both (71a) and (71c), where the VP follows *qu-bu-qu* and *shi-bu-shi*, respectively. Similarly, in (72b), *gao* ‘tall’ is to the left of *shi-bu-shi*, and the sentence is not acceptable. This contrasts with both (72a) and (72c), where *gao* follows *shi-bu-shi*.

- (71) a. Dawei qu-bu-qu mai shu? b. *Dawei mai shu {shi-bu-shi qu/qu-bu-qu}
 David go-not-go buy book David buy book be-not-be/go-not-go
 c. Dawei shi-bu-shi mai shu qu?
 David be-not-be buy book go
 Both a and c: ‘Is David going to buy books?’
 (72) a. Na du qiang shi-bu-shi hen gao? b. *Na du qiang gao de shi-bu-shi hen?
 that CL wall be-not-be very tall that CL wall tall DE be-not-be very
 c. Na du qiang shi-bu-shi gao de hen?
 that CL wall be-not-be tall DE very
 Both a and c: ‘Is that wall very tall?’

This landing site restriction on the fronted element in the *hen*- and *qu*-stranding

¹³ If *hen* is combined with a negative XP, as in (ia) (= (6b)), the correlated *hen*-stranding form is not acceptable. I leave an account for this constraint for future research.

(i) a. Lili hen bu xihuan jidan. b. *Lili bu xihuan jidan de hen.
 Lili very not like egg Lili not like egg DE very
 ‘Lili dislikes eggs very much.’

constructions, again, distinguishes the two constructions from the modal-stranding construction. As seen in (73), the fronted *zuo qu* ‘make music’ surfaces higher than the A-not-A modal verb *hui-bu-hui* ‘can-not-can’.

- (73) Zuo qu, ni hui-bu-hui?
 make music you can-not-can
 ‘Can you compose music?’

Fifth, the alternation in the *hen-* and *qu-*constructions may occur in the domain of a secondary predicate that follows *de*, as seen in (74) and (75); however, this is impossible for a modal-stranding construction, as seen in (76).

- (74) a. Dawei xie de [hen kuai]. b. Dawei xie de [kuai de hen].¹⁴
 David write DE very fast David write DE fast DE very
 Both: ‘David wrote very fast.’
- (75) a. Dawei kun de [qu shuijiao le]. b. Dawei kun de [shuijiao qu le].
 David sleepy DE go sleep PRT David sleepy DE sleep go PRT
 Both: ‘David was so sleepy that he went to sleep.’
- (76) a. Dawei gao de [neng mo fangding]. b. *Dawei gao de [mo fangding neng].
 David tall DE can touch ceiling David tall DE touch ceiling can
 ‘David is so tall that he can touch the ceiling.’

The contrasts between the two types of predicate movement are not accidental. Corver (2000) distinguishes predicate fronting from predicate inversion, claiming that the former, but not the latter, patterns with a regular A-bar movement. The former, which can also be called verbal phrase topicalization movement, does not correlate with the immobility of the subject, whereas the latter does. It could be the case that the one in the modal-stranding construction patterns with his predicate fronting (i.e., a regular A-bar movement), whereas the one in the *hen-* and *qu-*stranding constructions patterned with his predicate inversion. We have seen that the former movement lands at a higher position than the latter movement. Cross-linguistically, in many SVO languages in East and Southeast Asia, there are also constructions in which a raised predicate lands at a clause-internal position (Simpson 2001).

The two types of movement in Mandarin Chinese are different not only in the height of the landing site, but also in the size of the mover. J. Huang (1993) argues that what is moved in a modal-stranding construction is the whole proposition-denoting element, which contains the trace of the moved subject (a remnant movement). However, in the *hen-* and *qu-*stranding constructions, it is the predicate alone that moves, leaving the subject in situ.

One might wonder why *hen* and *qu* constructions are patterned together in this stranding aspect. Den Dikken’s predicate raising from RP to FP do not imply that the constructions that are derived by this raising need to show any semantic similarity. The vague label R and F can be realized by any functional element. The operation of this short-distance predicate raising is applied to derive various constructions, cross-linguistically, including copular constructions, locative inversion constructions (den Dikken 2006), measure phrase constructions (Eguren & Pastor 2014), and possessive constructions (den Dikken 2014). In the two stranding constructions discussed here, *qu* selects an eventive predicate, whereas *hen* always selects a

¹⁴ The alternation to the right of *de* may have exceptions. *Guofen* ‘excessive, overly’ is used as a matrix predicate in (9a), and in a secondary predicate in (ia). But the form in (ib) (cf. (74b)) sounds unnatural to me.

(i) a. Tianshi, Dawei xihuan de [hen guofen]. b. ??Tianshi, Dawei xihuan de [guofen de hen].
 sweet David like DE very excessive sweet David like DE excessive DE very
 ‘Sweets, David like them too much.’

sub-type of stative predicate, i.e., gradable one. The selection of *hen* patterned with other degree words in the language and degree words in other languages. It seems unlikely that *qu* and *hen* form a natural class, excluding other elements.

5.4 A subject issue in the *hen*- and *qu*-stranding constructions

I have mentioned that it is possible that there are two subjects in a *hen* construction: an external one and an internal one (see 5.2). The possibility comes from the fact that *hen* occurs in stative expressions only, which satisfies the condition for a double subject construction (e.g., Chao 1968; Teng 1974; Li and Thompson 1981; Akiyama 2004; Vermeulen 2005; Yoon 2007), i.e., it expresses a categorical judgment, rather than athetic judgment (Heycock and Doron 2003). In Japanese, both subjects of a double subject construction are marked by the subject case marker *ga*, rather than the topic marker *wa* (Kuno 1973, cited in Heycock 2013: 333). Athetic judgment is found in eventive expressions. Two subjects of a *hen* construction can both be overt. In (77a), for instance, the external subject is *mei ge ren* ‘every one’, and the internal subject is *fumu* ‘parents’.

- (77) a. [Mei ge ren] fumu dou hen yanli.
 each CL person parent all very dour
 ‘Everyone, her/his parents are (very) dour.’
 b. *Mei ge ren fumu dou yanli de hen.
 each CL person parent all dour DE very
 c. [Mei ge ren de fumu] dou yanli de hen.
 each CL person DE parent all dour DE very
 ‘Everyone’s parents are very dour.’

As seen in the acceptability contrast between (77b) and (77c), in the *hen*-stranding construction, only one subject is allowed. In (77b), one subject is *mei ge ren* ‘each person’ and the other subject is *fumu* ‘parents’. In (77c), there is only one overt subject, *mei ge ren de fumu* ‘each person’s parents’. Since it is possible for a sentence of categorical judgment to have two subjects, my hypothesis is that in the *hen*-stranding construction, the internal subject is a *pro*, co-indexed with the external subject. Thus, the structure of (77c) should be (78).

- (78) [mei ge ren de fumu]_k dou [yanli]_i de [_{RP=DegP} *pro*_k hen t_i]
 each CL person DE parent all dour DE very

This is why in the previous (56a), I claimed that the lower subject must be a *pro*. Our next question is why the internal subject may not be overt. Specifically, why is (79), in which the internal subject is *fumu*, are not grammatical (regardless of where *dou* occurs)?

- (79) *[Mei ge ren] (dou) yanli_i de [_{RP=DegP} fumu (dou) hen t_i]
 each CL person all dour DE parent all very

One account comes from Zhang’s (2009) external subject-raising analysis of double subject constructions in which the two overt subjects do not surface as a constituent. In that theory, the two subjects form a constituent in their base-position, and the external subject is raised from the constituent, leaving the internal one behind. Recall that according to den Dikken’s (2006) linker theory, the raising of the predicate from RP correlates with the immobility of the subject. If no movement is allowed for the whole complex subject when the predicate is raised from RP, any movement out of the complex subject is also impossible. This explains why examples like (79) are not derivable.

We now turn to (77b). In this unacceptable *hen*-stranding example, not only the lower subject is not a *pro* (it is *fumu* ‘parent’ instead), but also the landing site of the fronted predicate *yanli* ‘dour’ is too low. If *fumu* is base-generated at Spec of RP, and *yanli* is fronted to a position higher than RP, the former should be lower than the latter. What we see in (77b) is just the opposite. Therefore, the example is not acceptable.

Recall that no subject-relativization is possible for a *hen*-stranding construction (see (53b)). In the double-subject perspective, the constraint is understood as the following: it is the syntactic operation that is related to the internal subject, a *pro*, rather than the overt nominal, that fails in the relativization. This analysis is compatible with the proposed account for the impossibility of the subject-relativization in terms of Den Dikken’s theory.

On the other hand, *qu*-constructions are typically eventive, and thus they do not satisfy the condition for double subject constructions.¹⁵ I have assumed that in the *qu*-stranding construction, the subject of the fronted VP is also a *pro* (see (60c)). In this construction, the left-edge overt nominal is not an external subject. Instead, it is a topic. One fact supporting this topic analysis is that the left-edge nominal in a *qu*-stranding construction may not be quantificational. In the canonical order in (80a), the left-edge nominal, *duoshao ren* ‘how many people’, is quantificational; however, this is impossible for the *qu*-stranding construction in (80b).

- (80) a. Duoshao ren qu mai shu le? b. *Duoshao ren mai shu qu le?
 how.many person go buy book PRT how.many person buy book go PRT
 ‘How many people have gone to buy books?’
- (81) a. Dawei qu mai shu le. b. Dawei mai shu qu le.
 David go buy book PRT David buy book go PRT
 ‘David has gone to buy books.’ ‘David has gone to buy books.’

The contrast means that if there is no predicate-raising, a subject, regardless of whether it is quantificational, as in (80a), or not, as in (81a), behaves like a subject in other constructions, raising from its theta position to its surface position (J. Huang 1993). If predicate-raising occurs, in deriving a *qu*-stranding construction, the operation correlates with the immobility of the subject. Then, if the subject is a *pro*, it remains in situ, co-indexed with the topic. This is the case of (81b): the topic is *Dawei*. But a topic cannot be a quantificational nominal such as *duoshao ren*, and thus the *qu*-stranding construction in (80b) cannot be derived.

Also, as in the case of the relativization of the internal subject in the *hen*-stranding construction in (53b), it is the *pro* subject that is relativized in the *qu*-stranding construction in (63b), and thus, the relativization is subject to the same constraint in the two constructions.

Thus, although I have claimed that the subject in the RP in both the *hen*-stranding and the *qu*-stranding construction is a *pro*, the syntactic status of the antecedent of the *pro* (which is the left-edge nominal) is different: it is an external subject in the former construction, and thus it can be quantificational, but a topic in the latter construction, and thus it cannot be quantificational.

Although the two stranding constructions are different in this subject detail, they share many other syntactic properties introduced above. *Qu* is not in a modifier position, nor is *hen*. Also, if *qu* is not in a specifier position, nor is *hen*. They are both head elements.

In this and the previous section, I have argued that *hen* heads a functional projection

¹⁵ In imperatives, like (ia) and (ib), *qu* ‘go’ may occur with a stative predicate. Such a construction might come from some coercion. But I leave a study of the construction for future research.

(i) a. Ni qu xihuan ni de ziyou ba! b. Ni qu e duzi ba!
 2SG go like 2SG DE freedom IMP 2SG go hunger stomach IMP
 ‘Go ahead to love your freedom!’ ‘Go and suffer from hunger!’

DegP. Many functional projections may have a null head under certain conditions, but may also require an overt head under some other conditions. The relevant facts with respect to DegP in Mandarin Chinese will be discussed in the next section.

6. Conclusions and a note on POS

6.1 Conclusions

In this paper, I have first argued for the projection of DegP in Mandarin Chinese, showing that the combination of the degree word *hen* ‘very’ and XP exhibits different distributions from XP. Secondly, I have argued for the functional head status of *hen*. My evidence is that *hen* and adjective reduplicant are in complementary distribution, parallel to the free and bound comparative or superlative degree markers in other languages such as English, and that *hen* can be stranded at the sentence-final position, like other head elements in the language.

6.2 A note on POS

In this subsection, I tentatively address the issue of POS, since it has been widely claimed that *hen* is a POS marker (e.g., Kennedy 1999) (see Grano 2012 for a general review).

POS is defined as an element that takes a gradable adjective as its argument and returns a set of individuals which have the property denoted by the adjective to some degree relatively high compared to the contextual standard (e.g., Cresswell 1976; Kennedy 1999). Two functions are conflated in POS, as pointed out by Rett (2008; also 2014): first, POS changes the semantic type of a gradable expression into that of a regular predicate; and second, it ensures that the degree of the property that an individual has exceeds the salient contextual standard. The former is a type-shifting function and the latter is an evaluativity-denoting function (or non-neutral meaning-denoting function).

The evaluativity-denoting function can be separated from the type-shifting function, and thus POS does not seem to be a primitive formal feature. First, there are elements that occur with an adjective and introduce an evaluative meaning but do not have the type-shifting function, since they may occur with a measure phrase. For instance, in (82a), *zuzu* ‘up to’ expresses the meaning that David’s height is high to the contextual standard, and thus this sentence may not be followed by a sentence meaning that he is too short. This is compared with (82b), where *zuzu* does not occur. (82b) has no evaluative reading, and therefore it can be followed by a sentence meaning that he is too short. The word *zuzu* in fact must occur with a measure phrase, such as *yi mi* ‘one meter’ in (82a). Since the measure phrase denotes a degree and thus saturates the d-argument of the gradable adjective, *zuzu* has no type-shift function. In contrast, *hen* rejects any measure phrase, as seen in (33a) before, because of its type-shifting function. The form *da* ‘reach’ in (83a) occurs with both a gradable adjective and a measure phrase. Similarly, the form *dao* ‘arrive’ in (83b) also occurs with both a gradable adjective and a measure phrase. These two forms also have no type-shifting function, but do express an evaluative meaning.

- (82) a. Dawei zuzu gao yi mi. #Tai ai le.
David up.to tall one meter too short PRT
‘David is as tall as one meter. #He is too short.’
b. Dawei gao yi mi. Tai {ai/gao} le.
David tall one meter too short/tall PRT
‘David is one meter tall. He is too {short/tall}.’
(83) a. Dawei gao-da yi mi. #Tai ai le.
David tall-reach one meter too short PRT
‘David is tall up to one meter. #He is too short.’

- b. Dawei zhong-dao 100 gongjin. #Tai qing le.
David heavy-arrive 100 kilo too light PRT
'David is heavy up to 100 kilos. #He is too light.'

In addition, Watanabe (2013) shows that an evaluative reading is available in the presence of a measure phrase, systematically in some positive constructions in Japanese.

Second, in a comparative construction, the degree word *bijiao* 'COMP' does not have an evaluative meaning, but the degree word *geng* 'even more' does. (84a) has *bijiao*, and it does not express an evaluative reading; and thus it can be followed by *suiran liang ge ren dou hen ai* 'although they are both short' (see Y. Liu 2013). In contrast, (84b) has *geng*, and it does express an evaluative reading, and thus it may not be followed by *suiran liang ge ren dou hen ai*. A parallel group of examples is given in (85).¹⁶

- (84) a. Biqi Lili, Dawei bijiao gao, suiran liang ge ren dou hen ai.
compare Lili David COMP tall though two CL person all very short
'Compared with Lili, David is taller, although both are (very) short.'
b. Biqi Lili, Dawei geng gao, #suiran liang ge ren dou hen ai.
compare Lili David more tall though two CL person all very short
'Compared with Lili, David is more tall, #although both are (very) short.'
- (85) a. Biqi Lili, Dawei bijiao ai, suiran liang ge ren dou hen gao.
compare Lili David COMP short though two CL person all very tall
'Compared with Lili, David is shorter, although both are (very) tall.'
b. Biqi Lili, Dawei geng ai, #suiran liang ge ren dou hen gao.
compare Lili David more short though two CL person all very tall
'Compared with Lili, David is more short, #although both are (very) tall.'

In English, the *-er* comparative constructions are not evaluative, but the *more*-constructions are (the following examples are from Rett 2008: 10).

- (86) a. Adam is shorter than Doug. -/> Adam/Doug is short.
b. Adam is more short than Doug. -> Adam/Doug is short.

Third, in an equative construction, an evaluative reading occurs if *ru* 'as' occurs, but not if the determinative degree word *name* 'that' (or *zheme* 'this') occurs. In (87a), *name* occurs with *da* 'big'. The sentence does not express an evaluative reading; and thus it can be followed by *Tai xiao/da le* 'It's too small/big'. In (87b), however, *ru* occurs with *da*. The sentence does express an evaluative reading, and thus it may not be followed by *Tai xiao le* 'It's too small'. Similarly, in (87c), *ru* occurs with *xiao* 'small', and the containing sentence may not be followed by *Tai da le* 'It's too big'.

- (87) a. Na ge qiqiu you lanqiu name da. Tai {xiao/da} le.
that CL balloon have basketball that big too small/big PRT
'That balloon is the same size as a basketball. It's too small/big.'

¹⁶ If the quantifier *xie* 'some', or *yixie* 'some', or *yidianr* 'a bit' occurs with *geng*, an evaluative reading is not always available. In (i), *geng* does not mean 'even more'.

(i) You geng pianyi yidianr de ma?
have more cheap a.bit DE Q
'Is there anything cheaper (than this)?'

- b. Na ge qiqiu da-ru lanqiu. #Tai xiao le.
that CL balloon big-as basketball too small PRT
'That balloon is as big as a basketball. #It's too small.'
- c. Na ge qiqiu xiao-ru lanqiu. #Tai da le.
that CL balloon small-as basketball too big PRT
'That balloon is as small as a basketball. It's too big.'

Fourth, as pointed out by Rett (2008, also 2015), antonyms exhibit different patterns of evaluativity, cross-linguistically. Some adjectives do not denote evaluativity, but their antonyms seem to do so. The following Chinese examples show her point. The adjective *gao* in (88a) does not have an evaluative reading, and thus the first sentence can be following by *Ta yiding hen ai* 'He must be (very) short.' But the antonymous *ai* 'short' in (88b) must have an evaluative reading, because the first sentence may not be followed by *Ta yiding hen gao* 'He must be (very) tall.' The equative constructions in (89) show the same contrast.

- (88) a. Dawei duo gao? Ta yiding hen ai.
David how tall 3SG must very short
'How tall is David? He must be (very) short.'
- b. Dawei duo ai? #Ta yiding hen gao.
David how short 3SG must very tall
'How short is David? #He must be very tall.'
- (89) a. Dawei gen Lili yiyang gao. Dou hen ai.
David and Lili same tall all very short
'David and Lili have the same height. Both are short.'
- b. Dawei gen Lili yiyang ai. #Dou hen gao.
David and Lili same short all very tall
'David and Lili have the same short height. #Both are tall.'

In comparatives, as pointed out by Solt (2014: Sec. 4.2), the two sentences in (90a) may mean the same, but the two sentences in (90b) do not. The second sentence in (90b) is infelicitous if both persons are judged smart.

- (90) a. Anna is taller than Zoe. ⇔ Zoe is shorter than Anna.
b. Anna is smarter than Zoe. ≠ Zoe is dumber than Anna.

Thus, the evaluative reading of POS of positives is also seen in other constructions, and can be context-sensitive. The syntactic status of this reading is thus not clear yet.

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