An exploration of the object placement issue of three categories of
***buyu*-structures in Mandarin**

by

Hang Cheng

Supervised by

Prof. Rint Sybesma

MA thesis of Chinese Linguistics,

Leiden University

August, 2016

Abstract

This thesis provides a syntactic explanation of the object placement issue of three *buyu*-structures, i.e. resultative *buyu*-structure, degree *buyu*-structures and potential *buyu*-strucutres, by re-examining their syntactic structures respectively.

As a result, the reason why no object is allowed in the degree *buyu*-structure is ascribed to another projection occupying the complement position of V, which never moves up. On the contrary, without the extra projection, resultative and potential structures display a simpler sentence formation: [NP+VP+NP], where the second NP looks like the object of a sentence. However, contraints on the syllable numbers of the resultative *buyu* dues to the existence of vP in transitive resultative *buyu*-structures, and v^0 cannot take a huge chunk, which reflects the crucial property of the so-called 'light verb' ------ LIGHT.

Apart from solving this object placement issue, the current study also applies Xuan's (2008, 2011) TelicP Hypothesis to the analysis of both degree constructions and potential forms, revising Sybesma's (1999) Small Clause analysis in several aspects. A relative unified skeleton of these three *buyu*-structures is built:

$[_{vP} [_{v'} v [_{AspP} [_{Asp'} Asp [_{Mod2P} [_{Mod2'} Mod2 [_{TelP} [_{Tel'} Tel [_{VP} [_{V'} V (…)]]]]]]]]]]$

The derivations of these three categories of *buyu*-structures also share some common processes. First, the main verb moves up to Tel^0 to check its telic feature and incorporates with *buyu*; then the combination of [V+*buyu*] moves up to inner Asp^0 or Mod^0. For resultative *buyu*-structures, there is no inner ModP, thus the movements within vP are V-to-Tel^0 movement and then Tel^0-to-Asp^0 movement. If the structure is transitive, one more operation is applied: an Asp^0-to-v movement or an insertion of *ba*. For degree *buyu*-structures, a DegP occupies the complement position of the main verb to predicate on the main verb, denoting the degree property of a verbal event. The Tel^0 is filled with *de* and the main verb moves up and incorporates with *de*. In transitive structures, the combination of [V-*de*] further moves up to v. For potential *buyu*-structure, *de* occupies $Mod2^0$, and no inner AspP is involved. Similarly, the main verb moves up and incorporates with *buyu* first, and then their combination moves up to $Mod2^0$ and incorporates with potential *de*. Lastly, the incorporated potential construction would further moves up to $Mod1^0$ at IP domain to fully realize the potential modality.

Acknowledgements

Content

An exploration of the object placement issue of three categories of *buyu*-structures in Mandarin

1. The Issue

The complex post-verbal structures in Mandarin Chinese are always interesting yet controversial issues. Traditionally, those post-verbal non-nominal elements (excluding aspectual markers, e.g. *-le* 了, *-zhe* 着, *-guo* 过 etc.) are labelled as *buyu* 补语 to indicate their supplementary functions. The term '*buyu*' is also used in many literatures to mention the combination of the verb and post-verbal elements. Syntactically, these additional elements have a unified surface position ------ immediately following the verb; however, most of them cannot be analyzed as the sister node of the Head, i.e. COMPLEMENT. Semantically, nonetheless, the interpretations of these post-verbal elements vary, e.g. expressing result, possibility, degree, state, direction, time, number, etc. (Zhu 1982, Wang 1994). In the current study, for clearness and convenience, I will use the traditional term *buyu* to denote all those non-nominal post-verbal elements regardless of their semantic properties, avoiding mixing up with the terminology 'Complement' in generative syntactic theories. In addition, the term *buyu* is only used to mention those post-verbal elements in this thesis, and the combination of a verb plus its post-verbal element is labeled as '*buyu*-structure'. The specific meanings of varied *buyu* or *buyu*-structures will be denoted by adding extra modifiers, for instance, degree *buyu*, directional *buyu*, potential *buyu*-structure etc.

Zhu (1982) once made clear distinctions among three categories of *buyu*-structures: resultative *buyu*-structure (*Jieguo Buyu* 结果补语 in Chinese), potential *buyu*-structure (*Keneng Buyu* 可能补语 in Chinese) and state *buyu*-structure (*Zhuangtai Buyu* 状态补语 in Chinese). According to Zhu's categorization, there is an obvious distinction between resultative *buyu*-structure and both of the state and potential *buyu*-structure that an extra morpheme *-de* 得 is inserted between the main verb and the so-called *buyu* part in potential *buyu*-structure and state *buyu*-structure whereas no *-de* is there in resultative *buyu*-structure. For instance,

(1) a. 张三打哭了李四。   *resultative buyu-structure*

    Zhangsan   da-ku   le   Lisi.

    Zhangsan   beat-cry   ASP   Lisi

    'Zhangsan made Lisi cry by beating him.'

   b. 张三打**得**哭李四。   *potential buyu-structure*

    *Zhangsan   da-**de**-ku   le   Lisi.*

    Zhangsan   beat-DE-cry   ASP   Lisi

    'Zhangsan can make Lisi cry by beating him.'

   c. 张三打**得**李四哭了一下午。   *state buyu-structure*

    *Zhangsan   da   **de**   Lisi   ku   le   yi   xiawu.*

    Zhangsan   beat   DE   Lisi   cry   ASP   one   afternoon

    'Zhangsan beat Lisi (so harsh that it) made Lisi have been crying for the whole afternoon.'

Distinctions between potential *buyu*-structure and state *buyu*-structure mainly lie in two aspects. On one hand, the potential *buyu*-structure emphasizes the possibility of a result of the verbal event being realized or a state being achieved, for instance, *chi-de-bao* 'can feel being full after eating', or *pao-de-kuai* 'can run fast', *chi-bu-bao* (*bu* marks the negation) 'cannot feel being full after eating' or *pao-bu-kuai* 'cannot run fast'; state *buyu*-structure describes the state or manner of the verb, for instance, *pao-de-kuai* 'run fast'. On the other hand, the stress of potential *buyu*-structure lays on the verb; whereas in the state *buyu*-structure, the stress lays on the *buyu* part. In terms of -*de*, though bearing a neutral tone in both structures, -*de* in potential *buyu*-structure is more stressed yet -*de* in state *buyu*-structure is much weaker.

Return to resultative *buyu*-structure, it reports the result of a verbal event, for instance, *chi-bao* 'eat and then be full'. In many scholars' systems (Huang 1988, Li 1990, 1995, 1999, Huang *et al* 1997; among others), such a structure is labeled as 'resultative compound' because the combination of the main verb and the result-denoting part is so coherent that it behaves like a compound. The state *buyu*-structure in Zhu's categorization is also analyzed as a complex or phrasal form of resultative compounds because a state or a degree is considered as a kind of result as well. For instance, *da-ku* 'beat-cry' in (1a) is a resultative compound, in which *da* 'beat' is the main verb and *ku* 'cry' denotes the result of beating. (1c), on the contrary, represents a phrasal structure with the insertion of -*de*. The fact that Lisi has been crying for the whole afternoon also represents the result of 'Zhangsan's beating'. However, I will label the

'phrasal structure' as 'degree *buyu*-structure' in the current study for reasons to be shown in the following sections.

Apart from above distinctions, an interesting pattern among those three structures has rarely been delved into. On one hand, no objects can appear in degree *buyu*-structures; on the other, there is a constraint on the number of syllables of resultative *buyu* when an object follows. Examples are illustrated in (2-7). All (a) sentences are resultative *buyu*-structures; all (b) sentences are potential *buyu*-structures; and all (c) sentences are degree (state) *buyu*-structures.

I. *When buyu is monosyllabic:*

(2) a. 我洗**净**了衣服。

    *Wo   xi-**jing**   le   yifu.*

    I   wash-clean ASP   cloth

    'I washed the clothes clean.'

  b. 我洗得**净**衣服。

    *Wo   xi   de   **jing**   yifu.*

    I   wash DE   clean   cloth

    'I can wash the clothes clean.'

  c. *我洗得**净**衣服。

    *Wo   xi   de   **jing**   yifu.*

    I   wash DE   clean   cloth

    'I washed the clothes and the clothes became clean.'

(3) a. 我叠**齐**了衣服。

    *Wo   die-**qi**   le   yifu.*

    I   fold-neat ASP   cloth

    'I folded the clothes neatly.'

  b. 我叠得**齐**衣服。

    *Wo die de   **qi**   yifu.*

    I   fold DE   neat   cloth

    'I can fold the clothes neatly.'

  c. *我叠得**齐**衣服。

    *Wo die de   **qi**   yifu.*

    I   fold DE   neat   cloth

    intended:

'I folded the clothes and the clothes were folded neatly.'

II. *When buyu is disyllabic:*

(4) a. ?我洗**干净**了衣服。

     *Wo   xi-**ganjing**   le   yifu.*

     I   wash-clean   ASP   cloth

     'I washed the clothes clean.'

  b. 我洗得**干净**衣服。

     *Wo xi   de   **ganjing**   yifu.*

     I wash DE   clean   cloth

     'I can wash the clothes clean.'

  c. *我洗得**干净**衣服。

     *Wo xi   de   **ganjing** yifu.*

     I wash DE   clean   cloth

     'I washed the clothes and the clothes became clean.'

(5) a. *我叠**整齐**了衣服。

     *Wo   die-**zhengqi**   le   yifu.*

     I   fold-neat   ASP   cloth

     'I folded the clothes neatly.'

  b. 我叠得**整齐**衣服。

     *Wo die   de   **zhengqi**   yifu.*

     I   fold DE   neat   cloth

     'I can fold the clothes neatly.'

  c. *我叠得**整齐**衣服。

     *Wo die   de   **zhengqi**   yifu.*

     I   fold DE   neat   cloth

     'I folded the clothes and the clothes were folded neatly.'

III. *When buyu contain more than two syllables:*

(6) a. *我洗**干干净净**了衣服。

     *Wo xi-**ganganjingjing**   le   yifu.*

     I   wash-clean   ASP   cloth

     'I washed the clothes clean.'

  b. ?我洗得**干干净净**衣服。

     *Wo xi   de   **ganganjingjing** yifu.*

　　　　I   wash   DE   clean   cloth

　　　　'I can wash the clothes clean.'

　　c. *我洗得<u>**干干净净**</u>衣服。

　　　　*Wo   xi   de   **ganganjingjing**   yifu.*

　　　　I   wash   DE   clean   cloth

　　　　'I washed the clothes and the clothes became clean.'

(7) a. *我气**<u>嚎啕大哭</u>**了他。

　　　　*Wo   qi-**haotaodaku**   le   ta.*

　　　　I   annoy-cry.aloud   ASP   he

　　　　'I annoyed him and he cried aloud.'

　　b. ?我气得**<u>嚎啕大哭</u>**他。

　　　　*Wo   qi   de   **haotaodaku**   ta.*

　　　　I   annoy   DE   cry.aloud   he

　　　　'I can annoy him and cry aloud.'

　　c. *我气得**<u>嚎啕大哭</u>**他。

　　　　*Wo   qi   de   **haotaodaku**   ta.*

　　　　I   annoy   DE   cry.aloud   he

　　　　no proper intended interpretation

First, the occurrence of objects in resultative *buyu*-structures conforms the constraints on the number of syllables (cf. Dong 1998; Deng *et al* 2008; Feng 2013; Xiong 2013). The acceptability of sentences declines from (2a) to (7a) with the increase of the number of syllables of *buyu*. To be specific, in (2a) and (3a), the *buyu*s are monosyllabic and the sentences are well accepted[1]. In (4a) and (5a), the *buyu*s are disyllabic words and the sentences are not so good; yet (4a) is much better than (5a) for the second character of the *buyu* in (4a) bears a neutral tone. In (6a) and (7a), the *buyu*s consist of more than two syllables and they are completely unacceptable. Secondly, the objects can be free to appear after potential *buyu*, when the number of syllables is not too big, e.g. (2b), (3b), (4b) and (5b). Whereas, if the *buyu* consists of too many syllables, for instance, four syllables in (6b) and (7b), those sentences would be much less natural. Third, no object is allowed in degree (state) *buyu*-structures,

---

[1] I must clarify it that, in fact, neither sentences containing *xi-jing* nor sentences containing *die-qi* are perfectly accepted among Mandarin natives. What I am trying to do here is to avoid the semantic variations between monosyllabic and disyllabic adjectives and to formulate minimal pairs. However, it is not an easy work since few pairs are qualified if we go through the lists of the most common-used words in *buyu*-structures (Chao 1968, Zhu 1982) or four hundred most common-used adjectives in Beijing Mandarin (Hu 1987). The bottom line is that monosyllabic adjectives are much easier and more common to be *buyu* than disyllabic ones. The reason why *xi-jing* and *die-qi* are not perfect is not quite clear to me now, which may relate to the differences between spoken and written languages. Even so, it should be a matter of token, which won't affect the whole pattern of the type.

regardless of the number of syllables of *buyu*, e.g. all (c) sentences in (2-7). In other words, if there is a grammatical *buyu*-structure with the appearance of *-de* as well as an object immediately following [V+*de*+*buyu*], only potential reading can be generated. However, for all the unacceptable degree *buyu* sentences in (2-7), if we move the objects to the sentence initial position, or introduce verb-copying or the *ba*-construction (a causal structure), those sentences are rescued. For example, *yifu die (-de) zhengqi (le), wo ba yifu die (-de) zhengqi (le)* and *wo die yifu die (-de)-zhengqi (le)* 'I folded the clothes neatly'[2] are all quite well-formed sentences.

Contradictions exist among existing explanations. On one hand, from a traditional perspective, *buyu* modifies the verb and affixes to the main verb (that's also the reason why such a constituent is called *buyu*) without altering the argument structure of the verb, even if *-de* is inserted. If so, all three categories of the structures should allow objects to occur after the *buyu*, when the verb is transitive. Consequently, since *xi* 'wash' or *die* 'fold' in (2-6) are both transitive verbs, objects should occur in all cases, constituting the formula [V(+*de*)+*buyu*+O]. In fact, even if we admit that the presence or absence of *-de* won't affect the argument structure, the insertion of *-de* may bring about other consequences which will in turn lead to the distinctive patterns of the occurrence of objects in resultative *buyu*-structure and degree *buyu*-structure. For instance, following Simpson's Law that 'resultative attributes are predicated of objects, whether surface objects or underlying objects' (Simpson 1983: 144, cited from Sybesma 1999), Sybesma's (1992, 1999) Small Clause Analysis argues that the so-called 'objects' in Mandarin resultative structures are subjects in the small clauses as well. Normally, *buyu* (the result-denoting element) moves up to incorporate with the verb and then they move up together. Eventually, the subject of the small clause is left behind, appearing as an object. When *buyu* cannot be incorporated with the verb, *-de* needs to be inserted and the predicate in the small clause does not move. Hence, the NP in the small clause stays at the subject position and no surface objects in that structure. In this sense, Small Clause Analysis explains the object occurrence issue between the resultative *buyu*-structure and the degree *buyu*-structure without claiming the appearance of *-de* will change the argument structure. However, simply adopting the Small Clause analysis fails to explain why potential *buyu*-structure and degree *buyu*-structure have such opposite patterns, since both of them have *-de*. Moreover, the constraint on the number of syllables of *buyu* in resultative *buyu* structure also remains a question.

---

[2] Potential readings are also possible for those sentences except for the *ba*-construction.

On the contrary, if we take Phrase Structure Condition or Lexical Integrity (Huang 1984) into consideration, it is not allowed when two constituents follow one verb. In other words, if *buyu* comes after the verb, nothing can follow the *buyu*. Thus, none of those *buyu* could precede an object. The contradiction here suggests that a better explanation should be given beyond above arguments, though those arguments still worth considering.

This issue relates to many interesting yet crucial topics within Chinese Linguistics, whereas I will attribute the distinctions in the syntactic structures as the fundamental explanations of the questions. In addition, considering the fact that research on the structures of those three categories of *buyu*-structures do not receive equal attention, an examination of structures of all three categories is quite necessary. As the core part of this thesis, the syntactic features of the three categories of *buyu*-structures will be discussed one by one in Section 2. To be specific, section 2.1 discusses previous studies on resultative *buyu*-structure; section 2.2 revises one existed proposal of degree *buyu*-structure based on discussions in section 2.1; section 2.3 deals with the potential *buyu*-structure; and lastly 2.4 presents an interim summary of the structures of all three categories of *buyu*-constructions. Based on the structures proposed in Section 2, I could return to and focus on the object placement issues in Section 3: section 3.1 provides the answer to the question why degree *buyu*-structure does not allow objects; section 3.2 focuses on the syllable number constraints of resultative *buyu*-structure and potential *buyu*-structure. Finally, Section 4 serves as a conclusion.

2. Structures

2.1 Resultative *buyu*-structure

The resultative *buyu*-structure, or '*jieguo buyu*' defined by Zhu (1982) or resultative VV compounds in many literatures, has three basic features (Williams 2014): 1) the aspectual suffix *-le* only attaches to the right of the second verbal element; 2) separation of two verbs by a noun is impossible; 3) no adverb can combine with the second verbal element. To cover all of those facts, several researchers propose that the Mandarin resultatives are lexical items, i.e. VV compounds, rather than the productions of syntactic operations (Huang 1988; Li 1990, 1995, 1999; Huang *et al* 1997). The lexical approach works neatly and conveniently. However, those

resultative compounds are so productive and regular nowadays that they should share same inner structures, which could be enumerated by syntactic operations. Otherwise, all tokens of Mandarin resultatives needs to be stored in the lexicon. In addition, as Xuan (2011) has pointed out, diachronically, those so-called "compounds" were not always there in Chinese languages. From a grammaticalisational perspective, "Today's morphology is yesterday's syntax" (Givon 1971), hence the syntactic approach is also justified.

Sybesma (1992, 1999) proposes a very convincing syntactic analysis on Mandarin resultatives. The analysis basically parallels with Hoekstra's system (Hoekstra 1988, 1990; cited from Sybesma 1999) which deals with resultative structures in English and Dutch. He assumes that the main verb refers to an atelic verbal event; and a small clause taking the verb within XP (i.e. *buyu*) as predicate denotes the result of the event. To be more specific, there are two conditions[3] with slight distinctions in the process of derivation. The underlying structures are presented in (8).

(8) Proposed underlying structures of Mandarin resultatives

    a. *Transitive result structures*

       NP_1 [$_{vP}$ v [$_{VP}$ V [$_{SC}$ NP_2 XP]]]

    b. *Intransitive result structures*

       e [$_{VP}$ V [$_{SC}$ NP XP]]

In (8b), there is only one NP, which is base-generated as the subject of the small clause, and it only has thematic relation with *buyu* yet no relation with the main verb. This NP needs to move out of the small clause to [Spec, VP] to check its nominal features, and two verbal elements will incorporate. As a result, we get the linear order of [NP+V+*buyu*]. In (8a), there are two NPs, and a higher layer of *v*P is introduced to be in charge of the transitivity. Another NP merges at [Spec, *v*P] as a causer. The *v* head could be phonetically realized with an insertion of the causal morpheme *ba* 把 'make', or with the movement of the incorporated compound from V^0 to v^0.

This analysis reaches a relatively unified structure and explanation of Mandarin resultatives, and it could also take care of all the three features Williams (2014)

---

[3] Originally, there are three conditions in Sybesma's (1999) conclusion. I changed a bit here, as well as (23) in section 2.2.2, according to a more recent diagram in Sybesma & Shen's (2006). First, a *v*P layer is added and it serves as the functional projection of both transitive and causative occasions, which are separated in Sybesma (1999). Second, I added the number to distinguish two NPs, when there are two in the structures, for the convenience of elaborating the system.

mentions. In addition, it builds the relationship between resultative compounds and their *-de* construction counterparts, as well as *ba*-construction. First, the alternation between resultative compounds and *-de* construction relates to the process of movement and verbal incorporation at V^0. To form a resultative compound, *buyu* in XP moves and incorporates with the main verb; whereas when the *buyu* cannot incorporate with the verb, for instance, it is modified by adverbs or it is a clause *per se*, a dummy *-de* is inserted and no movement and incorporation work on *buyu*. Therefore, the distinctions between resultative compounds and the *-de* construction in the surface linear word order as well as the similarity of their semantic interpretations can both be explained. Second, the relation between transitive resultative compounds, i.e. (8a), and the corresponding *ba*-construction builds at v^0. The insertion of *-ba* is regarded as one option in the insertion-or-movement alteration of fulfilling the *v* head. However, as Sybesma (in class) has pointed out, there is a word order problem with this analysis, as illustrated in (9).

(9) a. *intended sentence:*

小红哭湿了手绢。

Xiaohong   ku-shi   le   shoujuan.

Xiaohong   cry-wet   ASP   handkerchief

'Xiaohong cried and the handkerchief got wet.'

b. *underlying structure:*

[$_{vP}$ Xiaohong [$_{v'}$ *v* [$_{AspP}$ [$_{Asp'}$ le [$_{VP}$ [$_{V'}$ ku [$_{SC}$ shoujuan shi]]]]]]]

c. *the result after incorporation of V and buyu:*

[$_{vP}$ Xiaohong [$_{v'}$ *v* [$_{AspP}$ [$_{Asp'}$ le [$_{VP}$ [$_{V'}$ **shi$_i$-ku** [$_{SC}$ shoujuan t$_i$]]]]]]]

d. *the result after movement to Asp:*

[$_{vP}$ Xiaohong [$_{v'}$ *v* [$_{AspP}$ [$_{Asp'}$ **shi$_i$-ku$_j$-le** [$_{VP}$ [$_{V'}$ t$_j$ [$_{SC}$ shoujuan t$_i$]]]]]]]

We can see that when the *buyu*, i.e. *shi* 'wet' in this case, moves up to V^0 to get incorporated into the main verb, an incorrect word order, i.e. *shi-ku* in this case, rather the correct order *ku-shi*, yields.

Xuan (2008, 2011) puts forward a 'TelicP' hypothesis. This analysis in fact provides a solution to this word order problem. More importantly, by hypothesizing a functional projection 'TelicP' (TelP for short), her structure clearly presents the property of *buyu* that it gives an ending point to the verb and also includes Mandarin event structures

into typological universals of presenting telic events. To be specific, the *buyu* in resultative structures projects a TelP. The NP$_2$ in (8a), which is the subject of small clause and also surface 'object' in the whole resultative sentences, serves as an argument of *buyu*, occupying the Spec position of TelP. The structure is presented in (10), and (11) shows the derivation of one sentence.

(10) *The structure of resultatives with a TelP* (Xuan 2011: 72)

   [$_{vP}$ [$_{v'}$ v [$_{AspP}$ [$_{Asp'}$ Asp [$_{TelP}$ [$_{Tel'}$ Tel [$_{VP}$ [$_{V'}$ V PP]]]]]]]]

(11) *The derivation of (9a):*

   小红哭湿了手绢。

   Xiaohong   ku-shi   le   shoujuan.

   Xiaohong   cry-wet   ASP   handkerchief

   'Xiaohong cried and the handkerchief got wet.'

   a. *underlying structure:*

   [$_{vP}$ Spec [$_{v'}$ v [$_{AspP}$ [$_{Asp'}$ Asp [$_{TelP}$ Spec [$_{Tel'}$ Tel [$_{VP}$ [$_{V'}$ V]]]]]]]]

     Xiaohong   le   shoujuan   shi   ku

   b. *first step: V-to-Tel movement*

   [$_{vP}$ Xiaohong [$_{v'}$ v [$_{AspP}$ [$_{Asp'}$ le [$_{TelP}$ shoujuan [$_{Tel'}$ ku$_i$-shi [$_{VP}$ [$_{V'}$ t$_i$]]]]]]]]

   c. *second step: Tel-to-Asp movement*

   [$_{vP}$ Xiaohong [$_{v'}$ v [$_{AspP}$ [$_{Asp'}$ ku$_i$-shi$_j$-le [$_{TelP}$ shoujuan [$_{Tel'}$ t$_j$ [$_{VP}$ [$_{V'}$ t$_i$]]]]]]]]

   d. *third step: Asp-to-v movement*

   [$_{vP}$ Xiaohong [$_{v'}$ ku$_i$-shi$_j$-le$_k$ [$_{AspP}$ t$_k$ [$_{Asp'}$ ku$_i$-shi$_j$-le [$_{TelP}$ shoujuan [$_{Tel'}$ t$_j$ [$_{VP}$ [$_{V'}$ t$_i$]]]]]]]]

As presented in (10), the correct linear order is generated. I leave aside further feature-checking operations in higher layers for now since they will not alter the word order or change the property of denoting an ending state of TelP.

When *ba* is inserted at *v*, the first step and the second step are same, but the further Asp-to-*v* movement is omitted.

(12) 小红把手绢哭湿了。

   Xiaohong   ba   shoujuan   ku-shi   le.

   Xiaohong   BA   handkerchief   cry-wet   ASP

   'Xiaohong made the handkerchief wet by crying.'

   a. *underlying structure:*

[*v*P Spec [*v'* *v* [AspP [Asp' Asp [TelP Spec [Tel' Tel [VP [V' V]]]]]]]]

 Xiaohong BA   le   shoujuan shi   ku

b. *first step: V-to-Tel movement*

[*v*P Xiaohong [*v'* ba [AspP [Asp' le [TelP shoujuan [Tel' ku$_i$-shi [VP [V' t$_i$]]]]]]]]

c. *second step: Tel-to-Asp movement*

[*v*P Xiaohong [*v'* ba [AspP [Asp' ku$_i$-shi$_j$-le [TelP shoujuan [Tel' t$_j$ [VP [V' t$_i$]]]]]]]]

In addition, the derivation of intransitive sentences is also similar.

(13) 手绢哭湿了。

Shoujuan   ku-shi   le.

handkerchief   cry-wet   ASP

'The handkerchief got wet because someone cried.'

a. *underlying structure:*

[AspP [Asp' Asp [TelP Spec [Tel' Tel [VP [V' V]]]]]]

            le   shoujuan   shi   ku

b. *V-to-Tel movement*

[AspP [Asp' le [TelP shoujuan [Tel' ku$_i$-shi [VP [V' t$_i$]]]]]]

c. *second step: Tel-to-Asp movement*

[AspP [Asp' ku$_i$-shi$_j$-le [TelP shoujuan [Tel' t$_j$ [VP [V' t$_i$]]]]]]

Sybesma (in class) renames Xuan's TelP as another inner AspP (Asp*P) between *v*P and VP and proposes one more layer of inner AspP (Asp#P) between the AspP and TelP in Xuan's structure. According to this diagram, lexical *buyu* projects the lowest AspP (Asp*P); more grammaticalized result *buyu*, like *diao* 掉, *wan* 完, *zhu* 住, etc., projects the middle AspP (Asp#P); and the highest AspP is projected by the completely grammaticalized element *le*, as illustrated in (14).

(14) [*v*P[*v'* *v* [AspP[Asp' Asp [Asp#P[Asp#' Asp# [Asp*P[Asp*' Asp* [VP[V' V PP]]]]]]]]]]]

The structure in (14) further presents the distinctions as well as the similarity between 'regular' verbal resultatives, the group of grammaticalized *buyu* including *diao, wan* and then aspectual marker *le*.

Nonetheless, in the previous Small Clause analysis, the word incorporation and *-de*

insertion are alternatives; this newly revised diagram has not included the analysis of -*de* structure yet. In fact, semantically, -*de* plus all the constituents following it also provides an ending point of the verbal event and denote the telic status. Therefore, they should be treated as the TelP/Asp*P as well, but how to structuralize that, especially when the constituent following -*de* is quite complicated? In addition, one of Xuan's contributions on this issue is that her hypothesis takes care of typological universals of telic structures and presents the grammaticalization and analyticalization from ancient Chinese to contemporary Mandarin. However, the structure [V+*de*+*buyu*] in fact existed in history, though not a long period (from middle Tang Dynasty to Song Dynasty); and is believed to have been assimilated by [V+*buyu*] structure and to have lost the morpheme -*de* (or -*de* has undergone further grammaticalization to null form (Jiang and Cao 2005)). So whether we should include -*de* structure in the diagram in (12) or not? If so, again, how to structuralize that? If not, however, how to explain the syntactic and semantic similarities between -*de* structures and resultative compounds?

2.2 Degree *buyu*-structure

In this section, I will only discuss the -*de* structure with the interpretations of degree, state, or result; I leave the potential structure to the next section.

2.2.1 Basic Data

One typical feature of the so-called degree (state/manner) *buyu*-structure is that a morpheme -*de* 得 is inserted between the verb and the following constituents. For now, I will put aside the controversial names of 'resultative', 'degree', 'state', or 'manner' for a while and do not distinguish their semantic disparities. However, "the presence/ absence of *de*, which (to some native speakers at least) has no effect on the semantics" (Sybesma 1999: 18); also only when "the embedded head is preceded by a modifier", when "the embedded predicate has undergone reduplication", or when "the result denoting part is a sentence" (Sun 1987: 46-47), the insertion of *de* is obligatory. In addition, no aspectual element can appear between the verb and *de* (e.g. (15b)), or after *de* (e.g. (15c)).

(15) a. 他笑得肚子疼了半天。

    Ta   xiao   de   duzi   teng   le   bantian.

    3.SG   laugh DE belly hurt ASP   a while

'He laughed and his belly hurt a lot for a long time.'

b.*他笑了得肚子疼了半天。

Ta   xiao   le   de   duzi   teng   le   bantian.

3.SG   laugh   ASP   DE   belly   hurt   ASP   a while

'He laughed and his belly hurt a lot for a long time.'

c.*他笑得了肚子疼了半天。

Ta   xiao   de   le   duzi   teng   le   bantian.

3.SG   laugh   DE   ASP   belly   hurt   ASP   a while

'He laughed and his belly hurt a lot for a long time.'

As to the constituent following *de*, it can be a single adjective (e.g. (16)), duplication form of an adjective (e.g. (17)), an adjective or verb plus *le* (e.g. (18)), or a tensed sentence with varied structures (e.g. (19)).

(16) a. 他跳得高。

     Ta   tiao   de   gao.

     3.SG   jump   DE   high

     'He jumps high.'

     b. 他吃得多。

     Ta   chi   de   duo.

     3.SG   eat   DE   a lot

     'He eats a lot.'

(17) a. 他跳得高高兴兴的[4]。

     Ta   tiao   de   gaogaoxingxing   de.

     3.SG   jump   DE   happy   DE

     'He jumped happily.'

     b. 他洗得干干净净的。

     Ta   xi   de   ganganjingjing   de.

     3.SG   wash   DE   clean   DE

     'He washed (something) very clean.'

(18) a. 张三气得哭了。

     Zhangsan   qi   de   ku   le.

     Zhangsan   annoy   DE   cry   ASP

     'Zhangsan got annoyed and then cried.'

---

[4] The second *de* 的 is obligatory here for reasons that I don't know now.

b. 张三写得累了。

Zhangsan   xie   de   lei   le.

Zhangsan   write   DE   tired   ASP

'Zhangsan wrote and then got tired.'

(19) a. 他跳得我头晕眼花的。

Ta   tiao   de   wo   tou-yun-yan-hua   de.

3.SG   jump   DE   1.SG   head-dizzy-eye-fuzzy   DE

'He jumped (a lot) and it made me feel so dizzy.'

b. 他气得我昨晚(都)没睡着。

Ta   qi   de   wo   zuowan   (dou)   mei   zhui-zhao.

3.SG   annoy   DE   1.SG   last night   (even)   not   fall.asleep

'He annoyed me so much that I could not (even) fall asleep last night.'

c. 他叫得我要死了。

Ta   jiao   de   wo   yao   si   le.

3.SG   scream   DE   1.SG   will   die   ASP

'He screamed (so much/harsh) and I was almost dying.'

Moreover, the matrix verbal element could also be an adjective.

(20) a. 这双鞋白得我真想踩。

Zhe-shuang xie   bai   de   wo   zhen   xiang   cai.

this-CL   shoe   white   DE   1.SG   really   want   step

'This pair of shoes is so white that I really want to step on them (to leave footprints).'

b. 她的脸红得像苹果一样。

Ta-de   lian   hong   de   xiang   pingguo   yiyang.

3.SG.POS   face   red   DE   resemble   apple   same

'Her face is so red that it looks like an apple.'

In addition, multiple -*de* sentences are also available and productive.

(21) a. 他跳得高得我够不着。

Ta   tiao   de   gao   de   wo   gou-bu-zhao.

3.SG   jump   DE   high   DE   1.SG   cannot.reach

'He jumps so high that I cannot reach.'

b. 她羞得脸红得像苹果一样。

   Ta   xiu de lian hong de   xiang pingguo yiyang.

   3.SG   shy DE face red   DE   resemble apple   same

   'She is so shy that her face turns red, which looks like an apple. '

2.2.2 Previous studies

Huang (1988), also Huang, Li and Li (2009), analyze *de* as a semantically obscure post-verbal morpheme suffixing to the matrix verb and introducing a clause which describes the result of the event denoted by V. The constituents denoting no matter result, degree or manner occupy the complement position of V, regardless of their syntactic status of being single predicates or full clauses. When necessary, a *pro* is introduced into the embedded clause, which is controlled by the post-verbal NP. Examples below in (22-23) are cited from Huang, Li and Li (2009: 84-91).

(22) a. 他走得气喘吁吁。

   Ta   zou   de   qichuanxuxu.

   3.SG   walk DE   breathe.heavily

   'He walked so fast that he breathed heavily.'

   he walk-DE [$_s$ pro breathe heavily]

   b. 他气得我不想写信。

   Ta   qi   de wo bu xiang xie   xin.

   3.SG   annoy DE 1.SG not want write letter

   'He annoyed me so much, that I didn't want to write the letter.'

   he annoy-DE me [$_s$ pro not want to write letter]

(23) a. 他气得我呀，不想写信。

   Ta   qi   de wo   ya, bu   xiang xie   xin.

   3.SG annoy   DE   1.SG   YA, not   want   write   letter

   'He annoyed me so much, um, that I didn't want to write the letter.'

   b. #他气得呀，我不想写信。

   Ta   qi   de ya,   wo   bu   xiang xie   xin.

   3.SG   annoy DE YA   1.SG   not   want   write   letter

   '#He was so annoyed that I didn't want to write the letter.'

The basic logic of Huang's argument is that, first, the interjection *ya* 呀 cannot be inserted into a coherently connected unit. Hence, given *ya* must be inserted after the

second NP (NP₂ for short), e.g. (23a), instead of being inserted between *de* and NP₂, e.g. (23b), [V+*de*+NP₂] is an unseparatable unit. In other words, NP₂ is part of the matrix sentence. Then a *pro* is necessary in the embedded clause searving as the subject of it. The relationship between NP₂ and embedded *pro* is control.

One crucial problem with this argument is that if we allow the second NP to be the object in the matrix clause, it is more granted to occupy the complement position of matrix verb; at the same time the result-denoting part is also claimed to take the complement position. Consequently, there is a dilemma.

What's more, as Pan and Ye (2015) has pointed out, the *ya*-insertion test is problematic since *ya* in fact cannot be invariably inserted after the NP₂. The strongest counter evidence is the existence of sentences whose main verbs are intransitive verbs. On that occasion, NP₂ can never be analyzed as the object of the main verb and *ya* could only be inserted after *de*, preceding NP₂. For instance, *tiao* 'jump' in (24) is an intransitive verb, and *ya* could only be inserted before NP₂, i.e. *wo* 'I'.

(24) a. #他跳得我呀，头晕眼花的。

    Ta   tiao   de   wo   ya,   tou-yun-yan-hua   de.

    3.SG jump DE 1.SG YA head-dizzy-eye-fuzzy DE

    '# He jumped me, um, and it made me feel so dizzy.'

   b. 他跳得呀，我头晕眼花的。

    Ta   tiao   de   ya,   wo   tou-yun-yan-hua   de.

    3.SG jump DE YA 1.SG head-dizzy-eye-fuzzy DE

    'He jumped (a lot), um, and it made me feel so dizzy.'

In addition, even when the matrix verb is transitive, there are conditions that NP₂ cannot be considered as the object of the main verb and on those occassions *ya* is preferred to be inserted between *de* and NP₂. The first condition is where NP₂ belongs to certain special categories which can never be an object, such as *mei*+N 'every', *you-de ren* 'someone', or noun-duplication. For instance[5],

(25) a. 弄得有人下不来台

    nong   de   youren   xia-bu-lai   tai

    make DE someone down-not-come stage

    'to make some cannot get out of the embarrasement'

---

[5] Examples in (23-24) are cited from Pan and Ye (2015: 29-31).

   i) # nong de youren (ya), [*pro* xia-bu-lai tai]

   ii) nong de (ya) [youren xia-bu-lai tai]

b. 搞得人人都很紧张

   gao   de   renren   dou   hen   jinzhang

   make   DE   everyone   all   very   nervous

   'to make everyone feel very nervous'

   i) # *gao de renren(ya),* [*pro* dou hen jinzhang]

   ii) nong de (ya) [renren dou hen jinzhang]

c. 张三哄骗得每人都做了十个俯卧撑。

   Zhangsan hongpian   de   meiren   dou   zuo   le   shi-ge   fuwocheng.

   Zhangsan   cheat   DE   everyone   all   do   ASP   ten-CL   push-up

   'Zhangsan cheated everyone into doing ten push-ups.'

   i) #Zhangsan hongpian de meiren (ya), [*pro* dou zuo le shi-ge fuwocheng].

   ii) Zhangsan hongpian de (ya), [meiren dou zuo le shi-ge fuwocheng].

The second condition is where the NP bears the semantic role of causee rather than a patient. For instance,

(26) 妈妈打我打得自己都乌青了。

   Mama   da   wo   da   de   ziji   dou   wuqing   le.

   mum   hit   1.SG   hit   DE   herself   even   bruise   ASP

   'Mum hit me (so heavy) that even made herself bruised.'

   i) #Mama da wo da de ziji (ya), [*pro* dou wuqing le].

   ii) Mama da wo da de (ya), [ziji dou wuqing le].

It is obvious in (26) that the object/patient of the action *da* 'beat' is *wo* 'me', instead of *mama ziji* 'mother herself'. Therefore, *ziji* 'herself' following *da-de* 'beat-DE' cannot be considered as the object of *da* 'beat' and *ya* must be inserted before *ziji* 'herself'.

To solve this problem, Pan and Ye (2015) anaylzes the *de*-construction as a raising structure rather than a control structure. In addition, they propose a free empty category *e* (Xu 1986), which has no need to be controlled, in the Spec position of VP to receive theta role and case from VP. They also suggest that in sentences like (22b), *e* should be co-indexed with the second NP, whereas in intransitive sentences as (22a) there is no *e*. However, though I agree with their argument against the problematic

ya-test, I assume the insertion of *e* is not necessary. The division of no *e*, *e* co-indexing with NP₂ and completely free *e* appears to be neat. Moreover, the existence of ambiguity of (27) is ascribed to above different co-index relations of *e* according to their analysis.

(27) 他骂得观众都走了。　(Pan and Ye 2015: 34)

　　Ta　　ma　　de　　guanzhong　　dou　　zou　　le.

　　3.SG scold　DE　audience　　all　leave　ASP

　　i) 'He scolded at the audience and they all left.'

　　ii) 'He scolded at someone else (so harsh) that all the audience left.'

For interpretation i) in (27), *e* co-indexes with NP₂, whereas for interpretation ii), *e* is completely free. In fact, *guanzhong* belongs to one category of objects *ta* 'he' may scold at. That is, when *e* is free, *e* refers to a certain entity which is covert in the sentence, whereas the occasion that *e* co-indexes with NP₂ actually is when the entity *e* refers to appears in the sentence. However, taking 'shadow interpretation' (Hoekstra 1988, Sybesma 1999) into consideration, the co-indexing relation between *e* and NP₂ is actually affected by our knowledge about the real world. In other words, *ta* 'he' only conducts an act of 'scolding', anyone could be the one being blamed, and the result of his action is 'all the audience left'. Only '*he is scolding at the audience*' is the most common occasion when someone uses this sentence. Similarly, even (22b) could also have an interpretation that 'he was annoyed by someone else and somehow (his being angry) made me feel unwilling to write a letter', though it is quite an unusual scenario. Consequently, all transitive *de*-constructions are ambiguous when NP₂ does not belong to those special categories which could only function as the subjects. In addition, when *e* is totally free, the semantic relations between NP₂ and the matrix verb is actually the same. Therefore, no need for an extra *e* semantically.

One more problem of Huang's analysis is that though *de* in appearance suffixes to the matrix verb and phonetically bears a neutral tone, why it must be a clitic to the verb and where its position is in the syntactic structure? Pan and Ye's (2015) proposes a DeP as the complement of VP. The consequent question is what this DeP is, or what the syntactic or semantic function of this projection? With the simple label of DeP, except for providing a syntactic position to the morpheme *de*, problems like why *de* must clitic to the main verb and move up together still cannot be explained.

Sybesma (1992, 1999) introduces an ExtP over the small clause and the ExtP binds or "close[s] off the open range inherently present in the matrix predicate" (Sybesma 1999:28). With the existence of ExtP, the Ext^0 provides a position for the dummy *de*, and the following constituent denoting the result or degree, i.e. the small clause, is the complement of ExtP. In other words, the small clause in fact functions as the result denoting part which closes off the atelic verbal event and *de* is just a dummy element which for granted can incorporate into a matrix verb. In my opinion, proposing that *de* occupies Ext^0 has an advantage over the assumption that *de* projects a DeP because by proposing an ExtP, we actually deal with a functional projection which denotes the result. In this sense, *de* is just one token of lexical items which could be inserted at Ext^0. Whereas, according to Pan and Ye's (2015) structure, *de* is the only option. When only contemporary Mandarin is considered, proposing a DeP is fair though it may be better to use a categorial label which could denote some semantic functions; but diachronically and typologically speaking, there have been other morphemes such as *jiang* 将 that once functioned similar to *de* and there may be other morphemes used in dialects or have been used some stages of history yet unknown to us now. Thus on those occasions, the labelling of DeP is problematic.

The structure containing ExtP is illustrated below in (28).

(28) a. *Transitive degree structures*

NP_1 [$_{vP}$ *v* [$_{VP}$ V [$_{ExtP}$ Ext^0 [$_{SC}$ NP_2 XP]]]]

   b. *Intransitive degree structures*

   e [$_{VP}$ V [$_{ExtP}$ Ext^0 [$_{SC}$ NP XP]]]

The label 'transitive'/ 'intransitive' here is not related to the category of matrix verbs, instead it takes the structure as a whole and parallels with its compound counterparts, as I presented in (8). No matter whether the matrix verb is originally a transitive or intransitive verb, the verb takes ExtP, not the nominal object, as its complement. When there are two NPs, NP_1, the causer, merges at the Spec position of *v*P, and the NP_2 is the subject of the small clause. Thus the whole sentence looks like a transitive sentence in appearance, as in (28a). When NP_1 is not overt, NP_2 moves up to the Spec position of V, functioning as the subject of the whole sentence, that is the occasion he dubs as an intransitive structure, (28b). This structure voids all the problems with Huang's analysis I mentioned previously. Moreover, the strict parallelism between the "result structures" and the "degree structures" finely covers the syntactic and semantic

similarities and connections between the resultative compounds and -*de* construction.

In a word, the ExtP structure covers the crucial properties of *de*-structures with a neat diagram. However, one theoretical internal problem remains. The ExtP denotes the degree or the result of the verbal event, which in fact also provides the ending-point of the non-telic verb. Though *de* along with all the constituents following *de* comes after the main verb in the surface, it would be better if the ExtP, as a functional projection, projects higher than VP, anagolous to TelP in Xuan's diagram. In other words, both of Xuan's analysis of resultative compounds and this analysis of *de*-structures with ExtP are quite reasonable and applicable hypotheses; the only contradiction between them is whether the functional category for the telic/ degree property of the verb lays higher or lower than VP. In Xuan's structure, the TelP is higher than VP; ExtP, whereas, is lower. However, since being higher has a theoretical advantage, I assume an alternative structure which keeps the basic idea of ExtP and small clause, yet projects the 'ExtP' over VP would turn out to be the solution to the problem.

2.2.3 Degree or Result

As I mentioned in the beginning of this section, according to Sun (1987), when "the embedded head is preceded by a modifier", when "the embedded predicate has undergone reduplication", or when "the result denoting part is a sentence" (Sun 1987: 46-47), the insertion of *de* is obligatory. This argument implies that movements plus verbal incorporation are the default choice for result structures, but *de*-insertion is the spare option. The claim that "the presence/ absence of *de*, which (to some native speakers at least) has no effect on the semantics" (Sybesma 1999: 18), further indicates if a resultative compound form is possible, a corresponding *de*-construction is also available. However, it is not always the case that *de*-constructions have the same acceptability as their corresponding compound forms. Sentences in (29-31) are some examples of transitive resultative structures.

(29) a. 小红哭湿了手绢。

     Xiaohong   ku-shi   le   shoujuan.

     Xiaohong   cry-wet   ASP   handkerchief

     'Xiaohong cried and the handkerchief got wet.'

  b. %小红哭得手绢湿了。

     Xiaohong   ku   de   shoujuan   shi   le.

Xiaohong   cry   DE   handkerchief   wet   ASP

'Xiaohong cried so much and the handkerchief got wet.'

c. 小红哭得手绢都湿了。

Xiaohong   ku   de   shoujuan   dou   shi   le.

Xiaohong   cry   DE   handkerchief even   wet   ASP

'Xiaohong cried so much and even the handkerchief got wet.'

(30) a. 张三打死了李四。

Zhangsan   da-si   le   Lisi.

Zhangsan   hit-die   ASP   Lisi

'Zhangsan hit Lisi and Lisi died.'

b. ?张三打得李四死了。

Zhangsan   da   de   Lisi   si   le.

Zhangsan   hit   DE   Lisi   die   ASP

'Zhangsan hit Lisi so much and Lisi died.'

c. 张三打得李四都流血了。

Zhangsan   da   de   Lisi   dou   liuxue   le.

Zhangsan   hit   DE   Lisi   even   bleeding   ASP

'Zhangsan hit Lisi so much that he is bleeding.'

(31) a. 小红吃完了饭。

Xiaohong   chi-wan   le   fan.

Xiaohong   eat-finish   ASP   meal

'Xiaohong finished her meal.'

b. *小红吃得饭完了。

Xiaohong   chi   de   fan   wan   le.

Xiaohong   eat   DE   meal   finish   ASP

intended:

'Xiaohong finished her meal.'

All (a) sentences in (29-31) are well-formed resultative *buyu*-structures, whereas their corresponding *de*-sentences are not so good as them. (29b) and (30b) show that, when *buyu*s are lexically telic morphemes, the *de*-sentences are acceptable to varied degrees. When a degree marker *dou* 都 is added, those *de*-sentences turn better, e.g. (29c) and (30c). However, when the *buyu* is a more grammaticalized word which clitics to the verb, as *wan* in (31a), the corresponding *de*-structure, i.e. (31b), is completely ungrammatical. Another pair of sentences is shown in (32).

(32) a. 小红改好了论文。

    Xiaohong   gai-hao   le   lunwen.

  i) Xiaohong   revise-finish   ASP   paper

   'Xiaohong finished revising the paper.'

  ii) Xiaohong   revise-good   ASP   paper

    'Xiaohong made the paper look good after she revising it.'

  b. ？小红改得论文好了。

    Xiaohong   gai   de   lunwen   hao   le.

  i) #Xiaohong   revise   DE   paper   finish   ASP

    intended meaning: 'Xiaohong finished revising the room.'

  ii) Xiaohong   revise   DE   paper   good   ASP

    'The paper is good after Xiaohong revising it.'

The resultative compound in (32a) is ambiguous, though *hao* is much more common to be interpreted as 'finish' than 'good'; however, in (32b), *hao* could only be interpreted as 'good', if we leave the acceptability of this *de*-sentence aside for a while. Above phenomena indicate that, on one hand, *de*-structure is incompatible with the pure result *buyu*, e.g. *wan, zhu, hao, etc.* On the other, when co-occurring with regular *buyu*, *de*-structures are also not always so good as compound resultatives in syntax, and sentences with more clear hints on degree denoting, such as adding a marker *dou*, are preferred.

The intransitive structures present similar patterns between resultative compounds and the corresponding *de*-structures. First, when the subjects are agents, *de*-structures, e.g. (33b) and (34b), are not as good as the compound forms, e.g. (33a) and (34a). When *dou* is added, the *de*-structure sentence turns better, e.g. (33c). Also, *de*-structure is incompatible with the pure result *buyu*, e.g. (34b). In addition, when the subjects are affectees, their *de*-structures are even worse, e.g. (35).

(33) a. 小红气哭了。

    Xiaohong   qi-ku   le.

    Xiaohong   angry-cry   ASP

    'Xiaohong was angry and then cried.'

  b. %小红气得哭了。

    Xiaohong   qi   de   ku   le.

Xiaohong   angry   DE   cry   ASP

'Xiaohong was so angry that he cried.'

c. 小红气得都哭了。

Xiaohong   qi   de   dou   ku   le.

Xiaohong   angry   DE   even   cry   ASP

'Xiaohong was so angry that he even cried.'

(34) a. 小红写完了。

Xiaohong   xie-wan   le.

Xiaohong   write-finish   ASP

'Xiaohong finished writing.'

b. *小红写得完了。

Xiaohong   xie   de   wan   le.

Xiaohong   write   DE   finish   ASP

intende:

'Xiaohong wrote (something) and then it finished.'

(35) a. ?手绢哭得湿了。

Shoujuan   ku   de   shi   le.

handkerchief   cry   DE   wet   ASP

'The handkerchief got wet someone's crying.'

b. ?他的眼睛醉得红了。

Ta   de   yanjing   zui   de   hong   le.

3.SG   POS   eye   drunk   DE   red   ASP

'His eyes got red because of getting drunk.'

As a result, the compound forms and the *de*-structures are not always free alternatives when the predicates of the small clause are simple. Why should it be the case, and why *de*-structure is incompatible with a more grammaticalized *buyu*? In addition, are there anything in common among the elements following *de* except for the fact that they are too big and complex chunks to be inserted at Tel^0 or to be incorporated into the main verb? I would like to argue that the thing in common is the degree semantics in those complex constituents. Moreover, the requirement of the degree semantics here rules out the combination of such *de*-structure with pure result *buyu* like *wan, zhu, diao etc.*, and makes the occurrence of regular lexical *buyu* in the *de*-structures weird. Let's see some examples first.

(36) a. ?小红伤心得吃了薯片。

    Xiaohong shangxin de chi le shupian.

    Xiaohong   sad   DE eat ASP chip

    'Xiaohong was so sad that she ate chips.'

b. 小红伤心得下午一直在吃薯片。

    Xiaohong shangxin de xiawu yizhi zai chi shupian.

    Xiaohong   sad   DE afternoon all.the.time is eat   chip

    'Xiaohong was so sad that she was eating chips all the afternoon.'

c. 小红伤心得吃完了所有的薯片。

    Xiaohong shangxin de chi-wan le suoyou de shupian.

    Xiaohong   sad   DE eat-finish ASP all   DE   chip

    'Xiaohong was so sad that she finished eating all the chips.'

(37) 小红伤心得都吃了薯片。

    Xiaohong shangxin de dou chi le shupian.

    Xiaohong   sad   DE even eat ASP chip

    'Xiaohong was so sad that she even ate chips.'

(36b) and (36c) are perfect sentences, whereas (36a) is unnatural. It is obvious that there are some quantificational elements modifying the event of *'eating chips'*, which indicates certain degree semantics, or at least entails scalarity information by nature. To be more specific, *'(eating chips) for the whole afternoon'* could be compared with *'one hour'*, or *'the whole day'*; similarly, *'all the chips'* could be compared with *'half of the chips'*, or *'a mouthful of chips'*. However, it is hard to abstract a degree interpretation by using a bare VP, unless there is a presumption that 'Xiaohong, say, who wants to lose weight, never eats chips'. In other words, she ate the chips because she was extremely sad otherwise she would never eat chips. Then, we suppose there is an order of sequence of food that Xiaohong would eat. By bearing all these assumptions and contexts in mind, we could accept (36a). On the contrary, with the occurrence of *dou* which overtly indicates the existence of such a scale, makes (37) a perfect sentence.

Here is another occasion that may obscure the line between degree and result. Examples are shown in (38).

(38) a[6]. 国足气得我砸了电视。

---

[6] This sentence is provided by Prof. Ren Zhou personally.

Guozu   *qi   de   wo   za   le   dianshi.*

national football team (of China)   annoy   DE   1.SG   smash   ASP   TV

'The China national football team made me so angry that I smashed the TV.'

b. 国足气得我都砸了电视。

Guozu   *qi   de   wo   dou   za   le   dianshi.*

national football team (of China) annoy   DE 1.SG   even   smash   ASP   TV

'The China national football team made me so angry that I even smashed the

TV.'

Both sentences in (38) are quite good, with *dou* occurred in (38b) whereas no *dou* in (38a). We could argue that the constituents following *de* in (38a) purely describes a verbal event which is the result of *'my anger'*, and only in (38b), there is a degree implication. However, on one hand, *'smashing the TV'* is never a normal action which would in fact show the extreme. On the other hand, when someone is speaking such kind of sentences, s/he never wants to tell others about the exact action that s/he has smashed the TV, instead, s/he intends to express his or her extreme anger.

In a word, those *de*-structures in question express a degree meaning.

Lastly, I would like to give a short remark on the vagueness between result and degree. Many scholars (Yang 1990; Sybesma 1999; Williams 2014) claim that there is no clear distinction between the functions of a *buyu* of denoting the degree and the result of one verbal event. I admit that to reach some degree is a kind of result; however, to get some results could also mean to reach certain a degree in the sequence of possible consequences of an action. In addition, Jiang and Cao (2005) regards both the result *buyu*-structure and the degree *buyu*-structure as a continuum on their semantic interpretations. I agree with them. However, it is not enough when we come up with the conclusion that something is a continuum. We still need to make sure what the proto is and what the margins are. Based on above comparisons, I prefer to claim that the proto feature of compound forms is to express results; whereas that of the *de*-structure is to express degrees. That's also the reason why I labeled the former one as result *buyu*-structure, and the latter as degree *buyu*-structure.

2.2.4 An alternative structure

Now, let's turn to the syntactic structure.

2.2.4.1 The identity of *de*

First of all, in degree sentences, the main verb is still atelic which need to be closed off. However, *de* plus all the constituents following it provide an ending point of the verbal event and denote the telic status. Thus, *de* should be analyzed as the head of TelP/Asp*P, i.e. Tel^0/Asp*^{0}, in parallel with the regular lexical *buyu* in the resultative compounds.

2.2.4.2 The analysis of post-*de* constituent

Then it comes to the constituent following *de*. My analysis here also follows the basic idea of Small Clause analysis with one adjustment. When talking about a small clause, the predicate is a tenseless constituent. However, the constituents following *de* could also be tensed sentences, as I listed in (16-19). Another crucial problem here is whether we should analyze such a constituent as a whole plate or as separated parts.

If we treat it as a whole, given the fact that the syntactic statuses may vary among various occasions, I label it as a XP for now in the current study. Since VP is the complement of TelP, the only possible position for the XP is the Spec position of TelP. Such a structure is illustrated in (39), and (40) serves as an example.

(39) [$_{vP}$ Spec [$_{v'}$ *v* [$_{AspP}$ [$_{Asp'}$ Asp [$_{TelP}$ Spec [$_{Tel'}$ Tel [$_{VP}$ [$_{V'}$ V]]]]]]]]

       NP   XP   *de*   V

(40) 他气得我不想说话。

    Ta   qi   de [$_{XP}$ *wo bu xiang   shuohua*].

    3.SG annoy DE   1.SG not   want   talk

    'He annoyed me so much that I did not want to talk.'

    underlying structure:

    [$_{vP}$ ta [$_{v'}$ *v* [$_{TelP}$ [$_{XP}$ wo bu xiang shuohua] [$_{Tel'}$ *de* [$_{VP}$ [$_{V'}$ qi]]]]]]

This analysis, in fact, parallels with Xuan's diagram of the resultative *buyu*-structure where the embedded NP takes the Spec position of TelP and the lexical *buyu* morpheme is the head of TelP. For instance,

(41) a. 张三踢破了鞋。

    Zhangsan   ti-po   le   xie.

    Zhangsan   kick-break ASP   shoe

    'Zhangsan kicked and made his shoes broken.'

underlying structure:

[$_{vP}$ Zhangsan [$_{v'}$ *v* [$_{TelP}$ xie [$_{Tel'}$ po [$_{VP}$ [$_{v'}$ ti]]]]]]

    b. 小红骂得小明都哭了。

Xiaohong   ma   de   Xiaoming   dou   ku   le.

Xiaohong   scold   DE   Xiaoming   even   cry   ASP

'Xiaohong scolded so harsh that even Xiaoming has been crying.'

underlying structure:

[$_{vP}$ Xiaohong [$_{v'}$ *v* [$_{TelP}$ [$_{XP}$ Xiaoming dou ku le] [$_{Tel'}$ *de* [$_{VP}$ [$_{v'}$ ma]]]]]]

In the resultative compound, i.e. (41a), the atelic verb *ti* 'kick' occupies the V^0, the result denoting adjective *po* 'break' occupies the Tel^0 and the embedded NP *xie* 'shoes' occupies the Spec of TelP. The embedded NP *xie* is an argument of the embedded predicate *po*, and they form the structure of *xie-po* to serve as the result of the verbal action *ti* (Xuan, 2011). Likewise, the XP could also be treated as an argument of *de*. For instance, in (41b), the XP *Xiaoming dou ku le* 'even Xiaoming has been crying' could be paraphrased as "the fact that even Xiaoming has been crying", and the TelP as *[[Xiaoming dou ku le] de]*. It is common to see a tensed clause functioning as the subject of the morpheme *de* among many Chinese dialects and historical materials. What's more, with this analysis, the answer to the object issue in question that why no objects are allowed in degree *buyu*-structure is quite obvious here. The so-called 'object' is in fact the subject of the XP which is deeply embedded in the Spec of TelP, thus V can never enter into the clause to be incorporated with the embedded predicate and to move up with it, leaving the embedded NP behind. As a result, we can never see the NP occurs behind [V-*buyu*], like an object.

However, another crucial problem raises consequently: if V cannot enter into the deeply embedded clause, similarly the NP within the embedded clause should never move out [Spec, TelP]. Then the intransitive structure and *ba*-construction cannot be derived, which apparently contradicts to the fact. According to either Xuan's or Sybesma's analysis, as I discussed in the previous section, when the whole structure is intransitive, the only NP is base-generated at the [Spec, TelP] (following Xuan), or the subject position of the small clause (following the small clause analysis). During the procession of derivation, this NP needs to move out of its original position to check its nominal feature and eventually function as the subject of the whole sentence. Also, in *ba*-construction, the embedded NP needs to move up alone as well. However, based on the current analysis of degree *buyu*-structure, if the XP containing the embedded

NP occupies the Spec position of TelP as a whole, as the structure illustrated in (39), the embedded NP cannot be extracted out of XP. Thus, the intransitive structure and *ba*-construction cannot be derived accordingly.

The embedded NP problem compels a separation within the XP: an NP subject plus a predicate. The subject occupies the Spec position of Tel^0, which means only the nominal item serves as the argument of *de* instead of the whole XP, strictly in parallel with the embedded subject in resultative *buyu*-structure; the predicate part occupies the Complement position of V, which predicates on the main verb and denotes the degree, as presented in (42).

(42) $[_{vP}$ Spec $[_{v'} v$ $[_{AspP}$ $[_{Asp'}$ Asp $[_{TelP}$ Spec $[_{Tel'}$ Tel $[_{VP}$ $[_{V'}$ V   Pred.$]]$ $]]$ $]]$ $]]$

      NP$_1$ NP$_2$ *de*   V   Predicate

Accordingly, the underlying structure of sentence in (40) would be analyzed as (43)

(43) 他气得我不想说话。

      Ta   qi   de $[_{XP}$ *wo   bu   xiang   shuohua*].

      3.SG   annoy   DE   1.SG   not   want   talk

      'He annoyed me so much that I did not want to talk.'

      underlying structure:

      $[_{vP}$ ta $[_{v'} v$ $[_{TelP}$ wo $[_{Tel'}$ *de* $[_{VP}$ $[_{V'}$ qi $[_{Pred.}$ bu xiang shuohua$]]]$ $]]$ $]]$

In this sense, all the embedded NP subjects are the external argument of *de*.

2.2.4.3 DegP and a degree operator

Before moving to the derivation of the whole structure of degree *buyu*-structure, I would like to introduce a Degree Projection to take care of the degree semantics I discussed in the previous section. The DegP is supposed to project over the embedded predicate, and the head of such a DegP is an empty degree operator. Normally, when there is a degree adverb, for instance, *hen* 很 'very', *jiqi* 极其 'exceedingly', etc., the Deg^0 is filled by those adverbs. However, when there is no such adverbs, and especially when the degree meaning is expressed by way of a tensed sentence, for instance (36-38), we need to insert an operation at Deg^0 to extract the degree meaning of the sentence.

(44) *A proposed DegP structure*

```
                    DegP
                   /    \
                        Deg'
                       /    \
                    Deg      XP
                  Adv. / Op.
```

(45) a. 很漂亮

　　　hen   piaoliang

　　　very   beautiful

　　　'very beautiful'

　　　[DegP [Deg' Deg   AP]]

　　　　　　　　very   beautiful

　　b. 他气得我[DegP 不想说话]。

　　　Ta   qi   de   wo [DegP *bu   xiang   shuohua*].

　　　3.SG   annoy   DE   1.SG   not   want   talk

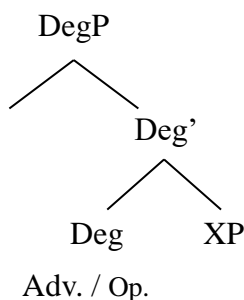　　　'He annoyed me so much that I did not want to talk.'

　　　[DegP [Deg' Deg   XP]]

　　　　　　　Op.   [XP bu xiang shuohua]

To be specific, such a degree operator is similar to the null operator in *bei*-structures (Feng 1995; Huang, Li and Li 2009). When analyzing *bei*-structure, *bei* is treated as a standard verb with a clausal complement introduced by an operator, which moves from the object position of embedded clause and is co-indexed with the subject of the main sentence. The operator has no phonetic realizations, but it abstracts the event the embedded clause describes as a feature that the subject of the matrix sentence experiences. Hence, the entire *bei*-sentence means that a person undergoes certain experience which has the feature of being hit, praised, blamed, etc. Likewise, the degree operator I propose here has a similar function. The degree operator abstracts the event the embedded clause describes as a degree feature that the verb reaches. For instance, *qi de ku le* means '(someone is) so angry that s/he cried' or better as 'be angry to the degree of crying.' In other words, the predicate part, in fact, does not describe any specific action or event, rather it helps to mark the degree of the

consequences of certain actions. To be more vivid, when someone applies an action to varying degrees, there would be various consequences on themselves or on others, and all those consequences constitute a sequence to reflect degrees of such actions. For instance, for the action 'she cries', she could cry softly which leads to the result that she feels even sadder; she could cry more attentively which leads to the result that she does not want to speak; she could cry even harder which leads to the result that everybody in the building could hear her crying, or she cannot even breathe. When we see the result that, say, she does not want to speak, we can mark the degree of her crying. The function of the degree operator is exactly to abstract all the events to a degree feature.

One piece of supporting evidence for proposing such a degree operator analogous to the operator in *bei*-construction is that *de* and *bei* underwent quite similar routes in terms of grammaticalization. At first, both of them are typical verbs which take nominal phrases as their objects, or complement. Then, they took varied structures as their objects, even a tensed clause. Gradually, they lost their original lexical meanings of 'to suffer' or 'to get'. Moreover, *bei* and *de* actually have resembling semantic meanings of 'get something', though for *de*, it is always the case that someone intends to get something good; whereas for *bei*, it is always the case that someone unfortunately and unwillingly suffers something bad. Therefore, it is reasonable to assume the existence of such a paralleled operator. For *bei*-structure, again, the subject is predicated for the property of experiencing some action; while for the degree *buyu*-structure, the verbal event reaches to some degree and the adjective or the clause following describes the degree.

Then, what is the structural relation between the degree operator and the predicate within the DegP? In fact, the degree sentences can be paraphrased as "... *zuo ... dao ... de chengdu*" 'Someone does something to a degree of …'. For instance, *qi-de ku le* can be paraphrased as *shengqi dao ku le de chengdu* '(Someone is) so angry to such a degree of crying'. The part '*ku le de chengdu*' is actually a gapless "relative clause", in which the clause occupies the complement position of the noun phrase (Huang, Li and Li 2009). Analogously, the *de chengdu* part corresponds to the degree operator, and the "relative clause" part corresponds to predicates in the constituents following *de*. In other words, the degree operator is the head of a Degree Phrase, and the predicate denoting the degree is the complement of the degree operator. The Degree Projection structure is illustrated in (46).

(46)

```
              DegP
              /  \
                Deg'
                /  \
             Deg    XP
          Adv. / Op.
```
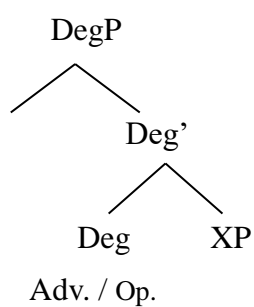
2.2.4.4 The alternative structure

Eventually, the alternative degree *buyu*-structure could be illustrated as in (47).

(47) *an alternative structure of degree buyu-structure:*

```
        vP
        /  \
             v'
            /  \
           v    AspP
               /   \
                   Asp'
                   /  \
                 Asp    TelP
                        /   \
                      NP     Tel'
                      /\     /   \
                          Tel      VP
                          de       /  \
                                      V'
                                      /  \
                                     V    DegP
                                          /   \
                                             Deg'
                                             /  \
                                          Deg    XP
                                       Adv. / Op.  /\
```
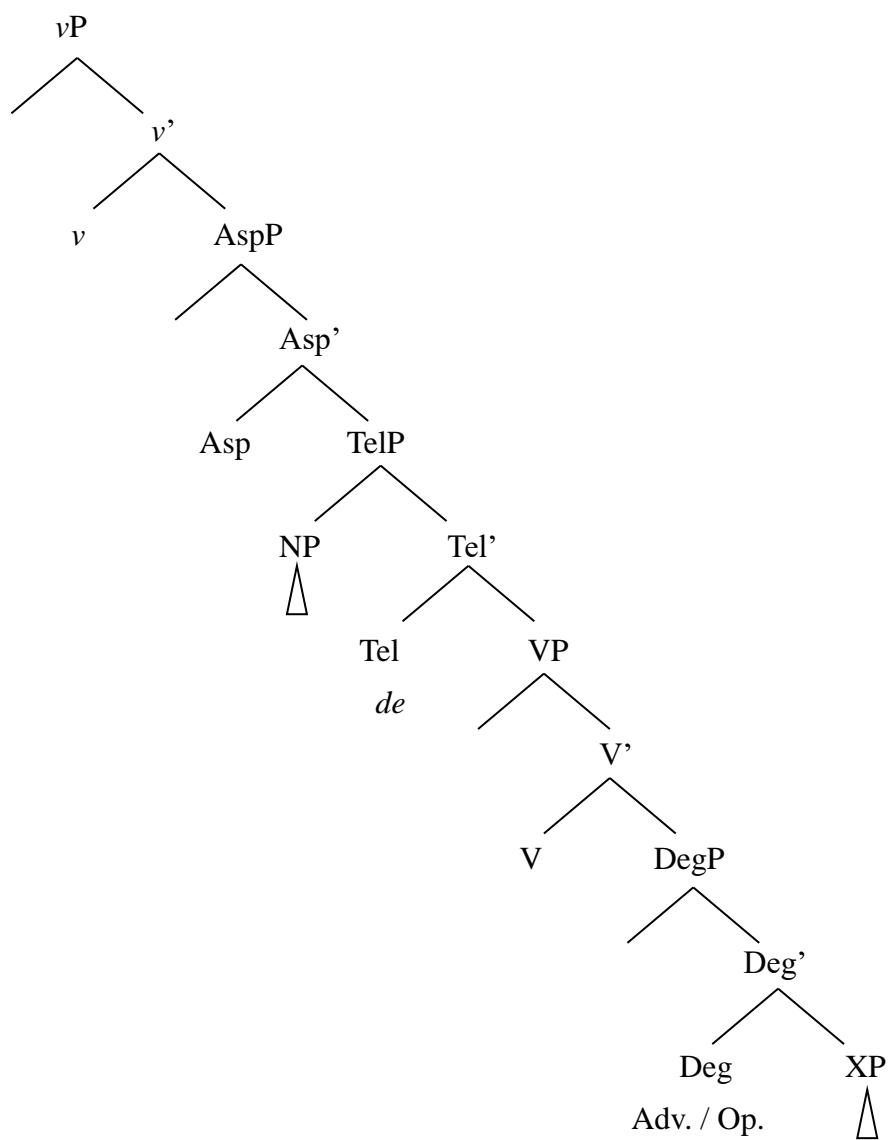
In order to derive a degree sentence, first, the main verb moves to Tel^0 to check the telic feature and incorporates with *de*. Then, the combination of [V-*de*] moves higher to check other features. For instance, (48) lists two degree sentences, one is transitive (48a) and the other is intransitive (48b), which cannot be derived if we treat the following-*de* structure as a whole. (49) and (50) show how these two sentences are derived within *v*P. I also leave aside higher movements and feature checking of this structure in the current study.

(48) a. 小红哭得手绢都湿了。

    Xiaohong   ku   de   shoujuan   dou   shi   le.

    Xiaohong   cry   DE   handkerchief   even   wet   ASP

    'Xiaohong cried so much and even the handkerchief got wet.'

  b. 小红伤心得吃完了所有的薯片。

    Xiaohong   shangxin   de   chi-wan   le   suoyou   de   shupian.

    Xiaohong   sad   DE   eat-finish   ASP   all   DE   chip

    'Xiaohong was so sad that she finished eating all the chips.'

(49) a. *underlying structure of (48a):*

    [*v*P Spec [*v'*v [TelP Spec [Tel' Tel [VP [V' V [DegP [Deg' Deg [XP]]]]]]]]]

     Xiaohong   shoujuan   *de*   ku   Op.   [dou shi le]

  b. *first step: V-to-Tel movement*

    [*v*P Xiaohong [*v'*v [TelP shoujuan [Tel' ku$_i$-*de* [VP [V' t$_i$ [DegP [Deg' Op. [XP dou shi le]]]]]]]]]]

  c. *second step: Tel-to-v movement*

    [*v*P Xiaohong [*v'*ku$_i$-*de*$_j$ [TelP shoujuan [Tel' t$_j$ [VP [V' t$_i$ [DegP [Deg' Op. [XP dou shi le]]]]]]]]]]

(50) a. *underlying structure of (48b):*

    [TelP Spec [Tel' Tel [VP [V' V [DegP [Deg' Deg [XP]]]]]]]

     Xiaohong   *de*   shangxin   Op.   [chi-wan le suoyou de shupian]

  b. *V-to-Tel movement*

    [TelP Xiaohong [Tel' shangxin$_i$-*de* [VP [V' t$_i$ [DegP [Deg' Op. [XP chi-wan le suoyou de shupian]]]]]]]

After higher feature checking and movements of (49c) and (50b), sentences in (48) can be fully derived.

In such a structure, the answer to the object issue is also apparent. On one hand, the so-called *buyu* is actually the embedded predicate, not the Tel head, which cannot be incorporated into the main verb and move up. In fact, the real *buyu*, which occupies Tel^0, is *de* itself. On the other, the so-called object is actually the external argument of *de*, and it will always precede to the DegP. Therefore, no object follows *buyu* in the surface structures. In this sense, both what I called *buyu* and object here actually are even neither *buyu* nor object.

In addition, *ba*-construction problem is also solved. *Ba*, as a phonetic filler (Sybesma 1999), is inserted at v^0. If *ba* is inserted, then no Tel-to-*v* movement of [V-*de*]. The corresponding *ba*-construction of (48a) is shown in (51) and its derivation process is shown in (52). No corresponding *ba*-construction of intransitive structures.

(51) a. 小红把手绢哭得都湿了。

     Xiaohong   ba   shoujuan   ku   de   dou   shi   le.

     Xiaohong   BA   handkerchief   cry   DE   even   wet   ASP

    'Xiaohong cried so much that she even made the handkerchief wet.'

(52) a. *underlying structure:*

    [$_{vP}$ Spec [$_{v'}v$ [$_{TelP}$ Spec [$_{Tel'}$ Tel [$_{VP}$ [$_{V'}$ V [$_{DegP}$ [$_{Deg'}$ Deg [XP]]]]]]]]]

        X.   *ba*   shoujuan   *de*   ku   Op. [dou shi le]

    b. *V-to-Tel movement*

    [$_{vP}$ Xiaohong [$_{v'}ba$ [$_{TelP}$ shoujuan [$_{Tel'}$ ku$_i$-*de* [$_{VP}$ [$_{V'}$ t$_i$ [$_{DegP}$ [$_{Deg'}$ Op. [$_{XP}$ dou shi le]]]]]]]]]]

Furthermore, the ambiguity of *ba*-sentence like (53) could also be explained.

(53) 我把他们打得手都肿了。(Huang, Li and Li 2009: 160)

    Wo   ba   tamen   da   de   shou   dou   zhong   le.

    I   BA   them   beat   DE   hand   even   swollen   ASP.

    a. I beat them so harsh that it even made their hands swollen.

    b. I beat them so harsh that it made my own hands even swollen.

(53a) is a typical transitive interpretation. The subject *wo* 'I', also the agent, merges at the position of [Spec, *v*P] and the post-*ba* NP *tamen* 'they/them', occupies the [Spec, TelP], same with *shoujuan* in (48a). On the contrary, (53b) is basically an intransitive

structure, which means *wo* 'I' is base-generated at [Spec, TelP] and moves up to [Spec, *v*P] eventually. As to *tamen* 'they', it should be analyzed as the outer object (Huang, Li & Li, 2009), which occupies a higher Spec position than *wo*.

Though this separation proposal solves the problems raised by the single XP proposal, to separate the whole sentence which is preceded by *de* is counter-intuitive to some extent. It is more natural to assume the whole sentence, i.e. XP, as the result, which '*de*' (get) from the atelic verb than the assumption that it is the embedded NP received the result. More work will need to be done in the future to solve this puzzle. Given that the assumption of XP as a whole occupying the Spec position of TelP leads to the failures of deriving intransitive structures and corresponding *ba*-constructions, even though a bit unnatural, the separation analysis has the advantage. Therefore, I will adopt the separation analysis in the current study to deal with the object placement issue.

2.3 Potential *buyu*-structure

2.3.1 The potential *-de*

Mandarin *de* in the potential *buyu*-structure is a modal morpheme which expresses the possibility whether the result of a verbal event could be realized or not. According to Zhu's (1982) classification, potential *buyu*-structure and degree *buyu*-structure share exactly the same surface structure, i.e. [V+*de*+*buyu*]; however, their underlying structures cannot be the same. Since the specific structure of potential forms in Mandarin has not been fully discussed among scholars, I will first examine several remarkable properties of Mandarin potential *-de* and as well as potential *buyu*-structures before moving to the derivation of the syntactic structure of potential *buyu*-structure.

2.3.1.1 *de* as a post-verbal potential modal

First, Mandarin potential *de* is a post-verbal modal which needs to be adjacent to the verb, e.g. (54).

(54) a. 张三写得完作业。

    Zhangsan   xie   de   wan   zuoye.

    Zhangsan   write   DE   finish   homework

    'Zhangsan can finish writing homework.'

b. 张三洗得干净衣服。

Zhangsan   xi   de   ganjing   yifu.

Zhangsan   wash   DE   clean   clothes

'Zhangsan can wash the clothes clean.'

In contemporary Mandarin, *de* can never appear before the verb, e.g. the ungrammaticality of (55), or after the NP, e.g. the ungrammaticality of (56).

(55) a.*张三写完作业得。

Zhangsan   xie   wan   zuoye   de.

Zhangsan   write   finish   homework   DE

intended interpretation: 'Zhangsan can finish writing homework.'

 b. 张三洗干净衣服得。

Zhangsan   xi   ganjing   yifu   de.

Zhangsan   wash   clean   clothes   DE

intended interpretation: 'Zhangsan can wash the clothes clean.'

(56) a. *张三得写完作业。

Zhangsan   de   xie   wan   zuoye.

Zhangsan   DE   write   finish   homework

intended interpretation: 'Zhangsan can finish writing homework.'

 b. *张三得洗干净衣服。

Zhangsan   de   xi   ganjing   yifu.

Zhangsan   DE   wash   clean   clothes

intended interpretation: 'Zhangsan can wash the clothes clean.'

Mandarin also has a pre-verbal model morpheme, i.e. *neng* 能 'can', which can express potential semantics as well. For instance,

(57) a. 张三能写完作业。

Zhangsan   neng   xie   wan   zuoye.

Zhangsan   can   write   finish   homework

'Zhangsan can finish writing homework.'

 b. 张三能洗干净衣服。

Zhangsan   neng   xi   ganjing   yifu.

Zhangsan   can   wash   clean   clothes

i) 'Zhangsan can wash the clothes clean.'

ii) 'Zhangsan is permitted to wash the clothes clean.'

The contrast between sentences in (54) and (57) demonstrates that, on one hand, potential *de* cannot precede the verb. On the other hand, there is another position preceding to the verb which also expresses potential semantics, but only the modal verb *neng* 'can' can occupy this position whereas the potential *de* cannot. In addition, the pre-verbal *neng* is ambiguous: both potential and permission interpretations are available in these sentences.

2.3.1.2 A distinctive negation form

Moreover, the negation form of potential *buyu*-structure, e.g. (58), is distinctive from most of other constructions in Mandarin.

(58) Zhangsan   xie   bu   wan   zuoye. （张三写不完作业。）

   Zhangsan   write   not   finish   homework

   'Zhangsan cannot finish writing his homework.'

Bu 不 'not' is the only option and the other available negation morpheme *mei* 没 'not' in Mandarin never occurs in potential *buyu*-structures. In addition, the adverb *bu* is not simply added to the verb, the *buyu* or the morpheme *de*; instead, *bu* substitutes *de*. That is to say, [V-*de*-*buyu*] expresses a positive semantics and [V-**bu**-*buyu*] expresses a negative semantics. It seems to be quite weird that *de* is substituted by *bu* instead of being modified by the negation morpheme. However, the relationship between the aspectual marker *le* and *mei*, in fact, is exactly same as that between the potential *de* and *bu*. In other words, *le* and *mei*, and *de* and *bu* are in complementary distributions respectively. For instance, in (59) and (60), *mei* and *le* are incompatible.

(59) a. 我吃了苹果。

   Wo   chi   le   pingguo.

    I   eat   ASP   apple

   'I have eaten the apple.'

   b. 我没吃苹果。

   Wo   mei   chi   pingguo.

    I   not   eat   apple

'I didn't eat the apple.'

c. *我没吃了苹果。

    Wo   mei   chi   le   pingguo.

    I   not   eat ASP   apple

(60) a. 我吃完了一个苹果。

    Wo   chi-wan   le   yi-ge   pingguo.

    I   eat-finish ASP one-CL   apple

    'I have finished eating one apple.'

b. 我没吃完一个苹果。

    Wo   mei chi-wan   yi-ge   pingguo.

    I   not eat-finish one-CL   apple

    'I haven't finished eating one apple (though I ate part of the apple)'

c. *我没吃完了一个苹果。

    Wo   mei chi-wan   le   yi-ge   pingguo.

    I   not eat-finish ASP one-CL   apple

Similarly in (61) *bu* and *de* never co-occur.

(61) a. 我吃得完一个苹果。

    Wo   chi   de   wan   yi-ge   pingguo.

    I   eat DE   finish one-CL   apple

    'I can finish eating one apple.'

b. 我吃不完一个苹果。

    Wo   chi   bu   wan   yi-ge   pingguo.

    I   eat not   finish one-CL   apple

    'I cannot finish eating one apple.'

The difference between these two pairs is that *de* and *bu* occupy the same position in the syntax (or at least the same layer), whereas *mei* and *le* occupy varied positions.

2.3.1.3 A regular pattern of A-not-A questions

The A-not-A questions of the potential *buyu* structure do not display unique patterns. Sentences in (62) represent two ways of forming an A-not-A question. (62a) is similar to (63a), in which both of the positive and negative forms are displayed, with the positive form preceding the negative one. (62b), resembles (63b), whereas, is a partial

verb-copying. In (63b), only the first morpheme of the word *xihuan* is copied, and then the single morpheme *xi* further combines with the negative morpheme *bu* as well as the original verb, generating the combination of '*xi-bu-xihuan*'. Analogously, in (62b), the first morpheme of the phrase *xie-de-wan*, i.e. *xie*, is copied and the final combination is '*[xie-bu-[xie-de-wan]]*'. Since the potential *buyu*-structure does not show a distinctive way of forming an A-not-A question, we could further argue that the potential *buyu*-structure [V-*de-buyu*] behaves much like a single word, for instance *xihuan* in (63), syntactically.

(62) a. 张三写得完写不完作业？

    Zhangsan   xie   de   wan   xie   bu   wan   zuoye?

    Zhangsan   write   DE   finish   write   not   finish   homework

    'Whether Zhangsan can finish writing his homework or not?'

    b. 张三写不写得完作业？

    Zhangsan   xie   bu   xie   de   wan   zuoye?

    Zhangsan   write   not   write   DE   finish   homework

    'Whether Zhangsan can finish writing his homework or not?'

(63) a. 张三喜欢不喜欢写作业？

    Zhangsan   xihuan   bu   xihuan   xie   zuoye?

    Zhangsan   like   not   like   write   homework

    'Whether Zhangsan likes to do homework or not?'

    b. 张三喜不喜欢写作业？

    Zhangsan   xi-bu-xihuan   xie   zuoye?

    Zhangsan   like-not-like   write   homework

    'Whether Zhangsan likes to do homework or not?'

2.3.1.4 Incompatible with aspectual *le*

The potential *de* can never co-occur with aspectual element *le*, regardless the position of *le*. For instance,

(64) *le precedes de*:

    a. *张三写了得完作业。

    Zhangsan   xie   le   de   wan   zuoye.

    Zhangsan   write   ASP   DE   finish   homework

    no intended interpretation

b. *张三洗了得干净衣服。

Zhangsan   xi   le   de   ganjing   yifu.

Zhangsan   wash   ASP   DE   clean   clothes

no intended interpretation

(65) *le follows de but precedes buyu*:

a. *张三写得了完作业。

Zhangsan   xie   de   le   wan   zuoye.

Zhangsan   write   DE   ASP   finish   homework

no intended interpretation

b. *张三洗得了干净衣服。

Zhangsan   xi   le   de   ganjing   yifu.

Zhangsan   wash   ASP   DE   clean   clothes

no intended interpretation

(66) *le follows buyu*:

a. *张三写得完了作业。

Zhangsan   xie   de   wan   le   zuoye.

Zhangsan   write   DE   finish   ASP   homework

no intended interpretation

b. *张三洗得干净了衣服。

Zhangsan   xi   de   ganjing   le   yifu.

Zhangsan   wash   DE   clean   ASP   clothes

no intended interpretation

2.3.1.5 Incompatible with *ba*-construction

the potential structures cannot co-occur with *ba* 把, *bei* 被, and event adverbs like *qing'eryiju* 轻而易举 'effortlessly' (Chao 1968, Li & Thompson 1981). Williams (2014) further suggests that the modal operator in potential structures should be very low in the syntax, at least below the position of *ba, bei,* as well as the event adverbs. Take *ba*-construction as an example, as in (67).

(67) a. *张三把衣服洗得干净。

Zhangsan   ba   yifu   xi   de   ganjing.

Zhangsan   BA   clothes   wash   DE   clean

'Zhangsan can wash the clothes clean.'

b. *张三洗得把衣服干净。

Zhangsan   xi   de   ba   yifu   ganjing.

Zhangsan   wash   DE   BA   clothes   clean

intended interpretation:

'Zhangsan can wash the clothes clean.'

However, pre-verbal modal *neng* can occur in front of/ higher than *ba*.

(68) a. 张三能把衣服洗干净。

    Zhangsan   neng   ba   yifu   xi   ganjing.

    Zhangsan   can   BA   clothes   wash   clean

    'Zhangsan can wash the clothes clean.'

  b. *张三把衣服能洗干净。

    Zhangsan   ba   yifu   neng   xi   ganjing.

    Zhangsan   BA   clothes   can   wash   clean

    intended interpretation:

    'Zhangsan can wash the clothes clean.'

2.3.1.6 The choice of *buyu*

As shown in Section 2.2.3, the degree *buyu*-structure is incompatible with the result *buyu* like *wan, zhu,* etc. More examples are shown in (69). Whereas the potential *de* can be perfectly compatible with both regular lexical *buyu*, e.g. (70a), and result *buyu* like *wan, zhu, etc.*, e.g. (70b).

(69) a. 小红穿得特别漂亮。

    Xiaohong   chuan   de   tebie   piaoliang.

    Xiaohong   dress   DE   very   beautifully

    'Xiaohong dresses quite beautifully.'

  b. *张三写得完。

    Zhangsan   xie   de   wan.

    Zhangsan   write   DE   finish

    intended interpretation:

    'Zhangsan wrote and as a result he finished writing.'

(70) a. 小红穿得漂亮。

    Xiaohong   chuan   de   piaoliang.

    Xiaohong   dress   DE   beautifully

    'Xiaohong can dress beautifully (though she normally does not).'

b. 张三写得完。

Zhangsan   xie   de   wan.

Zhangsan   write   DE   finish

'Zhangsan can finished writing.'

However, similar to resultative *buyu*-structure, the *buyu* part of potential structure cannot be complex either. Nor can adverbs be added to the *buyu*, neither can a whole sentence appear after *de*. For instance,

(71) 张三写得这么好。

Zhangsan   xie   de   zheme   hao.

Zhangsan   write   DE   so   good

'Zhangsan wrote so well.'

#'Zhangsan can write that well.'

(72) a. 张三哭得没法儿喘气。

Zhangsan   ku   de   mei   fa'r   chuanqi.

Zhangsan   cry   DE   not   method   breathe

'Zhangsan can cry to the degree that he cannot breathe.'

only: 'Zhangsan cry so much that he cannot breathe.'

b. 张三气得我不想说话。

Zhangsan   qi   de   wo   bu   xiang   shuohua.

Zhangsan   annoy   DE   I   not   want   talk

'Zhangsan can annoy me to the degree that I do not want to talk.'

only: 'Zhangsan annoyed me so much that I do not want to talk.'

(73) 这件衣服洗得干净。

Zhe-jian   yifu   xi   de   ganjing.

this-CL   clothes   wash   DE   clean

i) 'This piece of clothes can be washed clean.'

ii) 'This piece of clothes has been washed clean.'

(71), along with sentences in (72), shows that when the *buyu* part is complex (compared with (73) when *buyu* are bare adjectives), *de* between the verb and *buyu* only has the degree reading instead of potential reading.

We need to add another result *buyu*, e.g. *liao* in this case (74a), or the pre-verbal modal *neng* in (74b) to generate the potential reading.

(74) a. 张三写得了这么好。

    Zhangsan   xie   de   liao   zheme   hao.

    Zhangsan   write   DE   finish   so   good

    'Zhangsan can write (to the degree of) that well.'

  b. 张三能写得这么好。

    Zhangsan   neng   xie   de   zheme   hao.

    Zhangsan   can   write   DE   so   good

    'Zhangsan can write (to the degree of) that well.'

To sum up with the properties of the potential *de*, it is a post-verbal modal which needs to be adjacent to the verb and occupies the same position with its negative form *bu*. It can be perfectly compatible with both regular lexical *buyu* and result *buyu* like *wan, zhu, etc.*, but not complex degree *buyu*. As to the whole potential *buyu*-structure, it behaves more like a single word in terms of A-not-A question test, but it cannot co-occur with *ba* 把, and *bei* 被.

2.3.2 The structure

2.3.2.1 Potential form of resultative *buyu*

Semantically speaking, the potential *buyu*-structure expresses the possibility whether the result of a verbal event could be realized or not. For instance,

(75) 我吃完了一个苹果。

    Wo   chi-wan   le   yi-ge   pingguo.

    I   eat-finish   ASP   one-CL   apple

    'I have finished eating one apple.'

(76) a. 我吃得完一个苹果。

    Wo   chi   de   wan   yi-ge   pingguo.

    I   eat   DE   finish   one-CL   apple

    'I can finish eating one apple.'

  b. 我吃不完一个苹果。

    Wo   chi   bu   wan   yi-ge   pingguo.

    I   eat   not   finish   one-CL   apple

    'I cannot finish eating one apple.'

Syntactically, considering that the choice of *buyu* is similar between potential *buyu*-structures and resultative *buyu*-structures, it is reasonable to assume that the basic underlying structure as well as some stages of derivation are shared by both of theses two structures. In addition, given the fact that the potential *de* is incompatible with aspectual *le*, I would like to say *le* in resultative structures confirms the realization of the result whereas the potential *de* in the potential structures expresses the possibility. In other words, *de*, anagoulous to *le*, is an extra aspectual or modal of basic resultative compounds.

2.3.2.2 The position of potential *de*

Assuming that *ba* occupies v^0, following Sybesma and Shen's (2006) analysis as well as Xuan's (2008, 2011), it is apparent that *neng* projects higher than v^0 because *neng* occurs preceding to *ba*, e.g. (68). However, since the potential *de* cannot co-occur with *ba*, this diagnosis cannot be used directly to locate the potential *de*. Crucially, the co-occurrence of *neng* and *ba* suggests that the incompatibility between the potential *de* and *ba*-construction should not be ascribed to the incompatibility between potential semantics and *ba*-construction, rather between *ba*-construction and the potential constructions. Consequently, there are two possibilities. First, the construction [V+*de*+*buyu*] occupies v^0 position *per se*; alternatively, *ba* intervenes certain operations within the derivation of the potential construction. The main problem with both of the possibilities is the word order. As a modal element, potential *de* should project at least higher than TelP, which means *de* has to be inserted to the incorporated [V-*buyu*] construction in later stages of derivation after the verbal incorporation. Such an operation would be quite unnatural.

I will discuss the second option first. Following Cheng and Sybesma's (2003) analysis of forked modality, assuming that the potential modal *de* in Mandarin is split into two parts: a verbal part in the verbal domain and a non-verbal part in the functional domain, then the insertion of *ba* will exactly intervene the link between these two parts. According to them, at PF the potential *de* occupies $Mod2^0$, head of an inner modal projection within *v*P domain, resembling the inner aspect projections; whereas at LF it is interpreted as occupying $Mod1^0$ by way of merging. The reason why Mandarin has a forked modality is that the lower modal position is defective to express modality fully in the sense that it is only realized at PF but not interpreted at LF. Their proposal explains why the post-verbal *de* can have a matrix scope; and also why there is a 'doubling' sentence, e.g. (77), in Mandarin.

(77) 他肯定能吃得完这么点饭。(Cheng and Sybesma 2003)

Ta kending neng chi de wan zheme dian fan.

he surely can eat DE finish this bit rice

'He can for sure eat this little bit of rice.'

If their analysis is correct, why the potential construction is incompatible with *ba*-structure can be explained: the existence of *ba* intervenes the merge between to Mod positions. However, the word order problem of potential construction still remains problematic. For instance, (78) is a potential sentence, and (79) illustrates the first steps of derivation.

(78) 他吃得完这么点饭。

Ta chi de wan zheme dian fan.

he eat DE finish this bit rice

'He can eat this little bit of rice.'

(79) a. *underlying structure:*

[Mod1P Spec [Mod1' Mod1…[vP Spec [v' v [Mod2P [Mod2' Mod2 [TelP Spec [Tel' Tel [VP [V' V]]]]]]]]]]

                 ta   *de* [zheme dian fan] wan chi

b. *first step: V-to-Tel movement*

[Mod1P Spec [Mod1' Mod1…[vP ta [v' v [Mod2P [Mod2' *de* [TelP zheme dian fan [Tel' chi$_i$-wan [VP [V' t$_i$]]]]]]]]]]]

c. *second step: Tel-to-Mod2 movement*

[Mod1P Spec [Mod1' Mod1… [vP ta [v' v [Mod2P [Mod2' chi$_i$-wan$_j$-*de* [TelP zheme dian fan [Tel' t$_j$ [VP [V' t$_i$]]]]]]]]]]]

We can assume that without the insertion of another modal verb *neng*, the potential construction, or at least part of it, should move overtly to Mod1^0 in order to express the potential modality fully. Then it is natural that *de* itself should move; moreover, since *de* is a weak syllable to stand out alone, the main verb *chi* needs to move along with it. As a result, after further feature-checkings, the correct word order is there: *chi-de-wan*. However, the above statement in fact is an *ad-hoc* explanation which raises more problems. For instance, why should part of the combination [*chi-wan-de*]

move instead of the whole structure. Also, how to revise the word order in doubling sentences, as well as negative potential sentences?

Now let's return to the assumption that the construction [V+*de*+*buyu*] occupies v^0. Cheng and Sybesma (2004) applies 'morphophonological merger' (Bobaljik 1995) in analyzing potential morpheme *dak* in Cantonese. Based on the idea, the production of Tel-to-Mod2 movement, i.e. [V+*buyu*+*de*], [*chi-wan-de*] in the above example, do not need to move to Mod1^0; instead, it only needs to move to the closest head to Mod1^0, i.e. v^0, to realize the Agreement. However, if [V+*de*+*buyu*] occupies v^0 by itself, one consequence is that no intransitive potential *buyu*-structures is available, which definitely counters the fact. Considering this problem, I would prefer the proposal that the potential construction moves all the way to Mod1^0, though it is not an economical operation, and the word order problem is still unsolved either.

2.3.2.3 Potential *de* and degree *de*

One interesting pattern is shown in section 2.3.1.6 that the *buyu* part of potential structure cannot be complex. However, if another result *buyu*, e.g. *liao*, or the pre-verbal modal *neng* is added, the sentences will be rescued. The examples are repeated here as (80).

(80) a. 张三写得这么好。

　　　Zhangsan　xie　de　zheme　hao.

　　　Zhangsan　write　DE　so　　good

　　　'Zhangsan wrote so well.'

　　　#'Zhangsan can write that well.'

　　b. 张三写得了这么好。

　　　Zhangsan　xie　de　liao　zheme　hao.

　　　Zhangsan　write　DE　finish　so　　good

　　　'Zhangsan can write (to the degree of) that well.'

　　c. 张三能写得这么好。

　　　Zhangsan　neng　xie　de　zheme　hao.

　　　Zhangsan　can　write　DE　so　　good

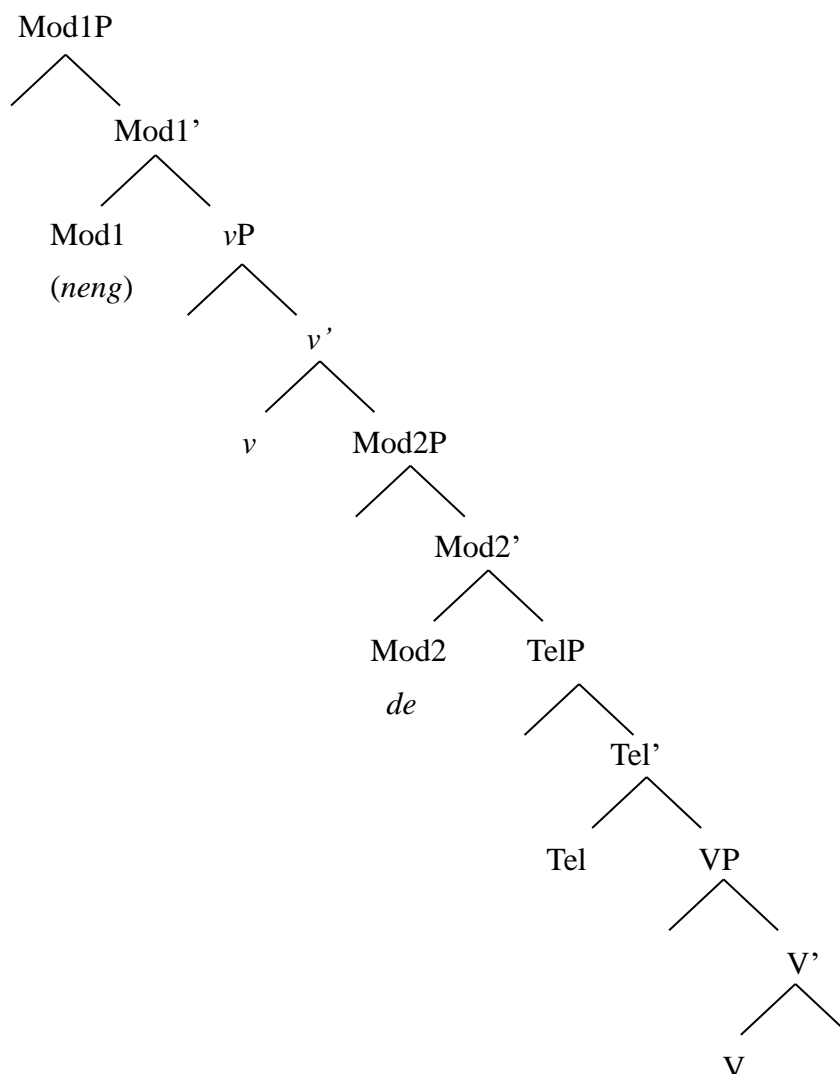　　　'Zhangsan can write (to the degree of) that well.'

The contrast between (80a) and (80b-c) shows that the potential semantics works well with degree phrases and the incompatible between potential *de* and degree phrases

should be accounted for by syntactic reasons. If my analysis of the degree *de* is correct, that it is the head of TelP, i.e. Tel^0, which is actually what we means by *buyu*, then the above phenomenon could be paraphrased as no potential construction is available when the Tel^0 is occupied by *de*. The alternative ways to express potential semantics are to add an extra pre-verbal modal *neng* or to substitute *de* which occupies Tel^0 with another element. There are two possible explanations here. One is simply a phonetic account that the occurrence of two successive phonetically weakened morpheme *de* is quite awkward for speakers. Alternatively, maybe there is only one *de* in charge of both degree and potential semantics and different interpretations are produced when *de* stays in different positions. When there is a need to fill both positions in one single sentence, *de* could only appear at one position and the other position needs to be inserted by other elements with the same semantic meaning, as in (80b) and (80c). I would like to leave the evaluation of which explanation is more reasonable open in the current study.

2.3.2.4 The structure of potential *buyu*-structures

Taking all the properties I discussed in previous section into consideration, I would like to claim that the potential *de* originates in the inner Mod^0, i.e. $Mod2^0$ in Cheng and Sybesma's (2003, 2004) analysis, then the potential construction preliminarily formed within *v*P domain moves all the way up to the Mod^0 at IP level, the $Mod1^0$ in Cheng and Sybema (2003, 2004). Therefore, the whole structure is illustrated in (81).

(81) *the structure of potential buyu-structure:*

```
Mod1P
  └── Mod1'
        ├── Mod1
        │    (neng)
        └── vP
              └── v'
                    ├── v
                    └── Mod2P
                          └── Mod2'
                                ├── Mod2
                                │    de
                                └── TelP
                                      └── Tel'
                                            ├── Tel
                                            └── VP
                                                  └── V'
                                                        └── V
```

2.4 Interim Summary

Till now, I have discussed all the structures of the three categories of *buyu*-structures. The current proposal generally has a unified skeleton, which is actually Xuan's (2008, 2011) TelP structure, repeated here as (82) with a little modifications.

(82) $[_{vP} [_{v'} v [_{AspP} [_{Asp'} Asp [_{Mod2P} [_{Mod2'} Mod2 [_{TelP} [_{Tel'} Tel [_{VP} [_{V'} V (\ldots)]]]]]]]]]]$

Meanwhile, the derivations of these three categories of *buyu*-structures are also similar: first the main verb moves up to Tel^0 to check its telic feature and incorporate with *buyu*; then the combination of [V+*buyu*] moves up to inner Mod^0 or Asp^0. After all the operations within the *v*P domain are done, the construction further moves up in the IP domain for further feature checkings. To be specific, for resultative

buyu-structure, there is no inner ModP, thus the movements within *v*P are V-to-Tel^0 movement and then Tel^0-to-Asp^0 movement. If the structure is transitive, one more operation is applied: an Asp^0-to-*v* movement or an insertion of *ba*. For degree *buyu*-structure, a DegP occupies the complement position of the main verb to predicate on the main verb, denoting the degree property of the verbal event. The Tel^0 is filled with *de* and the main verb then moves up and incorporates with *de*. In transitive structures, the combination of [V-*de*] further moves up to *v*. For potential *buyu*-structure, *de* occupies Mod2^0, and no inner AspP is involved. Similarly, the main verb moves up and incorporates with *buyu* first, and then their combination moves up to Mod2^0 and incorporates with potential *de*. Lastly, the incorporated potential construction would further moves up to Mod1^0 at IP domain to fully realize the potential modality. However, the word order problem of potential construction still remains unsolved in the current study.

3. Issue of object placement in *buyu*-structures

The object placement issue of the current study could be generalized as two aspects. First, the so-called objects are allowed in resultative and potential *buyu*-structures; whereas they never appear in degree *buyu*-structures. Second, there is a constraint on syllable numbers of *buyu* in resultative *buyu*-structure; whereas the constraint is much looser in potential *buyu*-strucuture. My explaination on these phenomena is based on the structures I proposed in Section 2. Section 3.1 will focus on the first generalization, the occurrence of the surface objects; and Section 3.2 will deal with the second one, the constraints on syllable numbers.

3.1 The occurrence of 'objects'

According to my analysis of all three categories of *buyu*-structures, the main verb is bare in resultative and potential structures; however in degree structures the complement position of V is occupied by a DegP. When all the movements have been done, from V to Tel^0, to Asp^0 or Mod^0, and to other higher positions in the IP domain and even higher, the DegP still remains at the sentence final postition. However, the surface objects in resultative and potential structure, which is the external argument of Tel^0 occupying [Spec, Tel], are left behind and appear in the sentence final position. That's the reason why surface objects are not available in degree structures, but are

available in resultative and potential structures. In other words, the issue, in fact, does not relate to the argument structures of verbs. Instead, it is only a linear order problem: whether or not the embedded NP subject would be left in the sentence final position. The phenomenon that no object occurs in the locative *buyu* sentences supports this analysis. Sybesma (1999) proposes a phonetical null operator as the predicate in locative small clause. I modify it a bit to adapt into the unified skeleton I proposed in the previous section. The structure of locative *buyu* sentences is shown in (83) and (84) presents an example of the derivation of a locative sentence.

(83) [$_{vP}$ [$_{v'}$ v [$_{AspP}$ [$_{Asp'}$ Asp [$_{TelP}$ NP [$_{Tel'}$ Ø$_{there}$ [$_{VP}$ [$_{V'}$ V PP]]]]]]]]

(84) a. 张三放了一本书在桌子上。

    Zhangsan fang le yi-ben shu zai zhuozi shang.

    Zhangsan put ASP one-CL book at table top

    'Zhangsan put a book on the table.'

  b. *the underlying structure*

  [$_{vP}$ Spec [$_{v'}$ v [$_{AspP}$ [$_{Asp'}$ Asp [$_{TelP}$ Spec [$_{Tel'}$ Ø$_{there}$ [$_{VP}$ [$_{V'}$ V PP]]]]]]]]

    Zhangsan   le yi-ben shu   fang [$_{PP}$zai zhuozi shang]

  c. *the V-to-Tel movement*

 I   [$_{vP}$ Zhangsan [$_{v'}$ v [$_{AspP}$ [$_{Asp'}$le [$_{TelP}$ yi-ben shu [$_{Tel'}$ fang$_i$-Ø$_{there}$ [$_{VP}$ [$_{V'}$ t$_i$ zai zhuozi shang]]]]]]]]]

  d. *the Tel-to-Asp movement*

    [$_{vP}$ Zhangsan [$_{v'}$ v [$_{AspP}$ [$_{Asp'}$ fang$_i$-Ø$_{therej}$-le [$_{TelP}$ yi-ben shu [$_{Tel'}$ t$_j$ [$_{VP}$ [$_{V'}$ t$_i$ zai zhuozi shang]]]]]]]]]

Intransitive sentences and corresponding *ba*-constructions are also possible. For instance,

(85) a. 这本书放在了桌子上。

    Zhe-ben shu fang zai le zhuozi shang.

    this-CL book put at ASP table top

    'This book is put on the table.'

  b. [$_{AspP}$ Zhe-ben shu$_k$ [$_{Asp'}$ fang$_i$-Ø$_{therej}$-le [$_{TelP}$ t$_k$ [$_{Tel'}$ t$_j$ [$_{VP}$ [$_{V'}$ t$_i$ zai zhuozi shang]]]]]]

(86) a. 张三把这本书放了桌子上。

    Zhangsan ba zhe-ben shu fang zai le zhuozi shang.

       Zhangsan BA this-CL book put at ASP table   top

      'Zhangsan put this book on the table.'

    b. [$_{vP}$ Zhangsan [$_{v'}$ba [$_{AspP}$ zhe-ben shu$_k$ [$_{Asp'}$ fang$_i$-Ø$_{therej}$-le [$_{TelP}$ t$_k$ [$_{Tel'}$ t$_j$ [$_{VP}$ [$_{V'}$ t$_i$ zai zhuozi shang]]]]]]]]

On above three conditions, no NP appears in the sentence final position. In addition, Fan (1982) scrutinizes the Mandarin *zai*-construction. He concludes that there are three structures of *zai*-construction: 1) PP+NP+VP; 2) NP+PP+VP; 3) NP+VP+PP. Again, none of these three variants have a NP in the final position.

As a result, the reason why no object is allowed in degree *buyu*-structure, as well as locative *buyu*-structure, is that there is another projection occupies the complement position of V, which never moves up. On the contrary, without the extra projection, resultative and potential *buyu*-structures display a simpler sentence formation: [NP+VP+NP], in which the second NP resembles an object.

3.2 The constraints on numbers of syllables

Now let's have a look at the syllables number issue. Resultative *buyu*-structure allows *buyu* to be a word of no more than two full-toned syllables (e.g. (1d)), which means that the *buyu* could be a monosyllabic word (e.g. (1a) and (1c)) or a disyllabic word with a neutral tone (e.g. (1b)). More examples are listed below in (87-88)[7].

(87) a. 老师调**匀**了颜料。

    Laoshi   *tiao*   ***yun***   *le*   *yanliao.*

    teacher   mix   uniformly   ASP   pigment

    'The teacher mixed the pigment uniformly.'

  b. ?老师调**均匀**了颜料。

    Laoshi   *tiao*   ***junyun***   *le*   *yanliao.*

    teacher   mix   uniformly   ASP   pigment

    'The teacher mixed the pigment uniformly.'

(88) a. 这个活动搞**活**了班级气氛。

    Zhe-ge   *huodong*   *gao*   ***huo***   *le*   *banji*   *qifen.*

    this-CL   activity   make   lively   ASP   class   environment

    'This activity made the environment of the class lively.'

  b. ?这个活动搞**活跃**了班级气氛。

---

[7] Examples here are adapted from Deng, Shi & Feng (2008).

> *Zhe-ge   huodong   gao   **huoyue**   le   banji   qifen.*
> this-CL   activity   make   lively   ASP   class   environment
> 'This activity made the environment of the class lively.'

(89) a. 我办**妥**了所有的手续。

> *Wo   ban   **tuo**   le   suoyou   de   shouxu.*
> I   settle   well   ASP   all   POS   formality
> 'I have settled all the formalities well.'

b. ?我办**妥贴**了所有的手续。

> *Wo   ban   **tuotie**   le   suoyou   de   shouxu.*
> I   settle   well   ASP   all   POS   formality
> 'I have settled all the formalities well.'

Chao (1968) has listed 154 words which are frequently used as resultative *buyu*. Only eleven out of 154 are disyllabic words (*mingbai* 明白 'clear', *pianyi* 便宜 'cheap', *huodong* 活动 'loose', *exin* 恶心 'disgusted', *nuanhuo* 暖和 'warm', *ganjing* 干净 'clean', *jieshi* 结实 'firm', *qingchu* 清楚 'clear', *hutu* 糊涂 'confused', *yangyang* 痒痒 'itchy', *zhengqi* 整齐 'organized') and only one of these eleven disyllabic words has two syllables of full tone (i.e. *zhengqi*). In addition, Hu (1987) listed four hundred frequently used adjectives in Beijing dialect, among 181 disyllabic words, only few could be used in the [V+*buyu*+O] template.

Obviously, there is no limitation of the number of syllables in lexical insertion. Consequently, the constraint plays a role during certain process(es) of syntactic derivation. The first possibility is the word incorporation. Dong (1998) and Feng (2013) assume it is the process of incorporating that introduces the constraint. According to Feng (2013), the Natural Prosodic Foot of Mandarin is a two-syllable unit and one prosodic foot cannot allow more than three syllables. Hence, plus *-le*, which counts as half of one syllable, a monosyllabic matrix verb could take a disyllabic *buyu* containing a netural tone at maximum. Dong (1998) also finds that when the matrix verb is a disyllabic word, the *buyu* tends to be a monosyllabic word which is quite grammaticalized, such as *hao* 'good', *wan* 'finish' etc.; the example of a disyllabic matrix verb plus disyllabic *buyu* is rare. This explanation seems to entertain the phenomenon of our sentences in (1) perfectly. In addition, they argue that, in fact, it is the prosodic requirement that triggers the word incorporation. Six Dynasties witnessed the disyllabification of ancient Chinese. Considering the

coincidence of the time point of disyllabification and the occurrence of resultative, especially the [V+*buyu*+O] construction, it is quite possible that the incorporation is triggered by the requirement of disyllabification at that time.

Nonetheless, if we take the intransitive resultative *buyu*-structure into consideration, we may find it problematic. The corresponding intransitive structures of (a) sentences in (1-4) are illustrated below in (90).

(90) a. 衣服**洗净**了。

    Yifu   *xi*   ***jing***   *le.*

    clothes   wash   clean   ASP

    'The clothes has been washed clean.'

   b. 衣服洗**干净**了。

    Yifu   *xi*   ***ganjing***   *le.*

    clothes   wash   clean   ASP

    'The clothes has been washed clean.'

   c. 衣服叠**齐**了。

    Yifu   *die*   ***qi***   *le.*

    clothes   fold   neat   ASP

    'The clothes has been folded neatly.'

   d. 衣服叠**整齐**了。

    Yifu   *die*   ***zhengqi***   *le.*

    clothes   fold   neat   ASP

    'The clothes has been folded neatly.'

The syllabic constraint disappears in (90). There are two possibilities here. First, the Natural Prosodic Foot requirement in Mandarin is not correct or at least is not a general requirement; and second, the verb-incorporation does not violate the requirement yet other process(es) may violate certain constraints. There are several examples supporting the fact that the Natural Prosodic Foot requirement does work in Mandarin Chinese (Feng 2013, among his other works). The examples demonstrate the necessity of a natural pause after two syllables, and the fact that sometimes the pauses ignore the syntactic and semantic structures. For instance,

(91) a. 一衣带水

     yi   yi   dai   shui

one   cloth   belt   water

lit 'one cloth-belt of water'

'the width of an area of water is as narrow as a cloth-belt'

b. 布宜诺斯艾利斯

　 Bu-yi-nuo-si-ai-li-si

　 'Buenos Aries'

c. a series of number: 5555

　 wu-wu-wu-wu

The proper punctuation pattern of (91a) should be *'yi#yi-dai#shui'*, based on its syntactic and semantic structures. However, in fact the only pause is after "*yi*" (*yi-yi#dai-shui*). It shows the strong power of the prosodic requirement which even overrides the syntactic structures. (91b) is a pure translation of the name of Buenos Aries. Hence, there are no inner syntactic structures among those syllables. Whereas, a clear pattern of pause, '*bu-yi#nuo-si#ai-li-si*', also exists. It demonstrates that disyllabic foot is quite natural in Mandarin. In (91c), the first and the third syllable would actually undergo third tone sandhi while the second and the fourth syllable would not. It also presents that two syllables form a prosodic unit. Thus, we cannot simply deny the validation of natural foot requirement in Mandarin.

The other possibility is that the constraint applies to movements, or there are some positions which do not allow too many syllables. As I have listed previously, all potential sentences are quite good, both the (b) sentences in (1-4) and the corresponding potential forms of sentences in (87-89), which are shown below in (92-94).

(92) a. 老师调得匀颜料。

　　 *Laoshi   tiao   de   **yun**   yanliao.*

　　 teacher   mix   DE   uniformly   pigment

　　 'The teacher can mix the pigment uniformly.'

b. 老师调得均匀颜料。

　 *Laoshi   tiao   de   **junyun**   yanliao.*

　 teacher   mix   DE   uniformly   pigment

　 'The teacher can mix the pigment uniformly.'

(93) a. 这个活动搞得活班级气氛。

*Zhe-ge   huodong   gao   de   **huo**   banji   qifen.*

this-CL   activity   make   DE   lively   class   environment

'This activity can make the environment of the class lively.'

　　b. 这个活动搞得**活跃**班级气氛。

*Zhe-ge   huodong   gao   de   **huoyue**   banji   qifen.*

this-CL   activity   make   DE   lively   class   environment

'This activity can make the environment of the class lively.'

(94) a. 我办得**妥**所有的手续。

*Wo   ban   de   **tuo**   suoyou   de   shouxu.*

I   settle   DE   well   all   POS   formality

'I can settle all the formalities well.'

　　b. 我办得**妥贴**所有手续。

*Wo   ban   de   **tuotie**   suoyou   de   shouxu.*

I   settle   DE   well   all   POS   formality

'I can settle all the formalities well.'

Meanwhile, the intransitive counterparts of transitive resultatives are also good, e.g. (90). Thus, the constraint must work on the processes or positions that only belong to the transitive resultative *buyu*-structure, which do not exist in both intransitive resultative *buyu*-structures and potential *buyu*-structures. As a result, I assume the answer is that v^0 cannot take a huge chunk. In fact, this requirement just reflects the crucial property of the so-called 'light verb', that is LIGHT.

4. Conclusion

This thesis gives a syntactic explanation on the object placement issue of three *buyu*-structures, i.e. resultative *buyu*-structure, degree *buyu*-structures and potential *buyu*-strucutres, by re-examining their syntactic structures respectively. As a result, why no object is allowed in the degree *buyu*-structure ascribes to another projection occupying the complement position of V, which never moves up. On the contrary, without the extra projection, resultative and potential structures display simpler sentence formation: [NP+VP+NP], in which the second NP resembles an object. However, contraints on the syllable numbers on the resultative *buyu* dues to the existence of *v*P in transitive resultative *buyu*-structures, and v^0 cannot take a huge chunk, which reflects the crucial property of the so-called 'light verb' ------ LIGHT.

Apart from solving this object issue, the current study also applies Xuan's (2008, 2011) TelicP Hypothesis to the analysis of both degree constructions and potential forms, revising Sybesma's (1999) Small Clause analysis in several aspects. A relative unified skeleton of these three *buyu*-structures are built, as in (95).

(95) [$_{v}$P [$_{v'}$ v [$_{Asp}$P [$_{Asp'}$ Asp [$_{Mod2}$P [$_{Mod2'}$ Mod2 [$_{Tel}$P [$_{Tel'}$ Tel [$_{V}$P [$_{V'}$ V (…)]]]]]]]]]]]]

However, the word order problem of the potential *buyu*-structure remains unsolved in this thesis. In addition, several interesting issues related but not involved in this study are also open for future research. For instance, what the relationship between descriptive *de*-constructions and degree *buyu*-structures, and how to structuralize the descriptive structures? How to analyse the diachronic alterations of object position of resultative *buyu*-structure and their potential forms? Also distinctive stress patterns work on degree structures and potential structures, then how to deal with such stress and focus issues?

Reference

Chao, Y. R. (1968), *A Grammar of Spoken Chinese*, Berkeley: University of California Press.

Cheng, L. L. S. and Huang, J. C. T. (1994), On the argument structure of resultative compounds, in Chen, M. Y. and Tzeng, J. L. O.(eds.), In: *Honor of William S-Y Wang: Interdisciplinary Studies on Language and Language Change*, 187-221, Taipei: Pyramid Press.

Deng, D., Shi, F. & Feng, S. L. (2008), The experimental research on prosody restrained syntax, *Journal of Chinese Linguistics* 36 (2), 195-210.

Dong, X. F. (1998), Shubu dai bin jushi zhong de yunlv zhiyue [The constrain of prosody on carrying objects of V-O structures], *Yuyan Yanjiu* [Linguistic Studies] 34, 55-62.

Feng, S. L. (1995), The passive construction in Chinese, *Studies in Chinese Linguistics* 1 (1), 1-28.

Feng, S. L. (2013), *Hanyu yunlu jufaxue* [Chinese Prosodic Syntax] (2nd edition). Beijing: The Commercial Press.

Givon, T. (1971), Historical syntax and synchronic morphology: An archeologist's field trip. *CLS* 7, 394-415.

Grano, T. (2012), Mandarin *hen* and Universal Markedness in gradable adjectives, *Natural Language and Linguistic Theory* 30, 513-565.

Hu, M. Y. (1987), Beijinghua Chu Tan, Beijing: The Commercial Press.

Huang, S. F. (1974), Mandarin causatives, *Journal of Chinese linguistics* 2 (3), 354-369.

Huang, J. C.-T. (1984), Phrase structure, lexical integrity, and Chinese compounds. *Journal of the Chinese Language Teachers Association* 19, 53-78.

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

Huang, J. C.-T., Cheng, L. L. S., Li, A. Y. H., and Tang, C. C. J. (1997), Causative compounds across Chinese dialects: A study of Cantonese, Mandarin and Taiwanese. In: *Symposium Series of the Institute of History and Philology Academia Sinica*, Number 2, 199-224.

Huang, J. C.-T., Li, A. Y.-H., & Li, Y. F. (2009), The Syntax of Chinese, Cambridge University Press.

Jiang, S. Y. (1994), *Jindai Hanyu Yanjiu Gaikuang*, Beijing: Beijing Daxue Chubanshe.

Jiang, S. Y. & Cao, G. S. *ed* (2005), *Jindai hanyu yufa yanjiu zongshu* [The literature review of studies on the grammar of Archaic Chinese], Beijing: The Commercial Press.

Li, C. N. & Thompson, S. (1981), *A Functional Reference Grammar of Mandarin Chinese*, Berkeley: University of California Press.

Li, Y. F. (1990), On V-V compounds in Chinese, *Natural Language and Linguistic Theory* 8, 177-207.

Li, Y. F. (1995), The thematic hierarchy and causativity, *Natural Language and Linguistic Theory* 13, 255-282.

Li, Y. F. (1999), Cross-componential causativity, *Natural Language and Linguistics Theory* 17, 445-497.

Mei, Z. L. (1991), Cong Han-dai de "dong-sha", "dong-si" kan dong-bu jiegou de fazhan, *Yuyanxue Luncong* 16, 222-245.

Pan, H. H. &Ye, K. (2015). Kongzhi haishi tisheng, zhe shi yi-ge wenti ------ zhishi lei '*V-de*' ju de jufa benzhi yanjiu [Control or raising? That is the question: The syntax of causative V-*de* construction], *Yuyan Yanjiu [Studies in Language and Linguistics]* 35(3), 28-37.

Shen, Y. and Xuan, Y. (2011), 'Wanjie duanyu' ji hanyu jieguo buyu de yufahua he wancheng-ti biaoji de yanbian guocheng [The grammaticalization of Chinese RC as TelP and the development of the perfective aspect markers], *Hanyu Xuexi* [Chinese Language Learning] 1, 3-14.

Shen, Y. and Sybesma, R. (2012), Zuoge dongci de xingzhi he zuoge jiegou de Gouzao [On the Nature of Unaccusatives and Unaccusative Structures], *Shijie Hanyu Jiaoxue* 26 (3), 306-321.

Shi, C. H. (2004), Dongjieshi xingcheng guocheng zhong peiwei fangshi de yanbian [The evolution of the syntactic arrangement of the verb-resultative constructions], *Zhongguo Yuwen* [Studies of Chinese Language] 6, 521-535.

Sun, C. F. (1996), *Word Order Change and Grammaticalization in the History of Chinese*, Stanford: Stanford University Press.

Sybesma, R. (1992), *Causatives and accomplishments: The case for Chinese ba*. PhD dissertation, Leiden University.

Sybesma, R. (1999), *The Mandarin VP*, Dordrecht: Kluwer Academic Publishers.

Sybesma, R. and Shen, Y. (2006), Jieguo buyu xiaoju fenxi he xiaoju de neibu jiegou [Small clause results and the internal structure of the small clause], *Huazhong*

Keji Daxue Xuebao 4, 40-46.

Wang, H. (1995), *Duiwai Hanyu Jiaoxue Yufa Dagang* [The syllabus of Grammar in Teaching Chinese as a Second Language], Beijing: Beijing Yuyan Xueyuan Chubanshe.

Wang, L. (1958/1980), *Hanyu Shi Gao*, Beijing: Zhonghua Shuju.

Williams, A. (2014), Causal VVs in Mandarin Chinese, In Huang, J. C.-T., Li, A. Y.-H. & Simpson, A. (eds), *The Handbook of Chinese Linguistics*, Oxford: Blackwell Publishing.

Wu, F. X. (2002), Hanyu nengxing shubu jiegou "V-*de*/*bu* C" de yufahua [On the grammaticalization of the potential verb-complement constructions "V-*de* C/ V-*bu* C" in Chinese], *Zhongguo Yuwen* [Studies of Chinese Language] 1, 29-40.

Xiong, Z. R. (2013), *Dangdai Yufaxue Jiaocheng* [A course of Contemporary Grammar], Beijing: Beijing Daxue Chubanshe.

Xu, L. J. (1986), Free empty category, *Linguistics Inquiry* 1, 75-93.

Xuan, Y. (2008), *Wanjie Duanyu Jiashe he hanyu xuhua jieguo buyu yanjiu ------ jianlun hanyu jieguo buyu, ti biaoji he quxiang buyu de jufa wenti*, PhD Dissertation, Peking University.

Xuan, Y. (2011), Xiandai hanyu dongjieshi buyu shi yizhong neibu qingtai ti ------ *Wanjie Duanyu Jiashe* dui dongjieshi jiegou de jieshi [The Resultative Complement is an inner aspect: *Telic Phrase Hypothesis* of Chinese verb-resultative constructions], *Huayu Jiaoxue yu Yanjiu* [TCSOL Studies] 1, 67-78.

Yang, P. (1990), Dai *de* de shubu jiegou de chansheng he fazhan [The origin and evolution of V-C structures with *de*], *Guhanyu Yanjiu [Researches of Ancient Chinese]* 1, 56-63.

Zhu, D. X. (1982), *Yufa Jiangyi* [A handout of Chinese grammar], Beijing: The Commercial Press.