

# Chapter Five Mandarin “hen” and Sentence Completion

In chapter four, the functional projection DegP is proved feasible for Mandarin gradable adjectives, but meanwhile leaves several problems unsolved, among which the dropping of “hen” in certain patterns is the most disputable one and no agreement has ever been approached, though many attempts are manipulated from various perspectives (Liu, 2010, Grano&Kennedy, 2012; Wu&Zhu, 2013). Besides, the relation between “hen” and the null positive morpheme “pos”(Lewis, 1970; Kennedy, 1997) is also worth to digging as both of them shoulder the same duty to resolve extra argument problem and evaluative problem (Rett, 2008, 2015). Finally, in positive forms, Mandarin not only owns monosyllable degree adverbs such as “hen(very)”, “tai(too)”, “lao(very)”, “man(very)”, but also has disyllable degree adverbs such as “feichang(very)”, “tebie(extremely)”, “youdian(a bit)”, etc. A problem thus arises that what categories these components fall in, degree adverbs or the functional head of DegP?

## 5.1 Constructions Without “hen”

Mandarin simple positive forms require “hen” to “complete sentences”(Kong, 1994; Huang, 1994). If DegP applies to Mandarin gradable adjectives in syntax with “hen” as the overt instantiation, the obligatoriness of “hen” receives a feasible explanation, and it meanwhile indicates that any positive forms with no overt “hen” should be ruled out. It is publicly known that this is a wrong predication. Sentences listed from (1) to (4) are all constituted by gradable adjectives but with “hen” dropped. Scrutinizing them, four types of strategies are concluded to permit the emptiness of DegP.

In (1a) and (1b), positive forms with measure phrases like “2 mi (2 meters)” and disyllable degree adverbs like “feichang(very)”, “tebie(extremely)” allows the drop of “hen”, and to be exact, it just refutes to co-occur with “hen”. In contrast, positive forms with negative adverbs and affirmative adverbs allows “hen” to occur optionally, that is to say, it does not require an obligatory appearance of “hen”. The second strategy is pertinent to “focus”, as shown from (2a) to (2c), “gao(tall)” becomes focalized respectively via focus auxiliary “shi(be)”, focus sensitive adverb “cai”, or an oral stress. Besides, if “gao(tall)” falls in a focus construction like (2d) and (2e), “hen” is also free to occur. The third strategy resorts to sentence final particles. As observed in (3a) - (3c), “ma”, as a particle for yes-no questions, permits gradable adjectives in its domain to appear in a bare form with no “hen”, so does “ne”, as a particle for wh questions, and “a” for an exclamatory sentence. (3d) deserves more attention because “le” in this pattern allows “hen” to be invisible, though its role is under a contention between verbal suffix or sentence final particle. The last type of constructions that allows gradable adjectives to appear in a bare form is offered in (4), where “Mary” and “sha(stupid)” forming a small clause selected by epistemic verbs.

- (1) a. John 2 mi gao.  
John 2 meter tall

- ‘John is 2 meters tall.’
- b. John tebie gao.  
 John extremely tall  
 ‘John is extremely tall.’
- c. John bu gao. negative adverbs  
 John Neg tall  
 ‘John is not tall.’
- d. John queshi gao. affirmative adverbs  
 John indeed tall  
 ‘Indeed, John is tall.’
- (2) a. John shi gao. focus auxiliary  
 John be tall  
 ‘It must be admitted that John is tall.’
- b. John cai gao (ne). focus adverb  
 John focus marker tall SFP  
 ‘John is the one who is tall.’
- c. John gao<sub>s</sub>. stress  
 John tall  
 ‘John is tall<sub>s</sub>.’
- d. John gao, Mary bu gao. contrastive focus  
 John gao, Mary Neg tall  
 ‘John is tall, but Mary is not tall.’
- e. John xueya gao. focus construction  
 John blood pressure tall  
 ‘John’s blood pressure is high.’
- (3) a. John gao ma? yes-no interrogative  
 John tall SFP  
 ‘Is John tall?’
- b. shui gao ne? wh interrogative  
 who tall SFP  
 ‘Who is tall?’
- c. John gao a. exclamatory  
 John tall SFP  
 ‘John is tall!’
- d. hua-er hong le.  
 flower red SFP  
 ‘Flowers became red’
- (4) John xiao Mary sha. small clause selected by epistemic verbs  
 John deride Mary stupid  
 ‘John derides that Mary as being stupid.’

By now, there are three influential analyses proposed by linguists to explore why “hen” superficially disappears in above cases. Liu (2010) puts Mandarin owns an explicit “hen<sub>1</sub>” and an implicit “hen<sub>2</sub>”, with the latter behaving like a polarity item that needs to be licensed by an operator. Liu claims components like “bu(not)”, “ma”,

“xiao(derive)”, as well as contrastive focus constructions usher in such kind of operator that functions to license the implicit “hen<sub>2</sub>”.

Grano(2012) points out that “hen” undertakes the same function as “be” in changing adjectives with [-V] feature into a projection with [+V] feature for the purpose to meet the requirement of T selecting a complement with [+V] (cf. Gu, 2007; Zhang, 2011). “hen” is in a complementary distribution with “pos” with the latter as a type-shit rule not projecting in syntax. As the implicit “pos” exerts no change to the category of AP in syntax, extra functional projections are necessitated here to shift the [-V] feature of AP into a [+V] feature, and these FPs include “bu” in (1c), “Ø<sub>whether</sub>” in (3a), “Ø<sub>affirmative</sub>” in (3c), “shi/Ø<sub>focus</sub>” in (2a) and (2d), “Ø<sub>modal</sub>” in (4). In a word, all exceptions can be concluded into a prototype schema as “[<sub>TP</sub> T [<sub>FP</sub> F<sup>0</sup> Ø [AP ...]]]”.

The third plan is advocated by Wu&Zhu (2013), they claim Mandarin gradable adjectives must fall into the category of generic sentences so there will be a GEN operator accordingly. Operator must bind a variable, or it will violate “prohibition against vacuous quantification (Krazer, 1995)”, and it is focus that offers the variable aligned with Rooth (1992)’s alternative semantics. Therefore, “hen” plays a role of focus marker, charging to introduce an alternative set consisting of “youdian(a little)”, “xiangdang(quite)”, “hen(very)”, etc. “bu” in (1a) is also a focus operator, introducing a set of “bugao(not tall)” and “ai(short)”; (2d), on its own, is a contrastive sentence with a set of “John gao” and “Mary bu gao”; in (3a), adjective “gao(tall)” in a yes-no question carries a focus feature, which can be further borne out via its answer, “gao a(tall SFP) ” or “bu gao a(not tall SFP) ”; in (4), adjectives selected by epistemic verbs play a role of focus, which will introduce an alternative set of “John xiao Mary X” and “X” can be “chou(ugly)”, “huaji(absurd)”, “sha(stupid)”, etc.

## 5.2 Sentence Completion Requirement

It must be admitted that to achieve an exhaustive description on the dropping of “hen” in multitudinous environments is not an easy job, let alone generalizing one single rule to cover all of them, connected with each other in a very loose relation. Those insightful studies mentioned above are undoubtedly efforts spared by scholars with many new cases being observed and many new explanatory frameworks being applied but also many new challenges being unavoidably raised. Among them, there is a neglect noteworthy: the obligatoriness of “hen” to simple positive forms are not isolated cases, same restriction being found in simple declarative built from verbs, the so-called “sentence completion requirement”. In simple declaratives, SV or SVO in a bare form is not complete enough to reach a grammatical sentence. To exemplify, temporal words like “mingtian (tomorrow)” in (5a) and frequent adverb “jingchang(often)” in (5b) are non-cancellable, otherwise they will be rendered unacceptable. To compare (5a) and (5b) with simple positive form “John hen gao (John is tall)”, they share to require certain adverbs to appear obligatorily. Moreover, the selection of adverbs is no at random. As respectively shown in (6a) and (6b), “jingchang(often)” cannot function to complete adjectival declaratives and “hen” cannot complete verbal declaratives.

It is apparent that (5a) and (5b) parallel to (1a) and (1b), where “mingtian(tomorrow)” and “2 mi(2 meters)” share a common status as adjunct and denote a same simple type of argument in semantics, “tomorrow” for “i” and “2 meters” for “d”, besides “jingchang (often)” and “tebie(extremely)” share to be adverbs in syntax and implement a modifying function in semantics. Give this parallelism, it is plausible to regard “hen” as nothing but a degree adverb, bearing the same function as “mingtian”, “2 mi”, “tebie” and “jingchang” to “complete sentences”. In addition, this may explain why measure phrases and degree adverbs refutes to occur with “hen”, i.e. degree adverbs are prevented from overlapping with each other.

- (5) a. John \*(mingtian) da lanqiu.  
John tomorrow play basketball  
'John will play basket ball tomorrow.'
- b. John \*(jingchang) da lanqiu.  
John often play basketball  
'John often plays basketball.'
- (6) a. \*John jingchang gao.  
John often tall  
b. \*John hen da lanqiu.  
John very play basketball

Adverbs bearing to saturate “sentence completion requirement” are not only confined to temporal words like “mingtian(tomorrow)” and frequent adverb like “jingchang(often)”, more instantiations including affirmative adverbs “queshi(indeed)” in (7a) and negative adverb “bu(not)” in (7b).

- (7) a. John queshi da lanlanqiu / gao.  
John indeed play basketball / tall  
'Indeed, John plays basketball/is tall.'
- b. John bu da lanqiu / gao.  
John not play basketball / tall  
'John does not play basketball/ is not tall.'

Simple verbal declaratives not only show similarities in the aspect that adverbs function to complete sentences, but also in cases adverbs are exempt from the duty of sentence completion. In another word, adverbs are no longer compulsory to cases mimicking (1)-(4), which are instantiated from (8) to (11). Under no surprise, adverbs become optional in syntax, just like “hen”. Sentences in (9) show that same sentence final particles permit the optional status of adverbs, and sentences in (10) tell that the methods that mark the focus status of “da(play)” also indicate a free appearance of adverbs, and finally in (11), certain verbs can select a small clause consisting of subject, verb and object only. Besides the common method shared by adjectives and verbs, the latter presents a specific feature in (8a) and (8b), where modal auxiliaries like “hui(can)” and “bixu(must)” also allow the missing of adverbs.

- (8) a. John hui da lanqiu. modal auxiliaries  
John can play basketball  
'John can play basketball.'

- b. John bixu da lanqiu.  
 John must play basketball  
 ‘John must play basketball.’
- (9) a. John da lanqiu **ma?** yes-no interrogative  
 ‘Does John play basketball?’  
 b. shui da lanqiu **ne?** wh interrogative  
 ‘Who plays basketball?’  
 c. John da lanqiu **a.** exclamatory  
 ‘John plays basketball!’
- (10) a. John **shi** da lanqiu. focus auxiliary  
 ‘It must be admitted that John plays basketball.’  
 b. John **cai** da lanqiu. focus adverb  
 ‘John is the one who plays basketball.’  
 c. John **da<sub>s</sub>** lanqiu, Mary **bu da.** contrastive focus construction  
 ‘John plays basketball, Mary does not.’  
 d. John **da<sub>s</sub>** lanqiu. stress  
 ‘John plays<sub>s</sub> basketball.’
- (11) a. John xihuan Mary da lanqiu. epistemic verbs  
 John like Mary play basketball  
 ‘John likes Mary playing basketball.’  
 b. Gorge taoyan Mary da lanqiu.  
 Gorge hates Mary play basketball  
 ‘Gorge hates Mary playing basketball.’

Given the similar requirement on an obligatory occurrence of adverbs and the similar cases that allow adverbs to lose their obligatory status, it is tempting to analyze simple adjectival positive forms and simple verbal declaratives within one single mechanism. The previous studies cast too much attention on the particularity of adjectival positive forms and devote themselves to digging out a specification unique to adjectives, leaving verbs intentionally neglected. Except for theoretical misgivings, the analyses mentioned above still fail to cover exceptions listed below.

- (12) a. John bushi \*(hen) gao.  
 John not be very tall  
 ‘it is not the case that John is very tall.’  
 b. John bushi \*(mingtian) da lanqiu.  
 John not be tomorrow play basketball  
 ‘It is not the case that John will play basketball tomorrow.’
- (13) a. John pao de kuai.  
 John run de fast  
 ‘John runs fast.’  
 b. John pao de hen kuai.  
 John run de very fast  
 ‘John runs very fast.’  
 c. ??Mary daban de piaoliang.  
 Mary dress de beautiful

- ‘Mary dresses beautifully’
- d. Mary dabān de hēn piaoliang.  
 Mary dress de very beautiful  
 ‘Mary dresses very beautifully.’
- (14) a. John xihuan Mary.  
 John love Mary  
 ‘John loves Mary.’
- b. Gorge taoyan Bill.  
 John hate Mary  
 ‘Gorge hates Mary.’

In (12a) and (12b), “hen” and “mingtian(tomorrow)” are indispensable, without adverbs, the acceptability of them become hopeless. Under previous analyses, (12a) and (12b) should allow adverbs to drop because “bushi(not be)” can be regarded as either a negative operator, or negative functional projection, or a mark of focus. The contrast between (13a, b) and (13c, d) is a myth as same “V de A” patterns present different degrees of acceptability. If gradable adjectives are assumed to project into a DegP universally, “hen” should be obligatory, as indicated by the hopelessness of (13c). Nevertheless, (13a) sounds completely natural without “hen”. (14a) and (14b) serves as an exception to sentence completion requirement. They present a simple form of subject, verb and object, but requires no obligatory appearance of adverbs. If “xihuan(like)” and “taoyan(hate)” are seen as gradable predicates, they should launch a requirement on the appearance of “hen”.

### 5.3 Motivations behind Sentence Completion Requirement

Hu&Shi (2005) starts from a plain assumption that a null morpheme must be licensed by corresponding overt morphemes. Aligned with the basic spirit behind IP and DP, they argue that NP and VP must respectively project into DP and IP for the purpose to obtain “referentiality”. Semantically speaking, NP and VP are nothing but a property, that is to say, both of them contain a free variable in their lexical entries. With no D<sup>0</sup> or I<sup>0</sup>, NP cannot refer to entities and VP cannot refer to events.

Following the logic of Hu&Shi (2005), verb “da(play)” should encode a time variable in its lexical entry, which is deleted by functional heads inside IP. Considering the compulsory agent argument and patient argument, the lexical entry of “da(play)” is encoded as (15) with a <e, <i, <e, t>>> type. “x” and “y” will be reduced by “John” and “lanqiu(basketall)” in an orthodox way. As temporal adverbs usually refer to the time when verbs or events denoted by verbs happen, a function “happen” is assumed to map events to time, and the part “happen(da)=i” as a modification of verbs is linked by a Boolean conjunction in the lexical representation, facilitating to identify the time of events. “i” can be saturated by temporal words like “mingtian(tomorrow)”, “jintian(today)”, “zuotian(yesterday)” or by the tense encoded in the lexical entry of “I<sup>0</sup>”.

- (15) a.  $\llbracket \text{da} \rrbracket = \lambda y \lambda i \lambda x. [\text{da}(x, y) \wedge \text{happen}(\text{da})=i]$       <e, <i, <e, t>>>  
 b.  $\llbracket \text{le} \rrbracket = \lambda P \lambda x. [P(x) \text{ (in the past)}]$       <<i, <e, t>>, <e, t>> (a vague past time)  
 c.  $\llbracket \text{le} \rrbracket = \lambda P \lambda i' \lambda x. [P(x)(i')]$       <<i, <e, t>>, <i, <e, t>>> (semantically trivial)

To illustrate the mechanism in a more elaborate way, “-le” is picked out as an example, which is simplified as a suffix corresponding to English “-ed”. In (16a), “da” initially selects “lanqiu (basketball)” as argument, so the combination of them lead to (16b). The next combination of “le” and “da lanqiu” is crucial to the analysis here. The existence of “ $\lambda i$ ” in (16b) prevents “da lanqiu” from absorbing “John” directly, which explains why IP must be there from a semantic perspective. Therefore, “le” is indispensable and functions to delete “ $\lambda i$ ”, shifting  $\langle i, \langle e, t \rangle \rangle$  into  $\langle e, t \rangle$  and laying the preparation for “John” to join the computation. As “le” carries a vague past time in its lexical meaning, its lexical entry can be embodied into a formula like (15b). Combining “le” and “da lanqiu”, a right output is achieved in (16c) with a  $\langle e, t \rangle$  type, which gets further saturated by “John” and derives a  $t$  type sentence. The part “happen(da)= in the past” means the event denoted by “da(play)” happens in the past. In conclusion, “le” bears two kinds of functions, one performs to shift the semantic type of verbs from  $\langle i, \langle e, \langle \dots t \rangle \rangle \rangle$  into  $\langle e, \langle \dots t \rangle \rangle$ , the so-called type-shift function, the other is to anchor when the event happened by offering a vague past time.

It should be noted that the past time temporal word “zuotian (yesterday)” is free to plug into (16a), so “le” should have a variant to accommodate the time argument denoted by “zuotian (yesterday)”. In (15c), an additional time variable “ $i$ ” is added for this reason, and its combination with “da lanqiu” will produce a semantic representation in (17b), where “ $i$ ” is intentionally kept for “zuotian(yesterday)” in (17a). In this case, “le” is semantically trivial as it neither exerts a type-shift function neither identify when the event happened.

- (16) a.  $[\text{IP John} [r \text{-le} [\text{VP da} [\text{DP lanqiu}]]]]$ .
- b.  $[\text{da lanqiu}] = \lambda i \lambda x. [\text{da}(x, \text{lanqiu}) \wedge \text{happen(da)} = i] \quad \langle i, \langle e, t \rangle \rangle$
- $\star [\text{-le da lanqiu}] = \lambda x. [\text{da}(x, \text{lanqiu}) \wedge \text{happen(da)} = \text{in the past}] \quad \langle e, t \rangle$
- (17) a. John zuotian da-le lanqiu.
- b.  $[\text{-le da lanqiu}] = \lambda i \lambda x. [\text{da}(x, \text{lanqiu}) \wedge \text{happen(da)} = i] \quad \langle i, \langle e, t \rangle \rangle$

The analysis of past tense suffix “le” and the meaning of verbs apply to gradable adjectives in a quite natural way. Under degree semantics, degree variable is encoded into the lexical entry of gradable adjectives, i.e. (18a). Measure phrases “2 mi (2 meters)” in (19a) parallels to temporal word “zuotian(yesterday)”, denoting a simple  $d$  type argument. Because of “ $\lambda d$ ”, “gao(tall)” cannot directly combine with “John”, so a functional  $\text{DegP}$  is indispensable in both semantic and syntax. As  $\text{Deg}^0$  in (19a) finds no overt forms, a null “pos” is thus assumed, which bears similar functions like “le”. Considering measure phrases, “pos” should specifically hold a position for it, so (18b) is derived out. Applying (18b) to (19a) will derive a legitimate semantics in (19b).

- (18) a.  $[\text{gao}] = \lambda d \lambda x. [\text{height}(x) \geq d] \quad \langle d, \langle e, t \rangle \rangle$
- b.  $[\text{pos}_2] = \lambda G_{\langle d, \langle e, t \rangle \rangle} \lambda d' \lambda x. [G(x, d')] \quad \langle \langle d, \langle e, t \rangle \rangle, \langle d, \langle e, t \rangle \rangle \rangle$
- (19) a. John  $[\text{DegP } 2 \text{ mi} [\text{Deg'} \text{ pos}_2 [\text{AP gao}]]]$ <sup>18</sup>
- b.  $[\text{2 mi pos}_2 \text{ gao}] = [\text{pos}_2] ([\text{gao}]) ([\text{2 mi}])$   
 $= \lambda x. [\text{height}(x) \geq 2 \text{ mi}] \quad \langle e, t \rangle$

“pos” in the literature is assigned with two major functions, they are type-shift

<sup>18</sup> To distinguish “pos” in positive forms without measure phrases and in positive forms with measure phrases, the former is marked by “ $\text{pos}_1$ ” and the latter “ $\text{pos}_2$ ”.

function and evaluative function. The “pos” in (19a) is particular in neither shifting the semantic type of gradable adjectives because it needs reserve a variable for the insertion of measure phrase, nor introducing an evaluative meaning because (19a) expresses no meaning like “John’s height exceeds certain standard degree, so that he can be judged as tall”. As listed in (2)-(4), “pos<sub>1</sub>” can appear independent of adverbs. Take (20a) as an example, it means to ask whether or not “John” can be judged as “tall”, and the result of this judgment must build up a prerequisite that John’s height exceeds certain “standard degree”, and the identification of which is determined either by a contextual standard degree, or a degree held by the speaker of utterance.

Suppose a context, where Mary and Lucy are talking about Mary's new boyfriend, John. Lucy knows nothing about John, so she asks the question in (20a). As known, John can be judged "tall" only if his height exceeds or equates to certain standards. Lucy, in her mind, may adopt either a contextual standard degree or a standard degree that she agrees on. If the contextual standard is stipulated as "1.7m" and John is 1.75m tall, then Mary can answer (20a) with "en, ta gao a (yes, he is tall)". But if Lucy has a specific standard on the height of tall, and Mary knows Lucy's standard. In this situation, she may answer (20a) with "an ni de biaozhun, ta bu gao(if judging from your standard, he is not tall)". Same semantic intuition is observed in (20b) where the standard degree may be the contextual standard height, or the height of Mary. The latter is indicated in a context that John is 1.75m tall and Mary is 1.73m tall, then (20b) can be uttered without problem. In short, " $d_{stdn}$ " in (21) may refer to either the standard degree offered by context or by the speaker.

- (20) a. John gao ma? b. John gao, Mary ai. → a specific standard degree  
 (21)  $\llbracket \text{pos}_1 \rrbracket = \lambda G_{\langle d, \langle e, t \rangle \rangle} \lambda x. \exists d [G(x, d) \& d \geq d_{\text{std}}]$   $\langle d, \langle e, t \rangle \rangle, \langle e, t \rangle \gg$

Given above analysis, the lexical entry of “pos<sub>1</sub>” in (20a) and (20b) should be encoded into a formula like (21), where it absorbs a gradable adjective with a  $\langle d, \langle e, t \rangle \rangle$  type and outputs a  $\langle e, \langle t \rangle \rangle$  type property, i.e. type-shift function. In addition, it incorporates into the evaluative meaning via the part “ $d \geq d_{\text{std}}$ ”, which expresses that there is at least a degree to which x is ‘adjective’, and the degree exceeds the standard degree “ $d_{\text{std}}$ ”. Given (18b) and (21), it is inferred to conclude that there are two variants of “pos”, which are respectively marked “pos<sub>1</sub>” in (21) and “pos<sub>2</sub>” in (18b). The former appears in diverse forms such as (1b-d), (2a-e), (3a-d) as well as (4), and its null nature in syntax can be licensed by either degree adverbs, or functional projections in the layer of CP, or certain epistemic verbal projections. The distribution of “pos<sub>2</sub>” is confined to measure phrases, e.g. (1a).

The null nature of “pos” may threaten the adequacy of above analysis because no direct evidence supports its existence, which leads to a myth that what reasons cause the failure of the bare form of “John tall (John is tall)”. In order to exclude the potential threats, the present tense in English and Mandarin is adopted for an analogy. Compared to past tense, present tense is peculiar in both syntax and semantics. On the one hand, English and Mandarin both adopt a null morpheme to hold present tense. English as an inflectional language, an overt agreement relation is manipulated in syntax and meanwhile indicates the existence the null present tense. As shown in

(22a)-(22c), the null present tense is deemed associated to “-s”, while in Mandarin, no syntactic agreement is employed and alternatively she develops a licensing mechanism conducted by adverbs, see (23a)-(23c).

- (22) a. John plays basketball.

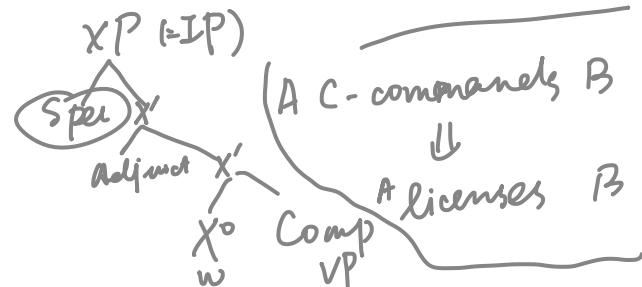
b. John has a basketball.

c. John often goes to the park.

- (23) a. John [<sub>I</sub> jingchang [<sub>I</sub> ω [VP da lanqiu]]]<sup>19</sup>.

b. John [<sub>I</sub> bu [<sub>I</sub> ω [VP da lanqiu]]]

c. John [<sub>C</sub> queshi [<sub>C</sub> C[<sub>IP</sub> ω [VP da lanqiu]]]].



Setting aside their semantics temporarily, adverbs like “jingchang(often)”, “bu(not)” as well as “queshi(indeed)” are assumed to occupy the specifier of IP or higher specifier of CP, all of which c-command the null “ω” in structure, hence implement a licensing function<sup>20</sup>. Actually, the mechanism behind adverbs licensing null present tense is of no difference to the association between “-s” and present tense in English.

As aforementioned, past tense “le” and degree “pos” allow a variant to absorb arguments of time points or degree points offered by temporal words like “zuotian(yesterday)” and measure phrases “2 mi (2 meters)”. Present tense is peculiar because it cannot be expressed by speech time and event time, and the fusion of event time and speech time only indicates a “progress aspect” rather than the present time, see (24)<sup>21</sup>. By contrast, present tense allows modifications from frequent adverbs like “jingchang(often)” in (23a). In both Mandarin and English, present tense is customarily adopted to describe a fact that is eternal or describe an event that happens habitually, both of which project no embodiment of a point at the time scale of (24). Due to this feature, it is not unexpected that temporal words like “jintian(today)”, “mingtian (tomorrow)” or “zuotian (yesterday)” will fail to occur in a sentence with present tense, see (25a). Therefore, (22a) is uttered to describe a fact that John does the sport called “play basketball” or to describe a habit that how often John plays basketball. Just like (23a), “often” is cited to express that the event “John plays basketball” happens frequently, or in a “often” frequency. And this also explains why “jingchang (often)” can license the null present tense in Mandarin.

- (24) -----|<sub>s/e</sub>----- progressive

- (25) a. \*John plays basketball today/tomorrow/yesterday.

b. John often plays basketball.

- (26) a.  $\llbracket \text{play basketball} \rrbracket = \lambda i \lambda x. [\text{play}(x, \text{basketball}) \wedge \text{happen}(\text{play}') = i]$

$\langle i, \langle e, t \rangle \rangle$

b.  $\llbracket \omega \rrbracket = \lambda P \lambda x. [P(x) \text{ (in the present tense)}]$   $\langle \langle i, \langle e, t \rangle \rangle, \langle e, t \rangle \rangle$

c.  $\llbracket \omega \text{ plays basketball} \rrbracket = \lambda x. [\text{play}(x, \text{basketball}) \wedge \text{happen}(\text{play}') = \text{in the present tense}]$   $\langle e, t \rangle$

d.  $\llbracket \text{John } \omega \text{ plays basketball} \rrbracket = \text{play}(\text{John}', \text{basketball}') \wedge \text{happen}(\text{play}') = \text{in the present tense}$

<sup>19</sup> In order to distinguish from the null degree “pos”, “ω” here refers to the null present tense.

<sup>20</sup> The syntactic category of “bu(not)” is definitely simplified as an adverbs, for more discussions can be found in Chen, Lee&Pan(2013), Chen&Pan(2017), etc.

<sup>21</sup> The present time reading of present tense(Listen! I hear the voice) is not considered here (Kearns, 2011).

To highlight this meaning of (22a) and (25b) in a full-fledged way, an argument named “the present tense” is adopted to specify that the events denoted by verbs happen to be true irrelevant of time or happen habitually, that is (26b). The combination of (26a) and (26b) produces (26c), which further absorbs “John” and derives out a  $t$  type proposition in (26d). The part “happen(play’) = in the present tense’” in (26d) means that  $t$  “John plays basketball and this event happens”.

(27) a. John often  $\omega$  plays basketball.

- b.  $[\omega] = \lambda Q. [(Q)] \quad <<e, t>, <e, t>>$
- c.  $[\omega] = \lambda Q. [\omega(Q)] \quad <<e, t>, <e, t>>$

(28) a.  $[\omega \text{ plays basketball}] = \lambda x. [\text{play}(x, \text{basketball})] \wedge$

- b.  $[\omega \text{ plays basketball}] = [\omega]([\omega \text{ plays basketball}]) \quad <e, t>$   
 $= \lambda Q. [Q](\lambda x. [\text{play}(x, \text{basketball})] \wedge \text{happen}(\text{play}') = \text{in the present tense'})$   
 $= \lambda x. [\text{play}(x, \text{basketball})] \wedge \text{happen}(\text{play}') = \text{in the present tense'}$
- c.  $\omega (\lambda x. [\text{play}(x, \text{basketball})] \wedge \text{happen}(\text{play}') = \text{in the present tense'})$
- d.  $\lambda x. [\text{play}(x, \text{basketball})] \wedge \omega (\text{happen}(\text{play}') = \text{in the present tense'})$

When it comes to the semantics of (25b), more words should be extended to “often”, which denotes a type of  $<<e, t>, <e, t>>$ , specific to adverbs. (25b) should project a deep structure like (27a), and the combination of “ $\omega$ ” and “plays basketball” generates an expression in (28a). “often” as a modifier, will not change the type of its argument so that it denotes a formula like (27b), where it absorbs a  $<e, t>$  type component and outputs another  $<e, t>$  type component (cf. Heim&Krazer, 1998). To apply it to (28a), (28b) with a  $<e, t>$  type is thus produced. However, (28b) has a problem that the meaning of “often” is bleached because its lexical entry in (27b) exerts nothing but a linking function. If “often” denotes a function like (27c), its combination with (28a) will produce a representation like (28c), which is also problematic because the variable  $x$  inside “often” cannot be saturated by subject “John”. Judging from the meaning of (27a), “often” contributes to modify the frequency of event “play”, that is to say, the semantic contribution of “often” mainly falls on the part of “happen(play’) = in the present tense”, thus a compromise is adopted as (28d). “often” still maintains a formula like (27b), but the combination of (27b) and (28a) will produce a representation like (28d), where “ $\omega(\text{happen}(\text{play}') = \text{in the present tense'})$ ” means “the event of ‘play’ happens in a ‘often’ frequency”.

The relation between adverb “often” and “ $\omega$ ” applies to Mandarin degree adverbs and “pos” as well. In simple verbal declaratives, the present tense “ $\omega$ ” is designed to settle the extra time argument in the lexical entries of verbs, and meanwhile the frequent adverb licenses its null performance in syntax. In an analogy, the degree head “pos” in (21) bears the same function to reduce the extra degree argument in the lexical entries of gradable adjectives, whose null performance is licensed by degree adverbs syntactically. In this sense, all positive degree modifiers like “youdian(a bit)”, “hen(very)”, “teichang(very)”, “tebie(extremely)”, etc. behave tantamount to “often” in both syntax and semantics. For the syntactic part, they license the implicitness of “pos”, and for the semantic part, they launch a function of modification, contributing to modify the gap between the maximal degree of  $x$  and

Specifier [in Syntax]

standard degree.

#### 5.4 Explicit “hen”, Implicit “hen” and “pos”

In the field of Mandarin positive forms, two kinds of explicit “hen(very)” are assumed to exist, “ $hen_1$ ” specifically refers to the one in simple positive forms and it is deemed to pronounce in a lightened way (Wang, 1937; Lv, 1980; Li&Thompson, 1981) or occupy the head position of positive DegP (Liu, 2010; Zhang, 2015). “ $hen_2$ ” refers the one acting as a degree adverb, with no lightened pronunciation and landing at the adjunct position of AP or DegP. As for “pos”, it is analyzed as a null degree head in English positive forms. Since DegP is universal to all gradable adjectives across languages and constructions, there must be a null “pos” in cases of (1) – (4), and Liu (2010) calls this “pos” as an implicit “ $hen_3$ ”. In addition, discussions on the semantics of “pos” in English prompt scholars to regard “ $hen_1$ ” as an overt form of “pos” in Mandarin (Kennedy, 2007; Grano&Kennedy, 2012). If above analyses are on the right track, then there must be three different “hen”’s in Mandarin, a lightened “ $hen_1$ ” at the degree head position of simple positive forms, a stressed “ $hen_2$ ” at the adjunct position of any positive forms and an implicit “ $hen_3$ ” at the degree head position of non-simple positive forms. The adequacy to assume three “hen”’s in Mandarin lexicon is really worth to digging into.

Before exploring the problem, it is necessary to give a brief retrospect on how “pos” is developed and its relation with English degree adverb “very(hen)”. It is agreed that gradable adjectives like “tall” and “short” have a gap between the standard of “tall” and the standard of “short” (Leffel, 2014; Leffel, *et al.* 2019). Klein (1980) describe the gap between “ $d_{\text{short}}$ ” and “ $d_{\text{tall}}$ ” in a scale of (29). Generally speaking, the degree of x must exceed or equal to “ $d_{\text{tall}}$ ”, then “x is tall” can be true. The comparison between the degree of x and “ $d_{\text{tall}}$ ” is termed as “evaluative meaning”, being encoded into a functional morpheme, namely, “pos”. The lexical entry of “pos” is defined in (30a), repeated from (21), where the value of “ $d_{\text{tall}}$ ” is determined either by context or by the speaker of sentences.

(29) height: 0  $\xrightarrow{\text{d}_{\text{short}}}$   $\xrightarrow{\text{d}_{\text{tall}}}$   $\xrightarrow{\text{d}_{\text{(G)}}/\text{high(d)}}$   $\xrightarrow{\infty}$

(30) a.  $[\text{pos}_1] = \lambda G_{<d, <e, t>} \lambda x. \exists d [ G(x, d) \wedge d > \text{d}_{\text{tall}} ]^{22}$   
          b.  $[\text{pos}_1] = \lambda G_{<d, <e, t>} \lambda x. \exists d [ G(x, d) \wedge d > \text{d}_{\text{(G)}} ]^{23} \quad \langle \langle d, <e, t>, <e, t> \rangle \rangle$

Kennedy (2007a) argues “ $d_{tall}$ ” is not secure enough to make sure individuals on the right of “ $d_{tall}$ ” are “tall”. Under the context of (31), “book A is thick” can hardly be accepted because the gap between A and B is too small (Sorites Paradox). To rule out (31), Kennedy thinks “ $d_{tall}$ ” must be raised to “ $d_{s(G)}$ ”, that is (30b), and  $s(G)$  is greater than “ $d_{tall}$ ”. Graff (2000, 2011) makes a similar argument that “pos” denotes a partial relation requiring that the degree of x should **far** exceed “ $d_{tall}$ ”.

<sup>31</sup> context: a book A with 100 pages and a book B with 99 pages

?Compared to book B, book A is thick.

(32)  $\llbracket \text{[very]} \rrbracket = \lambda G_{\langle d, \langle e, t \rangle \rangle} \lambda x. \exists d [\text{high}(d) \wedge G(x, d)]$  Kennedy & McNally (2005a)

<sup>22</sup> “ $d_{tall}$ ” here equals to “ $d_{std}$ ”, for highlighting the gap between the standard degree of shortness and tallness, “ $d_{short}$ ” and “ $d_{tall}$ ” are adopted.

The setting of “ $s(G)$ ” gives rise to a puzzle to the meaning of English degree adverb “very”, which highlights that the degree of  $x$  exceeds the standard degree in a **large** extent. To manifest such a meaning, the lexical entry of “very” encodes a part “**high(d)**”, which is paraphrased as “the degree  $d$  is large or high”. (30b) and (32) present no essential distinctions in semantics. Initially, both of them take a gradable adjective ( $\langle d, \langle e, t \rangle \rangle$ ) as argument and output an expression typed  $\langle e, t \rangle$ , the so-called type shift function. Furthermore, they share to identify the partial relation between the degree of  $x$  and the standard degree offered by context, i.e. evaluative meaning. (30b) employs “ $d_{s(G)}$ ” as a direct degree argument, while (32) takes a full advantage of the function of “**high(d)**”, which indicates that the value of  $d$  is large. In this sense, “very” is no longer optional, it must appear obligatorily to shift the type of gradable adjectives, or its combination with subject will be impossible. Judging from their lexical entries alone, it is found that the greatness relation between “**high(d)**” and “ $d_{s(G)}$ ” is undetermined, as shown in (29), it looks like “**high(d)**” and “ $d_{s(G)}$ ” are competing for the same degree point.

Given the syntactic distribution of “pos” and “very”, “ $hen_2$ ” parallels to “very” in sharing a standard like “**high(d)**” in semantics and an adverbial status in syntax, while “ $hen_1$ ” corresponds to “pos” in sharing a standard like “ $d_{s(G)}$ ” in semantics and a degree head status in syntax. “ $hen_1$ ” is thus regarded as an overt form of “pos” in Mandarin. Unfortunately, this analogization from “pos” and “very” to “ $hen_1$ ” and “ $hen_2$ ” is problematic.

The function that “very” bears is not adequate, because “very” is known as an **optional degree adverb, and its appearance is not obligatorily required**. Besides, as the meanings of (33a) and (33b) indicate, the greatness relation of “**high(d)**” and “ $d_{s(G)}$ ” is actually determined with the height of John being greater than the height of Mary. To map them into the scale of height, “**high(d)**” should locate on the right of “ $d_{s(G)}$ ”, i.e. (34).

- (33) a. John is very tall.  
b. Mary is pos<sub>1</sub> tall.

(34) height: 0 ————— • ————— • ————— • ————— → ∞  
 $d_{short}$        $d_{tall}$        $d_{s(G)}$       high( $d$ )

*height (John) > height (Mary) > d<sub>s(G)</sub>*

To solve the problem, a null “pos” is assumed to land at the middle of “very” and “tall”, since DegP is universal to all gradable adjectives, that is to say, (33a) should have a deep structure like (35a). Judging from the meanings of (33a) and (33b), it is inferred that they share to use a common standard degree, i.e.  $d_{s(G)}$ . Mary is “tall” because her height exceeds “ $d_{s(G)}$ ” and John is “very tall” because his height exceeds “ $d_{s(G)}$ ” in a ‘very’ or large extent. In these two cases, “pos” should be instantiated as “pos<sub>1</sub>”, since “pos<sub>1</sub>” is defined with both type shift function and evaluative function, hence the lexical entry of “very” in (32) is no longer adequate. Just like “often”, “very” acts nothing but a degree adverb, so that it should denote a semantic type as “ $\langle\langle e, t \rangle, \langle e, t \rangle\rangle$ ” and own a lexical entry in the form of (35b). The combination of “pos<sub>1</sub>” and “tall” outputs a representation in (36), which highlights that the degree of  $x$  must exceed “ $d_{s(G)}$ ”, namely, the contextual salient standard degree or the standard degree in the mind of speakers. (36) denotes a  $\langle e, t \rangle$  type, and its combination with

“very” in (35b) produces (37a), where the semantic contribution of “very” becomes invisible. Judging from the meaning of (35a), “very” actually targets the part “ $d > d_{s(G)}$ ”, i.e. modify the gap between the degree of  $x$  and the standard degree “ $d_{s(G)}$ ”. To highlight this meaning, the compromise adopted to “jingchang(often)” in (28) is used here, that is (37b), where “very” is designed to modify “ $d > d_{s(G)}$ ”. The part “very ( $d > d_{s(G)}$ )” can be transformed into “ $d >_{\text{very}} d_{s(G)}$ ” in (37c) or (37d) without any alternation to the original meanings. (37b) can be paraphrased as “there is a degree  $d$ , to which  $x$  is at least as tall as  $d$ , and  $d$  exceeds the standard degree  $d_{s(G)}$  in a large extent”. Similarly, (37c) can be paraphrased as “there is a degree  $d$ , to which  $x$  is at least as tall as  $d$ , and  $d$  **far** exceeds the standard degree  $d_{s(G)}$ ”.

- (35) a. John is very pos<sub>1</sub> tall.

b.  $\llbracket \text{very} \rrbracket = \lambda P.[P] \quad \langle \langle e, t \rangle, \langle e, t \rangle \rangle$

- (36)  $\llbracket \text{pos}_1 \text{ tall} \rrbracket = \lambda x. \exists d [ \text{height}(x) \geq d \& d > d_{s(G)} ] \quad \langle e, t \rangle$

- (37) a.  $\llbracket \text{very pos}_2 \text{ tall} \rrbracket = \lambda P.[P](\llbracket \text{pos}_1 \text{ tall} \rrbracket)$

$= \lambda x. \exists d [ \text{height}(x) \geq d \& (d > d_{s(G)}) ] \quad \langle e, t \rangle$

b.  $\llbracket \text{very pos}_2 \text{ tall} \rrbracket = \lambda x. \exists d [ \text{height}(x) \geq d \& \text{very } (d > d_{s(G)}) ] \quad \langle e, t \rangle$

c.  $\llbracket (37b) \rrbracket = \lambda x. \exists d [ \text{height}(x) \geq d \& d >_{\text{very}} d_{s(G)} ]$

Given above analysis, it is observed that Mandarin non-simple positive forms present an identical semantics and syntax as English (33a) and (33b). Take positive forms with sentence final particle “a” as an example, (38a) has no degree modifiers and (38b) is modified by the degree adverb “hen<sub>2</sub>”. If the analysis from (35) to (37) is right, then (38a) and (38b) have a deep structure like (39a) and (39b), where “pos<sub>1</sub>” owns a lexical entry in (30b), and “hen<sub>2</sub>” resembles “very” in (35b). With these parallelisms in mind, the semantic meanings of (38a) and (38b) are represented as (40a) and (40b).

- (38) a. Mary gao a.

b. John hen<sub>2</sub> gao a.

*Non-simple positive forms.*

- (39) a. Bill pos<sub>1</sub> gao a.

b. Gorge hen<sub>2</sub> pos<sub>1</sub> gao a.

c. Lucy hen<sub>1</sub> gao.

- (40) a.  $\llbracket (38a) \rrbracket = \exists d [ \text{height}(\text{Mary}') \geq d \& d > d_{s(G)} ]$

b.  $\llbracket (38b) \rrbracket = \exists d [ \text{height}(\text{John}') \geq d \& d >_{\text{very}} d_{s(G)} ]$

Next, let's see the most disputable part in the field, Liu regards “pos<sub>1</sub>” in (39a) as an implicit “hen<sub>3</sub>” and equalizes “hen<sub>1</sub>” in (39c) as an overt instantiation of “pos<sub>1</sub>”. In the system of Liu (2010), no “pos” is adopted, but only “hen<sub>1</sub>” and “hen<sub>3</sub>” in different positive forms with a common semantic meaning. Liu's analysis unfortunately makes the problem more complex. “hen<sub>1</sub>” as the head of DegP cannot explain why it refutes to co-occur with other types of degree adverbs or measure phrases in (41a) and (41b). On the one hand, “hen<sub>2</sub>” as a degree adverb, it refutes other types of degree modifiers or measure phrases, see (41c) and (41d). But this restriction cannot extend to “hen<sub>1</sub>” because “hen<sub>1</sub>” is analyzed as a degree head not a degree adverb. On the other hand, DegP is universal to gradable adjectives in all positive forms, “hen<sub>1</sub>” as the equivalent of “pos” should be free to co-occur with degree adverbs or measure phrases, just like English “pos” and degree adverbs, “pos” and measure phrases. Since Liu assumes an

*pos in English,*

implicit “*hen*<sub>3</sub>”, he can rescue (41a) and (41b) by claiming that an implicit “*hen*<sub>3</sub>” is located in the middle of “feichang” and “gao” or “2 mi” and “gao”, i.e. (41e) and (41f). This rescuing strategy yet sounds too ad hoc because to explain why the explicit “*hen*<sub>1</sub>” refutes “feichang” and “2 mi” but the implicit “*hen*<sub>3</sub>” does not seems like a mission impossible.

- (41) a. \*John feichang *hen*<sub>1</sub> gao.
- b. \*John 2 mi *hen*<sub>1</sub> gao.
- c. \*John feichang *hen*<sub>2</sub> gao.
- d. \*John 2 mi *hen*<sub>2</sub> gao.
- e. John feichang *hen*<sub>3</sub> gao.
- f. John 2 mi *hen*<sub>3</sub> gao.

Moreover, if “*hen*<sub>3</sub>” equals to “pos” in semantics, the heights of A, B, C and D in (42a-d) with a sentence final particle can be ranged in a hierarchy as “height(D)>height(C)>height(B)> height(A)”. But when it comes to (42a’), (42b’), (42c’) and (42d’), without sentence final particle, the hierarchy built above cannot be approached because the height of A is impossibly lower than the height of B or C, which indicates a fact that “*hen*<sub>1</sub>” and “*hen*<sub>3</sub>” do not share a common semantic meaning, that is to say, “*hen*<sub>1</sub>” does not equal to “pos” in semantics. Besides, the hierarchy “height(D)>height(A)” can still be guaranteed.

- |  |                                    |
|--|------------------------------------|
| (42) a. A <i>hen</i> <sub>3</sub> gao a. | a’. A <i>hen</i> <sub>1</sub> gao. |
| b. B youdian gao a.                      | b’. B youdian gao.                 |
| c. C bijiao gao a.                       | c’. C bijiao gao.                  |
| d. D <i>hen</i> <sub>2</sub> gao a.      | d’. D <i>hen</i> <sub>2</sub> gao. |

The problems in (41) and (42) can be avoided by assuming “pos” occupy the head of DegP and “*hen*” maintains a degree adverb. Since “pos” is universal, (41a) and (41b) should have a deep structure like (43a) and (43b), where degree adverbs and measure phrases license the null nature of “pos”. It should be noted that descriptions like “simple positive forms require an obligatory ‘*hen*’” are not accurate enough to cover the role of degree adverbs or other phrases related to degrees. “feichang” in (43a) and “2 mi” in (43b) enjoy a same indispensable role as “*hen*” because of the licensing function.

- (43) a. John feichang pos<sub>1</sub> gao.  
 b. John 2 mi pos<sub>2</sub> gao.

In this sense, “*hen*” still maintains a role as a degree adverb, and its indispensability lies on the licensing function it exerts to the null “pos”, that is to say, simple positive forms with “*hen*” should have a deep structure like (44a) and (44b). As we discussed in (30b) and (32), “pos” and “very” present a high degree of similarity in semantics (i.e. the greater than relation between “d<sub>s(G)</sub>” and “high(d)” is fuzzy in terms of their lexical entries alone). Perhaps plus its monosyllable structure and high frequency in Mandarin, “*hen*<sub>2</sub>” is undergoing a process of grammaticalization with “*hen*<sub>1</sub>” as the result because “*hen*<sub>1</sub>” in (44a) is pronounced in lightened way and “*hen*<sub>2</sub>” in (44b) in a stressed or normal way. Meanwhile, the meaning of “*hen*<sub>1</sub>” is bleached as (44a) and (44b) express a hierarchy “height (John)> height (Mary)”. But these features cannot demonstrate that “*hen*<sub>1</sub>” has been

grammaticalized into the head of positive DegP.

- (44) a. Mary hen<sub>1</sub> pos<sub>1</sub> gao.  
b. John hen<sub>2</sub> pos<sub>1</sub> gao.

Finally, (42a'-d') should project a deep structure in (45a-d). According to their semantic intuitions, A, B, C and D present a hierarchy like "height(D)> height(A) > height(C) > height(B)", and it is observed that this hierarchy maintains a synchronization with the hierarchy of degree adverbs, i.e. "hen<sub>2</sub>>hen<sub>1</sub>>bijiao> youdian". To build up a hierarchy like (42a-d) in non-simple positive forms, (45a) must be transformed into a form like (45e), where "gao" is assigned a stress, and the stress indicates the existence of FocusP in CP layer. In the next section, the author will argue that certain functional projection in CP layer can bear a same function as degree adverbs to license the null "pos". With (45e), they present a hierarchy like "height(D)> height(C) > height(B) > height(E)".

- (45) a. A hen<sub>1</sub> pos<sub>1</sub> gao.  
b. B youdian pos<sub>1</sub> gao.  
c. C bijiao pos<sub>1</sub> gao.  
d. D hen<sub>2</sub> pos<sub>1</sub> gao.  
e. E pos<sub>1</sub> gao.

D > A > C > B  
hen<sub>2</sub> hen<sub>1</sub> bijiao youdian

Except for "hen", Mandarin positive forms also employ several other monosyllable degree adverbs, like "tai(too)", "man(very)", "lao(very)", "ting(comparatively)", etc. As shown in (46a-d), these degree adverbs share features like a monosyllable structure and a requirement on an obligatory occurrence of sentence final particles. Unlike "feichang(very)" and "tebie(extremely)", these degree adverbs allow no repetitive forms. A rudimentary conclusion can be inferred that "feichang" behaves more like a pure degree adverb, just like "very", but "hen" or "tai" may behave less like a pure degree adverb.

- (46) a. John tai gao le.  
John too tall SFP  
'John is too tall.'
- b. Mary man piaoliang de.  
Mary very pretty SFP  
'Mary is very pretty.'
- c. Bill lao shuai le.  
Bill very handsome SFP  
'Bill is very handsome.'
- d. Gorge ting congming de.  
Gorge comparatively smart SFP  
'Gorge is comparatively smart.'

No one has ever discussed whether these monosyllable degree adverbs should be categorized as degree heads or not, even the boundary between "feichang" and "hen" is still unclear. Next, the author will take "hen" and "feichang" as an example to explore the categorization of degree heads and degree adverbs. In a tradition of generative grammar, six criteria are concluded by scholars to define functional category (Abney, 1987; Ouhalla, 1991; An, 2012, etc.), which include: 1) a closed

*(on the category of complements)* lexical class; 2) have a categorial selection; 3) have no semantic selection; 4) have an affixal status; 5) inseparable from their complements; 6) lack descriptive content.

*cannot assign θ-role .  
↑ =cannot introduce an argument*

With these criteria, it is observed that the difference between “hen” and “feichang” is not absolute.

1) Firstly, no matter what kind of labels these morphemes carry, either degree adverbs or degree heads, they are closed in number, that is to say, the first criterion just cannot distinguish degree heads from degree adverbs. 2) Secondly, functional morphemes should project a selection requirement on the category of complements, just like  $C^0\text{-IP}$ ,  $I^0\text{-VP}$  and  $D^0\text{-NP}$ , then “hen”, “tai” or others as the head of DegP, they should have a categorial selection of AP (gradable adjectives). This criterion is hard to judge because “hen” does collocate with nouns, verbs and non-gradable adjectives, e.g. (47a), (47b) and (47c). However, this criterion can be rescued because these components actually lose their original status. “nanren (man)” in (47a) is no longer nominal but adjective with a new kind of meaning as “man-like” (cf. He&Jiang, 2011); “xihuan(love)” as a gradable verb highlights its gradable meaning in the case of (49b); The meaning of “zhen (authentic)” in (49c) also changes into something describing the degree to which the fake painting is authentic (cf. Luo, 2016). Although this criterion is rescued, it still fails to make a distinction between degree adverbs and degree heads. As seen in (48a) and (48b), neither “hen” nor “feichang” allows to occur with non-gradable verbs.

(47) a. John hen nanren.

John very man

‘John is very man’

b. John hen xihuan Mary.

John very love Mary

‘John loves Mary very much.’

c. zhe fu hua hen zhen.

the CL painting very authentic

‘The painting is very authentic.’

(48) a. \*John hen da lanqiu.

b. \*John feichang da lanqiu.

3) In the third place, functional morphemes cannot assign a theta role, that is to say, they cannot introduce an argument. This criterion is simultaneously respected by both “hen” and “feichang”. As for the fourth criterion, scholars (Wang, 1937; Lv, 1985; Zhang, 2008) argue that “hen” may behave like a prefix, facilitating to constitute a disyllabic word. As (49a) and (49b) show, “hen” must be overt when monosyllabic adjectives appear in the modifier position, while for disyllabic adjectives, “hen” is not obligatory. The question is “feichang” can rescue (49a) in the same way as “hen”.

(49) a. yi ge \*(hen)-gao de nanhai

one CL very tall de boy

‘a tall boy’

b. yi ge (hen)piaoliang de nvhai

one CL very pretty de girl

‘a beautiful girl’

It is not surprised that “hen” and “feichang” behave almost identical in the last two criteria. For the fifth one, “gao” in the answer of (50a) and (50b) cannot be dropped. But there is an exception, it seems that “feichang” alone can answer the question in (50b), so does “tebie(extremely)”. Except for “feichang” and “tebie”, other disyllable degree adverbs like “youdian(a bit)” or “bijiao (comparatively)” still refute to drop their complement, see (50c). Consequently, these two exceptions are not persuasive enough to cut off degree heads and degree adverbs. Finally, as “hen” and “feichang” bear the same function to modify the gap between the degree of subjects and the standard degree of context or speaker, they are less descriptive than content words like nouns, verbs and adjectives.

- (50) a. Q: John hen gao ma?  
           John very tall SFP  
           ‘Is John tall?’  
       A: \*John hen /\*hen.  
           John very/very  
           ‘\*John is very/?very’

- b. Q: John feichang gao ma?

A: \*John feichang/feichang.

- c. Q: John youdian/bijiao gao ma?

A: \*youdian/\*bijiao.

Zhang (2015) gives out two more pieces of evidence for the degree head status of “hen”. On the one hand, she argues that functional morphemes cannot pass the test of X-not-X questions and allow no deletion of AP complements, see (51a) and (52a). Similarly, “feichang” neither undergoes a X-not-X formation in (51b) nor licenses the deletion of AP complements in (52b). On the other hand, she deems the complement of “ba(BA, causative marker)” as a nominal exclusive position. If “hen” acts nothing but a degree adverb, it will not change the syntactic label of gradable adjectives. As shown in (53a), “chengshi(honest)” occurs at the complement of “ba”, but “hen chengshi(very honest)” fails to occur. In Zhang’s argument, this proves that “hen” changes the status of AP into DegP, which leads to the failure of (53b).

- (51) a. \*John hen-bu-hen gao?  
           John very-not-very tall  
           ‘Is John very tal or not very tall?’  
       b. \*John feichang-bu-feichang gao?

- (52) a. \*John hen gao, Bill ye hen.

John very tall, Bill also very  
           ‘\*John is very tall, Bill is also very.’

- b. \*John feichang gao, Bill ye feichang.

- (53) a. wo ba chengshi dangzuo yi zhong meide.

I ba honesty regard one CL virtue  
           ‘I regard honesty as a kind of virtue.’

- b. \*wo ba hen chengshi dangzuo yi zhong meide.

I ba very honest regard one CL virtue  
           ‘\*I regard very honesty as a knd of virtue.’

c. \*wo ba feichang chengshi dang zuo yi zhong meide.

Based on above two tests, all degree adverbs in positive forms will be boiled down to degree heads as “feichang” is confronted with the same failure as “hen”. Unfortunately, the illegitimacy of X-not-X and AP ellipsis is observed in (54a) and (54b), where VP “da lanqiu (play basketball)” is modified by frequent adverb “jingchang(often)”. In result, X-not-X and AP ellipsis are not solidary enough to distinguish functional morphemes from adverbs.

(54) a. \*John jingchang-bu-jingchang da lanqiu?

John often -not- often play basketball

‘Does John often play basketball, or not often plays basketball.’

b. \*John jingchang da lanqiu, Bill ye jingchang.

John often play basketball Bill also often

‘John often plays basketball, Bill also often.’

(55) a. ta ba ni de chengshi dangzuo xuwei.

he ba you de honesty regard hypocrisy

‘He regards your honesty as hypocrisy.’

b. John ba jingchang da lanqiu dangcheng yi zhong xiguan.

John ba often play basketball regard one CL habit

‘John regards often playing basketball as a habit.’

Additionally, it is doubted to attribute the failure of (53b, c) to the adjunct status of adverb phrases. According to Lv&Pan(2013), “chengshi (honest)” undergoes a syntactic operation of nominalization, where the adjective “chengshi(honest)” evolves into a nominal “chengshi (honesty)” and the latter refutes to be modified by adverbs in a natural way because adverbs cannot modify nominals. As (55a) shows the nominalized “chengshi(honesty)” can be modified by possessive phrases “ni de(your)”. For (55b), what “da(play)” undergoes is an operation of gerund instead of nominalization so that “da(play)” maintains its features as a verb, like taking objects, being modified by adverbs.

To recapitulate, no evidence is proved persuasive to discriminate “hen” from other adverbs, let alone the distinction between “hen” and other monosyllable degree adverbs. “hen” as the head of functional DegP is still lingering. By assuming a null positive morpheme “pos”, the indispensability of degree adverbs in positive forms is approached as the null morpheme in Mandarin always requires a licensing launched by certain types of adverbs, and same requirement is observed in simple verbal declaratives on a par with “Sentence Completion Requirement”. “hen” is undergoing a process of grammaticalization, featured with a lightened pronunciation and a bleached meaning, but judging from both syntactic and semantic aspects, it will be too hasty to equate “hen” with an overt “pos”.

## 5.5 Non-simple Declaratives

Based on above analysis, the dropping of degree adverbs in non-simple positive forms of (1)-(4) and the dropping of temporal adverbs in non-simple verbal declaratives of (8)-(11) can be illustrated under a uniform mechanism, i.e. the null

☆ 7.3.2

functional components must be licensed by higher projections pertinent to time or degree in syntax. All kinds of adverbs related to sentence completion are base-generated at the specifier of IP or DegP, or even higher, and they encode more or less degree factors and time factor in their lexical entries. For positive forms, degree adverb “feichang(very)”, measure phrase “2 mi(2 meters)”, negative adverb “bu(not)” are assumed to occupy the specifier of DegP, while for simple verbal declaratives, temporal word “mingtian (tomorrow)”, frequent adverb “jingchang(often)”, negative adverb “bu(not)” are assumed to occupy the specifier of IP. Affirmative adverb “queshi(indeed)” and focus adverb “cai(focus marker)” are special that the former is assumed to land at the specifier of ForceP (CP split hypothesis, Rizz, 1997) and the latter at the specifier of AP. In Mandarin, certain functional projections in the domain of CP, for instance, ForceP and FocusP, are able to license the null head of DegP/IP, though some of them appear null in syntax as well. “queshi(indeed)” and “cai(focus marker)” exactly belong to such a category for “queshi(indeed)” can be assumed to adjoin at the specifier of exclamatory ForceP and “cai(focus marker)” indicates the existence of a null FocusP in the domain of CP<sup>23</sup>. (The licensing effect launched by FocusP can be observed in cases where focalization is realized by focus auxiliary “shi(be)”, focus constructions as well as assigning a stress to gradable adjectives.) Furthermore, the licensing effect launched by ForceP is found in patterns like yes-no interrogatives with “ma”, wh interrogatives with “ne” as well as exclamatory sentences with “a”. Certain auxiliaries like “hui(can)” and “yao(will)” can license the null head of IP because they are assumed to generate at the projection higher than IP (IP split hypothesis, Pollock, 1989) and own a meaning related to time. Certain epistemic verbs such as “kua(praise)”, “xiao(deride)”, “xihuan(like)”, etc., are acknowledged to license the null DegP and IP in small clauses they select. Considering the indispensable function of Deg<sup>0</sup> and I<sup>0</sup> to the extra degree argument and time argument encoded respectively by gradable adjectives and verbs, it is inadvisable to assume small clause project into a schema with no DegP or IP (cf. Gu, 2007).

¶ Pondering the mechanism behind non-simple declaratives, it is time to probe into why “hen” in (12a) must appear overt, but in (13a) and (14a), it just can be deleted. For expository purpose, (12a), (13a) and (14a) are repeated as (56a), (56b) and (56c).

(56) a. John bushi \*(hen) gao. “不是” “是” pure auxiliary ; head of “shif”

- b. John pao de kuai. a natural stress => “focus”
- c. John xihuan Mary.

(57) a. John bushi laoshi.

John not be teacher

‘John is not a teacher.’

b. the duo hua bushi hong de.

this CL flower not be red de<sub>nominal marker</sub>

‘This flower is not red.’

c. \*John shi gao. (“shi” here functions to be a linking verb)

<sup>23</sup> The reason why ForceP and FocusP are able to license the null head of DegP and IP is worthwhile to studying, so do their semantic contributions to DegP and IP. We will keep it for future research.

(58) a. \*John mingtian xihuan Mary.

John tomorrow like Mary

\*John will like Mary tomorrow.'

b. \*John jingchang xihuan Mary.

John often like Mary

\*John often likes Mary.'

Start from the negative compound "bushi(not be)". As shown in (57a) and (57b), "shi(be)" as an auxiliary is adopted to constitute nominal predicates, where both "laoshi(teacher)" and "hong de (red de)" present a  $\langle e, t \rangle$  type function. "shi(be)" thus selects a phrase typed  $\langle e, t \rangle$  but it expresses a vacuous meaning in semantics, i.e. "shi(be)" only undertakes a linking function. It differs from auxiliaries like "hui(can)" or "yao(will)" in encoding no modal meanings or temporal meanings in its lexical entry. The neutral meaning of "shi(be)" gets borne out via the failure of (57c), where gradable "gao(tall)" carries a degree variable that need be deleted, but the auxiliary "shi(be)" fails to offer such a restriction, so that a semantic crash becomes unavoidable. "bu(not)" in the case of (56a) is no longer an adverb but a negative morpheme combining with "shi(be)" in lexicon, occupying the head position of *shiP*. The compound "bushi(not be)" maintains the quality of "shi(be)", and launches no restriction over the degree variable of "gao(tall)", and thus it exerts no licensing effect to the null "pos" in syntax. Consequently, "hen" or other degree adverbs must appear overt to "complete" the sentence.

(56b) is rescued for monosyllable "kuai(fast)" obtains a stress in a natural way, and the existence of stress indicates a focus projection in the domain of CP, homogeneous mechanism observed in the case of (2c). Similarly, the oddness arising from "Mary da ban de piaoliang(Mary dresses beautifully)" can be eliminated by artificially placing a stress on "piaoliang(beautiful)".

Finally, the static verbs like "xihuan(like)", "taoyan(hate)" behaves more like gradable adjectives than verbs in the collocation with temporal words and degree adverbs. (56c), as a simple verbal declarative, refutes to be modified by any temporal words, e.g. both (58a) and (58b) are failed. (56c), on the contrary, allows the modification from degree adverbs but it does not require them to "complete" sentences. To explain the particularity, "xihuan(like)" is rendered as a special type of gradable predicates, differing from gradable adjectives, which compulsorily encode a degree variable into their lexical entries. Judging from the meaning of "xihuan(like)", it highlights a state, while for which, time or degree becomes an optional factor to its meaning. In this sense, "xihuan(like)" resembles nominal predicates, denoting a type simplified as " $\langle e, \langle e, t \rangle \rangle$ ", no compulsory time variables or degree variables being settled. Just like cases in (57a) and (57b), they require no adverbs to complete sentences because there is nothing in their lexical entries stopping the combination of "shi laoshi(be a teacher)" and "John", as they present a perfect match between type  $\langle e, t \rangle$  and type  $e$ . The optional status of time factors is manifested in the expression that "John guoqu shi laoshi(John was a teacher once)" and "John guoqu xihuan Mary(John liked Mary once)". The optional status of degree factors is evidenced by "John hen xihuan Mary(John likes Mary very much)".

Therefore, the legitimacy of (56c) without adverbs traces back to the uniform mechanism behind why non-simple declaratives allow adverbs to drop. Event verbs (in contrast with static verbs) and gradable adjectives (in contrast with non-gradable adjectives) respectively encode an obligatory time or degree variable in their lexical entries, whose existence prevents subjects from combining with predicates in a direct way, so that to assume a functional IP or DegP in the domain of IP layer becomes indispensable, bearing the function to delete the extra time or degree argument. The null nature of present tense and positive degree is undesirable for natural languages so that English and Mandarin by themselves develop out a mechanism to license these two null components, for English an overt agreement system is utilized and for Mandarin overt degree adverbs or functional projections in CP layer are employed. Since static verbs encode no compulsory time or degree variable, the indispensable  $I^0$  or  $Deg^0$  becomes dispensable so that an empty IP or DegP is assumed and the empty position naturally requires no adverbs or others to license it.

Conclusion:

it's positive degree 程度  
+ overt agreement  
system in English  
why?