SPLITTING LIGHT VERBS IN THE RESULTATIVE CONSTRUCTION

by

A Thesis submitted to the

School of Graduate Studies

in partial fulfillment of the requirements for the degree of

Doctor of Philosophy

Department of Linguistics

Memorial University of Newfoundland

May, 2019

St. John's   Newfoundland and Labrador

ABSTRACT

This thesis examines the resultative construction in Mandarin Chinese, and extends to different resultative patterns in Shanghai dialect and Innu-aimûn. The objective of the study is to investigate the derivational process of various resultative patterns with the labeling theory. I will attempt to provide a symmetric analysis of the resultative construction in general. Hopefully, this study will shed some light on the interface study between the syntactic derivation and the event semantic analysis in the resultative construction.

In Mandarin Chinese, a v-splitting structure is proposed in compounding resultatives and DE-resultatives, in which multiple adjacent light verbs are hypothesized along with feature inheritance. The v-splitting structure is also applied to a pattern containing a preverbal resultative adverb in Mandarin Chinese, which is termed as adverb-resultatives. I propose that these patterns fall into the resultative construction in a broad sense. The splitting approach is better than a base-generated structure with two v heads. One advantage is that it allows us to formulate the analysis in which the root raises to v* without violating the head movement constraint. It also works better to explain the specificity effect, when it is based on a splitting structure and labeling requirement.

Extending the study to the cross-linguistic scope, resultatives in Shanghai dialect and Innu-aimûn are briefly explored. On the one hand, a mono-layer light verb is proposed in Shanghai dialect, in which the resultative predicate does not undergo head movement to

the light verb, ending up with the serial verb pattern. The contrast between Shanghai and Mandarin resultatives indicates the diachronical development of light verbs in Chinese: from a unified mono-layer to a v-splitting structure. On the other hand, in Innu-aimûn, the resultative predicate is realized in the preverbal position within the complex verb structure. Multiple head movement is analogically explored in Innu-aimûn.

Through the comparative study, the parameter of head movement is emphasized in various resultative patterns. Different strategies to the symmetry-breaking are proposed across languages. In English, the $\langle\varphi,\varphi\rangle$ label matching is used in the VP agreement system. However, this is not unanimously applied to other languages. In Innu-aimûn, result-raising in the resultative construction is the only possibility to break the symmetry of an uninterpretable configuration. In Chinese, two ways are proposed on the symmetry-breaking: the $\langle\varphi,\varphi\rangle$ feature-matching as the core mechanism in the VP agreement system, and result-raising as a supplementary operation.

ACKNOWLEDGEMENTS

The acknowledgement page provides me a precious opportunity to express my sincere gratitude to those who have offered me constant support for my overseas study and the thesis completion. My heartfelt gratitude first goes to my thesis committee examiners Dr. Keir Moulton, Dr. Alexander Williams and Dr. Julie Brittain. Without their helpful comments and advice, the thesis would not have been completed as it is.

My deepest indebtedness doubtless to my supervisor Dr. Phil Branigan. Indeed, I am so honored to be a graduate student working with Phil, and it is Phil that makes my overseas study enriched. Even up to now when I type the acknowledgement words, what came into my mind is that Phil is always reachable and ready to listen to my confusions in the thesis writing, regardless of semester breaks or holidays. I have benefited a lot from his patient discussions, insightful comments and endless encouragement. I am also impressed by his insightful sharing in our syntax class and reading groups. The reading group provides good moments for us to read and discuss the frontier syntactic work. Being my supervisor, Phil's professional expertise and easygoing personality will benefit me for good in my future academic or non-academic life.

In addition, please allow me to speak out my sincere gratitude to Dr. Paul DeDecker, who advises my first comprehensive examination. I am appreciated that Paul is always kind and patient to demonstrate useful methods on data-recording and statistic-analysing. I am also

study. Even though staying far away from home, I am obliged that she is always there not only for my study but also for my life advising.

Last but not least, I would like to show my gratitude to my families and friends. The countless support from them adds outstanding scenery in my overseas life. My parents always give me unconditional support for my study and many other choices. During the past oversea years, I cannot go back to visit them as usual. But I feel so excited when we have the video or audio online call each time. In order not to distract my attention on my thesis writing and my overseas study, they always share happy experiences with me, and never mention any difficulties they come across. I know this is all about parents' love. Here I would also like to say thanks to my older brother and my sister in-law. They try their best to take good care of my parents which I should have done. At last, please allow me to mention a little angel girl, my 4-year-old niece. Although now she cannot understand the English words here, but I will not hesitate to let her know that I love her, as she has created immeasurable happy moments for my overseas study.

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ABBREVIATIONS

1, 2, 3	1st, 2nd, 3rd Person
Adj	Adjective
Adv	Adverb
AP	Adjectival Phrase
Asp	Aspect
Aux	Auxiliary
BecP	Become Phrase
CausP	Causative Phrase
CL	Classifier
CP	Complementizer Phrase
DOR	Direct Object Restriction
DP	Determiner Phrase
EF	Edge Feature
E-language	External Language
EP	Event Phrase
ExtP	Extent Phrase
FinP	Finiteness Phrase
FocP	Focus Phrase
ForceP	Force Phrase
GENI	Genitive
H	Head
HMC	Head Movement Constraint
I-language	Internal Language
INFL	Inflectional Head
Intrans	Intransitive Verb
LA	Labeling Algorithm
NEG	Negation
NP	Noun Phrase
OAsp	Outer Aspect
Obj	Object
P	Preposition
p	Functional Preposition
PP	Preposition Phrase
PRF	Functional Particle
PRO	Empty Pronoun
PrP	Predicate Phrase

R	Root
Res	Resultative Predicate
RVC	Resultative Verb Compounds
SC	Small Clause
SPEC	Specifier
Subj	Subject
TopP	Topic Phrase
TP	Tense Phrase
Trans	Transitive Verb
VP	Verb Phrase
vP	Functional Light Verb Phrase
V-V	Compounding verbs
V1	First verb in compounding verbs
V2	Second verb in compounding verbs
XP/YP/ZP	Maximum Projection/Phrase
φ	φ-features (e.g. Person/Number/Gender/Case, etc.)

Chapter 1

Introduction

This thesis focuses on the syntactic derivation of the resultative construction in Mandarin Chinese. In the first chapter, the general phenomena and three goals of this study are first introduced. Then technical assumptions are presented, which matter for the overall investigation. The purpose in introducing these technical assumptions is not to recapitulate minimalist theory, but simply to establish discoveries I will rely on. In the discussion of the technical background, three specific assumptions are illustrated: the structures of vP & AspP, the process of head-movement within vP and beyond, and the labeling algorithm. I will first illustrate how it all works in analysis of the verb copying construction, and it will be further adopted to analyse the resultative construction in this study. Verb movement in Chinese is generally limited to the VP shell structure (Larson 1988), and does not further move to a higher functional category, according to Huang's (1991, 1992, 1994) series of work (Paul 2000). A functional category Asp is introduced, which may accommodate some verb movement outside the vP boundary. The syntactic framework illustrated in this chapter will be applied to analyse multiple resultative patterns in general, and derivational mechanisms are drawn from the labeling theory (Chomsky 2013, 2014).

1. The Phenomena

The resultative construction is usually composed of two predicates: a means predicate and a result state predicate (Williams 2008). Two resultative patterns are widely acknowledged in Mandarin Chinese: compounding resultatives (1a) and DE-resultatives (1b).

(1) a. *Wusong da si le laohu.* (Compounding resultatives)
     Wusong beat die ASP tiger
    'Wusong beat the tiger so that it died.'
  b. *Wusong da de laohu si le.* (DE-resultatives)
     Wusong beat DE tiger die PRT
    'Wusong beat the tiger so that it died.' (Zhang 2001: 192)

In (1a), the resultant state *si* 'die' immediately follows the activity verb *da* 'beat', which is known as the compounding resultative pattern. In (1b), the activity verb *da* 'beat' is followed by the DE-marker, introducing the resultant state *si* 'die'. This pattern is known as the DE-resultative pattern.

In addition to these two resultative patterns, the resultant state can be realized as an adverb, immediately preceding the activity verb. As in (2), the resultant state *cuicuide* 'crisp' is realized as an adverb in Mandarin Chinese, denoting the change of the state by completing the activity *zha* 'fry'. This pattern will be termed as the adverb resultative pattern in this thesis.

(2) *Ta cuicuide zha le yi pan huashengmi.*
   He crisp fry ASP one plate peanut
  'He fried a plate of peanuts, as a result the peanuts are crisp.' (Lu 2003)

There is abundant literature to discuss the compounding and the DE-resultative pattern in Chinese. However, few studies (Xiong 2013) put the adverb pattern into the resultative construction in general. I hope this thesis can reach three goals. First, I will describe the resultative data in Mandarin Chinese (i.e. the compounding resultative pattern, the DE-resultative pattern, and the adverb resultative pattern). Second, existing accounts do not seem to well characterize the data as they should. They do not provide a unified explanation in Mandarin Chinese. I will explain these three patterns by providing a unified discussion on their syntactic derivational model. Third, very few existing studies have provided good explanations on derivational differences between Mandarin Chinese and other Chinese dialects or other languages. Motivated by these general problems, this thesis focuses on the syntactic derivation of three patterns in Mandarin Chinese, and then extend to Shanghai dialect and other languages, like English and Innu-aimûn. The resultative construction exists in these languages, but the resultant states are realized in different ways. I will explain the resultative variety from a v-splitting approach, hoping to provide a unified explanation to the resultative construction in general.

In the resultative construction, the syntactic relation between the activity verb and the resultant predicate will be explained, based on the vP shell structure. The understanding of the vP structure is fundamental to analyse head movement and to specify the internal structure of the resultative construction. The background assumption on the vP shell structure will be presented in the following.

2. Background Assumptions

After introducing the investigated data and existing problems, I will provide background theory in this section. Three areas are illustrated: the structures of vP & AspP, the process of head-movement within vP and beyond, and the labeling algorithm. The theoretical assumptions will be later adopted to analyse the resultative construction in general.

2.1 Head movement

2.1.1 VP shell structure

Head movement within the vP structure will be important for my proposal in chapter 3, so the technical background in this area is necessary to be introduced. Shell theory is first developed to analyse the double object construction in English (Larson 1998), in which the indirect object and the verb merge as a constituent, and the direct object is derived as the subject of the verbal phrase. As in (3), the verb is raised to a higher functional verbal category, via the V-raising operation (Larson 1988).

(3) a. *John sent a letter to Mary.*
   b.
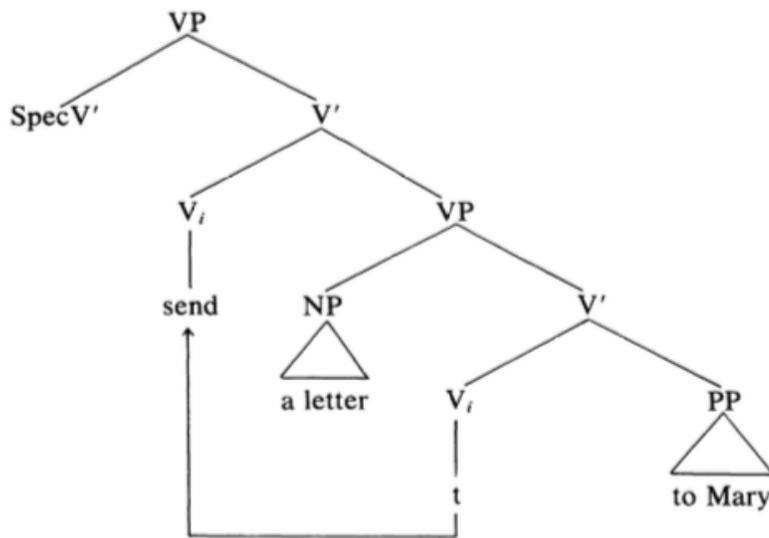
(Larson 1988: 343)

A similar verb raising operation is found in passive sentences in (4). The object *Mary* becomes the subject in Spec-vP, which is available to the higher T and move further to Spec-TP (Larson 2014). The verb is raised to a higher functional verbal category through V-raising.

(4) a. *Mary was kissed by John.*
   b.

```
                              vP
                         ┌────┴────┐
                      Mary         v'
                    │          ┌───┴───┐
                    │          v       VP
                    │       ┌──┴──┐   ┌─┴──┐
                    │       v    kiss PP    V'
                    │              │   ┌─┴──┐  ┌─┴──┐
                    │              │  by  John kiss  Mary
                    │              │
                    └──────────────┘
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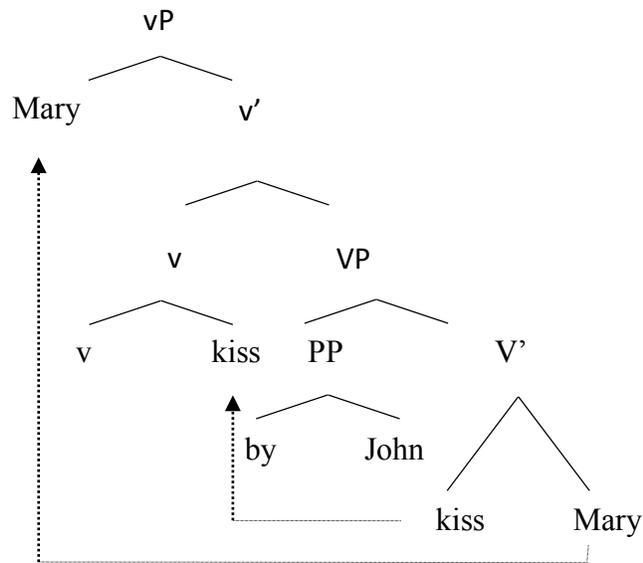
(Larson 2014: 99)

Next, let us look at the syntactic nature of the verb root in particular. Marantz (1997) discusses the role of roots playing for (Phonological) Words from a syntactic perspective, against lexicalist assumption. He argues that roots are category neutral and are defined as things with specific meaning. The full meaning of the root is determined by functional categories attached to the root in a special boundary context. The boundary context provides particular syntactic environment, in which the categoryless root is created a verbalizing category by the functional head v, or a nominalizing category by the functional D. Marantz classifies Roots into three types, based on Chomsky's (1970) remarks on nominalization: roots not internally caused, roots internally caused, and roots naming an ending result. The first two classes denote changes of the state, and the third type names an ending result, not an event of changing state. As in (5), an external agent is compatible with

DESTROY-type roots, but not in GROW-type roots. The external agent is still implied in GROW-like roots, but only in verbal environment. Since no v-1 agent is interpreted in the internally caused change of state. Chomsky solves this paradox by assuming that the agent of grow is restricted to projection in verbal environment, but the agent of destroy (externally caused change of state) is interpreted by the root. BREAK-type roots license an optional external agent. The verbal categories are implied by "v", and the nominal use of the root is derived by merging a root with "D".

(5) Three Types of Roots

Root	Class
DESTROY	change of state, not internally caused
GROW	change of state, internally caused
BREAK	result (of change of state)

(Marantz 1997: 217)

Let us see the instantiation of the root DESTROY in detail in (6), which projects an external agent. The external agent is implied by v-1, projecting a verbalizing context, thus a verbal category is derived in (6a). The nominal context of the DESTROY root is derived by merging it with "D" in (6b). An external agent can also be found in the nominalized *destruction*, but the agentive interpretation for the possessor DP is not introduced by v-1, but rather implied by an externally caused event. The purpose is to distinguish *destruction*

and *growth*, which allows an external agent in the former but not in the latter.[1] However, the *-ing* nominalized form derives first from a verbalizing and then a nominalizing context. The *-ing* nominalized process is represented in (6c).

(6) Nominalization Derived from Verb

a. John destroyed the city.

b. The destruction of the city.
   The city's destruction.

c. John's destroying the city.

```
        v-1                              D                            D
       /  \                            /   \                        /   \
   v-1      √DESTROY              D        √DESTROY            D       v-1
           /    \                        /    \                       /    \
    √DESTROY  the city           √DESTROY  the city            v-1      √DESTROY
                                                                       /    \
                                                                √DESTROY  the city
```
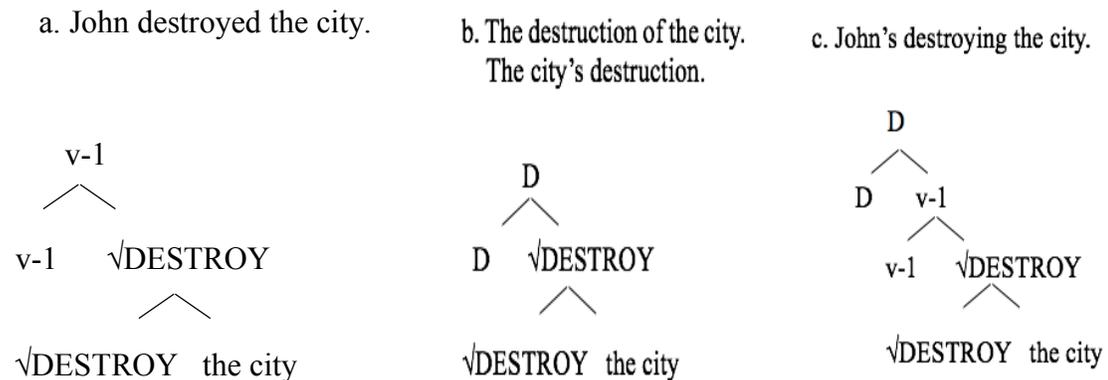
(Marantz 1997)

I will adopt Marantz's conclusion and assume that Root is category-neutral when it enters the derivation. The category of Root is labeled by a higher functional category.

2.1.2 Verbal head-movement in Mandarin Chinese

Now let us move forward to head raising in Chinese. Based on Larson's (1988) vP shell analysis, Huang (1991) argues that the topmost empty verb in the VP shell structure is the

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[1] If v-1 is introduced in the agentive interpretation in the footnote (i)-a, we would also expect the same reading in (i)-b, since the agent-introducing v-1 should also be allowed within the nominalization (Marantz 1997: 218).
 (i) a. *John's destruction of the city.*
     b.**John's growth of tomatoes.*

host of an eventuality predicate in Chinese. The eventuality predicate denotes the event type of the characterized verb. For instance, the eventuality predicate DO is indicated in activity verbs, BE/HOLD in stative verbs, and CAUSE in causative verbs. It is the eventuality predicate that triggers head movement in Chinese, although it is phonetically null. In Huang's work, the landing site of the raised verb in Chinese is confined to the vP shell structure. As we can see in (7b), the verb *zui* 'get drunk' (along with the affixed *de*) is raised to CAUSE, which is still confined into the vP shell structure.

(7) a. *Na ping jiu zui   de Zhangsan zhan bu   qilai.*
    that CL wine drunk DE Zhangsan stand NEG rise
    'That bottle of wine got Zhangsan so drunk that he could not stand up.'
   b. *Na Ping jiu [$_{V'}$ CAUSE$_i$ [$_{VP}$ Zhangsan zui$_i$ de zhan bu   qilai]]*
    that CL wine   Zhangsan drunk DE stand NEG rise   (Huang 1992)

Paul (2000) argues that head movement in Chinese may go beyond the vP shell structure, rather than always being confined into the verb phrase. Supporting evidence is observed in verb copying sentences, in which verbs in the same form are used twice.

(8) a. *Wo qi   ma   qi   le   haojici   le.*
    I   ride horse ride ASP many-CL PRF
    'I have ridden on a horse many times.'
   b. *Wo qi   ma   yijing qi   le   haoji ci le.*
    I   ride horse already ride ASP many CL PRF
    'I have ridden on a horse already many times.'   (Paul 2000: 266)

In (8a), the verb *qi* 'ride' has been used twice. In the verb copying construction, the adverb *yijing* 'already' occurs right before the second V2, as in (8b). Paul (2000) explains that adverbs enter the derivation in the edge of vP. The second verb V2 occupies within vP, but

V1 must be outside vP. Based on the adverb distribution in verb copying sentences, it at least indicates that head movement in Chinese is not always confined to the vP shell structure. The discussion on head movement in Chinese is more complex than the general vP shell structure, and it needs reconsideration (Paul 2000).

Based on Paul's (2000) finding that the landing site of a raised verb may go beyond the vP shell structure in Chinese, I suppose a functional head Asp(ect) outside the phasal v*P. The interpretable [ASPECTUAL] ([ASP]) feature is originated in Asp, which denotes the event type of the predicate. The [ASP] feature in Asp can be either strong or weak. If the [ASP] is strong, then it can trigger raising of a verb. If it is weak, no head is raised to Asp. The derivational structure is presented in (9).

(9) vP-external Asp
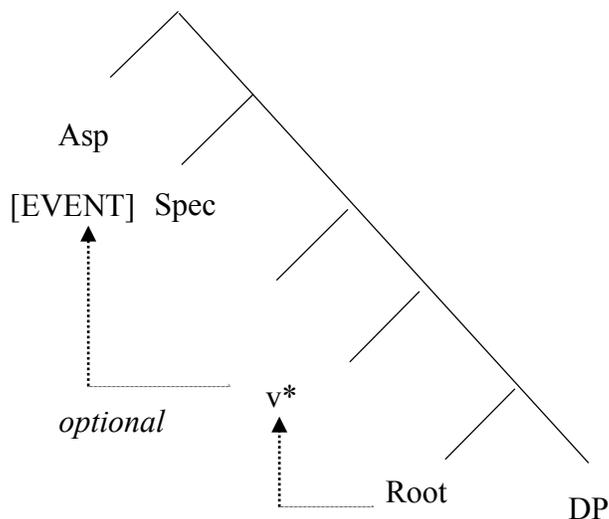
The idea on optional feature-driven head movement is supported by Pollock's (1989) analysis in French. In French, lexical verbs (and auxiliaries) undergo verb movement in tensed clauses in (10a), but not necessary in infinite clauses in (10b-10c).

(10) a. *Jean (n') aime pas Marie*.
　　　John　　like　not　Mary
　　　'John does not like Mary.'
　　b. *N'**avoir**/***posséder pas** de voiture en banlieue crée des problèmes.*
　　　'To have/possess not a car in the suburbs creates problems.'
　　c. *(Souvent) Paraître (souvent) triste pendant son voyage de noce, c'est rare.*
　　　'(Often) to-appear (often) sad during one's honeymoon is rare.'　　(Pollock 1989)

According to Pollock (1989), the finite lexical verb *aime* in (10a) obligatorily moves to Infl (i.e. T), triggered by [+finite] feature in Infl. Main verb infinites cannot raise over negation, but auxiliaries are allowed, in (10b). Although main verb infinites cannot move over negation, it can optionally precede VP-adverbs (or floated quantifiers) in (10c). Pollock (1989) assumes the split-Infl structure to analyse the finite and infinite contrast.

(11)
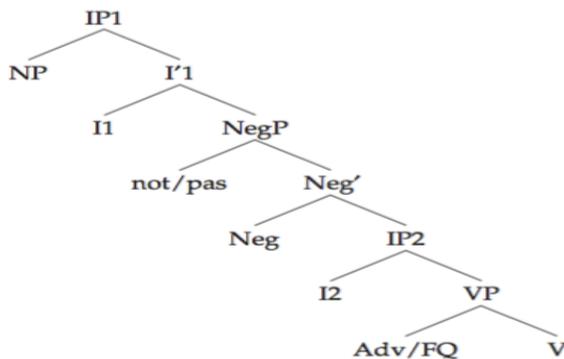
(Pollock 1989)

In (11), main verbs in finite clauses obligatorily move to I1 (the higher Infl); main verbs in infinitives optionally raise to I2 (the lower Infl). The head movement distinction is correlated to [+/-finite] features and [v] features in Infl. In finite clauses, the [+finite] feature always triggers the main verb to Infl. In infinite clauses, the strong [v] feature in Infl raises main verbs to the lower Infl. Otherwise, if the [v] feature is weak, no head movement is observed. Thus, optional head movement is tested in French, which is correlated to feature-driven motivation.

So far, I have proposed that the verb may optionally raise to Asp in Chinese, if a strong [ASP] feature is contained in Asp. This proposal is comparable to French optional head movement (Pollock 1989).

The structure of vP is connected to the range of the position where adverbs may appear. Let us move from head raising to the syntactic position of adverbs in the derivation. Following Bowers (1993), manner adverbs enter the derivation in specifiers of an intermediate projection. The intermediate position is the intermediate merger result of a head and its complement. Paul (2000) assumes the edge of vP to host manner adverbs in Mandarin Chinese (as I have mentioned in the verb copying sentences). Thus, the Spec-v* is the possible position (represented by number 2) to accommodate manner adverbs, but

not the Spec-Asp (represented by number 1)[2] and the Spec-Root (represented by number 3) in Chinese.

(12)
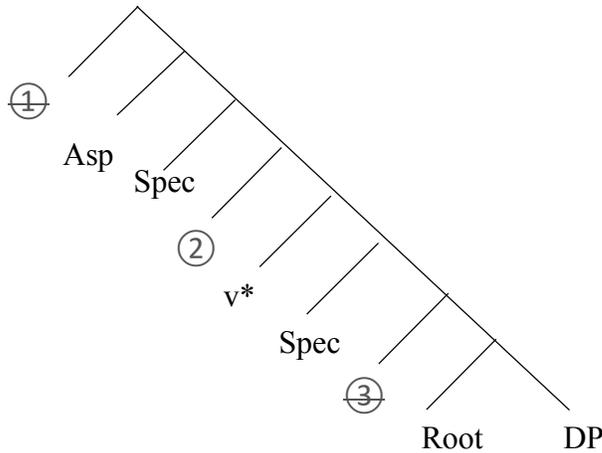
In Chinese, manner adverbs are allowed in preverbal positions, but not in sentence-final positions in a context-independent structure. However, the adverb distribution may vary across languages in the surface order, due to the direction of adverb adjunction (Bowers 1993). For instance, adverbs can adjoin either to the left or to the right of a specifier position in English, so both preverbal and sentence-final adverbs are observed. The empirical application of Asp outside v*P and the adverb in the Spec-v*P will be adopted in chapter 4 to explain the derivation of Chinese adverb resultatives in detail.

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[2] I will show the adverb can be contained in the Aspectual phrase only in pseudo-conjunction in Chinese.

2.2 Labeling Algorithm

2.2.1 Labeling rules

Now, let us move on to the labeling algorithm, which matters to describe the resultative head moving to a higher position in the resultative construction. In this section, I will introduce this framework in general. Chomsky (2013) argues that the label of the syntactic object is dependent on the computation, into which each of the syntactic objects enters. Following Marantz (1997), any category is created by a functional head in a particular boundary context. For instance, Root is labeled as a verbal category by the functional v, and as a nominal category by a higher D. Beyond this, Chomsky (2013: 43) claims labeling is essentially minimally search. In the configuration [H, XP], with H being a phasal head, the Labeling Algorithm (LA) takes H as the label. For instance, in {v, {V, DP}}, the label of {V, DP} must be available before {v, {V, DP}}, and LA takes v as the label. In the configuration [H, XP], with H being a non-phasal head, either the procedure (13a) or (13b) is chosen (Chomsky 2013; Chomsky 2014; cited in Hosono, 2015: 53-54):

(13) a. The subject in [Spec, XP] moves to [Spec, H] and strengthens the non-phasal head;
b. That raised subject and the non-phasal head agree in some feature; LA takes that shared feature as the label.

According to the LA, the non-phasal heads R(oot) and T are weak and cannot be labeled by themselves. They must be strengthened by movement of the subject into the specifier position of their complement, and LA takes the $<\varphi,\varphi>$ as the label.

In the configuration [XP, YP], two labeling possibilities are available for the labeling algorithm (Chomsky 2013; Chomsky 2014; cited in Hosono, 2015: 54):

(14) a. If either XP or YP undergoes internal merger, LA takes the head of the phrasal object that does not move out as the label;
    b. If an agree relation exists between XP and YP, LA takes that shared feature as the label.

For instance, in [C [T [DP [vP…]]]], the labeling algorithm is represented in (15). In the configuration [DP, vP], DP undergoes internal merger, to a higher position, and the head of the vP that does not move out is the label, i.e. vP. In the configuration [T, vP], the subject in [Spec, vP] (i.e. DP) moves to [Spec, T] and the non-phasal head T gets strengthened. The raised subject DP shares φ-features with the non-phasal head T, so LA takes φ-features as the label, i.e. φP (<φ, φ>). The phasal head C merges into before internal merger of the subject DP to TP, since T inherits the uF from C. The derivation structure in the labeling algorithm is presented in (15).

(15) Labeling in CP
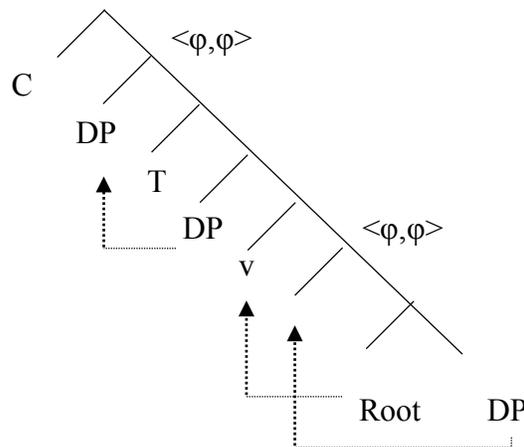
(The labeling approach will be used to explain the resultative construction. It will provide a technical solution to movement of the resultative predicate to a higher position, especially relevant to the resultative adverb when it raises up to a higher position in adverb resultatives in chapter 4.)

2.2.2 Illustration in verb copying sentences

After analysing the basic assumption of head raising and the labeling algorithm, let us move back and see how verb copying sentences might be derived within this framework. The purpose of introducing the structure of verb copying sentences here is to simply support the claim that the verb may undergo head movement and raise beyond the vP shell structure in Chinese. The verb can be located in the functional Asp, containing a strong [ASPECTUAL] feature. Here I repeat the verb copying sentence in (16).

(16) *Wo qi   ma   qi   le   haojici le.*
    I   ride horse ride ASP many-CL PRF
    'I have ridden on a horse many times.'

The verb root *qi* 'ride' adjoins to the categorizing functional head v*, making it a verbal category. The verb further moves to the Asp, triggered by a strong [ASPECTUAL] feature. Then the postverbal object *ma* 'horse' merges with the higher copy of the verb through sideward movement, forming *qi ma* 'ride horse'. The sideward movement is a derivation operation, in which the copy of a syntactic object merges with another syntactic object independently, and then enter the derivation in a sideward way (Nunes 2001). In sideward derivation, the higher copy of the verb *qi* 'ride' merges with the object *ma* 'horse', forming

the assembled constituent *qi ma* 'ride horse'. The sideward derivation is triggered by a theta-feature checking to the object by the higher copy of the verb. The theta-feature checking satisfies the Last Resort condition on Copy (Cheng 2007). The higher copy of the verb (Root+v*+Asp) does not c-command the lower copy of the verb (Root+v*), so both copies of head raising are remained and spelt-out in verb copying sentences.

Cheng (2007) assumes that the first verb and the bare noun in verb copying sentences behave like compounds, since the aspectual marker -le can never occur after the first verb. The first verb and the object feed noun incorporation, producing the VP configuration as a whole unit. This is similarly assumed in Hsu (2008). Hsu argues that the highest copy of verb and the object are topicalised as a whole in the sentence-internal position, since the aspectual marker -le is not possible right after the first verb. The lacking of the aspectual marker -le supports the idea that the first verb falls into part of the incorporated or topicalised complex. For the manner adverb yijing 'already', it is legitimate to adjoin to the immediate node of v*P but not so high as the immediate projection of Asp phrase, as assumed in Paul (2000). This is also empirically supported by the ungrammaticality of pre-topical adverbs in Chinese,[3] if the first verb and the object are analysed as a topic-like contstituent as a whole (Hsu 2008).

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[3] Adverbs are not allowed in a pre-topical position in Chinese.
(ii)a. *Zhe ben shu wo hen renzhende du le yi bian.*
    this CL book I very carefully read ASP one CL
   'I read this book very carefully.'
  b.*Hen renzhende zhe ben shu wo du le yi bian.*
    very carefully this CL book I read ASP one CL

Beyond the Asp projection, T is hypothesized as general and it triggers the subject from Spec-vP to Spec-T. The derivation of the verb copying sentence is presented in (17), in which a vP-external functional head Asp is hypothesized as the landing site of a raised verb.

(17) Verb copying sentences

```
         *Adv
         yijing
             Asp
                   Subject
         qi    ma
                   Adv
                   yijing
                       v*
                             Root       DP
                             qi         haoji-ci
```
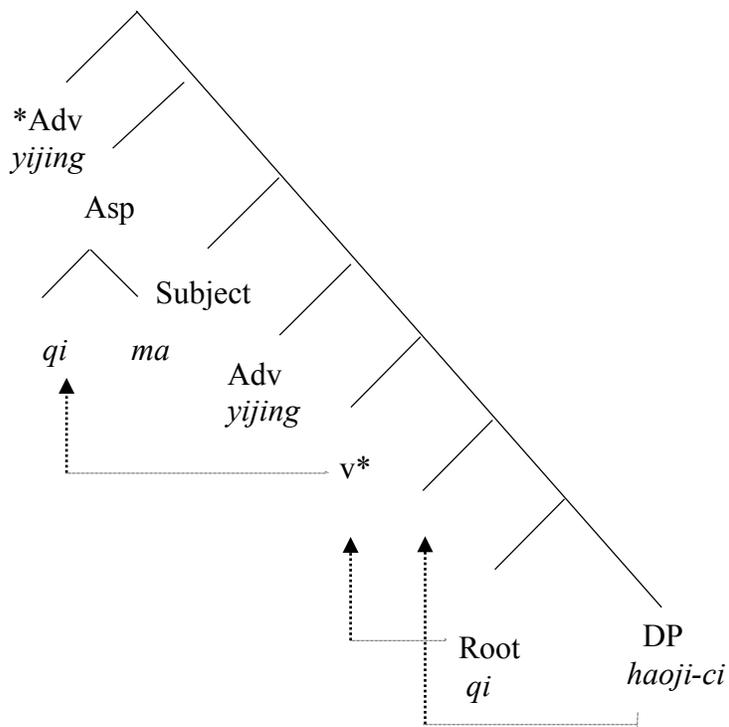
In the above section, the labeling algorithm, the vP shell structure and the vP-external Asp are illustrated in analysis of the verb copying construction. The vP-framework will be later adopted to account for different resultative patterns in Mandarin Chinese and then extend to other dialects and languages.

3. Overall Argument

In this thesis, I will first analyse resultative patterns in Mandarin Chinese in detail, and then in Shanghai dialect and Innu-aimûn more quickly, to investigate the derivational process of the resultative construction in general. I propose that the phasal head v* splits into multiple adjacent layers along with feature inheritance, producing a v-splitting structure in two typical resultative patterns in Mandarin Chinese: the compounding pattern and the DE-pattern. Then, I will apply the v-splitting structure to explore Chinese adverb resultatives, concluding that adverb resultatives share a similar underlying base with two widely discussed patterns, and they can be generalised as broad resultatives in Mandarin Chinese.

In the Shanghai dialect, one of the southern Chinese dialects, serial verb resultatives are attested. I analyse this pattern with a mono-layer light verb structure, which is reminiscent of the resultative pattern in Middle Chinese. The contrast between the serial verb pattern in Shanghai dialect and the compounding/DE-resultatives in Mandarin indicates diachronic development of the light verb system: from a mono-layer to a v-splitting structure. The analogical cross-linguistic study on Innu-aimûn shows that multiple head movement occurs in the resultative pattern. The syntactic difference in these dialects and languages will be discussed from the parametric setting of head movement.

4. Layout of Thesis

This thesis consists of 6 Chapters. I present a rough introduction to each chapter in the following.

Chapter 1 provides basic background assumptions, as I have discussed above. In this chapter, the vP shell structure (Larson 1988) is first introduced, based on which I discuss that vP-external Asp may function as a landing site of head raising in Chinese. In addition, the labeling algorithm (Chomsky 2013, 2014) is demonstrated in this chapter. It will be used to explain the underlying movement motivation in resultative patterns across languages.

Chapter 2 considers the pertinent literature on resultative patterns. General studies on resultatives are introduced in terms of event structure, semantics and various approaches to syntactic derivation. After summarizing general approaches on resultatives, I focus the review on resultatives in Mandarin Chinese. First, two patterns are widely discussed in Mandarin: compounding resultatives and DE-resultatives. Second, adverb resultatives in general (e.g. the data in English) are introduced, and then move on to the pattern containing a preverbal resultative adverb in Mandarin Chinese.

Chapter 3 focuses on typical resultatives in Mandarin. Compounding resultatives and DE-resultatives are analysed from the v-splitting structure. Comparing the compounding

pattern and the DE-resultative pattern, I propose that both are derived within a v-splitting structure. These two patterns share a similar underlying model. In addition, I also explain specificity asymmetries in these two typical resultative patterns from the labeling perspective. The asymmetric (sisterhood) relationship between the postverbal object and the resultative head causes the specificity constraint.

Chapter 4 examines the derivation of adverb resultatives in Mandarin Chinese. A v-splitting structure is tested and successive cyclic head movement Res-to-v-Asp is discussed in this pattern. In this chapter, the adverb conjunction is also explored; typical and pseudo conjunction are distinguished. The conjunction difference is explained by the v-splitting model and with the phonological interface constraint.

Chapter 5 compares resultatives across dialects/languages. A micro-parametric study is first done in Shanghai dialect. Unlike the v-splitting structure in Mandarin, a mono-layer light verb is analysed in Shanghai serial verb resultatives. In addition, a macro-parametric study is taken in Innu-aimûn, an Algonquian language spoken in northeastern Canada. Multiple head movement is hypothesized in resultatives in Innu-aimûn. The discrepancy of structural characteristics across languages is explained by non-local head movement, the light verb system, and symmetry-breaking in the labeling theory.

Chapter 6 draws a conclusion to this thesis. In this thesis, the labeling-based analyses on a set of resultative patterns are meant to provide a systematic perspective on how resultatives work in Mandarin Chinese, Shanghai dialect and Innu-aimûn. However, more cross-

linguistic researches should still be conducted in order to present a better understanding of

the resultative construction in general.

Chapter 2

Literature Review

In this chapter, I will first introduce the resultative literature in generative grammar and then move to studies in Mandarin Chinese. Three general approaches to the resultative construction are introduced in section 1: event structures, semantic analysis of argument realizations and the syntactic derivation of the resultative structure. In this section, I also introduce the generative study of adverb resultatives, mainly based on English data. In section 2, specific studies on Chinese resultatives are presented. Three patterns are introduced in turn: the compounding resultative pattern, the DE-phrasal resultative pattern and the adverb resultative pattern. The classification of Chinese resultatives is introduced in section 3.

1. Resultatives in Generative Grammar

There is abundant literature dealing with resultatives in linguistics, because they occupy an important place on the interface of lexical semantics and syntax. The resultative construction consists of two predicates: the first describing an activity predicate, and the second for a result predicate (Simpson 1983; Carrier & Randall 1992; Rappaport Hovav and Levin 2001). In following examples in (1), the adjectives *flat*, *hoarse* and *solid* describe the change of state. The change of state is a result of completing an action, denoted by the activity verb, such as *hammer*, *yell*, and *freeze* in (1).

(1) a. *The blacksmith hammered the metal flat.*
  b. *Sheila yelled herself hoarse.*
   c. *The river froze solid.*　　　　　　　(Levin & Rappaport Hovav 1995: 39; 2005: 219)

The resultative construction is often in "the form of NP1 V NP2 XP, in which the verb may be a transitive or an unergative intransitive" (Levin 2013: 1). The resultative predicate is fairly free in terms of category, and it may be an adjective phrase, a prepositional phrase, a noun phrase, or a verbal particle, as in (2).

(2) Two groups of resultatives

 Group I: Transitive resultatives
　　　　　a. *The gardener watered the tulips flat.*
　　　　　b. *The grocer ground the coffee beans into a fine powder.*
　　　　　c. *They painted the house a hideous shade of green.*

 Group II: Intransitive resultatives
　　　　　a. *The joggers ran their Nikes threadbare.*
　　　　　b. *The kids laughed themselves into a frenzy.*
　　　　　c. *He sneezed his handkerchief completely soggy.*
　　　　　　　　　　　　　　　　　　　　(Carrier and Randall 1992)

The word order mainly varies in two ways: the object (direct or not direct) surfacing between V and Res in a discontinuous order, as in English in (2); or in a continuous order, with the object following Res, as in Igbo, Ambae in (3). Res may also precede V, like in German (Williams 2007) in (4) or in Innu-aimûn in (5) (Branigan 2018). The Res-V order is found not only in head final languages (Williams 2007), but also in polysynthetic languages (Branigan 2018).

(3) a. *Ọkụkọ kpu wa   -ra   akw'a.*
    fowl   brood split -FACT egg
    'The chicken made the eggs split by brooding.' [Igbo (Benue-Congo)]
  b. *da   =mo   tai visa   na   avi.*
    1ns.incS =REAL chop split(tr) ACC firewood
    'We split the firewood by chopping it.' [Ambae (Oceanic, Vanuatu) (Williams 2007)

(4) a. *weil   er meine Hosen unheimlich sauber gewaschen hat*
    because he my pants   uncannily clean washed   has
    'because he made my pants uncannily clean by washing' [German]
  b. *Die Teekanne leer trinken*
    the teapot   empty drink
    'To drink the teapot empty' [German]
  c. *Die Tulpen platt Giessen*
    the tulips   flat water
    'Water the tulips flat' [German]   (Kratzer 2005)

(5) a. *Pien shîpeku-peshaim^u mitshuâpinnû.*
    Pien shîpeku=peshaim^u mitshuâp-innû.
    Peter green-paint   house
    'Peter painted the house green.'
  b. *Ânî kashteu-peshaim^u.*
    Ânî kashteu=peshaim^u.
    Annie black=paint
    'Annie painted it black.'   (Branigan 2018: 208)

In the following section, the event structure approach, a semantic account for argument realization, and underlying syntactic representation will be introduced to show the range of analyses for the resultative construction.

1.1 Event structures in resultatives

First, I will introduce the event structure analysis. Although I will not ultimately adopt the semantic account, the introduction to this approach provides a typological perspective to the syntactic analysis in this construction. The lexical semantic representation of verbs

starts from Vendler's (1957) classification into four event types. *States* represent static situations, but *Activities* express dynamic situations. Both *States* and *Activities* denote temporally unbounded/atelic situations. *Achievements* are punctual, while *Accomplishments* extend over a period time. Both *Achievements* and *Accomplishments* express a change of state, so they are temporarily bounded/telic.

(6) Four Event Types of Verbs

   a. States (static/atelic)
   b. Activities (dynamic/atelic)
   c. Accomplishments (telic)
   d. Achievements (telic)   (Vendler 1957)

Dowty (1979) further proposes three primitives DO, CAUSE, BECOME to express event types of the verb. The primitive DO is assumed in activities, BECOME in achievements, and CAUSE in accomplishments in (7).

(7) Primitives in Event Types

   a. state: $\pi_n (\alpha_{1,...,}\alpha_n)$
   b. activity: DO $(\alpha_1, [\pi_n (\alpha_{1,...,}\alpha_n)])$
   c. achievement: BECOME $[\pi_n (\alpha_{1,...,}\alpha_n)]$
   d. accomplishment: $[[DO (\alpha_1, [\pi_n (\alpha_{1,...,}\alpha_n)])] \text{ CAUSE } [BECOME [\pi_n (\alpha_{1,...,}\alpha_n)]]]$
                                                      (Dowty 1979: 123-124)

In states, activities and achievements, a single event is assumed. In accomplishments, the lexical semantic representation consists of complex events: a causing subevent and a result subevent.

Following Dowty, Rappaport Hovav and Levin (1998) propose that verb meanings are complex, and verbs directly lexicalize complex event structures, as in (8).

(8) Event Structure Templates

  a. [x ACT _{<MANNER>}] (activity)
  b. [x <STATE>] (state)
  c. [BECOME [x <STATE>]] (achievement)
  d. [x CAUSE [BECOME [y <STATE>]]] (accomplishment)
  e. [[x ACT _{<MANNER>}] CAUSE [BECOME [y <STATE>]]] (accomplishment)
                                  (Rappaport Hovav & Levin 1998: 108)

Resultatives are often analyzed with a complex event representation (Dowty 1979; Levin & Rappaport Hovav 2005). The assumption is that verb meanings are complex and can be decomposed into multiple atomic events. On this analysis, resultatives involve a CAUSING SUBEVENT represented by the activity verb V, and a RESULT SUBEVENT, represented by the change of state, XP (in varied categories) (Rappaport Hovav & Levin 2001). The complex event structure is: [[x ACT _{<MANNER>}] CAUSE [BECOME [y _{<STATE>}]]] (Levin 1999). Rapaport Hovav and Levin (2001: 783) put forward a series of constraints on the relation between two subevents:

(9) Constraints on two subevents

  a. The subevents need not be temporally dependent.
  b. The result subevent cannot begin before the causing subevent.
  c. Only the result subevent can bound the event as a whole.
  d. There is no intervening event between the causing subevent and the result subevent;
    that is, causation is direct.

Lin (2004) summarizes the predicate decomposition literature. Beyond "Event structures" (Rappaport Hovav & Levin 2001), we can find abundant literature, such as "Lexical Conceptual Structures" (Rappaport Hovav & Levin 1998), "Lexical Relational Structures" (Hale 1993), "Semantic structures" (Pinker 1989), "Conceptual structures" (Jakendoff 1990), "Semantic Forms" (Van Valin & La Polla 1997), "L(exical)-syntax" (Travis 2002), "I(nternal)-structure" (Zubizarreta & Oh 2007), and "First-phase syntax" (Ramchand 2008). The event analysis in general sheds some light on understanding the internal relationship between the activity verb and the resultant predicate in this construction.

1.2 Semantic account of argument realization

Another prominent perspective of inquiry in resultatives is whether and how the properties of resultatives are derived from the argument structure of its component verbs, and how syntactic structures relate to argument structures. This will help us to know better about the internal relation between predicates and their arguments. A verb's argument structure often specifies the lexical entry of each verb, determining how many numbers of arguments satisfied in syntax. Since Stowell (1981), argument structure has been portrayed as thematic-grids, which does not specify syntactic category or linear order, but only thematic roles (Marantz 1984).

Resultatives have been associated with the grammatical function of direct objects since Simpson (1983). Simpson proposes that the resultant predicate (XP) must be predicated of the syntactic object. The syntactic object includes surface objects, underlying objects, and

even fake reflexives (Simpson 1983: 142). Levin & Rappaport Hovav (1995) develop the generalization into the Direct Object Restriction, claiming that "a resultative phrase may be predicated of an immediately postverbal NP, but may not be predicated of a subject or of an oblique complement" (Levin & Rappaport Hovav 1995: 34), as in English in (10).

(10) a. *John hammered the metal flat.* (thematic object)
    b. *John drank the teapot empty.* (unselected object)
    c. *John laughed himself silly.* (fake reflexive)
    d. *The river froze it solid.* (derived subject/underlying object)
                                     (Levin & Rappaport Hovav 1995)

However, Rappaport Hovav and Levin (2001) abandon their syntactic explanation on DOR later, since the subject-predicated resultant XPs are also found in English. In (11), the resultant phrase *out of Bethlehem*, *clear of the rocks*, *across the room* and *across the park* predicate the subject instead of the object of each sentence.

(11) a. *The wise men followed the star out of Bethlehem.*
    b. *The sailors managed to catch a breeze and ride it clear of the rocks.*
    c. *John danced mazurkas across the room.*
    d. *The children played leapfrog across the park.*   (Mateu 2005: 57)

Mateu (2005) responds that the so-called validity of the DOR involves an adjunct XPs, claiming that the relevant problematic examples are underlying unaccusative constructions instead. In Dutch, the auxiliary selection in (12a) and the use of participle in prenominal position in (12b) show unaccusativity of these sentences.

(12) a. *De politie is de dief tot zijn huis gevolgd* (Dutch)
      the police IS the thief to his house followed

b. *deze mij tot aan de deur gevolgde politieman*
   this me until the door followed policeman   (Mateu 2005:72)

Further supporting evidence is the impossibility of passivizing the example (13a) into (13b).

The impossibility is not because it is associated with a subject-predicated resultant XP, but

rather that it is an unaccusative construction (Mateu 2005).

(13) a. *The wise men followed the star out of Bethlehem.*
     b. **The star was followed out of Bethlehem.*   (Mateu 2005)

In contrast, the grammaticality of "*The thief was followed to his house*" is because the

sentence has the additional reading within a transitive structure. The absence of the agent

removes the DOR violation as in the passive construction. Mateu (2005) summarized into

two sense contrasts:

(14) a. Correlated motion sense: Unaccusative structure ('BE' selected)
     b. Detective-suspect/causative sense: Transitive structure ('HAVE' selected)

The unaccusative use of *follow* is also shown in German (15a) and Dutch (15b).

(15) a. *Die Polizei ist dem Dieb zu seinem Haus gefolgt*   (German)
        the police   IS de   thief-dat to his house followed
     b. *Die Polizei hat den Dieb   zu seinem Haus verfolgt.* (Dutch)
        the police HAS de thief-acc to his   house VER followed [Heiner Drenhaus]
                                                             (Mateu 2005: 73)

As noted, the unaccusative use of the verb *follow* is associated with BE-selection, with a

dative case assignment. The transitive use is represented with HAVE-selection, assigning

accusative case. The so-called counter-example to DOR actually does not challenge the restriction. Mateu claims that the adjunct analysis is the most natural approach for directional phrases, like those seemingly with subject-predicated resultant XPs.

1.3 Underlying syntactic representations

My major concern in this thesis is with the syntactic literature, and how the syntactic approach characterizes the resultative construction in general. Among current syntactic approaches, the small clause analysis (Hoekstra 1988, 1992) and the ternary branching analysis (Carrier & Randall 1992) are briefly introduced next. I will also illustrate some limitations of these two syntactic approaches.

1.3.1 Small clause analyses

Hoekstra (1988, 1992) analyzed the resultative construction with a small clause theory. The basic idea behind the small clause approach is that the second predicate is considered as a secondary predicate, which forms a small clause with its subject. Three small clause rules are summarized by Hoekstra (1988). The postverbal NPs in this approach are analyzed as affected objects, independently from the action mentioned by the main verb.

(16) Small Clause Rules

   a. It adds a small clause complement to the verb;
   b. It eliminates the internal arguments of the verb;
   c. It gives the verb a causative reading.   (Hoekstra 1988)

According to Hoekstra (1992), the predication must be stage-level, dynamic, and not inherently bounded. The sentences in (17) are grammatical, but problematic in (18). We can see the construction clashes when the predication is individual-level (18a), undynamic (18b), and bounded in nature (18c).

(17) a. *They danced the night away.*
    b. *Morris moaned his way out of the hall.*
    c. *The dog barked the chickens awake.*

(18) a. **This encyclopedist knows all books superfluous*. (individual level)
    b. **Medusa saw the hero into stone*. ([-dynamic])
    c. **The psychopath killed the village into a ghost town*. ([+bounded])
                                                                    (Hoesktra 1992)

An important contribution of the small clause theory of resultatives is to show shortcomings of some competing lexicalist theories. As Hoekstra (1988: 138) noticed, "the common distinction between lexical word making and non-lexical sentence making is questionable at best". For instance, these examples in (19) are identical, both "consisting of an activity denoting verb, taking a small clause complement which is interpreted as a resulting state" (Hoekstra 1988: 138). The distinction between the syntactic object (19a) and the morphological object (19b) seems to be questionable, as generally assumed in lexicalist theories (Mateu 2001).

(19) a. *dat Jan   zich   drunken drinkt*. (syntactic object)
        that John himself drunk   drinks
    b. *dat Jan   zich   bedrinkt*. (morphological object)

that John himself BE-drinks
c. drinkt [SC zich {drunken/BE-}]   (Mateu 2001)

However, the small clause theory does not emphasize the semantic distribution of the postverbal NP (i.e. the subject in small clause), or the resultative phrase (the predicate in small clause). Consequently, no proper semantic restriction guarantees an interpretable resultative phrase. Boas (2011) shows that the small clause analysis cannot specify the semantic selection restriction to postverbal constituents in resultatives.

(20) a. *Pat ran his Nikes {threadbare/?blue/*new/*small}*
     b. *Claire painted the door {red/?old/*visible/*broken}.*
     c. *Chris drank {Martin/?himself/*his Martini/*the glass} under the table.*
     d. *Nicole danced {Sacha/herself/?her cat/*her goldfish}tired.*   (Boas 2011:2)

The analysis also lacks empirical motivation to account for the postverbal constituent with lexically intransitive matrix verbs, such as *run* in *Pat ran his Nikes threadbare*. That is, if the activity verb and the postverbal argument are independent, the selected and unselected postverbal arguments make no difference in the small clause approach.

1.3.2 Ternary branching analyses

Carrier & Randall (1992) account for resultatives in a ternary analysis, dividing verb phrases into: the activity verb, the NP and the resultative phrase. The assumption is that the resultative phrase and the postverbal NP are both arguments of the activity verb.

(21) a. *Claire [$_{VP}$ painted [$_{NP}$ the door] [$_{AP}$ red]]*
    b. *Pat ran his Nikes threadbare.*

In the transitive resultative pattern (21a), the postverbal NP is the internal argument of the verb. The ternary branching analysis suggests that NP and AP are sisters of the activity verb, forming argument hood. According to Carrier & Randall, in the transitive resultative pattern (21a), it should mean as a consequence of *painting the door*, the door became red. The interpretation supports that *the door* is an argument of the activity verb. They also note that in the intransitive resultative pattern (21b), the postverbal NP receives only one theta-role from the resultative phrase, but not from the ergative activity verb. They therefore exclude postverbal NPs of intransitive verbs from the set of arguments of the verb in the resultative construction.

Boas (2011) critiques this kind of analysis. Firstly, it cannot distinguish the selected and non-selected postverbal NPs in lexically transitive activity verbs: such as *drink, wash and fry*. This analysis cannot explain the semantic selection of postverbal NPs and resultative phrases. For instance, the postverbal object is not the semantically selected argument of the activity verb in (22a) and (22c), but selected in (22b).

(22) a. *Melissa drank the teapot empty.*
    b. *Dave washed the soap out of his eyes.*
    c. *Ed fried the pan black.*   (Boas 2011)

Secondly, the exclusion of postverbal NPs out of arguments in intransitive verbs cannot explain why postverbal NPs exhibit the behavior of arguments under passivization (*The Nikes were run threadbare*) (Boas 2011).

So far both the small clause approach and the ternary analysis seem insufficient to explain the resultative construction. This leaves some space available to further investigate the syntactic derivation of this construction.

1.4 Resultative adverbs in generative grammar

In this section, an overall background of resultative adverbs is provided in generative grammar. Since adverb resultatives will be modeled in a unified explanation of broad resultative construction, it is necessary to know the general existing assumption. Geuder (2002) notes that resultatives in English can be coded with an adverb, rather than an adjective, preposition, or noun phrase. The term "adverb" refers to adverbial modifiers, which are morphologically derived from an adjectival base, or are formally identical to adjectives.

(23) a. *They decorated the room **beautifully**.*
    b. *She fixed the car **perfectly**.*
    c. *She grows chrysanthemums **marvelously**.*

(24) a. *I opened the door **wide**.*
    b. *I shut the door **tight**.*   (Geuder 2002:69)

The adverbs *beautifully*, *perfectly*, and *marvelously* in (23) imply respectively that the room was in a beautiful state as a result of the action of decorating it, that the car was perfect as a result of fixing it by her, and that the chrysanthemums grown by the subject referent were marvelous (Geuder 2002)[4].

However, adverbs like *wide* and *tight* are analyzed in (24) as verbal modifiers in Parsons (1990) and Geuder (2002). The co-occurrence with an adjective ensures that *wide* and *tight* are adverbs, although they lack the suffix –*ly*, as we can see in "*The door is wide open*". The adverb occurs with the verb that already has its resultative state specified. For instance, the verb *to open* "takes its name from a predicate that describes a resultant state (i.e. the adjective *open*), so the slot of the result predicate is already filled" (Geuder 2002: 71). The word *wide* is a modifier and not the resultant state itself.

Parsons (1990) analyzes the oriented adverb as modification of the resultant state, and proposes the accomplishment as a series of three subevents in the event semantic framework. Parsons uses Culminate and Hold as predicates, which denote aspects. The decompositions of *x open y* and *x open y wide* are represented:

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[4] In addition to the resultative object-orientation, the adverb can also modify the activity event: the way of decorating (of the room) is beautiful, rather than the room is beautiful as a result of the decorating action. The alternative interpretation is supported by the non co-occurrence of this adverb and a regular result state. Thus, I propose that these two readings are derived from different syntactic structures. The object-orientation is generated when the resultative adverb is derived as a predicate; the modification is produced when the adverb is analysed as a manner modifier.
(iii) *Arthur hammered the metal flat beautifully*.

(25). x open y:
     (∃e) [Cul (e) & Agent (e, x) & (∃*e'*) [Cul (e') & Theme (e', y) & CAUSE (e, e') &
     ∃*s* [open (s) & Theme (s, y) & Hold (s) & BECOME (e', s)]]]

(26). x open y wide:
     (∃e) [Cul (e) & Agent (e, x) & (∃*e'*) [Cul (e') & Theme (e', y) & CAUSE (e, e') &
     ∃*s* [open (s) & Theme (s, y) & Hold (s) & BECOME (e', s) & Being-wide (s)]]]
                                                                              (Parsons 1990)

Geuder (2002) agrees the modification analysis to adverbs, as argued in adjectival

resultatives in (26). However, Geuder further explains that the result-orienting

interpretation is realized in the compositional semantics. These adverbs are actually

predicates of events in the compositional semantics. Ultimately they orient towards an

individual,[5] created as a result of the event. The modification of this resultant individual is

the source of their result-orienting interpretation.

Based on Geuder (2002), Levinson (2010) names this kind of adverbs pseudo-resultatives,[6]

with puzzles for the syntax and semantics interface. What arguments are these modifiers

modifying? Levinson shows pseudo-resultative modifiers are not DP-modifiers (modifiers

of the predicate of individuals, denotes by the object DP), as in (27); not predicates of

events, like manner adverbs in (28); and not implicit object modifiers, as argued by Geuder.

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[5] On Geuder's account, this individual is not realized directly by any constituent in the syntax, but is
assessed as part of the semantic contribution of the verb.
[6] Levinson claims the resultative adverbs in Geuder (2002), are semantically similar to pseudo-
resultatives, but might differ from them in not bearing the *–ly* morpheme. That is, Levinson exclusively
focuses on adjective modifiers.

(27) *She braided her hair **tight**.* *→ her tight hair

(28) a. *The dog ran quickly.* → The running event was quick.
     Run (e) & Quick (e)[7]
   b. *She braided her hair tight.* *→ The braiding event was tight.
     *Braid (e) & Tight (e)   (Levinson 2010)

Levinson argues that pseudo-resultative adverbs do not modify any 'word' in the syntax,
but modify the root of the verb in a given configuration, licensed by the semantic type of
the root and the structure of root creation verbs. Semantically, the root like *braid* and the
pseudo-resultative adverb like *tight* are both of type $<e, t>$ and combine via predicate
modification. The resulting constituent has the same type as the root itself, $<e, t>$.

(29) Composition of the root with pseudo-resultatives
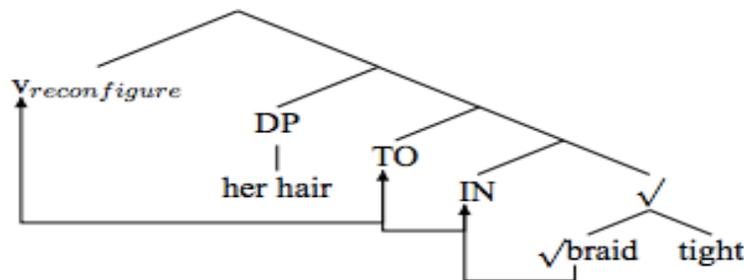
                                                                (Levinson 2010)

As in (29), Levinson assumes a structure for the causative semantics, in which the eventive
head *braid* bears additional denotation, represented by $V_{reconfigure}$. Prepositional nodes IN
and TO express the causation of a state, morphologically similar to *into*. That is, Levinson

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[7] Following neo-Davidson tradition of event semantics (Davidson 1967), both verbs and verb modifiers
such as manner adverbs are taken to be predicates of events.

denotes causation of a state through RECONFIGURE, rather than adding the extra distinct event (such as CAUSE).

To sum up, Geuder (2002) argues that the adverb like *wide* in English is a resultant modifier, rather than the predicate of the result. Levinson (2010) further defines the adverb as pseudo-resultative adverb, proposing a 'reconfigure' operation for the result-orienting realization, not in syntax, but in semantic representation.

2. Resultatives in Mandarin Chinese

Turning now to Mandarin Chinese, literature on the compounding pattern, the DE-resultative pattern, and the adverb pattern will be introduced in this section. Mandarin data and the research question of mine relate to prior literature, so I start with the question of head-directionality, then go on to review derivational accounts in Mandarin Chinese. Most of what I am doing is related to the first and the second goal of this thesis-to describe resultative data in Mandarin Chinese, and to see how a unified derivational explanation can be isolated in this language.

2.1 Literature on Compounding Resultatives

2.1.1 Directionality on headness

In the compounding resultative pattern (30), the activity verb *ku* 'cry' is immediately followed by a resultant state *shi* 'become wet'.

(30). *Zhangsan **ku shi** le shoupa.*
    Zhangsan cry wet Asp handkerchief
    'Zhangsan cried and as a result, the handkerchief become wet.'   (Lin 2004: 12)

The resultative compound in Mandarin Chinese is very productive and can involve various argument structure frames as the components of predicates: $V_{trans}+V_{intr}$, $V_{trans}+V_{trans}$, $V_{intr}+V_{trans}$, $V_{intr}+V_{intr}$, $V_{dit}+V_{trans}$ and $V_{dit}+V_{intr}$ (Lin 2004).[8] In compounding resultatives, the V-V compound looks like a single predicate in a sentence, with or without postverbal NPs. However, in the DE-inserted construction, DE denotes a resultative marker, and the secondary predicate appears to be embedded in a clause (Lin 2004).

Compounding resultatives have attracted attention, because the argument structure of compounds and how it relates to its component verbs pose challenges to conventional argument-function assumptions (Li 1995, Lee & Ackerman 2011). Sometimes the resultative compound produces ambiguous interpretation, either subject-orienting in (31b) or object-orienting in (31a) and (31c).

(31). *Taotao **zhui-lei**-le Youyou.*
    Taotao chase-tired-ASP youyou
    a. 'Taoyao chased Youyou and as a result, Youyou got tired.' (Object-reading)
    b. 'Taotao chased Youyou and as a result, Taotao got tired.' (Subject-reading)
    c. 'Youyou chased Taotao and as a result, Youyou got tired.' (Object-reading)[9]
                                                             (Y. Li 1995: 256)

---

[8] In Mandarin Chinese, the adjective can be used as the predicate without a copular verb. Thus, the adjective category in compounding and DE-resultatives is analysed as the predicate, represented as V in general literature (Y. Li 1990; Cheng and Huang 1994; Zhang 2001; Lin 2004).
[9] The object interpretation in (31c) is not accepted by all speakers, which seems less common than the object reading in (31a).

In examining how argument structures of component verbs V1 and V2 combine in compounding resultatives, one unavoidable question concerns the directionality of resultative compounds: whether the head is on the left or the right. Four logical possibilities have been proposed in literature: the head on V2 (Yong 1997; Tai 2003), the head on V1 (Y. Li 1990; Cheng & Huang 1994), the head on both V1 and V2 (Gu 1992; Aboh 2009), and non-head on V1 and V2 (C. R. Huang & Lin 1992), as in (32).

(32) Some representative literature on head directionality

Directionality on Headness	
Heads	**Representatives**
V1	Y. Li (1990); Cheng & Huang (1994)
V2	Yong (1997); Tai (2003)
V1V2	C. R. Huang & Lin (1992)
V1 & V2	Gu (1992); Aboh (2007)

For the idea that V2 is the head, Aboh (2007) proposes that V1 in the resultative compound (or resultative verb series) merges as a functional (verbal) element, within the extended projection of the lexical verb V2. The function of V1 is similar to a certain light verb, since it delimits a functional domain and embeds the lexical verb V2, as in the configuration [CP…[TP…V1…[vP…[V2…]]]. However, Y. Li (1990) argues that V1 in the resultative

compound is the head, because the compound is 'verb-like' rather than 'adjective-like'. For instance, as in *pao-lei* 'run-tired', V1 is a verb and V2 is an adjective. Cheng & Huang (1994) have a similar assumption that V1 is the head, based on syntactic, not purely semantic considerations.

(In this thesis, I will argue that the V1 is the head of the verb phrase. The V1 derives from a categoryless root, then make it a verbal category by merging it to a verbal functional head. Both the activity and the resultant predicate are derived within the vP shell structure. The details will be specified in chapter 3, when I start to analyze the syntactic derivation.)

2.1.2 Lexical Rules

Thompson (1973) argues that resultative verbs in Mandarin Chinese are morphologically complex verbs, and proposes a set of lexical rules for their derivation. The first rule is called a "lexical potentializing rule": [V-V] RV→{a. [V-**de**-V] RV; b. [V-**bu**-V] RV}. In this rule, two diagnostic insertions of '-*de*-' (can/be able) and '-*bu*-' (can't/ be unable) between V1 and V2 are employed. The possibility of -*de*- and -*bu*- insertion tests the licensing of resultative compounds. Thompson (1973) claims that this rule is obligatory for all resultative compounds. A set of "*lexical insertion rules*" is also proposed for resultative compounds. As in (33), the rules start with morphemes and stems, then undergo lexical rules, and then derive various lexical items. Lexical items may be recycled to the first step, or directly identified as resultative compounds, as a result of lexical insertion rules.

(33) Lexical insertion rules for resultative compounds

```
┌─────────────┐
│ MORPHEMES,  │◄──────────┐
│ STEMS       │           │
└─────────────┘           │
      │                   │
      ▼                   │
┌─────────────┐           │
│ LEXICAL     │           │
│ RULES       │           │
└─────────────┘           │
      │                   │
      ▼                   │
┌─────────────┐           │
│ LEXICAL     │───────────┘
│ ITEMS       │
└─────────────┘
      │
      └──────────►
```
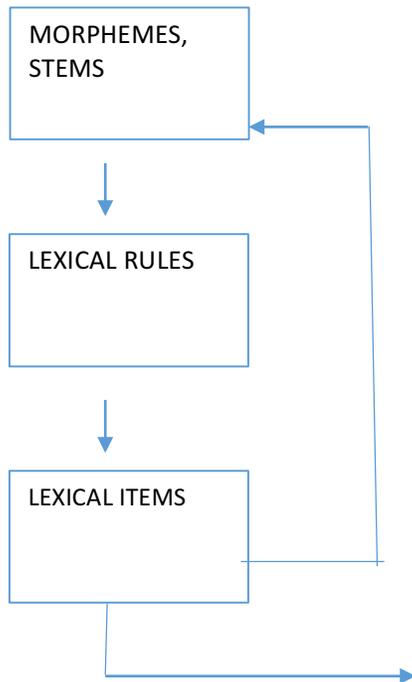
      LEXICAL INSERTION RULES   (Thompson 1973: 369)

Under a lexical rule approach, resultative compounds are morphologically complex verbs, rather than deriving from syntactic transformation. There is evidence to argue against the lexical approach and show that compounding resultatives are formed in syntax instead (Thompson 1973; Li 1990). The first is Thompson's (1973) own examples: the insertion of '-*de*-' (be able) or '-*bu*-' (be unable) between the two components of resultative compounds in (34). The insertion adds the meaning 'be able/can' in (35) or 'be unable/can't' in (36).

(34). *Ta **la-kai***   *le*   *men.*
    He pull-open ASP door
    'He pulled the door open.'

(35). *Ta **la-de-kai** men.*
 He pull-can-open door
 'He can pull the door open.'

(36). *Ta **la-bu-kai** men.*
 He pull-can't-open door
 'He cant't pull the door open.'   (Thompson 1973: 361)

The inserted '-*de*-' adds the meaning 'able', expressing being able to do achieve the state. It is denoted by the second V in resultative compounds. The insertion examples show that the activity verb and the resultative predicate are not a lexical whole and they are discontinuous. The lexical approach cannot well explain the discontinuousness within the compounding words.

There are two more general problems to this lexical-based approach. First, it only specifies the compounding pattern, but not including other resultative patterns, such as DE-resultative and adverb resultative patterns in Mandarin Chinese. Thus no unified explanation has been provided. Second, since Marantz (1973), a lot of subsequent literature has argued against the lexicalist approach in that it is not efficient in explaining the general problems about compounding words. Given above problems, I will not follow the lexical-based approach, but adopt the syntactic perspective to analyse compounding resultatives and DE-phrasal resultatives as well.

2.1.3 Small clause analysis

Sybesma (1999) analyzes resultatives in Chinese, based on Hoekstra's (1988) 'small clause'

approach. Sybesma classifies into three types of resultatives in (37). All of them contain a

small clause. The postverbal NP is analysed as the subject and the following predicate

expression XP as the predicate, based on their semantic relationship.

(37) Three Types of Resultative Compounds

   a. Transitive resultative structure: NP [$_{VP}$ V [$_{SC}$ NP XP]]
   b. Intransitive resultant structure: e [$_{VP}$ V [$_{SC}$ NP XP]]
   c. Causative resultative: NP CAUS [$_{VP}$ V [$_{SC}$ NP XP]]   (Sybesma 1999)

For instance, in the transitive resultative structure in Mandarin Chinese in (38), the

postverbal NP *shou juan* 'handkerchief' and the secondary predicate V2 *shi* 'wet' form the

small clause, in the complement of a functional head *Extent* (Abr. Ext°). The main verb *ku*

'cry' projects into VP, with *Zhangsan* as the sentential subject, as in (39).

(38). *Zhangsan **ku-shi**-le   shoujuan.*
     Zhangsan cry-wet-ASP handkerchief
     'Zhangsan cried and as a result the handkerchief got wet.'

(39). *Zhangsan [$_{VP}$ ku [Ext [$_{SC}$ shoujuan shi-le]]]*
     Zhangsan [$_{VP}$ cry [Ext [$_{SC}$ handkerchief wet ASP]]]   (Sybesma 1999)

As I have mentioned about the shortcoming of the small clause approach in section 1.3.1,

it does not emphasize the semantic relation between the postverbal argument and the

activity verb. That is, in Mandarin Chinese, we cannot distinguish the underlying structures

in (40) and (41).

(40). *Zhangsan ku shi le shoujuan.*
    Zhangsan cry wet ASP handkerchief
    'Zhangsan cried and as a result the handkerchief got wet.'   (Sybesma 1999)

(41). *Zhangsan kan dao le shu.*
    Zhangsan chop fall Asp tree
    'Zhangsan chop the tree as a result, the tree become fallen down.'   (Huang 1988)

In (40), the postverbal argument *shoupa* 'handkerchief' is not the argument S(emantically)-

selected by the activity verb *ku* 'cry', since there is no predictable semantic relation between

the activity verb and the postverbal argument. However, in (41), the postverbal argument

shu 'tree' is the S-selected argument of the verb *kan* 'chop'. According to the small clause

approach, these two patterns will share the same underlying structure. The postverbal

arguments *shoujuan* 'handkerchief' and *shu* 'tree' form the subject of the resultant

predicates *shi* 'become wet' and *dao* 'become fallen down' respectively. This approach is

limited in that it fails to account for the semantic difference between the selected and

unselected object. This issue is going to be accounted for in the thesis analysis.

2.1.4 vP shell structure

Huang *et al.* (2009) analyze resultative compounds by the use of VP shell structures. The

main verb V1 and the secondary verb V2 are base-generated, forming the outer VP (v) and

the inner VP (V) respectively. The inner V adjoins with the outer v, and the compound

assigns a theta-role to NP (Spec, VP_INNER). The example in (42a) is represented in (42b). The inner V *dao* 'fall' attaches to the outer v *kan* 'chop'. The combined compound assign a theme theta-role to the argument *shu* 'tree'.

(42) a. *Zhangsan kan dao le shu.*
     Zhangsan chop fall Asp tree
     'Zhangsan chop the tree as a result, the tree become fallen down.'
   b. [_CP C [_TP Zhangsan_i T [_vP t_i v chop fall_j [_VP tree V t_j]]]   (Huang *et al.* 2009)

Similarly, Zhang (2001) analyzes the resultative compound with a similar base. The secondary predicate is base-generated in the complement of vP, and then undergoes head raising operation. Their surface structures are developed by head-movement.

Similar to the small clause analysis, one of the problems in the vP shell analysis (Zhang 2001; Huang *et al.* 2009) is to ignore the semantic relationship between the postverbal NP and the activity of main verb (Lin 2004). That means both selected and non-selected (object-control) resultative compounds share the same underlying structure. I will show a v-splitting model works better than the small clause and the general vP shell structure as argued in the existing literature.

2.1.5 Specificity effects in compounding resultatives

In compounding resultatives, both specific and non-specific postverbal arguments are licensed. The existing accounts of specificity in objects and subjects are introduced in this section.

(43) a. *Akiu da   po   le   yi ge huaping.*
          Akiu beat broken ASP one CL vase
          'Akiu beat a vase broken.'
     b. *Akiu da   po   le   na ge huaping.*
          Akiu beat broken PRF that CL vase
          'Akiu beat that vase broken.'   (Zhang 2001)

In (43a), the postverbal argument is specific. However, in (43b), it also allows a non-specific object in the compounding resultative pattern. Zhang (2001) claims that in the compounding resultative pattern, the resultative predicate first raises from VP to the lower v, then raising to Vpri (the primary predicate), finally raising [Vpri-V] to Asp. The resultative predicate moves out of the vP, in which the subject of the predicate (PRO) is base-generated. A non-specific reading of the postverbal argument (i.e. the subject of the resultative predicate) is licensed, as in (44).

(44) Specificity in the compounding pattern

Akiu da po   le na ge huaping.
Akiu beat broken PRF that CL vase
'Akiu beat that vase broken.'

                                                                                    (Zhang 2001)

48
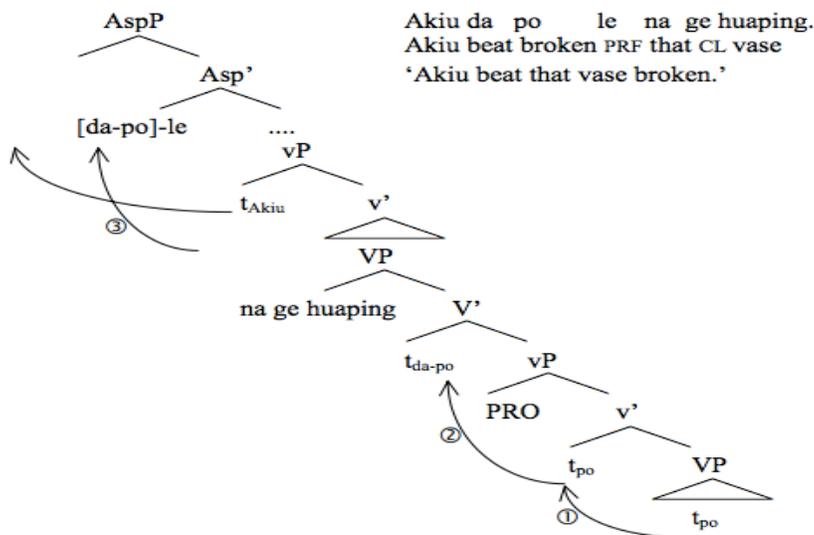
Actually, the object-specificity asymmetry is not only reflected in Chinese resultatives, but also in non-resultative sentences in (45).

(45) a. *Ma Li kan shu/zhe-ben   shu   kan-le   liang-ge xiaoshi*. (nonspecific)
   Ma Li read book/this-CL book read-ASP two-CL hour
   'Ma Li read one book/this book for two hours.'
  b. *Ma Li kan *shu/zhe-ben   shu   kan-le   liang-bian*. (specific)
   Ma Li read *book/this-CL book read-ASP twice
   'Ma Li read this book twice.'
  c. *Ma Li kan-le   liang-ge xiaoshi de shu/*zhe-ben   shu*.[10]
   Ma Li read-ASP two-CL hour   DE book/*this-CL book
   Reading 1: (As for the given book on the shelf,) Ma Li has read this book for two hours. (definite)
   Reading 2: (As for the activity,) Ma Li read one book for two hours. (nonspecific)
  d. *Ma Li kan-le   liang-bian de shu/*zhe-ben   shu*. (definite/specific)
   Ma Li read-ASP two-CL   DE book/*this-CL book
   'The book, which has been read by Ma Li twice.'   (adapted from Tsai 2001)

In (45a) and (45c), nonspecific readings are licensed, with a duration expression *liang-ge xiaoshi* 'for two hours'. In (45b) and (45d), a specific object is the only possible reading, containing a frequency expression *liang-ci* 'twice'.

In addition to the specificity asymmetry in objects, we can also find asymmetric specificity in subjects, as in (46).

(46) a. *Akiu yiwei   you liu-ge ren   dao le*. (specific)
    Akiu thought have six-CL person arrive PRF
    'Akiu thought that there are six persons who have arrived.'
  b. *Akiu yiwei   na liu-ge ren   dao   le*. (definite)
   Akiu thought that six-CL person arrive PRF
   'Akiu thought that those six persons have arrived.'
  c.*Akiu yiwei liu-ge ren dao le*. (*non-specific)
   Akiu thought six-CL person arrive PRF

---

[10] In (45c), the non-specific reading is more widely accepted. However, the sentence is ambiguous. Both definite and non-specific readings are possible.

       *'Akiu thought that six persons arrived.'   (Tsai 2001)

The specific reading of the subject is licensed by the existential modal *you* 'have' and the demonstrative *na* 'that' in (46a) and (46b) respectively. Next, I will introduce Jackendoff's (1991) explanation, based on the boundedness feature.

Jackendoff (1991) assumes that nominal arguments may bear conceptual features +/-bounded [+/-b] and +/-internal [+/-i]. The boundedness feature indicates whether the boundaries of an entity are in view. The [-b] value does not entail that the entity is necessarily unbounded in space. The internal structure feature indicates whether the entity has inherent division into discrete members. The [-i] value does not mean the lack of internal structure, but rather the absence of necessary entailment about the internal structure. Jackendoff (1996) and Sybesma (1999) claim that the nature of the nominal argument affects the aspectual property of an event. For an accomplishment verb, when the nominal argument is [+b] (such as *the apple*, *fifteen sandwiches*), the event is telic/bounded. It can be followed by temporal adverbials such as *in an hour* in (47a), but not *for an hour* in (47b) (Jackendoff 1996). When the nominal argument is [-b] (e.g. *custard*, *sandwiches*), the event is atelic/non-bounded. It can be followed by temporal adverbials such as *for an hour* in (47c), but not *in an hour* in (47d).

(47) a. *Bill ate the apple/fifteen sandwiches in an hour.*
    b. *Bill ate ?? the apple/*fifteen sandwiches for an hour.*
    c.*Bill ate custard/sandwiches in an hour.*
    d. *Bill ate custard/sandwiches for an hour.*   (Jackendoff 1996: 307)

Jackendoff (1996) further points out the gradable adjective defines a scale, which is associated with a degree achievement. The boundedness of this scale determines the telicity of the event, such as in *cool*. Smith (1991) assumes that the perfective aspect indicates completion in a telic/bounded event. According to Travis (2010), a viewpoint aspect (e.g. perfective, progressive) is licensed by a functional projection that is projected higher than vP. Zhang (2017) calls this projection viewpoint-AspP. Zhang claims that the frequency expression containing a classifier never occurs with an imperfective aspect. That is, the frequency expression is in the scope of the viewpoint-Asp, with the feature [-imperfective]. It is the frequency expression (i.e. eventuality counting expression in Zhang's term) that blocks the licensing of the non-specific object. However, the duration expression, such as *liang-ge xiaoshi* 'for two hours', is interpreted with an atelic reading.

Although the duration expression indicates an atelic interpretation, the duration expression in the Chinese example in (45) denotes a telic reading, showing an ending boundary of the *reading* event. This is ensured by the verbal aspect suffix *le*, expressing perfectivity. The perfective marker indicates that an event is being viewed in its entirety or as a whole, which presents a closed non-stative situation.

2.2 Literature on DE-resultatives

In this section, the existing literature of DE-resultatives are introduced. The DE-resultative pattern contains an activity verb, then followed by a DE-introducing clause-like complement (*Huang et al* 2009), as in (48).

(48). *Zhangsan **ku de** shoupa   **shi**-le.*
      Zhangsan cry DE handkerchief wet-PRF
      'Zhangsan cried and as a result the handkerchief got wet.'   (Sybesma 1999)

In the DE-resultative pattern, the activity verb is considered as the head of the main clause, and the resultant predicate is considered as the head of the DE-clause. These two predicates are analysed within two clause segments (Sybesma 1999). In this section, I will introduce two major syntactic analyses on the DE-resultative pattern in Mandarin Chinese: the small clause approach and the vP shell analysis. I will show each approach has its limitations.

2.2.1 Small clause analysis

In the DE-resultative pattern, Sybesma argues that DE heads the '*Extent Phrase*', intervening between the projection of the activity and the result. As it is represented in (49b), the postverbal argument *shoupa* 'handkerchief' and the resultative predicate form the small clause. The marker DE is analysed as an extent head, represented as Ext.

(49) a. *Zhangsan **ku de** shoupa   **shi**-le.*
        Zhangsan cry DE handkerchief wet-PRF
        'Zhangsan cried and as a result the handkerchief got wet.'
     b. Zhangsan [$_{VP}$ ku [Ext DE [$_{SC}$ shoujuan shi-le]]]
        Zhangsan [$_{VP}$ cry [Ext DE [$_{SC}$ handkerchief wet ASP]]]   (Sybesma 1999)

Zhang (2001) analyzes the DE-resultative pattern and the compounding pattern with a similar base structure. Their surface structures are developed by different syntactic operations: Merger in the former and (Head) Move in the latter. Zhang proposes that the

secondary predicate in the DE-resultative pattern is base-generated in the complement of vP. The position of DE is realized as a morpheme DE in PF. Zhang's (2001) base-generation approach is also similar to Sybesma's (1999) small clause analysis.

The major shortcoming of this approach is what we have seen when we consider the compounding pattern. Both selected and non-selected post-DE arguments share the same underlying structure, with difficulty in explaining their different interpretations, as in (50).

(50) a. *Zhangsan ku de shoupa   shi-le.*
      Zhangsan cry DE handkerchief wet-PRF
      'Zhangsan cried and as a result the handkerchief got wet.'
   b. *Zhangsan kan   de shu dao le.*
      Zhangsan chop DE tree fall-PRF
   'Zhangsan chop the tree as a result, the tree become fallen down.'

We can see that the post-DE argument *shoupa* 'handkerchief' does not bear a semantically selected relation with the activity verb *ku* 'cry' in (50a), but with a semantically selected relation in (50b). This challenging issue deserves to be further examined in the thesis.

2.2.2 vP shell analysis

In a DE-as-a-complementizer analysis of Huang (1982), DE in DE-resultatives is analysed as a complementizer within the general vP shell structure. The resultative predicate is then the predicate of the full complement clause. The complementizer-treatment of DE indicates that the activity verb (higher V, to be specific, the root of the activity verb) and the resultative predicate originate within two different phasal domains: Res in the lower CP-

clause phasal domain and Root (of the activity verb) in the higher verbal phasal domain, as in (51).

(51) DE as a complementizer
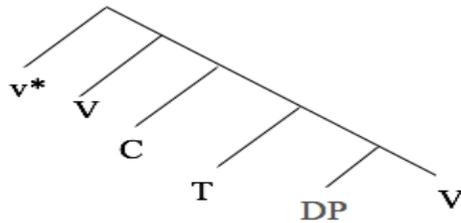
Subsequently, Huang *et al.* (2009) revise their analysis and argue that DE is considered as an affix in nature and attaches to the first verb. The DE-resultative pattern is analysed within the vP shell structure. The activity verb and DE undergoes head movement to the light verb as a whole in (52).

(52). DE as an affix
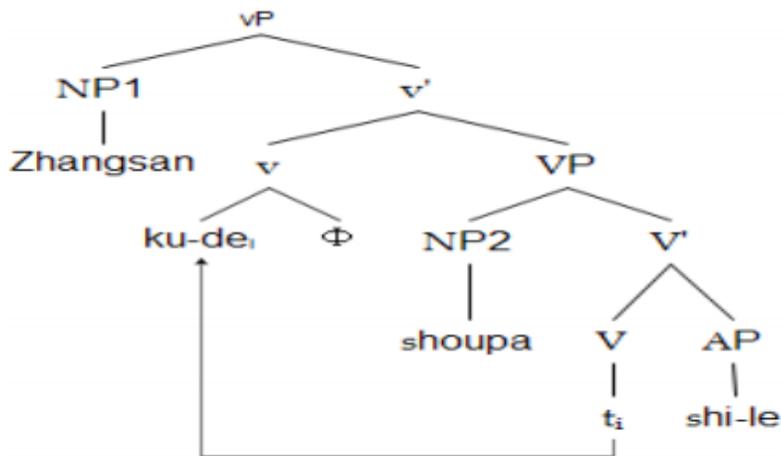
(Huang *et al.* 2009)

The vP shell analysis (Huang et al. 2009) does not focus on the argument structure of the activity verb. Like the small clause approach, it does not distinguish the selected or unselected object, since both derive in Spec-VP in the vP shell analysis.

Based on Huang *et al.* (2009), I will provide a unified derivational model to the DE-resultative pattern and the compounding pattern (in chapter 3, and even to the adverb pattern in chapter 4). The activity verb and the resultative state will be both limited into a vP-phasal domain, unlike the complementizer treatment, but more similar to Huang *et al.* (2009). (The unified analysis is more conformed to the principle of simplicity in generative grammar. A unified model is based on many similarities of their event structures and argument realization as I have introduced in section 1.2 and 1.3).

2.2.3 Specificity effects in DE-resultatives

In the DE-resultative pattern, the post-DE argument can be only interpreted with a specific reading, as in (53a) and (53b). The non-specific reading is not possible, as in (53c).

(53) a. *Akiu da   de Baoyu haotaodaku.*
     Akiu beat DE Baoyu cry.loudly
     'Akiu beat Baoyu and as a result Baoyu cried loudly.'
   b. *Akiu da   de na (yi) ge heaping po   le.*
   Akiu beat DE that one CL vase   broken PRF
     'Akiu beat that that vase broken.
   c.*Akiu da de yi   ge huaping po   le.
     Akiu beat DE one CL vase   broken PRF   (Zhang 2001)

Zhang (2001) explains the specificity in the following way. She proposes the structure (54) for DE-resultatives. Unlike the compounding resultative pattern, the resultative predicate does not move out of the lower vP. The subject PRO of vP is base-generated, and the PRO is co-indexed with the object *Baoyu*. Non-specific interpretation of the subject is not allowed, due to the control relation between *Baoyu* and the subject PRO of vP.

(54) Specific reading in the DE-patttern

Akiu da de Baoyu haotaodaku.   (80a)
Akiu beat DE Baoyu cry.loudly
'Akiu beat Baoyu and as a result Baoyu cried loudly.'
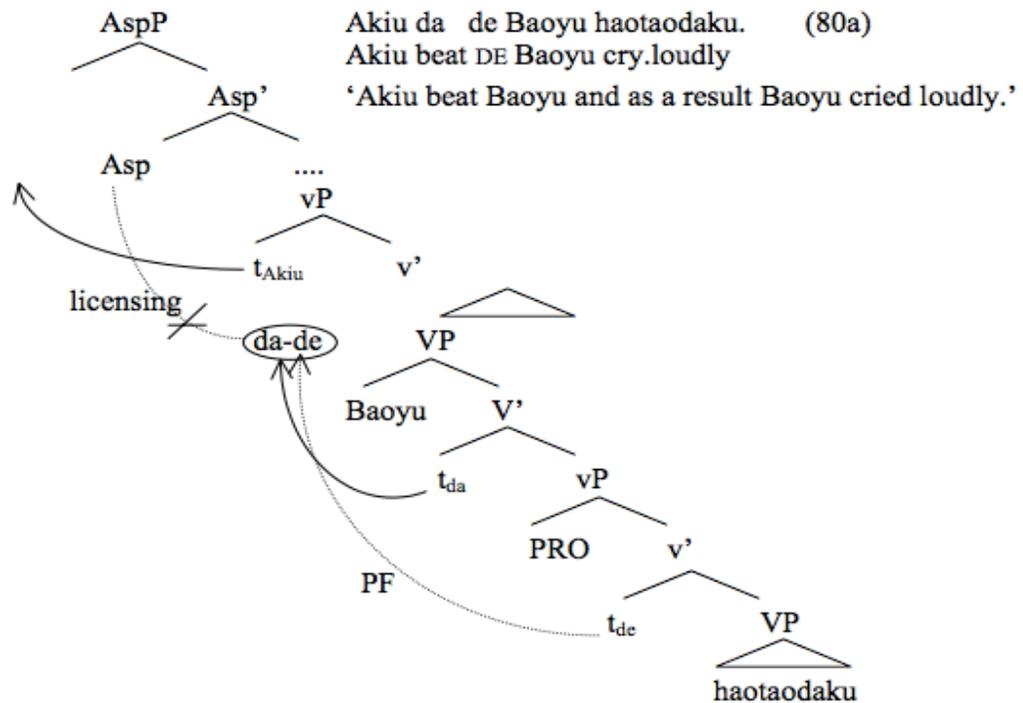
(Zhang 2001)

Zhang (2001) does not clearly mention the motivation: why the resultative predicate should move out of the vP in compounding resultatives, but not in DE-resultative patterns? (I will explain the specificity asymmetry in terms of labeling, by concerning feature inheritance in a splitting model.)

2.3. Adverb resultatives in Mandarin

2.3.1 Distribution of adverbs

After introducing the existing literature of compounding and DE-resultatives, now let us turn to adverb resultatives in Mandarin Chinese. It is controversial in Chinese: whether adverbs are allowed in postverbal positions or not. Let us start with manner adverbs. Li and Thompson (1981) and Larson (2015) classify manner adverbs into movable and non-movable adverbs. For them, movable adverbs can occur both sentence-medially in (55a) and sentence-initially in (55b), but non-movable adverbs can only be used sentence-medially in (55c).

(55) a. *Ta jintian zou   le.*
        3sg today leave ASP
        'S/he left today.'
    b. *Jintian ta   zou   le.*
        Today 3sg leave ASP
        'S/he left today.'
    c. *Ta yijing   zou   le.*
        3sg already leave ASP
        'S/he already left.'
    d.*Yijing ta   zou   le.*
        Already 3sg leave ASP   (Larson 2015)

Among movable adverbs, Larson (2015) argues that some manner adverbs can also occur sentence-finally, but non-movable ones cannot. Adverbs containing the suffix-*de* cannot occupy the sentence-final position, in (56d). Other movable adverbs without the suffix-*de* can be used in sentence-final positions, as in (56b).

(56) a. *Ta zongshi **hen dasheng** gen bieren jianghua.*
     3sg always very loud   to   others talk
     'S/he always talks to others loudly.'
   b. *Ta zongshi gen bieren jianghua **hen dasheng**.*
     3sg always to   others talk   very loudly
   c. *Ta zongshi **qiaoqiaode** gen bieren jianghua.*
     3sg always quietly-DE to   others talk
     'S/he always talks to others quietly.'
   d.**Ta zongshi gen bieren jianghua **qiaoqiaode**.*
     3sg always to   others talk   quietly   (Larson 2015)

However, Sybesma (2012) and Paul (2012) reject the idea of a postverbal position for

manner adverbs, arguing that adverbs in Mandarin Chinese are not allowed between the

verb and its object or following the object. Paul (2012) argues instead that the postverbal

manner adverb actually functions as the predicative complement, since the same position

seems to host predicates generally. Non-predicative adjective cannot occur in this position.

Other supporting evidence is that only predicative adjectives can be the focus of the

negation and questioning test, as in (57b) and (57c). Thus, the postverbal position in (57a)

must be that of a predicative complement (Paul 2012).

(57) a. *Ta cai   de dui/*cuo.*
       She guess DE right/wrong
       'She guessed right/wrong.'
    b. *Ta de   kanfa   bu dui.* (Negation)
        he GENI opinion NEG right
        'His point of view is not correct.'
    c. *Ta chang de dasheng bu   dasheng?* (Questioning)
        he sing   DE loud   NEG loud
        'Does she sing loudly?'   (Paul 2012)

The claim about the status of the predicative complement (Paul 2012) does not really deny

its adverb category, as observed in Larson (2015). The category of the word and its phrase

structure role (complement) are not the same thing. However, the predicative complement analysis (Sybesma 2012; Paul 2012) is not unproblematic. The definition of the predicative adjective is not entirely clear. Some so-called non-predicative adjectives like *cuo* 'wrong' can also satisfy negation (58b) or questioning diagnostics (58c).

(58) a. *Ta cai   cuo   le.*
     He guess wrong PRF
     'He guessed wrong.'
   b. *Ta cai   de   mei cuo.* (Negation)
     he guess DE NEG wrong
     'He did not guess wrong.'
   c. *Ta cai   de cuo   mei cuo?* (Questioning)
     he guess DE wrong NEG wrong
     'Does he guess wrong?'

The counter-examples in (58) show that the negation and questioning test cannot be reliably used as diagnostics for the predicative complement (Paul 2012), since *cuo* 'wrong' can also pass these two tests, but cannot appear in the sentence-final position.

Regardless of the status of the predicative complement proposal (Paul 2012), at least we can see that a manner adverb can occur in the sentence-final position (Larson 2015). What's more, in addition to manner adverbs, apparent resultative adverbs share a similar distribution in Mandarin Chinese. As in (59), they can occur either in preverbal or postverbal positions.[11]

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[11] If the resultative adverb occurs in the sentence-final position, it usually needs the punctuation or with an intonation change, as in (59b). Otherwise, it is less acceptable.

(59) a. *Zhangsan **cuicuide/hen cui de***   *zha le   yi   pan huashengmi.*
      Zhangsan crisp (in reduplication)/very crisp fry ASP one plate peanut
      'Zhangsan fries a plate of peanuts, and as a result the peanuts become crisp.'
    b. *Zhangsan zha le   yi   pan huashengmi, **hen cui/cuicuide***.
      Zhangsan fry ASP one plate peanut,   very crisp/crisp
   'Zhangsan fries a plate of peanuts, and as a result the peanuts become crisp.'

The focus of the thesis is preverbal adverbs, especially resultative adverbs in preverbal positions in Mandarin Chinese, like (59a).

2.3.2 Predicate analysis

Xiong (2013) analyses the preverbal resultative adverb as the predicate of a PRO, controlled by the object. Let us take the example in (60). For the preverbal resultative adverb, Xiong (2013) argues that the adverb *yanyande* 'strong' enters the derivation as the predicate of PRO. The clause [PRO *yanyande*] functions as a complement of the postverbal argument *yiwancha* 'one bowl of tea'. The activity verb *qi* 'make' raises from the verb head V to a higher functional Bec, because the null phonological form (PF) of 'DE' in the node of Bec. The activity verb *qi* 'make' finally lands at the functional head Caus, moving cyclically via the mediate head Bec. The resultative adverb in the complement-clause then undergoes movement to a focused position, ending up as a surface preverbal adverb out of the vP shell structure. In Xiong (2013), the resultative state raises to a specifier position for CausP; the PRO is controlled by the object *yi wan cha* 'one cup of tea'. Thus, an object-orienting reading is realized. The derivation is presented in (60c).

 (60) a. *Ma Li yanyande qi   le   yi wan cha.*
       Ma Li strong   make Asp one bowl tea

'Ma Li made a cup of tea, and as a result the tea is very strong.'
b. [CausP [Ma Li] [Caus' [Caus] [BecP [yi wan chai] [Bec' [Bec] [VP PROi yanyande] [V qi]]]]]]
c. Derivation

```
                        CausP
                       /     \
                  Ma Li        Caus'
                              /     \
                  [PRO yanyande]i    Caus'
                                    /     \
                                 Caus       BecP
                                 qij       /     \
                                    yi wan cha     Bec'
                                                  /     \
                                               Bec        VP
                                               qij       /    \
                                                        ti      V
                                                                ti
```
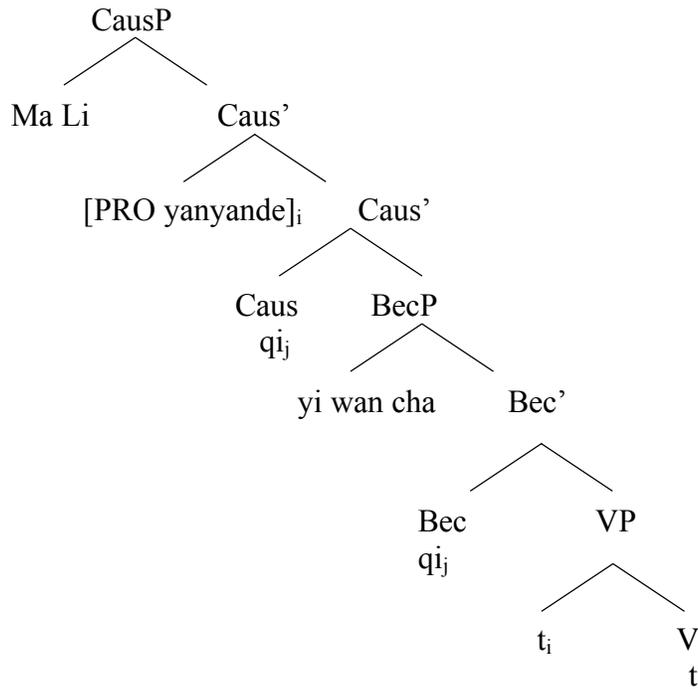
(based on Xiong 2013)

One of Xiong's (2013) problems is about the motivation to move the resultative adverb in the clause {PRO *yanyande*} to a focused position. There is not obvious focused semantic interpretation in this pattern, so it is problematic to assume the adverb is triggered by some focalization information outside CausP. Extending Xiong's (2013) head raising assumption, I will argue that the preverbal resultative adverb in Mandarin undergoes cyclic head raising in a v-splitting structure. Each step of head movement is triggered by the particular feature-driven motivation. Unlike assuming multiple light verb zones (e.g. CausP or BecP in

Xiong's analysis), I will provide a v-splitting model to analyse adverb resultatives in Mandarin Chinese. The details will be explained in chapter 4.

3. Typologies of Chinese Resultatives

Finally, I will illustrate how the literature classifies different resultative constructions in Chinese. Let us see how existing accounts address the data and unite resultatives in different perspectives. The existing literature is mainly concerned with the compounding pattern, rather than the DE-pattern or the adverb pattern. Classifications have been developed based on semantic types of the activity verb and resultant predicate (Li and Thompson, 1981) or the argument realization (Shen & Mochizuki, 2010; H. Lin, 1998; Cheng & Huang, 1994).

First, let us start with the semantic type of the activity verb and the resultant predicate. Li & Thompson (1981) divide resultative compounds in Chinese into three basic types: *simple, phase,* and *directional*.

(61) a. *Type 1- simple RVC:* V1 denotes an activity and V2 denotes the end state that is brought about by the V1, thus the resultative compound is telic, e.g. *da-si* 'hit-die', *ti-fan* 'kick-spill', *ku-shi* 'cry-wet'.
   b. *Type 2- phase RVC:* expressing the completion of an event without supplying a literal result state, e.g. *mai-diao* 'sell-drop', *zuo-hao* 'make-good', *kan-wan* 'read-finish'.
   c. *Type 3- directional RVC:* V1 is an activity verb, and V2 is a verbal element expressing spatial properties of the activity, e.g. *pao-guo* 'run-over', *na-zou* 'take-away', *tiao-chu* 'jump-out'.

The resultative compound in type 1 is relatively straightforward, in that it expresses the telicity, with the ending resultant state of an activity. However, type 2 and type 3 seem not consistent with the definition of resultatives, without supplying a result state of an action. Type 2 and type 3 express the degree or spatial properties of an action denoted by V1, rather than denoting the resultative state (Chao 1968), both of which are more depictive than resultative.

In addition to the semantic distinction, some scholars classify varieties in the construction, depending on its argument structure (Shen & Mochizuki 2010; H. Lin 1998) and the transitivity (Cheng & Huang 1994).

The arguments in the compounding resultative can be inherited from both V1 and V2, subcategorized into V2-predicates-objects or V2-predicates-subjects. The arguments may alternatively orient either V1 or V2, subcategorized into no-argument-inherited-from-V1; no-argument-inherited-from-V2; the complemental-V1-resultative-V2-relation (Shen & Mochizuki 2010: 341-343). Thus, five types are classified based on the argument structure (Shen & Mochizuki 2010).

H. Lin (1998) classifies resultative compounds into four classes, depending on whether V1 is transitive or intransitive, and whether V2 is predicated of the subject or object, like *kan-lei* 'cut-tired', *ku-lei* 'cry-tired', *tui-kai* 'push-open', *ku-shi* 'cry-wet'. A similar but more specific classification can be found in Cheng and Huang (1994). In terms of two dimensions:

aspectuality and *transitivity*,[12] Cheng and Huang (1994) classify resultative compounds into four types: *unergative, transitive, ergative,* and *causative*, as in (62).

(62) a. *Zhangsan qi-lei   le.* **(unergative)**
      Zhangsan ride-tired PRF
      'Zhangsan rode himself tired.'
    b. *Zhangsan qi-lei-le   liang-pi ma*. **(transitive)**
      Zhangsan ride-tired-ASP two-CL horse
      'Zhangsan rode two horses tired.'
    c. *Zhangsan qi-si   le*. **(ergative)**
      Zhangsan anger-dead PRF.
      'Zhangsan got extremely angry.'
    d. *Zhe-jian shi   zhen qi-si   Zhangsan le.* **(causative)**
      this-CL matter really anger-dead Zhangsan PRF
      'This matter really angered Zhangsan.'   (Cheng & Huang 1994:188-189)

Cheng & Huang's (1994) four-type classification is also applied to DE-inserted resultatives. For thematic roles, the subject in unergative and transitive constructions is Agent. However, in ergative and causative constructions, the subject is Theme or Experiencer. Cheng & Huang (1994) distinguish unergative/transitive resultatives from ergative/causative resultatives. Cheng & Huang argue that the former two are active resultatives, represented as $[_{RV}V1_{Active} [V2_{State/Change-of-state}]]$, and the latter is a non-active resultative pattern, with the configuration $[_{RV}V1_{Non-active} [V2_{State/Change-of-state}]]$.

---

[12] *Aspectuality* refers to the event type of a predicate, corresponding with Vendler's assumption on activity, accomplishment, achievement, and state. *Transitivity* refers to the number of the arguments a predicate licensed (Cheng & Huang 1994).

To sum up, these classifying approaches are not directly tied to the syntactic derivation of this construction. However, it is important for us to look at the construction from a typological perspective, as well. The classification (in term of the semantic relation, the argument orientation and the transitivity) helps us to scan this construction with its internal distinction. It is not possible to explain the construction in a unified model unless we have known its classification and its characteristic differences. This is also one of the goals of this inquiry.

4 Summary

In this chapter, I have introduced general studies on resultatives from generative grammar. Resultatives are discussed in terms of event structure templates, semantic explanation of argument realization, and syntactic underlying representations. Three typical resultative constructions, the compounding, the *DE*-phrasal pattern and the adverb resultative pattern are introduced in Mandarin Chinese. The relationship of two predicates, different classifications and specificity asymmetry in postverbal nouns are discussed. Multiple derivational approaches are compared between the small clause theory and the vP shell analysis, and the limitation of each is also illustrated.

In this thesis, unlike almost all previous analyses, I will propose that the adverb resultative pattern in Mandarin Chinese shares the common syntactic derivation with compounding and DE-phrasal resultatives. I will put forward a unified derivation model to these three resultative patterns in Mandarin. The unified analysis will be examined through the

typological investigation. The surface encoding of cross-linguistic resultatives is explained

by the parametric variation in Res-to-v head movement.

Chapter 3

Typical Resultatives

In this chapter, I will analyse the syntactic derivation of two widely acknowledged resultative patterns in Mandarin Chinese: the DE-phrasal resultative pattern (1a) and the compounding resultative pattern (1b). Both patterns are composed of two predicates: a means predicate and a result state predicate. With a result state, the resultative construction contains a resultant event with a definite endpoint (Wechsler 2005; Tham 2009).

(1) a. *Wu Song da   de laohu si   le.*   (DE-Resultatives)
    Wu Song beat DE tiger die PRT
   'Wu Song beat the tiger so that it died.'
  b. *Wu Song da   si   le   laohu.*   (Compounding Resultatives)
    Wu Song beat die ASP tiger
   'Wu Song beat the tiger so that it died.'   (based on Zhang 2001: 192)

The current literature mainly analyses these two resultative patterns either from a lexically-based approach (Thompson 1973), a complex event-based analysis (Levin & Rappaport Hovav 1995; Lee & Ackerman 2011) or a syntactic derivational representation (Hoekstra 1988; Huang 1988; Zhang 2001), as I have introduced in chapter 2. The syntactic approach generally involves a small clause analysis (Hoerkstra 1988; Sybesma 1999) or the VP-shell analysis (Huang 1988; Zhang 2001). In this chapter, I will show that these two typical resultative patterns can be effectively modeled by the v-splitting hypothesis. The derivation will be explained within the labeling theory (Chomsky 2013; 2014), and see how it works on the specificity constraint. The analysis demonstrates that the resultative construction in

Mandarin Chinese is different from a language like English, specifically because of the double v structure, which is impossible in English. With the basic analysis, I then show how this improves on earlier approaches.

1. A Quick Summary of the Model

In DE-resultatives and compounding resultatives, a two-layer vP configuration with two adjacent light verbs is proposed. The result state is analysed as the resultative head Res, but may be realized in different categories (e.g. adjectives in DE and compounding patterns or adverbs in the adverb pattern). Thus, I just use Res for the result state without defining the exact category in the following underlying derivation.

In the v-splitting model, a cluster of features is hypothesized upon the phasal head v*. These include [CATEGORIAL]([CAT]) and [uASPECTUAL] ([uASP]) features on the light verb v*. The [CAT] feature creates a label for the categoryless root. For instance, the functional v can label a verbal category for the categoryless root. The [uASP] feature specifies the event type of the verbs, and it may express the state, activity, achievement or accomplishment of the event type (corresponding to Vendler 1957). The [uASP] is associated to the extra lower v position, which is created by the splitting operation along with feature inheritance. In addition, the resultative head Res also carries the [uASP] feature, but in an optional way. The optional [uASP] feature of the Res is supported by the multiple eventuality of the independent predicate: it can express the state in a root clause or a change

of state in a resultative clause.[13] Thus, the absence/presence of the [uASP] feature falls into free variation in the Res. If the Res does not contain the [uASP] feature, no Res-to-v movement takes place, and the DE is realized in the lower v at PF, as in DE-resultatives. If the Res contains the [uASP] feature, it undergoes head raising to the lower v, as in compounding resultatives. The [uASP] feature in the lower v and the Res is checked and valued by the interpretable [ASP] feature in the higher functional head Asp outside v*P. The general derivation of the DE-resultative pattern in (2a) is presented in (2b), in which Root-to-v* head movement is proposed, but the resultative predicate remains in-situ. The compounding pattern in (3a) is proposed in (3b), which shares the same underlying base, but two long-head movement operations are proposed: Root-to-v* and Res-to-v.

(2) a. *Zhang San ku de shoupa   shi le.* (DE- Resultatives)
    Zhang San cry DE handkerchief wet PRT
    'Zhang San cried and as a result the handkerchief became wet.'

---

[13] The predicate denotes the state and the change of state respectively in (iv). Based on the multiple eventuality for the single predicate, I propose the aspectual feature [uASP] is in free variation in the predicate. That is, the predicate can optionally carry [uASP] features.
(iv) a. *Zhe tiao shoupa   hen shi*. (state)
   this Cl   handkerchief very wet.
    'This handkerchief is very wet.'
  b. *Zhang San ku shi le   zhe tiao shoupa*. (change of state)
   Zhang San cry wet Asp this CL handkerchief
    'Zhang San cried and as a result the handkerchief became wet.'

b. Derivation of DE-resultatives

Asp[ASP]
  Spec
  Zhang San
    v*[CAT]
      v[uASP]
      de   Spec
          Root[uCAT] DP
          ku   shoupa   Res[uASP]
                                   shi
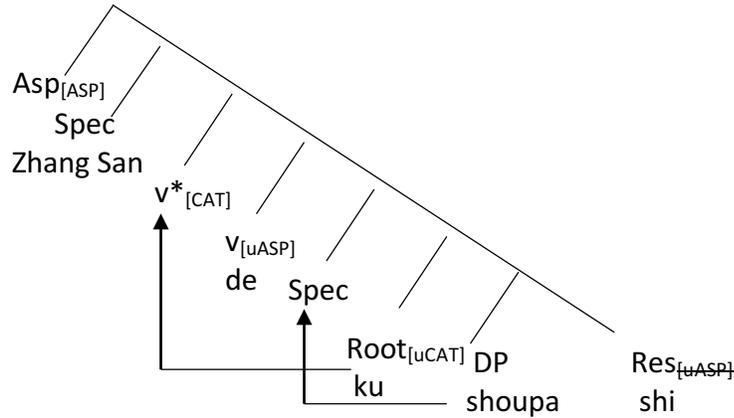
(3) a. *Zhang San ku shi   le   shoupa.* (Compounding Resultatives)
        Zhang San cry wet ASP handkerchief
       'Zhang San cried and as a result the handkerchief became wet.'
    b. Derivation of compounding resultatives

Asp[ASP]
  Spec
  Zhang San
    v*[CAT]
      v[uASP]
      le Spec
          Root[uCAT]
          ku   DP
                shoupa   Res[uASP]
                             shi
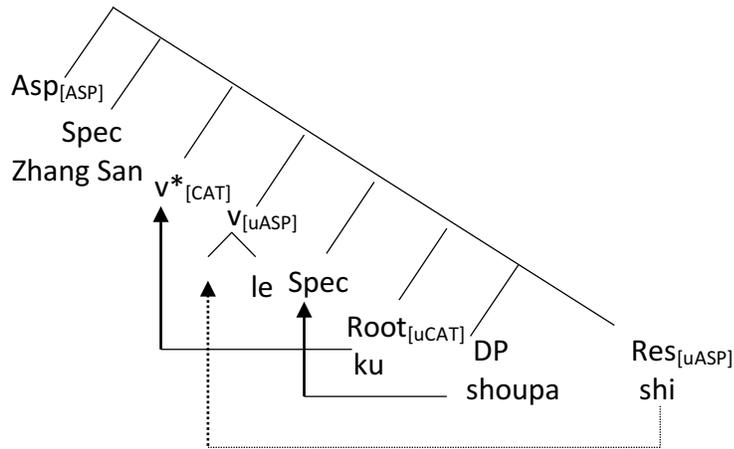
The concrete proposals in (2b) and (3b) ensure word order differences between DE-resultative and compounding structures. Later, I will relate this model to the adverb resultative pattern in the following chapter (i.e. chapter 4), and present a unified model to explain these three resultative patterns together in Mandarin Chinese.

1.1 v-splitting hypothesis

Before specifying the v-splitting hypothesis, let us start from Robert's (2012) work as a precedent for head splitting. Within the phase theory, Chomsky (1998) observes that the phase head C should be regarded as an idealization which collapses Rizzi's categories. Roberts (2012) further argues that C can be split into a series of adjacent heads. Edge features (EF) are only carried by the highest head, whereas probing features are borne by the structurally lower heads. Roberts provides the following illustration of this approach.

As in Serbian/Croatian in (4), the probing feature is distributed to the structurally lowest head Fin and the EF to the highest head Force. Roberts (2012) analyses the clitic cluster in Serbian/Croatian in a similar split-C approach. The clitic cluster in the embedded finite clause immediately follows the complementizer, and no other constituents can intervene between the clitic cluster and the complimentizer *da*.

(4) a. …*da mu   ga Ivan daje*
       …that him it Ivan gives
    b.*…*da rado   mu ga Ivan daje*
       …that gladly him it Ivan gave
    c.*…*da   Ivan mu ga daje*
       …that Ivan him it gave
       …that Ivan gave it to him (gladly)

(5)

```
              CP
             /  \
            C    XP
            da   / \
                X   TP
               /\   /\
         clitics X DP_subject T'
```

$DP_{subject}$
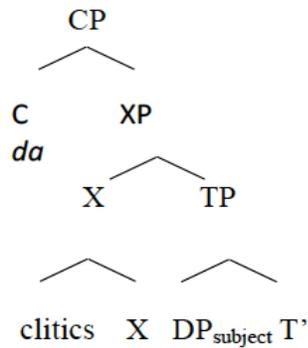
(Roberts 2012: 389)

In (5), C is analysed as Force, and X as Fin, since the head C should be a phasal head, attracting clitics to raise up. The probing feature is associated with the structurally lowest head Fin and the EF to the highest head Force. In the split-C analysis (Roberts 2012), feature inheritance must still take place. The phasal head C still should transfer features to T. The feature inheritance from C to T before C-splitting takes place.

Extending the split-C analysis, I propose that Mandarin differs from a language like English specifically because of the v-splitting derivation, whereby parallel head splitting is proposed in the light verb system. The v-splitting is a syntactic operation, in which the light verb can be split into multiple adjacent sub-layers. The phasal head v* splits into a higher v* and a lower v, to form the double-v structure, in (6b).

(6) v-splitting hypothesis

    a.

       v*

    b.

       v*

          v
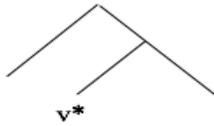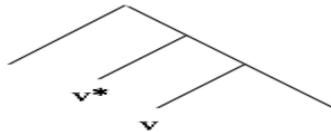
The v-splitting analysis proposed in this thesis is comparable to the split-C analysis in Roberts (2012), and multiple adjacent layers of light verbs are proposed in this model.

1.2 Head movement constraint with reconciliation

In the derivation of compounding and DE-resultatives, there is head movement Root-to-v*. Let us look at how Root head movement might work in the v-splitting proposal. Before the v-splitting occurs, the root acts as the head of the complement of the phasal head v*. This selection relationship is established before v-splitting occurs. Then the light verb splits into two adjacent light verbs, but this splitting operation does not change the already-established relationship between the Root and the phasal head v* (i.e. the higher v in the split pattern). Since the head-head relationship between Root and v* has been established before the splitting operation, Root-to-v* movement still respects the spirit of head movement constraint (HMC) (Travis 1984). Thus, in Root-to-v* head movement, the split lower light

verb v does not intervene in head movement Root-to-v*.

This idea is analogous to what Chomsky says in Problems of Projections (Chomsky 2013), where he says that C identifies T as the head of its selected complement, and later movement of the subject to become the sister of TP does not alter that prior relationship between C and T. TP is not actually the complement of C in that model-the exocentric structure DP-TP is. The idea is presented in (7a). Similarly, in the v-splitting model, the later v-splitting might not make the Root lose its status as the mobile head, which can raise up to the higher v position in (7b). The Root-to-v* head movement in the v-splitting proposal respects the spirit of HMC.

(7) a. Head and Complement in CP
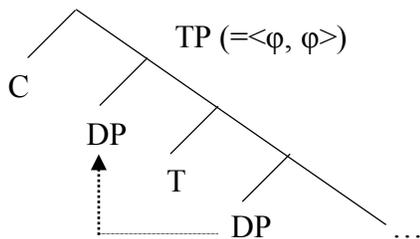
b. Root-to-v* movement in v-splitting structure[14]
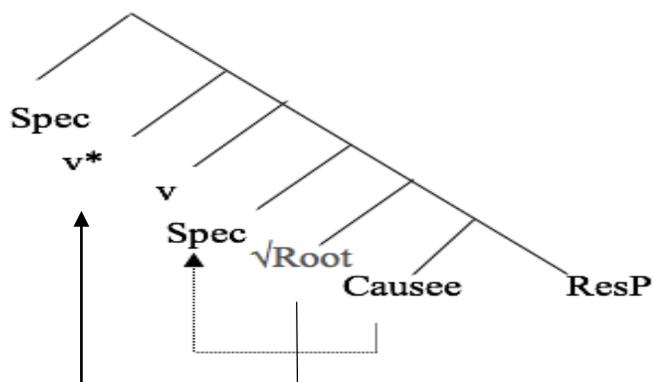
1.3 Landing site of a raised object

As in other transitive vP configurations, the root itself needs a specifier position for the labeling purpose. Given the labeling algorithm, the non-phasal head Root is weak and cannot be labeled by itself. It must be strengthened by the movement of the specifier of its complement (i.e. Causee); LA takes the shared $<\varphi,\varphi>$ feature as the label. (The hypothesis that Spec-Root is a landing site for the postverbal nominal is independent from the prosodic linearization in Chinese resultatives, since Causee is always in a postverbal position in VO patterns.) The assumption that the root needs a specifier is supported empirically by the phenomenon of pseudo-classifiers in Chinese.

---

[14] In the v-splitting structure, Root-to-v* head movement is focused here, so Causee to Spec-Root is not explained until the next section 1.3.

(8) *Ma Li chang yi   chang zhe-dao cai.*[15]
   Ma Li taste   one taste   this-Cl   dish
   'Mary have tasted this dish.'   (adapted from Feng 2009)


This pattern contains two words with the same form. One is the main verb, and the other occupies the classifier position. In the example, the main verb *chang* 'taste' enters the derivation in Root, which merges to v to be a verbal category. The number word *yi* 'one' occupies Spec-Root, and the postverbal argument Causee in-situ. According to Chain Reduction, two copies of the same label cannot co-occur, and the lower copy is usually deleted at PF. But in the pseudo-classifier construction, both copies are pronounced. I explain the permission of both copies from Marantz (1997), and result in two of the copies to be spelt out at PF, without violating Chain Reduction.

Marantz (1997) assumes that the meaning of the root is determined by functional categories in a special boundary context. Applying into the pseudo-classifier in Chinese, the root *chang* 'taste' is neutral between verb and noun, and it may derive inside two categorizing contexts. In this construction, both copies of the root are actually pronounced, because of the unique feature of this construction. The numeral *yi* 'one' is merged as a phrasal sister with the root, and in that position it enables a $<\varphi,\varphi>$ label to be assigned after Feature Inheritance from v to the root, as in (9).

---

[15] Feng (2009) mentions the similar verb phrase *chang yi chang* 'taste one taste', *kan yi kan* 'see one see', etc. The linearization of *chang yi chang* 'taste one taste' without the aspect marker *-le* usually indicates an imperative or demanding mood.

(9)

```
              v
            /   \
          v      <φ, φ>
               /   \
            DP      /  \
            yi   Root    DP
                 chang   zhe dao cai
```
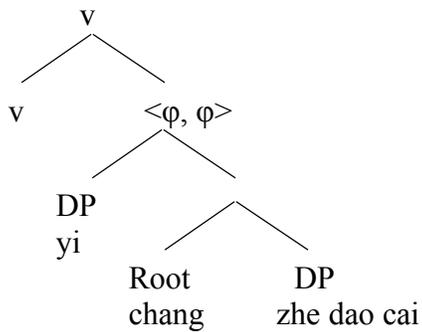
As always, the root raises to v, as in (10).

(10)

```
              v
            /   \
          v      <φ, φ>
          ↑    /   \
        : DP      /  \
        : yi   Root    DP
        :      chang   zhe dao cai
        :......:
```
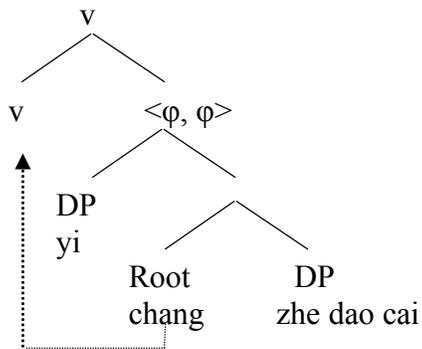
At this point, one would normally expect the lower copy to be deleted. But *yi* 'one' has the

particular property of acting as a nominal categorising head for a root which appears as its

sister, and the lower copy is therefore classified as a noun for the purpose of interpretation

as the Sensory-Motor interface. Since the verbal copy adjoined to v and the lower copy of

the root are not equivalent as this interface, no deletion of the lower copy takes place.

The special categorising relationship between the numeral word *yi* 'one' and the verb root is supported by the limited usage of numeral words. Only *yi* 'one' is permitted and numbers more than one are ruled out.

(11) a. *chang yi   chang*
      taste   one taste
   b.**chang liang/san chang*
      taste   two/three taste

The pseudo-classifier structure indirectly supports the assumption that Spec-Root is a syntactically liscened position for the postverbal argument. If it is occupied by the nominal *yi* 'one' as shown in pseudo-classifiers, the internal argument will stay in-situ. Otherwise, it may move to Spec-Root or further (e.g. to the sentence-initial triggered by a Topic/Focus motivation). The hypothesis that the Root needs a specifier position (based on Chomsky 2014) will be adopted to account for the resultative construction in Mandarin Chinese (the DE-resultative, compounding-resultative and adverb-resultative patterns) and other languages (Shanghai dialect and Innu-aimûn).

2. v-splitting in DE-resultatives

Now the specific features of DE-resultatives can be analysed. In DE-resultatives, the DE-marker is found in the right-adjacent position of the activity verb, as in (12).

(12) *Akiu ku de zhe liang tiao shoujuan   dou shi le.*
    Akiu cry DE this two CL   handkerchief even wet PRF
    'Akiu cried so much that these two handkerchieves were wet.'
<div align="right">(based on Zhang 2001: 215)</div>

In the following, I analyse that resultative DE is an overt realization of the lower light verb within the v-splitting structure. A comparative study is presented between the v-splitting approach and previous approaches: the CP-treatment and the vP-shell analysis in the DE-pattern. Through the comparison, we can see that the v-splitting analysis is better than a base-generated structure with two v heads. It allows us to formulate the analysis in which the root raises to the higher v* without violating the head movement constraint. The splitting analysis works better to explain the specificity effect, compared to a simple vP shell structure (Huang *et al.* 2009).

2.1 v-splitting derivation in DE-resultatives

In the DE-resultative pattern, the post-DE argument can optionally have a selectional relationship with the activity verb. In (13a), *zhe liang tiao shoujuan* 'these two handkerchieves' do not have the selected relationship with the verb *ku* 'cry'. The argument *zhe ke shu* 'this tree' in (13b) has the selected relationship with the verb *kan* 'chop'.

(13) a. *Akiu ku de zhe liang tiao shoujuan   dou shi le.*
     Akiu cry DE this two CL   handkerchief even wet PRF
     'Akiu cried so much that these two handkerchieves were wet.'
  b. *Akiu kan   de zhe ke shu dou dao le*.
     Akiu chop DE this CL tree even fall PRF
   'Akiu chopped this tree so much and as a result this three became fallen down.'
                              (based on Zhang 2001)

 Two subtypes of DE-resultatives can be derived from a similar underlying base: a v-

splitting configuration. In the v-splitting structure, the phasal head v* splits into two sublayers of v: the higher v* and the lower v. Resultative DE is analyzed as an overt element in the lower functional v at PF in DE-resultatives. In (13a), the unselected post-DE argument *zhe liang tiao shoujuan* 'these two pieces of handkerchieves' is generated as the sister to the resultative head *shi* 'become wet'. Root-to-v* head movement operation takes place in the DE-resultative pattern. As I have explained, before the v-splitting occurs, the root acts as the head of the complement of the phasal head v*. This relationship has been established before v-splitting. The syntactic relation between the Root and the v* will not be altered after the v-splitting operation. The Root-to-v* head movement then creates a verbal category for the Root in the derivation. The derivation is represented in (14).

(14) v-splitting in unselected DE-resultatives
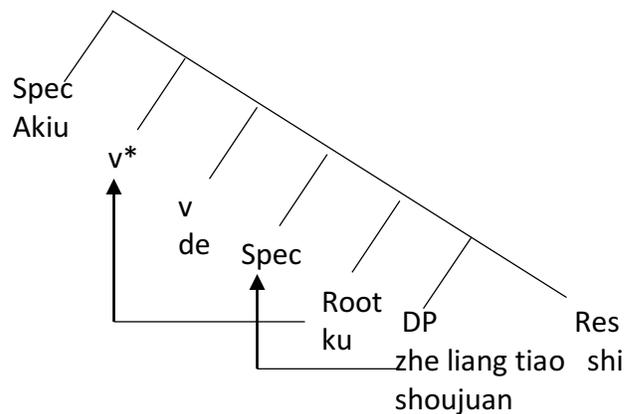
The selected pattern in (13b) shares the similar underlying base with (13a), but only differs in the sister relation between the post-DE DP and the resultative predicate. The selected argument *zhe ke shu* 'this tree' is not the sister of the resultative predicate, but merges instead with the activity root. The raised DP *zhe ke shu* 'this tree' in the specifier of Root

becomes the subject of the resultative head Res after it shifts to Spec-Root, so the object orientation is reached, as in (15).

(15) v-splitting in selected DE-resultatives
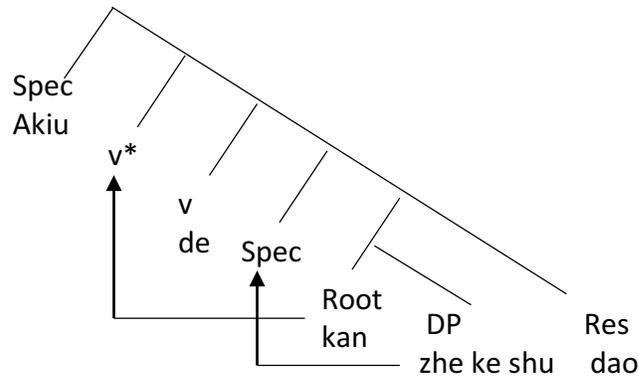
The unselected and selected patterns are accounted for in a unified model, only differing in the sister relation between the verb root and the postverbal argument. The c-commanding relation between the resultative head and the postverbal argument is different, but both can predict the result head as the predicate of the postverbal argument in both patterns. In the unselected pattern, the resultative head Res *shi* 'wet' is the sister to the postverbal argument *zhe liangtiao shou pa* 'these two handkerchieves', which is not surprising to produce Res-as-predicate of the postverbal argument (similar to the small clause approach). In the selected pattern, the resultative head Res *dao* 'fall' is not c-commanded by the postverbal argument *zhe ke shu* 'this tree', but it is c-commanded by the copy of the shifted postverbal argument in the Spec of root. The c-commanding relation still produces the Res as the predicate of the postverbal argument after the DP shift to the Spec of Root. Thus, both unselected and selected patterns guarantee the Res as the predicate of the postverbal

argument. [16]/[17]

[16] Similar selected proposals are found in Japanese V-V resultatives (Nishiyama 1998). In Japanese (v), the the activity verb V selects a case-free PRO in its sister node. The activity verb then undergoes head raising and attaches to the resultative head, forming the V+V complex. The PRO is co-indexed with the object, which enters the derivation in the specifier of VP. Similarly, in Yorùbá serial verb resultatives and some other languages (Déchaine 1993), the activity verb selects DP as its sister, and then merges with the result verb. Cross-linguistic data provide evidence for the sister relation of the activity verb (root) and the selected DP in resultatives.

(v). *John-ga Bill-o osi-taosi-ta.*
    John-Nom Bill-Acc push-topple-Past
    'John toppled Bill by pushing him.'
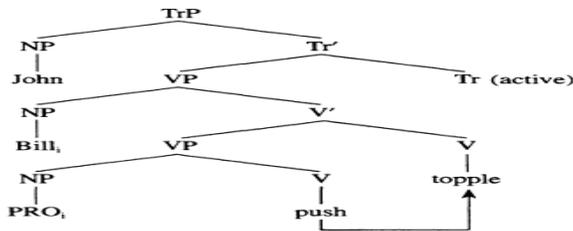
[17] In the selected pattern, the predication of the resultative Res to the postverbal argument is alternatively supported by the across-the-board movement (ATB) in coordinated *wh*-movement (Williams 1978). In (vi-a), multiple coordinated conjuncts contain *wh*-expression in complement of the verb *saw* and *hit*. Simultaneous *wh*-movement takes place within the two conjuncts, putting the higher *wh*-copy in the complementizer and both of the underlying lower *wh*-expression are deleted. The ATB rule can account for the predication of Res in selected resultative pattern in (vi-b). The categoryless root is sister to the postverbal argument. An empty PRO (co-indexed with the postverbal argument) derives as the sister to the resultative head Res. There is a covert conjunction relation between these two syntactic objects (Root+DP and Res+PRO). Simultaneous DP shift to the specifier of Root for the labeling purpose, and both lower copies are deleted. The underlying sister relation between the Res and the PRO (co indexed with DP) produces the Res as the predicate of the postverbal argument in the selected pattern.

(vi) a.   b.

Who did John saw and Bill hit?

Who did [[John saw t] and [Bill hit t]]
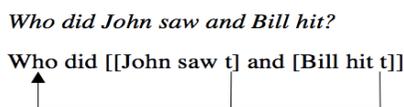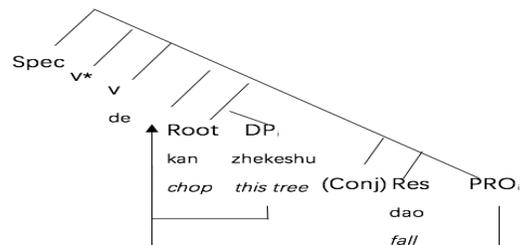
In DE-resultatives, a manner adverb like *yijing* 'already' is not possible between the activity verb and DE in (16a). Moreover, DE-resultatives cannot co-occur with an aspectual affixed *LE* in (16b).

(16) a. *Akiu (yijing) ku (*yijing) de zhe liang tiao shoujuan   dou shi le.*
          Akiu already cry already DE this two CL handkerchief even wet PRF
         'Akiu already cried so much that these two handkerchieves were wet.'
    b. *Akiu da   (*le) de (*le) Baoyu haotaodaku.*
        Akiu beat ASP DE ASP Baoyu cry.loudly
   'Akiu beat Baoyu and as a result Baoyu cried loudly.'   (Zhang 2001: 215)

Let us first explain how the manner adverb, such as *yijing* 'already', can immediately precede the activity verb *ku* 'cry'. As proposed for the derivation, head movement Root-to-v* is syntactically legal, due to the established relationship between the Root and v* before the v-splitting operation. Since two v positions are created only through v-splitting, there is no base position where an adverb might appear between them. The manner adverb must therefore derive in the specifier position of the higher v*, not in the specifier of the lower v, creating the grammatical manner adverb. Thus, the manner adverb *yijing* 'already' remains right before the activity verb *ku* 'cry', but not between the activity verb *ku* 'cry' and the resultative *DE*.

Next, let us turn to the competing relationship between *LE* and *DE*. In the v-splitting structure, DE is an overt morphological realization in the lower light verb v. This DE and

the aspectual LE compete the same node (i.e. the lower light verb v) in the syntactic derivation.[18] The competing relation is represented in (17).

(17) Competing *DE* and *LE* in v-splitting
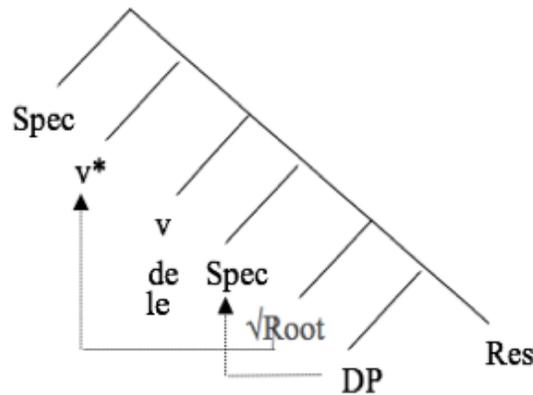
The impossible coexistence of DE and LE is due to how different aspectual features are expressed in the light verb v and the resultative head Res. The [uASP] features originate in the v* and then associate with the lower v in the splitting operation; the optional [uASP] feature is contained in the Res in free variation. In the DE-resultative pattern, these aspect-features are valued by the higher Asp, and expressed explicitly by the head position (i.e. the lower v), thus, the lower v is morphologically realized as the resultative DE at PF. However, LE has a different aspectual element (i.e. expressing an achievement element, not a resultative element), so these resultative aspectual features must be expressed by an extra resultative head. LE in the resultative pattern is not self-sufficient to express the resultative feature. It has to attract an extra resultative head to the lower v, as I will explain

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[18] Later in the analysis of the compounding pattern, we will see the LE marker is allowed in the lower v position again.

in compounding resultatives later. I will mention the LE pattern once again in compounding

resultatives. The competing relationship in the resultative construction can be represented:

(18) a. DE in the lower v→expressing the resultative aspectual feature
    b. LE in the lower v+a raised Res head→expressing the resultative aspectual feature[19]

To sum up, the [uASP] feature in the lower v must be expressed explicitly in the resultative

construction. In the DE-resultative pattern, the lower light verb v is the desirable position,

realized by the resultative DE. However, the affixed LE has different aspectual elements

(e.g. non-resultative aspectual features in LE) and it is insufficient to serve the aspectual

feature. As a result, DE and LE is complementary in the resultative-expressing node: the

lower v.

2.2 Specificity in DE-resultatives

In DE-resultatives, the subject of the resultative predicate has to be specific, as in (19). I

will discuss the postverbal specificity constraint from the v-splitting analysis.[20]

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[19] This is applied in compounding resultatives in Mandarin Chinese, which will be discussed later
in this chapter. In the compounding pattern, LE occupies the lower v in the splitting structure. The
resultative feature in the lower v cannot be self-fulfilled by the LE, but has to trigger the resultative
head RES to raise up to this position. Thus, we can see LE is possible in compounding resultatives,
but not in DE-resultatives.

[20] The argument that the subject of the resultative predicate has to be specific in DE-resultatives is
based on Tsai (2001) and Zhang (2001). I will adopt the argument and try to provide the explanation
from the labeling algorithm, without discussing the distinction between specificity and definiteness
or other relevant issues.

(19) a. *Ma Li zha de zhe pan huasheng hu   le.*
     Ma Li fry DE this plate peanut   overcooked PRF
     'Ma Li fried this plate of peanuts and as a result the peanuts became overcooked.'
   b. *Akiu ku de zhe tiao shoujuan   dou shi le.*
     Akiu cry DE this CL handkerchief even wet PRF
     'Akiu cried so much that this handkerchief was wet.'

Let us first see how the specific reading is realized in the selected pattern. Since specificity is here associated with a certain syntactic context, it is reasonable to suppose that it may be reflected in a specific ([SPEC]) feature employed in a labeling configuration. In (19a), the [CAT] features originate in the phasal head v*. The [CAT] features in v* trigger the merger operation of the Root to the higher v*, creating a verbal category. DE, like a participle, is realized in the lower functional v. The lower v has φ-features and SPEC-features inherited from v* to v, then transfers to Root. The <φ,φ> features and <SPEC,SPEC> features are shared between Root and the shifted postverbal argument. LA take these feature pairs as the label. A specific reading in the postverbal argument is reached, as in (20a). The specificity effect not only applies to the selected pattern, but also to the unselected pattern. Similarly in (19b), <φ,φ> features and <SPEC,SPEC> features are shared between Root and the shifted postverbal argument. The shared feature pair produces a specific reading, as in (20b).

(20) a. <SPEC,SPEC> feature in selected DE-resultatives

<φ,φ>
Spec
Ma Li
  v*
    v
   de Spec
                  <SPEC,SPEC>&<φ,φ>

Root DP   Res
zha zhe pan hu
     huashengmi
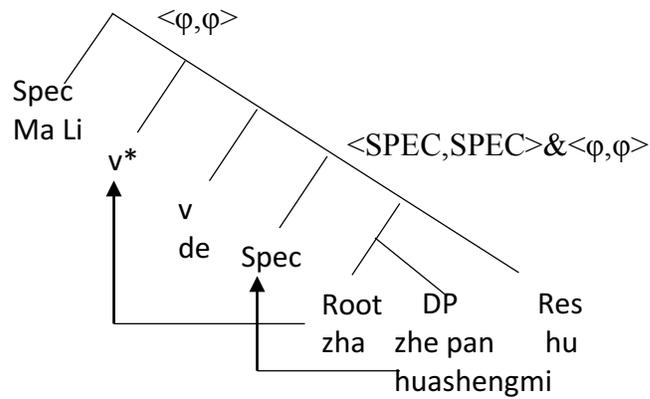
b. <SPEC,SPEC> feature in unselected DE-resultatives

<φ,φ>
Spec
Akiu
  v*
    v
    de Spec
                  <SPEC,SPEC>&<φ,φ>
       Root
       ku   DP   Res
             zhetiao shi
             shoujuan
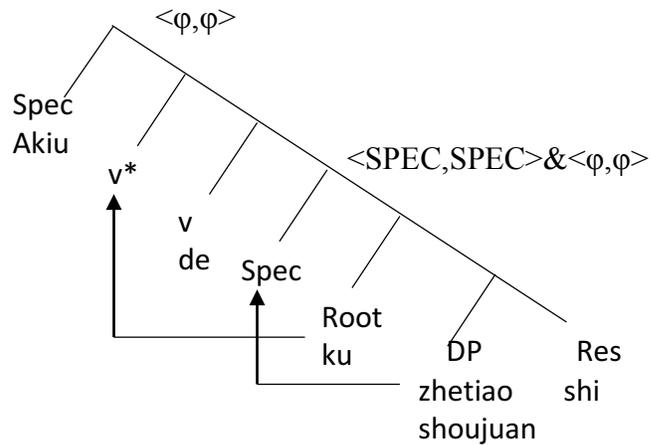
2.3 Comparison with other approaches

Next, I will compare how the splitting-v proposal differs from the light verb structure in the existing literature. And then I will demonstrate that the v-splitting approach better models the selection relation between the resultative predicate and the postverbal argument, as compared to Huang's affixed and vP shell analyses in Mandarin Chinese.

2.3.1 Comparison with other light verb argument

Dating back to Jespersen (1954), the term 'light verb' was firstly created, originally describing verbs such as *have* and *give* in the complex predicate construction, like *have a path* and *give a push*. In these light verbs, the semantic content is expressed by the nominal action, rather than the verb itself. The nominal actions *path* and *push* are known as deverbalized substantives, and the verbs *have* and *give* do not make much contribution to the semantic expression (Jespersen 1954). In the generative perspective, the concept "light verb" is widely accepted as a component, separate from VP, introducing the agent theta-role (Larson, 1988; Hale & Keyser 1991; Chomsky 1995). Chomsky (1995) argues that the light verb v is a soundless verbal head and less lexical than V, introducing the agent argument to the sentence. According to Chomsky (1995), the complete functional complex is represented in (21), which minimally introduces both the external and internal participants.

(21)

```
        vP
       /  \
     NP    v'
          /  \
         v    VP
             /  \
          XP1    V'
                /  \
               V    XP2
```

(Chomsky 1995)

88
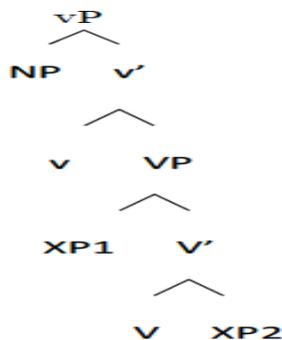
Harley (2008) argues that the functional verb v can take a vP complement in Japanese causatives. In causatives, the base verb form is derived from a Root, and the lower v introduces the external argument, forming an argument-complete complement of a higher v. The higher v introduces the agent argument of the causative construction. Thus, the vP complement which is introduced by another higher v is found as follows.

(22) vP complement introduced by a higher v
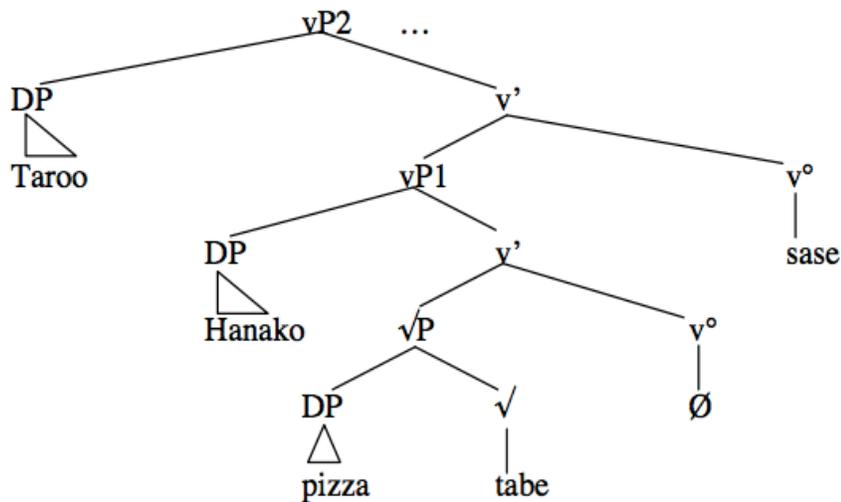
(Taroo-ga Hanako-ni pizza-o tabe-sase-ta)
Taro-N Hanako-D pizza-A eat-caus-past
"Taro made Hanako eat pizza."

(Harley 2008: 30)

Si (2018) analyses Mandarin Chinese Causatives along similar lines, arguing that the light verb v actually forms a light verb field or light verb zone. The field or the zone is made up

of multiple layers of maximal light verb projections. Taking resultative patterns for example, Si (2018) claims that the resultative construction consists of a light verb field/zone. The light verb is distributed into higher and lower light verbs. The light verb field consists of two sub-layers: a CAUSE light verb field and a BECOME light verb field. Each field is further distributed into its external and internal light verbs, as in (23).

(23) a. *Ta xi   ganjing le   yifu.*
     he wash clean   ASP clothes
     'He washed clothes, and as a result the clothes became clean.'
   b. Multiple light verb zones
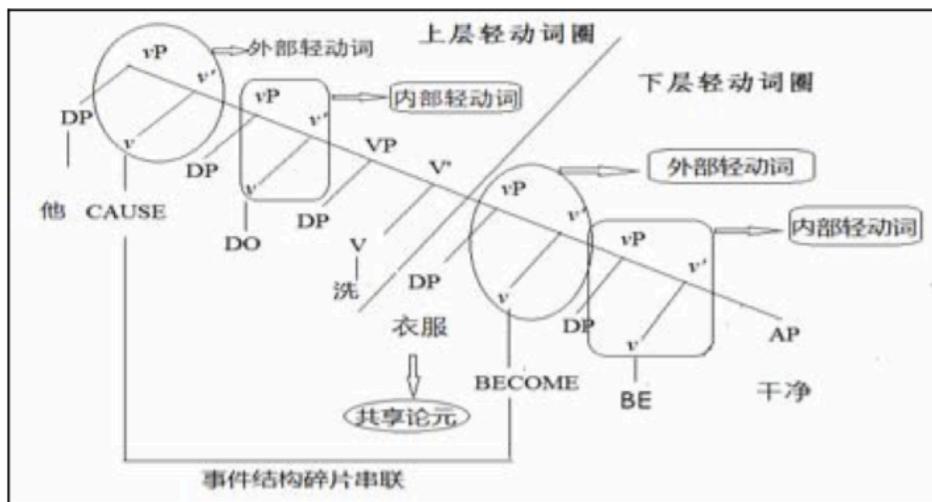
(Si 2018: 16, Diagram 16)

Unlike Harley (2008) and Si (2018), which analyse that v can take a vP complement or v actually forms a light verb field or light verb zone, I maintain that multiple light verbs can express a single initial v, which is more parallel to Robert's (2012) split-C analysis. Unlike in causative structures, the lower v generated by this splitting operation does not introduce

new argument structures or theta-roles. The splitting hypothesis works better for multiple head raising in the resultative construction, without violating HMC.

2.3.2 Comparison with other derivational approaches

I propose that DE-resultatives are derived from the v-splitting structure: a higher functional light verb and a lower light verb. The DE-marker is overtly morphologically realized in the lower v. The resultant predicate Res enters the derivation, projecting into a phrasal node. The categoryless Root moves to the higher v*, creating a verbal label. The example is repeated in (24a).

(24) a. *Zhang San ku de zhe tiao shoupa   shi le.*
       Zhang San cry DE this CL handkerchief wet PRF
       'Zhang San cried and as a result this handkerchief became wet.'
   b. Analysis of DE-resultatives
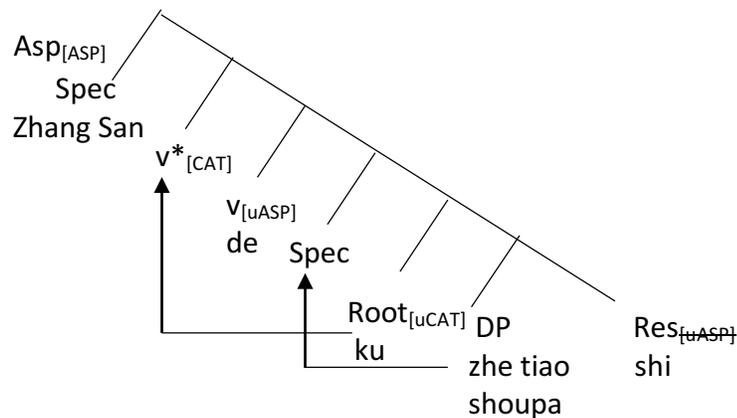
As I have proposed, in the splitting analysis, the selecting relationship between the v* and the root has been established before the splitting operation occurs. Thus, the Root can raise

to the higher v*, passing by the lower v head, which still respects the spirit of head movement constraint. The splitting approach is better than a base-generated structure with two v heads. It allows us to formulate the analysis in which the root raises to v* without skipping the lower v head.

The v-splitting analysis is different from existing accounts. In previous studies, DE has been analysed as a complementizer (Huang 1988) or as an affix attached to the activity verb (Huang *et al.* 2009). Let us consider (24a) for example to see the differences.

In Huang (1988), DE in DE-resultatives is analysed as the complementizer. The resultant predicate is the predicate of the complement clause, projecting into VP, later into TP and CP. The complementizer-treatment of DE indicates that the activity verb (higher V, to be specific, the root of the activity verb) and the resultant predicate are generated within two different phasal domains: Res in the lower CP-clause phasal domain and Root in the higher verbal phasal domain.

(25) DE as a complementizer
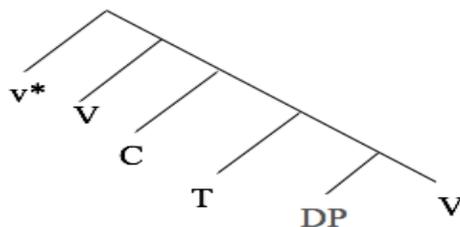
In contrast, Huang *et al.* (2009) argue that DE is considered as an affix in nature and attaches to the first verb. The DE-resultative pattern is analysed within a single vP shell structure, and the activity verb and DE undergoes head movement to the light verb.

(26) DE as an affix

```
                        vP
              ┌──────────┴──────────┐
            NP1                     v'
             │              ┌────────┴────────┐
          Zhangsan          v                VP
                        ┌───┴───┐        ┌────┴────┐
                      ku-deᵢ    Φ       NP2        V'
                                         │       ┌──┴──┐
                                      shoupa      V    AP
                                                  │     │
                                                  tᵢ  shi-le
```
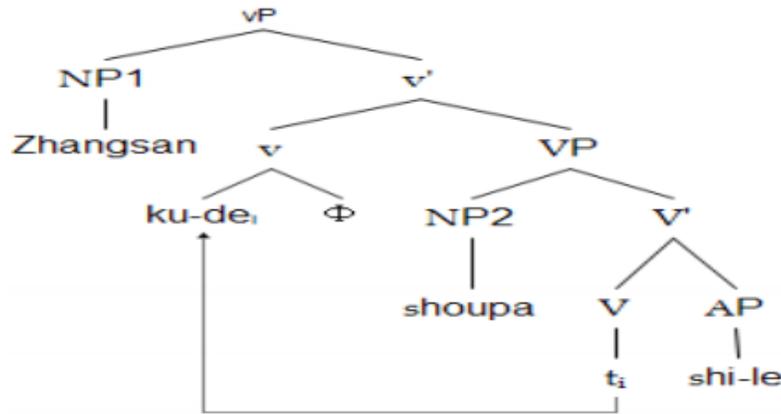
(Huang *et al.* 2009)

Now, let us see how the splitting analysis works better than the affixed treatment in the vP shell structure (Huang *et al.* 2009) and the complementizer treatment (Huang 1988).

The vP shell analysis (Huang *et al.* 2009) offers no explanation of the specificity effect, since it is based on a simple vP shell structure. However, the splitting approach explains the specific reading of post-DE argument from the labeling requirement. The feature pair <SPEC,SPEC> is shared between the Root and the shifted argument, and the shared feature produces the specific reading of the argument in DE-resultatives, as I have explained in section 2.2.

The advantage of the splitting approach over the CP-clause analysis (1988) lies in addressing semantic connections between the activity verb and the resultant predicate. The semantic connection means these two constituents always appear in pair in the resultative construction.

Let us start with the English example, where we can also find the structure consists of an activity verb and a location event. Mateu and Espinal (2007) argue that the structure derives from a 'generalized transformation', which corresponds to an activity event and a prepositional result-like event. The activity event and the prepositional event adjoin to the combined event, structurally represented by V1. The external argument is introduced by another functional head (outside of V1).

(27) a. *John cried his eyes out*. (Mateu & Espinal 2007: 12-13)
   b.
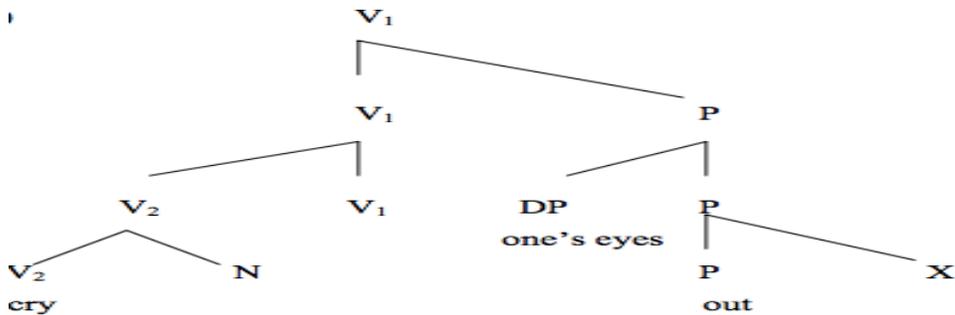
(Mateu & Espinal 2007: 12-13)

Mateu and Espinal show that the relationship between activity verbs and resultative predicates must be close enough to even allow for idioms to be formed. In their terms, the verbal phrase *cry out* corresponds to *Motion+Path* lexicalization pattern: the activity verb denotes the motion and the result-like preposition for the path. The *motion+path* combination is analysed with the idiomatic meaning of *crying his eyes out*. If this assumption is correct, the activity verb and the resultant predicate also shows semantic closeness: the activity verb denotes the action and the resultant predicates always specify the result state of the action. More generally, the composition of the resultative pattern involves the *action+state-of-change* combination.

In Chinese resultatives, we can see the compositionality of an activity and a state of change denoted by the activity. The v-splitting analysis supports the semantic connection, since these two predicates are found in the same phasal domain of v*P. In contrast, Huang's (1992) CP-complement analysis runs counter to this fact, because the activity verb is analysed in a higher v*P domain, while the resultative predicate is in a lower CP domain.

Let us see how the semantic connection works in Chinese DE-resultatives.

(28) a. *Zhang San da de   Li Si ku le.*
     Zhang San beat DE Li Si cry PRF
     'Zhang San beat Li Si, as a result Li Si became crying.'
  b. *Ma Li ku de shoupa   shi le.*
     Ma Li cry DE handkerchief wet PRF
     'Ma Li cried and as a result the handkerchief became wet.'

In (28a), the resultative construction consists of two predicates: a means verb *da* 'beat' and the resultant predicate *ku* 'cry'. The activity verb and the resultative predicate fall into the same verbal phasal domain in the splitting analysis. The activity verb *da* 'beat' enters the derivation in the Root and get its category label when the root raises to the v*. The resultative predicate is base-generated in the resultative head Res. Both *da* 'beat' and *ku* 'cry' are derived within the phasal v*P domain. Similarly, the activity verb *ku* 'cry' and the resultative predicate *shi* 'become wet' in (28b) derive from the same phasal v*P domain.

In summary, the activity and its resultative state always appear in tandem, although the concrete change of state is varied. The CP-analysis considers the C as a complementizer; it blocks the semantic closeness, since these constituents are in two separate phasal domains. The splitting analysis instead supports the semantic connection, since the action and the resultative state derive from the same phasal domain.

2.4 Summary of DE-resultatives

In the DE-resultative derivations, six stages have been identified. First comes the head-head relationship between the phasal v* and the Root in the splitting structure. The head relationship is fixed before the v-splitting operation, so they will not change even after the splitting takes place. Second, the v-splitting operation is a syntactic operation, which is parallel to Robert's split-C analysis. The motivation in the v-splitting operation is caused by the need for explicit aspectual expressions. In the DE-resultative pattern, the resultative [uASP] features trigger head raising of the extra lower v, and then they are valued by the

[ASP] features in the higher functional head Asp outside v*P. The lower v is morphologically realized by DE at PF. Third, head movement Root-to-v* takes place. In the splitting operation, the basis for feature inheritance is altered. A set of features originate in the phasal head v*: [CAT] and [uASP] features. The [CAT] features trigger the head Root-to-v* movement operation, as mentioned in the third stage. However, some features are transferred to the lower v, such as [uASP] features. The feature effect in the v-splitting operation makes the original phasal head unable to function as the phasal head anymore, since it now becomes a combined complex 'Root+v*', due to its [CAT] features. Instead, the split lower v becomes the new phasal head. Fifth, the specificity constraint of the postverbal argument is discussed. The lower v in DE-resultatives has SPEC-features which are inherited from v* to v, then transferred to the Root. Therefore, the <SPEC,SPEC> feature is shared between the Root and the shift Causee and label as such. As we can see, the labeling requirement runs through feature inheritance and the specificity constraint.

3. v-splitting in Compounding Resultatives

In this section, the v-splitting derivation is illustrated in detail in compounding resultatives. Through the comparison between my analysis and two other syntactic approaches (i.e. small-clause analysis and vP-shell analysis), we can see v-splitting analysis works better to explain the argument structure in the resultative construction, such as to distinguish the selected or unselected postverbal argument. In addition, the direct object constraint (DOR) is compared between Mandarin Chinese and English in this section. The violation cases in

these languages are caused by different motivations: English is sensitive to the transitivity, whereas Chinese finds a way around the transitivity distinction.

3.1 v-splitting derivation in compounding resultatives

Compounding resultatives in Mandarin Chinese consist of two predicates: the activity verb and the resultative predicate. In (29a), the postverbal argument *shoupa* 'handkerchief' is the unselected object of the activity verb *ku* 'cry'. In (29b), the object *shu* 'tree' is the selected argument of the activity verb *kan* 'chop'.

(29) a. *Ma Li ku shi le   shoupa.*
  Ma Li cry wet ASP handkerchief
  'Ma Li cried and as a result the handkerchief became wet.'
 b. *Ma Li kan   dao le   shu.*
 Ma Li chop fall ASP tree
  'Ma Li chopped the tree and as a result the tree became fallen down.'

Again, both patterns are derived from a v-splitting configuration, in which two adjacent light verbs are involved. In (29a), the root *ku* 'cry' enters into the derivation without a category, and its merger to the functional head v* creates the verbal category for the root. The DP *shoujuan* 'handkerchief' within the configuration {DP, Res} moves out to the specifier position of Root, creating the shared feature between the shifted DP and the Root as the label, i.e. the $<\varphi,\varphi>$ feature pair. The Res-to-v head movement is triggered by resultative aspectual features in this pattern. Let us look at why Res-to-v is possible in splitting analysis. The [uASP] feature originates from v*, and then transfers to the extra lower v in the splitting hypothesis. There is no selection relationship between the lower v

and Res, so there is less of a locality restriction (no head movement constraint), but the lower v still wants to attract the closest available head, due to its [uASP] feature. Movement of Root to v* makes it ineligible; Res is the only option that can be raised to the lower v, and then the [uASP] feature in the lower v and the Res are checked and valued by the interpretable [ASP] feature in the higher Asp.

In compounding resultatives, we can find the perfective aspectual marker *LE*, immediately following the resultative predicate. This *LE* is an overtly morphological realization of the lower v, as the same as the DE in DE-resultatives. However, unlike the resultative DE, the perfective LE itself is not sufficient to express the resultative aspectual feature. The unfulfilled [uASP] feature triggers the head Res-to-v movement operation, ending up with a complex cluster 'Res+LE'. This can also explain why the affixed LE can co-occur with compounding resultatives but not with DE-resultatives. The derivational structure of an example (29a) is represented in (30).

(30) v-splitting in unselected compounding resultatives
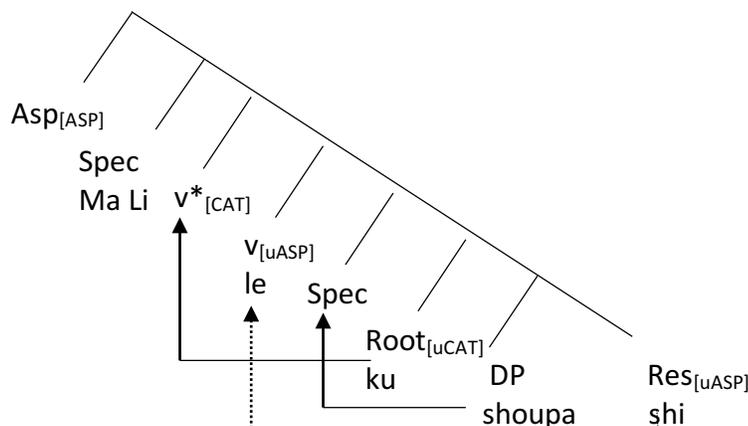
In (29b), the postverbal argument is the selected object of the activity verb. The selected compounding resultative pattern shares the same underlying representation with the unselected one; only differs in sister relation between the Causee DP and the activity verb root. The activity verb root *kan* 'chop' merges with the selected object *shu* 'tree'. The resultative predicate *dao* 'fall down' enters into the derivation by merging with the node (Root+DP). Similarly, the head raising operation Root-to-v* is triggered by the labeling requirement, creating a verbal category for the root after raising the head. Another head Res-to-v movement is triggered by the aspectual features in the lower v. The affixed LE itself in the compounding pattern is not sufficient to fulfil the resultative aspectual feature, so it needs an extra Res head to raise to this node. Like what we have explained in the unselected pattern, Res is the only option that can be raised to the lower v. The v and the Res do not have the selection relation, so they are not in a locality restriction. The Root has been moved out to the higher v* and its trace does not block the head Res-to-v movement. Thus, the Res is the only candidate that can move to the lower v. The derivation of (29b) is thus represented in (31).

(31) v-splitting in selected compounding resultatives
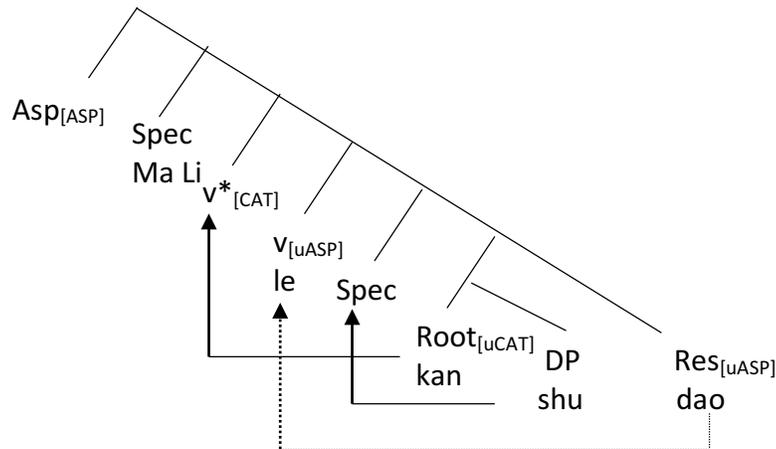
So far, a v-splitting configuration is modeled in two subtypes of compounding resultatives, which is similar to the representation for DE-resultatives in Mandarin Chinese.

3.2 Specificity in compounding resultatives

After analysing the derivation in compounding resultatives, I will examine the specificity in this pattern. The causee of the resultative predicate in compounding resultatives can be specific, as in (32b) and (33b), and nonspecific, in (32a) and (33a).

(32) a. *Ma Li chi ni le niurou.* (nonspecific)
    Ma Li eat tired Asp beef
    'Ma Li ate beef and as a result she became fed up with it.'
  b. *Ma Li chi ni le zhe zhong menggu niurou.* (specific)
    Ma Li eat tired Asp this type Mongolian beef
    'Ma Li ate this type of Mongolian beef and as a result she became fed up with it.'

(33) a. *Ma Li ku shi le shoupa.* (nonspecific)
    Ma Li cry wet ASP handkerchief
    'Ma Li cried and as a result the handkerchief became wet.'
  b. *Ma Li ku shi le zhe tiao shoupa.* (specific)

Ma Li cry wet LE this CL handkerchief
'Ma Li cried and as a result this handkerchief became wet.'

In (32a), the object *niurou* 'beef' is the selected object of the activity verb and has a non-specific reading. However, *zhe zhong menggu niurou* 'this type of Mongolian beef' is a specific object in (32b). The specificity asymmetry is also found in (33): a non-specific reading in (33a) and a specific reading in (33b). In this section, I will analyse the specificity constraint by considering differential feature agreement between the Root and the shifted Causee object in the v-splitting configuration.

Starting from the selected pattern in (32), the Causee DP is derived as the sister to the Root. Since there is no shared feature between the postverbal argument and the categoryless Root, the Causee argument moves to the specifier of Root. The Root inherits uninterpretable φ-features from v (originally from the phasal head v*), thus LA takes the shared <φ,φ> feature pair between the Root and the moved Causee as the label.

At this step, I further propose that both φ-features and optional SPEC-features are originally contained in the phasal head v*, and the lower light verb v can optionally contain the SPEC-features after splitting. If both φ-features and SPEC-features are inherited from v* to v then to Root, the <φ,φ> features and <SPEC,SPEC> features are shared between Root and the shifted postverbal argument. LA take these feature pairs as the label. A specific reading in the postverbal argument is reached. However, if only φ-features are inherited from the phasal head v* to v then to Root, Root and the shifted postverbal argument only share φ-

features, but not SPEC-features. Thus LA takes $\langle\varphi,\varphi\rangle$ feature pair as the label, ending up with an optional specific reading, as in (34a).

The unselected pattern (33) shares the similar underlying base, and only differs in the sister relation to the Causee and Res. The inherited $\langle\varphi,\varphi\rangle$ features and $\langle SPEC,SPEC\rangle$ features between Root and the shifted postverbal argument produce specific readings. If only φ-features are inherited and transfer to Root, the non-specific reading is produced, as in (34b).

(34) a. Asymmetric specificity in selected pattern
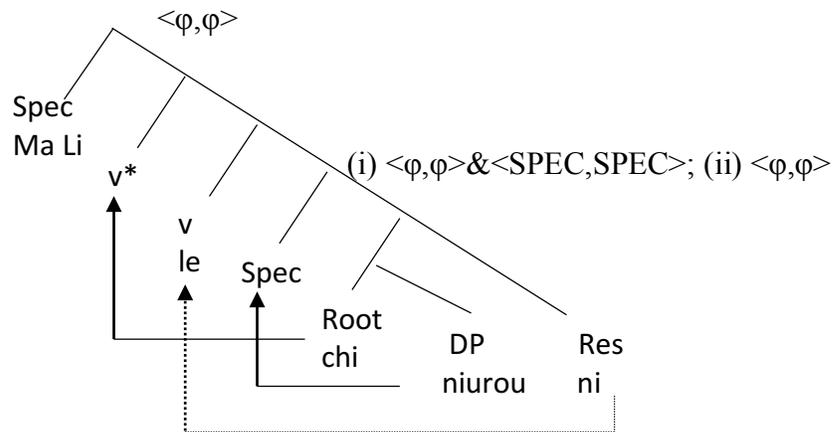
b. Asymmetric specificity in unselected pattern
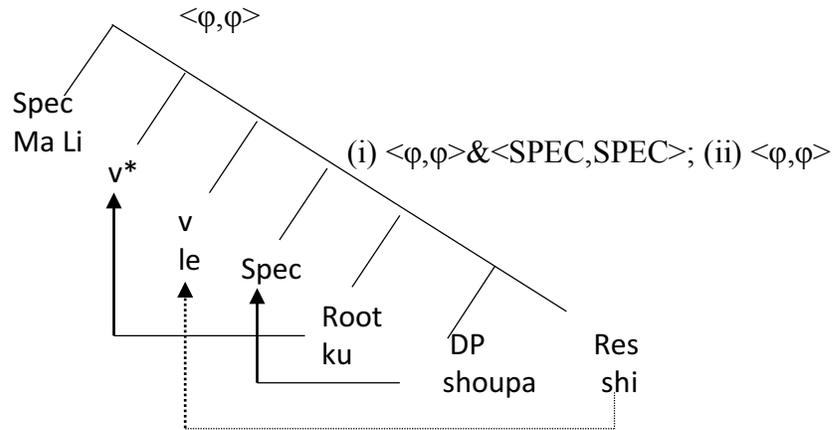
The proposal that the light verb can optionally contain SPEC-features is support by feature inheritance in root interrogatives. Following Chomsky (2014), in root interrogatives, *wh*-features and φ-features are originally contained in C, then transfer to T. The *wh*-expression and T share <φ,φ> and <*wh,wh*> features. LA takes the feature pair as the label, ending up with the interrogative force. If only φ-features are transferred from C to T, the non-interrogative force is realized. The labeling mechanism in root interrogatives may give us some implication that multiple features can be (optionally) inherited from a phasal head to a non-phasal head.

(35) C [$_{<φ,φ>/<Wh,Wh>}$ who T laughed]

[Wh]
φ
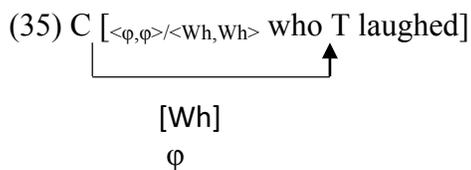
Based on feature inheritance in root interrogatives, I have proposed that the light verb can optionally contain SPEC-features, which are originally from the phasal head v*, and then cyclically transfer to the Root in the v-splitting structure. Both the compounding and DE-

patterns involve 'Causee-to-Spec of Root' movement, but differ in two ways. First, Res undergoes head raising in compounding resultatives, but remains in situ in DE-resultatives. Second, the lower light verb v inherits both $<\varphi,\varphi>$ features and SPEC-features from v*, then transfers to the Root in DE resultatives, producing specific readings. In contrast, the lower light verb v optionally inherits SPEC-features from v* to v, then transferred to Root in compounding resultatives, producing either specific or non-specific readings. Different feature checking determines different labels. Different labels correspond to differential specificity asymmetry.

3.3 Comparison with other approaches

In the following, the v-splitting approach are compared with two existing accounts: the small clause analysis (Hoekstra 1988; Sybesma 1999) and the VP shell analysis (Huang 1988; Zhang 2001).

Turning to the derivational analysis, both the "small clause" approach (Hoekstra 1988; Sybesma 1999) and the VP shell analysis (Huang 1988; Zhang 2001) treat accomplishments as bi-eventive, with head movement of the lower stative root, either in a small clause or as an inner verb. However, one problem is that the semantic relationship between the postverbal NP and the activity of the main verb is not clearly associated with a matching syntactic structure (Lin 2004). In the small clause approach (Sybesma 1999), it just proposes a direct small clause between the postverbal argument and the resultative state. It does not include any relationship between the activity verb and the postverbal argument.

That means both selected and non-selected (object-control) resultative compounds share

the same underlying structure, with difficulty in explaining their different interpretations.

(36) a. *Zhang San ku shi le shoupa*. (non-selected argument)
Zhang San cry wet Asp handkerchief
Zhang San cried and as a result, the handkerchief became wet.
b. *Zhang San kan dao le shu*. (selected argument)
Zhang San chop fall Asp tree
'Zhang San chop the tree as a result, the tree become fallen down.'

In (36a), the postverbal argument *shoupa* 'handkerchief' is not the argument

S(emantically)-selected by the activity verb *ku* 'cry', since no predictable semantic relation

can be indicated between the activity verb and the postverbal argument. However, in (36b),

the postverbal argument *shu* 'tree' is the S-selected argument of the verb *kan* 'chop'. In the

small clause analysis (Sybesma 1999), a functional head Ext is assumed, and it selects the

small clause as its complement. The resultant predicate undergoes head raising operation

to attach onto the activity verb. Both types of compounding resultatives are analysed with

the same derivational structure. Take the sentence (37a) for example. It is given the analysis

in (37b).

(37) a. *Zhang San ku shi le shoupa*.
Zhang San cry wet Asp handkerchief
Zhang San cried and as a result, the handkerchief became wet.
b. Zhang San [$_{VP}$ cry [Ext [$_{SC}$ handkerchief wet ASP]]]   (Sybesma 1999)

In contrast, in the VP shell approach (Huang 1988), the resultant predicate enters the

derivation as a verb. The postverbal argument is generated in the subject of the VP,

following the VP-internal subject hypothesis. A functional light verb v is assumed, selecting the VP as its complement. The head movement operation "V-to-v" occurs, thus we can see these two predicates with surface adjacency. The postverbal argument undergoes cyclic movement, from Spec-VP to Spec-vP, and later to Spec-TP. For instance, the sentence repeated in (38a) is analysed in (38b), based on Huang's approach.

(38) a. *Zhang San kan dao le   shu*. (selected argument)
       Zhang San chop fall Asp tree
       'Zhang San chop the tree as a result, the tree become fallen down.'
     b. [$_{CP}$ C [$_{TP}$ Zhangsan$_i$ T [$_{vP}$ t$_i$ v chop fall$_j$ [$_{VP}$ tree V t$_j$]]]]   (Huang 1988)

One question for Huang's structure is that it is not very clear why the resultative predicate can adjoin to the activity verb, and it does not contain an extra station for landing the resultative state, as well. Both the activity verb and the resultative verb finally moved to the higher functional light verb v, as in (38b). Moreover, similar to the small clause approach, it cannot clarify the selected relation between the activity verb and the postverbal argument from the non-selected relationship. The v-splitting approach works better to predict the argument distinction. The selected and non-selected distinction reflects the structural asymmetry between resultant predicates and their argument hood. The extra structure provided by the extra light verb v in the v-splitting structure makes it possible to introduce a new contrast for resultatives.

Now let us see how the v-splitting structure better models the selecting relationship. In the v-splitting analysis, selected and unselected compounding resultatives can be treated

differently. For the s-selected pattern (39a), the symmetric sisterhood between the causee object and the Root is appropriate. However, for the un-selected object (40a), the causee originally enters the derivation in a sister node of the resultant predicate. The contrast is repeated in (39b) and (40b).

(39) a. *Zhang San kan   dao le   shu*. (selected argument)
      Zhang San chop fall Asp tree
      'Zhang San chop the tree as a result, the tree become fallen down.'
   b. Selected Object
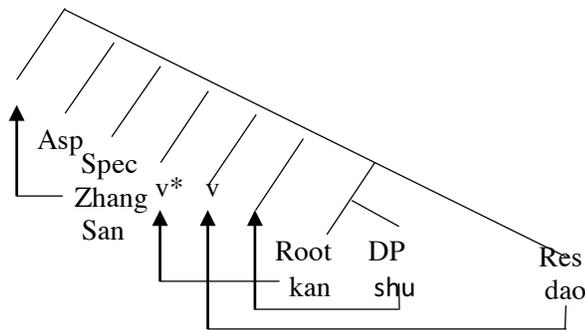
(40) a. *Zhang San ku shi   le   shoupa*.
      Zhang San cry wet Asp handkerchief
      Zhang San cried and as a result, the handkerchief became wet.
   b. Unselected Object
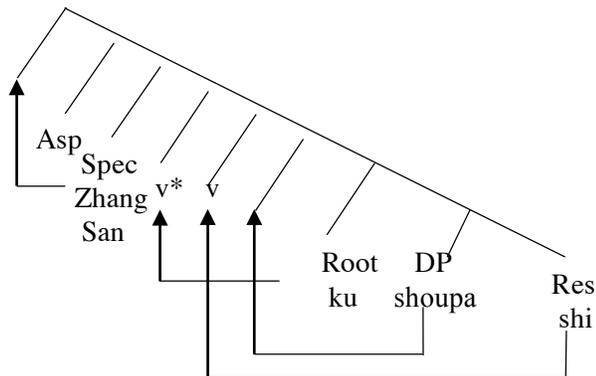
In (40), the c-command relation and the distance between the heads are different from that in (39). The contrast does not influence head movement Root-to-v* and the head movement constraint at all, since the critical head selection is established before the splitting takes place. In a v-splitting approach, differential symmetric or non-symmetric syntactic relations are possible between the Root and the postverbal argument. If the Causee derives as the sister to the Root, it produces the selected postverbal argument, in (39). If the complex merging node of Causee and Res falls into the sister relation to the Root, it derives the non-selected postverbal argument in (40). Either way, the structure ensures the proper argument structure of the resultative construction.

3.4 Parametric variation on direct object restriction

One complication which should be considered is any treatment of resultatives is the direct object restriction (DOR). In this section, we examine DOR differences in Chinese and English. I will introduce cases where direct object restriction can be violated in English and Chinese. The purpose is to explain syntactic possibility of subject-orientating readings in the resultative construction, in addition to the object-orienting resultative pattern discussed above.

Considering the syntactic relation between the resultative predicate and the postverbal argument, Simpson (1983) argues that the resultant predicate is the predicate of the postverbal argument NP. Levin and Rappaport Hovav (1995) call this the "Direct Object

Restriction (DOR)". I propose that the different sensitivity of DOR (Levin and Rappaport Hovav 1995) in English and Chinese is caused by different motivations.

Levin and Rappaport Hovav (1995) argued that the resultant predicate invariably functions as the predicate of the postverbal argument in English. In (41), the patterns denote that "the metal become flat" or "his Nikes threadbare", as a result of hammering event or running event. Levin and Rappaport Hovav (1995) named this generalization the Direct Object Restriction (DOR).

(41) a. *John hammered the metal flat.*
      b. *Bob ran his Nikes threadbare.*   (Levin & Rappaport Hovav 1995)

However, the violation of DOR is also seen in English. As in (42), the resultant phrase is not the predicate of the postverbal object, but the predicate of the subject (Wechsler 1997).

(42) a. *The wise men followed the star out of Bethlehem.*
      b. *He followed Lassie free of his captors.*   (Wechsler 1997)

Williams (2002) mentions that the violation of DOR involves the complex event of a motion[21] verb, which is different from normal resultatives. For instance, the verb *follow* is analysed as a motion verb, which directs a motion through the *following* event. It seems true in (42) that the preposition phrase *out of Bethlehem* and the adjective phrase *free of his*

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[21] Motion verbs usually characterise the change of spatial distance or direct a particular spatial place, such as *follow… out of….*, as mentioned (Wechsler 1997).

captors describe the directed motion of the subject rather than the postverbal object. A similar semantic explanation is observed in Wechsler (1997), which differentiates Canonical Result Restriction (CRR) from the abnormal resultatives.

(43) **Canonical Result Restriction (CRR):** A control resultative must represent a 'canonical' or 'normal' result state of an action of the type denoted by the verb.

(Wechsler 1997: 310)

According to Wechsler (1997), (44a) is not normal because *being hoarse* is not the canonical result of *barking*.[22] Instead, it is acceptable if the reflective postverbal object is added, since (44b) is not a control resultative, and the CRR does not apply.

(44) a.**The dog barked hoarse.*
b. *The dog barked itself hoarse.*

(Wechsler 1997)

Lin (2004) also notices that the violation pattern cannot be similarly paraphrased like the normal resultatives, indicating that the DOR-violated patterns are different from the normal DOR-obeyed patterns in English, which are typically known as resultative construction.[23]

(45) a. *John hammered the metal flat.*
   = John caused the metal to be flat by hammering it.
b. *The wise men followed the star out of Bethlehem.*
   *=The wise men caused themselves to get out of Bethlehem by following the star.

(Lin 2004: 99)

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[22] Wechsler (1997) even argues that there is no canonical result of *barking*, so *being hoarse* is not the normal result.
[23] Considering the semantic difference between the violated patterns and the normal resultative patterns, the DOR may still be a valid condition (Williams 2002; Lin 2004: 99).

The violation of DOR in English is not really relevant to the complex event of directed motion, but depending on the transitivity of the activity verb (Williams 2002). As in (46a), the preposition phrase *out of the yard* describes the resultant state of the subject, with a transitive activity verb in (46a). We can also find a reflexive pronoun in the postverbal position in English, with the resultative phrase describing the result state of the subject, as in (46b). However, it cannot denote the resultant state of the subject, with an intransitive activity verb in (46c).

(46) a. *They followed/chased the balloon out of the yard.*
　　 b. *They drink themselves drunk.*
　　 c.**They ran after/walked towards the balloon out of the yard.*　　　(Williams 2002)

Let us see the derivation of (46a) first. The postverbal PP is derived in the sister node of the postverbal argument *the balloon*, resulting in the subject orientation in (47).

(47)
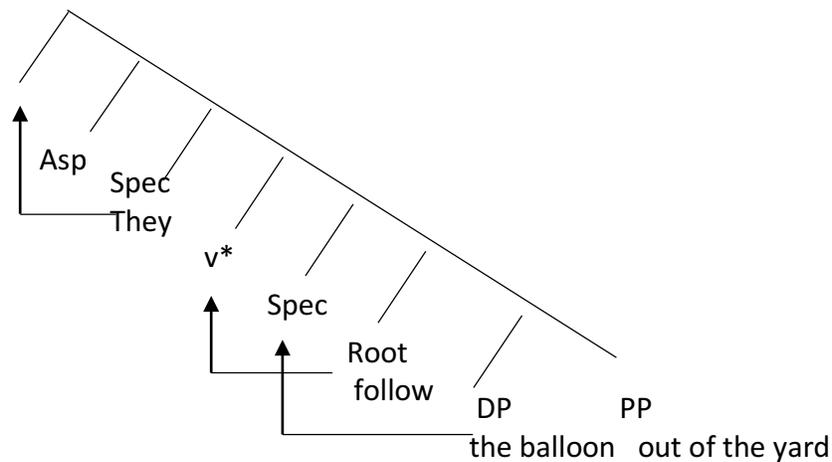
For the pattern (46b), repeated in (48a), the reflective pronoun is derived in the sister node of the resultative phrase, producing the subject-orientation in (48b).

(48) a. *They drink themselves drunk.*
    b.
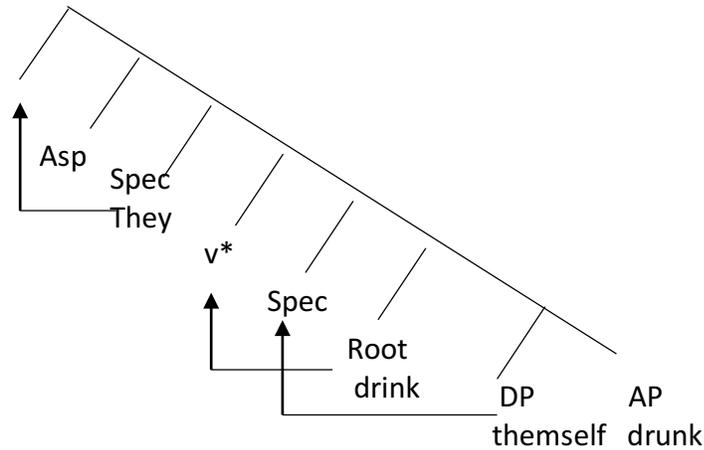
Turning to Mandarin Chinese, the DOR can be more systematically violated, in which the resultative phrase functions as the predicate of the subject (Zhang 2001). Let us see the pattern without an overt postverbal argument. The activity verb becomes detransitivized in (49c-e). The postverbal argument cannot be absent in (49b) in that the covert argument of the resultative predicate is not co-referential with the subject of the activity verb. Instead, it is grammatical if the co-referential relation is guaranteed in (49c). In (49d-e), the covert subject of the resultative predicate has to be co-referential with the subject of the activity predicate. As noted, I describe these cases as involving a covert subject of the resultative, rather than describing these as subject resultatives, because later I will analyse these in term of PRO-analysis.

(49) a. *Ta ku shi le   shoupa.*
       he cry wet Asp handkerchief
       'He cried and the handkerchief became wet.'
   b.*_Ta ku shi   le._
       he cry wet PRF
   c. *Ta ku xing   le.*
       he cry wake PRF
   d. *Ta chi bao le.*
       he eat full PRF
       'He ate and as a result he became full.'
   e. *Taotao zhui lei   le.*
       Taotao chase tired PRF
       'Taotao chased and as a result he got tired.'   (Zhang 2001)

In addition to the intransitive pattern that can violate the DOR, some transitive patterns are

also found in Mandarin Chinese. The resultative predicate is the predicate of the subject,

rather than the object, as in (50).

(50) a. *Zhang San chi bao le   fan.*
         Zhang San   eat full Asp meal
         'Zhang San got full from eating the meal.'
    b. *Li Si he   zui   le jiu.*
        Li Si drink drunk Asp wine
        'Li Si got drunk from drinking the wine.'   (Lin 2004: 100)

Differ from Zhang (2001) and Lin (2004), who analyse that both intransitive and transitive

patterns are subject-control structures, I propose that the violation of DOR in Chinese is

different from English. The key is that PRO is available in Chinese but not in English

subject-orienting cases. The derivational details of (51) are analysed as follows.


(51) a. *Zhang San chi bao le   fan.*
         Zhang San eat full Asp meal
         'Zhang San got full from eating the meal.'

b. *Zhang San chi bao le.*
   Zhang San eat full PRF
   'Zhang San ate and as a result he became full.'

In (51a), the postverbal argument *fan* 'meal' is analyzed in the sister node of the Root. I conclude a PRO is the sister of the resultative predicate *bao* 'become full'. The PRO is the subject of the resultative predicate, and it produces the subject-orientation reading, as in (52).[24]

(52)
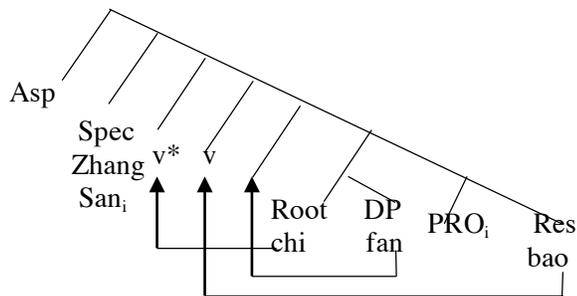
Similarly, (51b) is also the subject-orienting case, but there is no overt postverbal argument in this pattern. The activity verb *chi* 'eat' is a detransitivized verb, and a subject co-referential PRO originates as the sister node of the Root. The underlying derivation is

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[24] The proposal that PRO is the subject of the resultative predicate is supported by the PRO analysis in the *promise* sentence in English.
(iii) a. *I promise them to bring cakes.*
     b. I promise them [PRO to bring cakes].
The PRO is not controlled by the closet argument, but depend on lexical semantics. The PRO refers to the subject *I*, rather than the closest object *them*.

presented in (53). The postverbal empty PRO occupies the sister nodes of the resultative predicate Res, leading a subject co-referential denotation of the resultative predicate.

(53)

Asp
Spec
Zhang v* v
San$_i$
              Root
              chi
                        PRO$_i$ Res
                                    bao
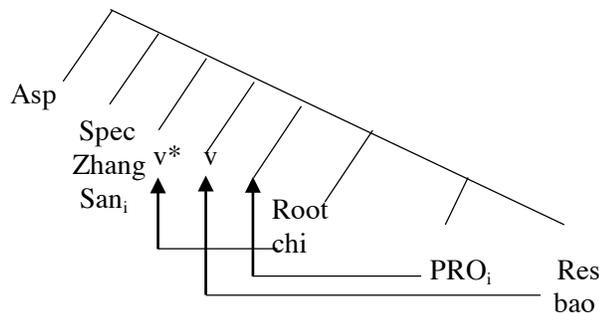
Comparing the DOR violation in English and Mandarin Chinese, we can see the transitivity distinction of the activity verb is sensitive to the DOR violation in English but immune to Mandarin Chinese. First, in English, the transitive activity verb can be used in the DOR violation structure, but the intransitive verbs cannot. In Mandarin Chinese, both the transitive and detransitivized activity verbs can be used in the DOR-violation structures. The underlying distinctions between these two languages lie in the possibility of PRO as the sister to the resultative predicate Res in Mandarin Chinese, but not allowed in English. The PRO is the subject of the resultative predicate, and it produces the subject-orientating interpretation in Mandarin Chinese resultatives.

4. Summary

This chapter has explored the v-splitting hypothesis and its application to two typical resultative patterns: DE-resultatives and compounding resultatives. In compounding resultatives, two head movement operations are hypothesized: Root-to-v* and Res-to-v. The Root-to-v* movement is triggered by the pre-established relation between the original light verb v* and the Root, which strictly respects the spirit of HMC. The Root is the head of the complement of the original phasal head v*, which won't be changed even after the v-splitting operation occurs in syntax. The lower head raising Res-to-v is motivated by the [uASP] features in the lower v and the Res, and the [uASP] features are checked and valued by the interpretable [ASP] in the higher functional head Asp outside the v*P. The feature inheritance is following Robert's (2012) argument on C-to-T inheritance in the C-splitting structure. The v-splitting analysis works better to distinguish the selected and unselected postverbal argument in compounding resultatives, compared to current existing literature, such as the small clause analysis and the conventional vP shell analysis.

I also discussed the direct object restriction and its violations. The violation in English is sensitive to transitivity structure, but not in Chinese. In addition, I compare the difference in orientation of the resultant predicate, the specificity of the postverbal argument and the intervening effect of manner adverbs in the v-splitting structure. To account for these distinctions, it seems that head movement is the right parametric setting for the pattern contrast and the v-splitting operation in syntax. The differential syntactic behaviors (e.g. specificity asymmetry) again support the v-splitting structure proposed in this thesis.

Chapter 4

Adverb Resultatives

The adverbs in (1) describe the resultative state, as a result of the activity that is characterized by the verb. In (1a), the adverb *beautifully* expresses that the room becomes beautiful as a result of decorating it. In (1b), the adverb describes the car becomes perfect as a result of her fixing it. In (1c), the adverb indicates that the chrysanthemums she grows become marvelous (Geuder 2002).

(1) a. *They decorated the room beautifully.*[25]
   b. *She fixed the car perfectly.*
   c. *She grows chrysanthemums marvelously.*   (Geuder 2002)

In Mandarin Chinese, a comparable result-orienting adverb is also found, but it must precede the main verb. In (2a), the adverb *jingmeide* 'beautifully' can describe the resultative state of the decorating action.[26] In (2b), the reduplicated orienting adverb *cuicuide* 'crisp' denotes the resultant state of an action characterised by the verb *zha* 'fry'.[27] In Mandarin Chinese, such resultative adverbs constitute a syntax-semantics mismatch, since the adverb precedes the predicate, but semantically orients to the postverbal NP. I

[24/26] The adverb *beautifully* in (1) and *jingmeide* 'beautifully' in (2a) is ambiguous: either a sentential adverb scoping over the following verb phrase or an object-orienting adverb. I propose these two readings are derived from different underlying representations: a manner modifier for the sentential adverb and a predicate for the resultative object-orienting adverb. The focus of the thesis is the object-orienting adverb, which is derived as a resultative predicate.

[27] Actually, for some native speakers, the reduplicated preverbal verb, like (2b), is more acceptable to denote the resultative meaning, compared to the object-orienting reading in (2a).

refer to these adverbs as resultative adverbs, and these patterns are addressed as adverb resultatives.

(2) a. *Tamen jingmeide zhuangshi le   yi-jian wuzi.*
     they   beautifully decorate   Asp one-Cl room
     'They decorated a room perfectly.'
   b. *Ma Li cuicuide zha le   yi   pan   huashengmi.*
     Ma Li crisp   fry ASP one plate peanut
     'Ma Li fried one plate of peanuts, and as the result the peanuts became crisp.'
<div align="right">(adapted from Zhu 1985)</div>

Xiong (2013) analyses the preverbal resultative adverb as the predicate of a PRO, in an analysis which includes a head raising component. Take (2b) for example. The resultative adverb is treated as the resultative predicate of a PRO. The clause [PRO *cuicuide*] functions as a complement of the argument *yi pan huashengmi* 'one plate of peanuts'. The activity verb *zha* 'fry' undergoes head movement from the verb head to a higher verbal functional head Bec, and finally lands at a much higher head Caus. The preverbal surface order of the resultative adverb moves further, triggered by some focalised information outside CausP. Xiong's (2013) detailed analysis will be considered in detail in this chapter. Xiong already gets the idea of treating resultative adverbs as predicates, but his analysis fails to motivate the syntactic operation of head raising. I will explore the results from chapter 3 to find a better solution of how the resultative adverb moves. I make use of the finding of chapter 3, to provide a better syntactic treatment of the word order in a unified representation. By doing this, I am able to extend the analysis by considering the conjunction of multiple adverbs in a way that no current literature has considered.

Resultative adverbs are distinguished from manner adverbs in section 1 in this chapter, and different syntactic positions are proposed for these two types of adverbs. I claim that manner adverbs enter the derivation in a specifier position; resultative adverbs are analysed as simple resultative predicates. In section 2, the syntactic derivation of adverb resultatives is analysed with the v-splitting approach. Like typical resultatives in Mandarin Chinese (i.e. compounding resultatives and DE-resultatives), the v-splitting hypothesis is applied to account for the underlying representation of adverb resultatives. The resultative adverb enters the derivation as the resultative predicate, which undergoes successive movement, represented as Res-to-v-to-Asp. Typical and pseudo conjunctions are extended in section 3. I propose that the typical conjunction pattern bears a more flexible order, but the pseudo-conjunction has asymmetric orders. Both typical and pseudo conjunctions contain multiple adverbs, but they derive from differential underlying representations.

1. Asymmetric Analyses for Manner and Resultative Adverbs

1.1 Manner adverbs as modification

In this section, manner adverbs and resultative adverbs are distinguished. Based on current literature, I suppose that manner adverbs are modifiers of predicates. In contrast, resultative adverbs derive as predicate heads.

Let us start with theoretical assumptions about manner adverbs in general. Manner adverbs express the way an action takes place. In (3), the manner adverb *rudely* can occur either right before the activity verb or in the final position of the sentence. For Jackendoff (1972),

the preverbal type is called the higher adverb, expressing the situation described by the VP; the sentence-final type is named as the lower adverb, denoting the range of events which the adverb refers to.

(3) *Louisa (rudely) answered Patricia (rudely).*   (McConnell-Ginet 1982: 159)

As for the syntactic status of manner adverbs, Cinque (1999) proposes that different adverb orders result from a universal hierarchical structure. The position of the adverb is analyzed as a specifier of a given functional projection, associated to different scopal properties. Bowers (1993) argues that English adverbs appear in the specifier position of an intermediate node. The adverb can be either to the left or to the right of this node. Although Bowers and Cinque have different analyses of manner adverbs, both can derive adverbs in multiple syntactic positions in the underlying structure. For instance, in a double object construction (4a), the oblique object is projected as the complement of verb and direct objects as the specifier of VP. The predication phrase (represented as PrP) is assumed as the higher functional verbal category; the subject occupies in its specifier position. The distribution of the adverb is provided in (4b), which shows the left and the right adjunction of manner adverbs.

(4) a. *John (quickly) threw (*) the book (quickly) into the drawer (quickly).*
   b.

```
                    PrP
              ┌──────┴──────┐
            NP             Pr' - - - - - - - - - - - - - - - - - - - ┐
          Subject      ┌────┴────┐                                    \
                     Adv        Pr'                                  (Adv)
                           ┌─────┴─────┐
                          Vᵢ           VP
                                  ┌─────┴─────┐
                                 NP          V' - - - - - - - - - ┐
                              Direct Obj  ┌───┴───┐                \
                                        Adv       V'             (Adv)
                                              ┌────┴────┐
                                             tᵢ   Oblique Complement
```
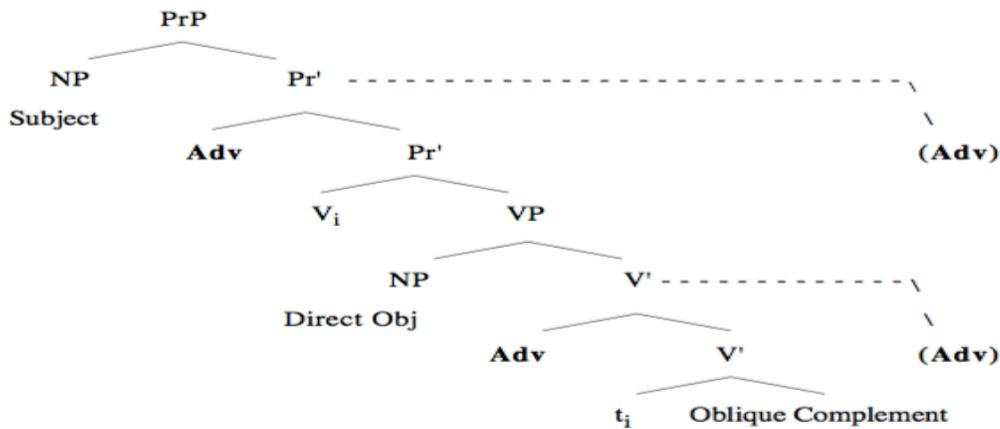
(Geuder 2002)

The adverb in the Spec-PrP is parallel to the Spec-v* in the general vP shell structure. I further suppose that the preverbal adverb may derive in the specifier of a much higher functional head, e.g. the Spec-Asp outside the v*P shell in English. Both of these two positions produce the preverbal surface of adverbs in English, as in (6a). However, the adverb across languages may derive in different orders. I will analyse that adverbs in Mandarin Chinese appear in the specifier position of the light verb v*, but not in the specifier position of Root and the specifier of Asp unless in the pseudo-conjunction. The supporting evidence that the adverb cannot occupy the Spec-Asp discussed in the verb copying construction (in section 2.1.2, chapter 1), in which the adverb cannot appear right before the first verb and the object (generated in the Asp in a sideward way).[28]

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[28](vii). *Wo (*yijing) qi   ma   yijing   qi   le   haoji ci le.*
     I   already   ride horse already ride ASP many CL PRF
   'I have ridden on a horse already many times.'   (Paul 2000: 266)
The first verb *qi* 'ride' and the object *ma* 'horse' are generated in the Asp in a sideward way outside the v*P; the manner adverb *yijing* 'already' is derived in the specifier of the v*P, within the vP shell structure, corresponding to Paul (2000). More details are discussed in section 2.1.2, chapter 1.

The derivations of English and Chinese manner adverbs in (5) are thus provided in (6).

(5) a. *John (quickly) painted the table red (quickly).*
    b. *Ma Li dashengde ku   shi le   shoupa   (*kuaisude).*
      Mary loudly   cry wet ASP handkerchief quickly
      'Mary cried loudly, and as a result the handkerchief became wet.'

(6) a. Syntactic derivation of (5a) in English
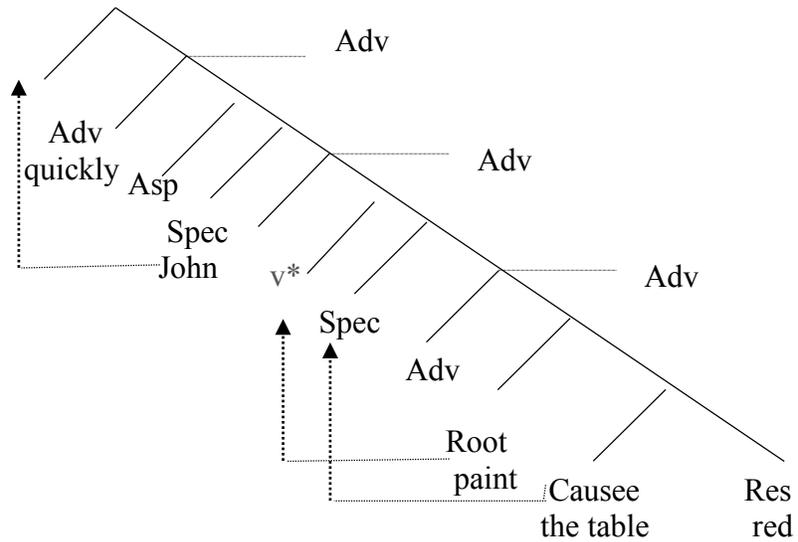
    b. Syntactic derivation of (5b) in Chinese
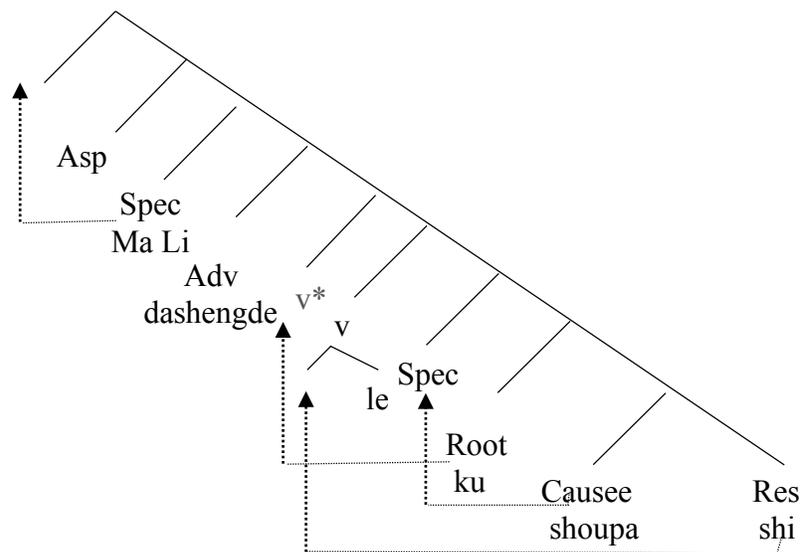
Based on Bowers (1993) and Geuder (2002), the manner adverb in English is analysed in the Spec-Root for a sentence-final position, the Spec-v* and the Spec-Asp for a preverbal position. However, in Chinese, I analyse the Spec-v* is the position for the preverbal adverb, and the Spec-Asp is not allowed for the adverbs (unless in the pseudo-conjunction, as I will discuss later in this chapter). The sentence-final adverb is forbidden in Mandarin Chinese. More details will be demonstrated in this chapter.

1.2 Resultative adverbs as predication

In this section, an analysis of the resultative adverb is provided. The English and Chinese examples are repeated below in (7).

(7) a. *They decorated the room beautifully.*   (resultative)
    b. *Tamen jingmeide zhuangshi le   yi-jian wuzi.* (manner and resultative)
      they   beautifully decorate   Asp one-Cl room
      'They decorated a room perfectly.'
    c. *Ma Li cuicuide zha le   yi   pan   huashengmi.*
      Ma Li crisp   fry ASP one plate peanut
      'Ma Li fried one plate of peanuts, and as the result the peanuts became crisp.'

Adverbs like *beautifully* in (7b) are ambiguous, allowing a manner and a property reading. They can be viewed as manner adverbials, describing the way of an action denoted by the verb in the case of "*They decorated the room beautifully*". They can also be analyzed as a property of resultant states, i.e. the room is in a beautiful state as a result of decoration.

However, adverbs like *crisp* in (7c) prohibits interactive interpretations. Their only interpretation expresses a resultant state, excluding the manner reading.

According to Geuder (2002), the degree of a property forms a scale, either bounded or not (i.e. to beautiful/towards beautiful). Manner modifications are different from properties, since a temporal-axis is assumed for manners, but not for properties. Briefly speaking, properties are paraphrased as *ways of being*, but manners as *ways of doing*. Based on Geuder (2002), I analyse the semantics for *beautifully*-type and *crisp*-type adverbs as in (8)-(9).

(8) *beautifully*-type adverbs
    a. Manner: [Action Y; [Property X]]
    b. Property: [Material Y; Property X]

(9) *crisp*-type adverbs
    Property: [Material Y; Property X]

Two semantic representations reflect two readings in *beautifully*-type adverbs, with an action Y and a property X in Manner interpretations and a material Y and a property X in Property interpretations. A single interpretation is available in *crisp*-type adverbs, with a material Y and property X in its underlying lexical notions.

Unsatisfactory reasons for assuming an ambiguous account are illustrated in Kennedy and McNally (1999), and McNally and Kennedy (2013). Multiple readings sometimes intersect,

as seen with *well*. Both degree and quality readings are observed,[29] and they are difficult to distinguish in (10).

(10) a. a *well* loaded packing box
     b. a *well* documented case
     c. a *well* understood phenomenon   (Kennedy and MaNally 1999: 247)

In this thesis, following Kennedy and MaNally (1999), I suppose that property-manner readings reflect independent argument structures. Multiple interpreted relationships between the modifier and the modified follow from distinct underlying derivations.

For the resultative adverbs like *jingmeide* 'beautifully', they are base-generated in the head Res. Two head movement operations must occur: Res-to-v and Res-to-v-to-Asp. (The first step of head movement is triggered by the [uASP] features in the lower v; the second step is triggered by the strong [ASP] feature in the Asp, and together with the phonological and morphological filters in the lower v.) A set of features drive cyclic head movement from Res to an intermediate v and then to Asp. Thus, the resultative adverb *jingmeide* 'beautifully'/*cuicuide* 'crisp' undergoes cyclic head movement Res-to-v-Asp. We have the semantic implication of the resultative adverb: predicate of the Causee argument, as in (11a).

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[29] The *degree* and *quality* readings are discussed in Kennedy and MaNally (1999), but manner and property interpretations are focused in this thesis.

In contrast, the manner reading is associated with a predicate of manner (modifying vP). I propose that manner adverbs (like *jingmeide/beautifully* with a manner reading) are generated directly in the specifier of the ligher verb v*. The overall distribution is represented in (11b). The details will be mentioned later in this chapter. [30]

(11) a. Resultative *jingmeide* as a Res head

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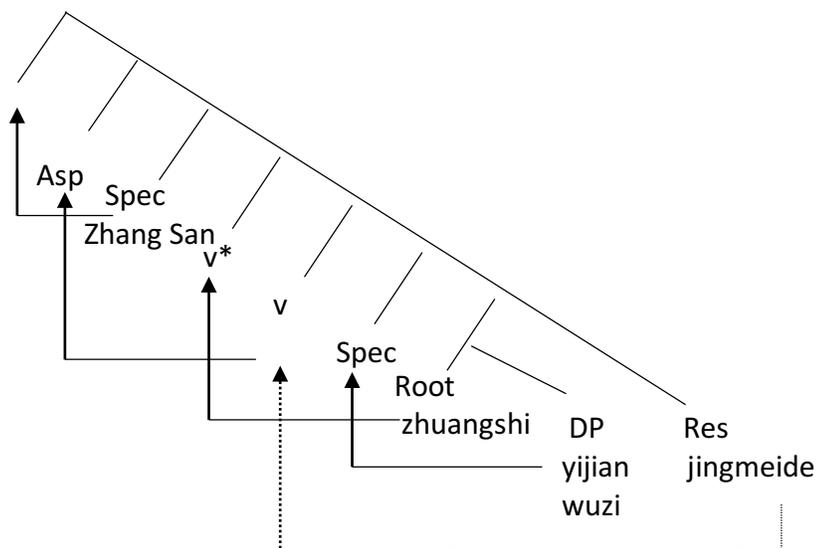
[30] In the adverb resultative (11a), a v-splitting model is assumed, and the resultative adverb is generated in the (resultative) predicate head. In contrast, in the non-resultative clause (11b), the structure is analysed in a single light verb system. The manner adverb enters the derivation in the specifier of a functional head.

b. Manner *jingmeide* as a Specifier
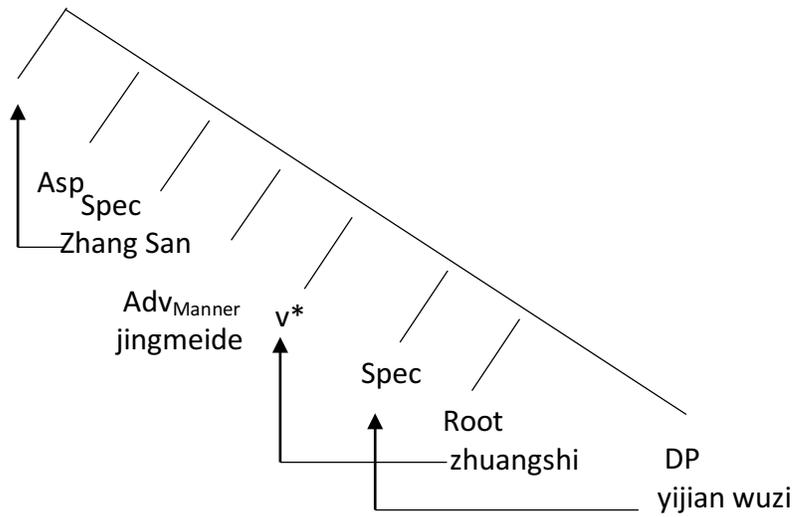
Thus, the asymmetric distribution of manner and resultative adverbs are provided in Chinese. In the adverb resultative pattern (11a), a v-splitting model is assumed, and the resultative adverb is generated in the (resultative) predicate head. In contrast, in (11b), the manner adverb enters the derivation in the specifier of the functional head v* in Mandarin Chinese. The resultative adverb is the focus of the present study, next the derivational details in the v-splitting approach are modelled.

2. Labeling Analysis of Adverb Resultatives

In this section, I will provide the detailed model of adverb resultatives in Mandarin Chinese and English, from the labeling-based approach. In Chinese, the v-splitting structure is supposed for adverb resultatives. Successive head movement is hypothesized in adverb resultatives: Res-to-v-to-Asp. I will explain the motivation from feature inheritance and

multiple feature checking. However, in English, the mono-layer light verb structure is supposed.

2.1 v-splitting in Chinese Adverb resultatives

In adverb resultatives, the resultative adverb is found right before the activity verb. It describes the change of the state as a result of the completion of an activity event. As in (12), the adverb *cuicuide* 'crisp' immediately precedes the activity verb *zha* 'fry', denoting that the plate of peanuts became crisp as a result of frying event. Adverb resultatives share a similar underlying base with compounding resultatives and DE-resultatives in Chinese. The derivational details are unified in the v-splitting structure.

(12) *Ma Li cuicuide zha le   yi   pan   huashengmi.*[31]
    Ma Li crisp   fry Asp one plate peanut
    'Mary fried a plate of peanuts and as a result these peanuts became crisp.'

In (12), the resultative adverb *cuicuide* 'crisp' enters the derivation in the predicate head Res. The internally caused argument, i.e. Causee, derives in its sister hood of the Root. No shared feature is agreed in the configuration {DP$_{CAUSEE}$, Root}, so either DP or Root has to move out of this configuration to create a label for the merged syntactic object. The non-phasal head Root cannot label itself; it gets strengthened by moving to the functional v* and create a verbal category. Thus, head movement Root-to-v* derives. The Causee

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[31] In Mandarin Chinese, the adverb *cuicuide* contains the reduplicative root *cuicui* and an affix-like marker *-de* for adverbs.

argument has to move out of {Root+Causee} to the specifier position of {Root+Causee}, as argued earlier in chapter 3.

The original phasal head v* splits into two adjacent light verb heads in Mandarin Chinese. The phasal head feature [C-feature] splits into [CAT] on v*, [uASP], SPEC-features and φ-features on v (inherited from v*) as a result of feature inheritance in the v-splitting structure. In the v-splitting structure, three head movement operations are supposed: Res-to-v, Res-to-v-to-Asp and Root-to-v*. The timing of multiple head movement and its obedience to Head Movement Constraint (Travis 1984) are demonstrated. The head selection relationship between v* and Root has been established before the splitting occurs, so the split lower light verb does not block the head movement Root-to-v*. The categoryless Root gets its category label, by merging with the functional light verb v*. After splitting occurs, the [uASP] feature is associated with the lower light verb v. The [uASP] feature on the lower v looks for an appropriate candidate to fulfil its resultative aspectual requirement. When it starts to search its goal, the Root comes first. However, the trace of the root does not carry the resultative feature, so it is out of consideration. Then it goes to the next head Res, and the Res is the ideal goal for Res-to-v movement, due to its corresponding uninterpretable resultative aspectual feature. Thus, the long-distance head movement Res-to-v actually respects the spirit of the HMC. The uniterpretable [uASP] feature is checked and valued by the [ASP] feature in the higher functional head Asp. The interpretable [ASP] feature is proposed upon the functional head Asp, and it describes eventuality of the predicate, corresponding to the event types of stative, activity, achievement and accomplishment (Vendler 1957). The raised adverb cannot remain in the

lower v, due to complex phonological and morphological interface filters. Although the adverb carries lexical meanings, it is relatively less-verbal in category. A morphological filter requires that the raised syntactic object must categorially consist with the landing node. Otherwise, it cannot be transferred to the interface and to be spelt out. If this assumption is on the right track, the resultative adverb cannot be morphologically realized in the lower v, and must further move it to a higher functional head (i.e. to Asp). It lands at the functional head Asp, containing the [ASP] feature. The [uASP] feature in the lower v and the Res is finally checked and valued by the corresponding aspectual feature in the higher functional head Asp. In addition, the reduplicated preverbal adverb also shows some implication on the phonological condition in Chinese adverb resultatives. (I will explain the phonological constraints in the adverb conjunction in section 3.2.) As a result, the adverb surfaces in an immediate precedence of the activity verb, as in (13).

(13) Labeling in Chinese adverb resultatives
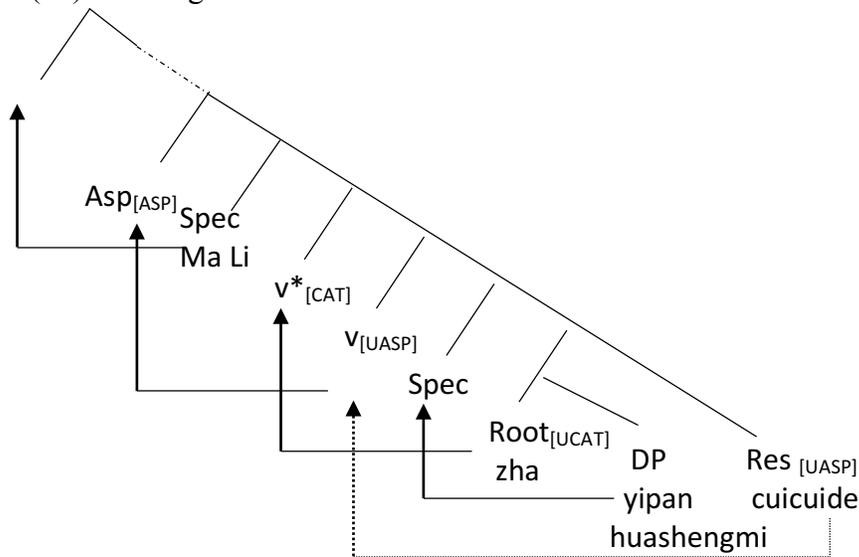
In the adverb resultative pattern, the selecting relation between the activity verb root and the postverbal argument is the only possibility, as in (14). This is different from compounding and DE-resultatives, which may allow both selecting and non-selecting relationships. The asymmetric selection is explained by the way of the resultative predicate Res when it enters the derivation. If the Res is a verb (or adjective in Chinese), it enters the derivation via external merger. The merger operation allows it to merge with either a verbal phrase or a nominal phrase, so we can see the selected and unselected patterns in compounding and DE-resultatives. If the Res is an adverb, it may enter the derivation not via the external merger but through the adjunction. This is not that surprising to propose the resultative adverb is adjoined to the verbal phrase (i.e. the Root+DP cluster), rather than to the nominal phrase (i.e. DP). If this assumption is acceptable, the selecting relation between the Root and the postverbal argument DP is the only possibility in the adverb resultatives, and this is different from the resultative verbs in compounding and DE-resultatives.

(14) a. *Ma Li cuicuide zha le   yi   pan huashengmi.*
   Ma Li crisp   fry Asp one plate peanut
         'Mary fried a plate of peanuts and as a result these peanuts became crisp.'
    b. **Zhang San dundunde qie le   zhe ba dao.*
         Zhang San   dull   cut ASP this CL knife
         Intentional: 'Zhang San cut something and as a result the knife became dull.'
    c. Asymmetric selecting relation

Root

    DP   Res-*Adv   Root DP   Res-Adv
                Res-V   Res-V
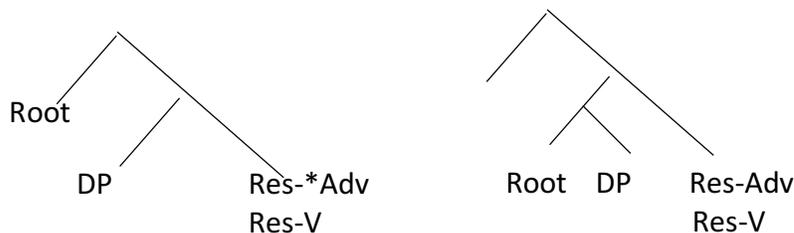
Another difference between the adverb pattern and the typical compounding resultative pattern is about the prohibition of the potentiality of *-de/-bu* insertion. In compounding resultatives, we can find the positive potential marker *–de* and the negative potential marker *–bu* can be inserted between the two verbs. However, this is not allowed in adverb resultatives.

(15) a. *Ta **la-de-kai** men.*
    He pull-can-open door
    'He can pull the door open.'
  b. *Ta **la-bu-kai** men.*
    He pull-can't-open door
    'He cant't pull the door open.'   (Thompson 1973: 361)
  c. **Ma Li cuicuide zha **bu/de** yi pan huashengmi.*
    Ma Li crisp fry can't/can one plate peanut
    Intentional: 'Mary fried a plate of peanuts and as a result these peanuts can/can't became crisp.'

The contrast is explained by the potential scoping conflict. In the compounding pattern, the potential marker derives in the specifier of the Root, represented as Pot(ential) (or may be directly attached to the Root in the lexicon as Thompson 1973). Both Pot and Root undergoe head raising operations, and the order V1-*de/-bu*V2 is produced. In the adverb pattern, similar to the compounding pattern, the potential markers *-de/-bu* undergo head raising. However, successive head raising occurs to the resultative adverb: Res-to-v-to-Asp. After the successive head raising, the potential domain cannot scope over the raised resultative adverb any longer, and the resultative adverb is located outside the v*P. Thus, the *-de/-bu* insertion is not allowed in adverb resultatives.

(16)
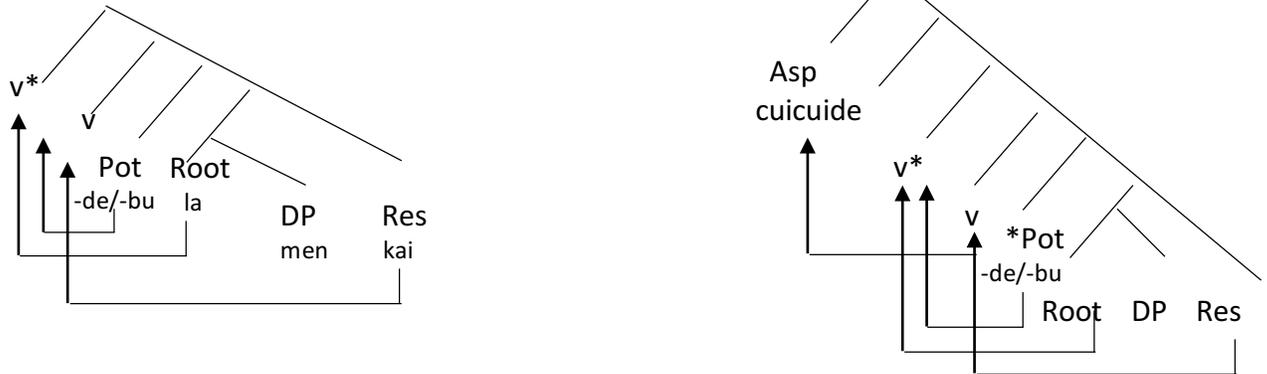
In this section, I suppose that that adverb resultatives share similar underlying base with compounding resultatives and DE-resultatives. A unified labeling-based approach is applied to these three patterns. They differ in the head parametric variation: no Res head movement in DE-resultatives, one-step head movement (Res-to-v) in compounding resultatives, and successive cyclic head movement (Res-to-v-Asp) in adverb resultatives. Another difference is the way that the resultative adverb enters the derivation via adjunction, which produce the selecting pattern in the adverb resultatives.

2.2 Specificity in adverb resultatives

After analysing the syntactic derivation, let us explore the specificity property of adverb resultative in Mandarin Chinese. In adverb resultatives, the postverbal causee can be either specific, as in (17a), or nonspecific, in (17b).

(17) a. *Ma Li cuicuide zha le zhe   pan huashengmi.*

Ma Li crisp   fry Asp this plate peanut
    'Ma Li fried this plate of peanuts and as a result these peanuts became crisp.'
  b. *Ma Li cuicuide zha le yi   pan huashengmi.*
   Ma Li crisp   fry Asp one plate peanut
    'Ma Li fried a plate of peanuts and as a result these peanuts became crisp.'

The specificity property in adverb resultatives is similar to the specificity constraint in compounding resultatives in Mandarin Chinese: either specific or nonspecific readings are allowed. As the findings of chapter 3, the specific asymmetry is explained by feature checking. Both φ-features and optional SPEC-features are originally contained in the phasal head v*, but the lower light verb v can optionally contain SPEC-features after splitting. If both φ-features and SPEC-features are inherited from v* to v then to Root, the <φ,φ> features and <SPEC,SPEC> features are shared between Root and the shifted postverbal argument. LA take these feature pairs as the label. A specific reading in the postverbal argument is reached. However, if only φ-features are inherited from the phasal head v* to v then to Root, Root and the shifted postverbal argument only share φ-features, but not SPEC-features. Thus LA takes <φ,φ> feature pair as the label, ending up with an optional specific reading, as in (17). The optional specificity is represented in (18).[32]

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[32] The hypothesis that the light verb can optionally inherit SPEC-features is supported by feature inheritance in root interrogatives, as I have discussed in section 3.2 in chapter 3. The core idea repeated. In root interrogatives, *wh*-features and φ-features are originally contained in C, then transfer to T. The *wh*-expression and T share <φ,φ> and <*wh,wh*> features. LA takes the feature pair as the label, ending up with the interrogative force. If only φ-features are transferred from C to T, the non-interrogative force is realized. The labeling mechanism in root interrogatives may give us some implication that multiple features can be (optionally) inherited from a phasal head to a non-phasal head. More details can refer back to section 3.2, chapter 3.

(18) Specificity in Chinese adverb resultatives

⟨φ,φ⟩
⟨φ,φ⟩

Asp Spec
     Ma Li

(i) ⟨φ,φ⟩ &⟨SPEC,SPEC⟩; (ii) ⟨φ,φ⟩

v*

v

Spec

Root
zha

DP   Res
yipan   cuicuide
huashengmi

2.3 Intervention effect in adverb resultatives

In Chinese adverb resultatives, the resultative adverb occurs right before the activity verb. I have analysed the resultative adverb by cyclic head movement Res-to-v-Asp. We also notice that an extra manner modifier can only appear right before the preverbal resultative adverb in Mandarin Chinese. It is ungrammatical if the manner adverb occurs immediately before the activity verb in (19b) or at the end of the sentence in Mandarin Chinese in (19c).

(19) a. *Tamen **kuaisu** er   cuicui-de zha le   yi pan huashengmi.*[33]
        they   quickly conj. crisply   zha Asp one-Cl peanut
        'They quickly fried one plate of peanuts, and as the result the peanuts became crisp.'
    b. **Tamen cuicui-de **kuaisu-de** zha le   yi   pan huashengmi.*
   they   crisply   quickly   zha Asp one-Cl peanut

---

[33] As for the manner adverb, it is more acceptable by using the conjunction *er* 'and', when it occurs right before the resultative adverb. Moreover, the manner modifier usually omits the adverb-marker DE, pronouncing as *kuaisu*, rather than *kuaisu-de*. Actually, this is addressed as pseudo conjunction and will be analysed in detail in section 3 in this chapter.

c. *_Tamen cuicui-de zha le   yi   pan huashengmi_ **_kuaisu-de_**.
  they   quickly   zha Asp one-Cl   peanut   quickly
  Intentional: 'They quickly fried one plate of peanuts, and as the result the peanuts became crisp.'

I explain this in terms of aspectual feature intervention in the v-splitting structure. Although adverbs don't typically disrupt head movement in existing accounts, in what follows it reflects the intervening effect in successive cyclic head movement in adverb resultatives.

(20) Intervention effect in Chinese adverb resultatives[34]
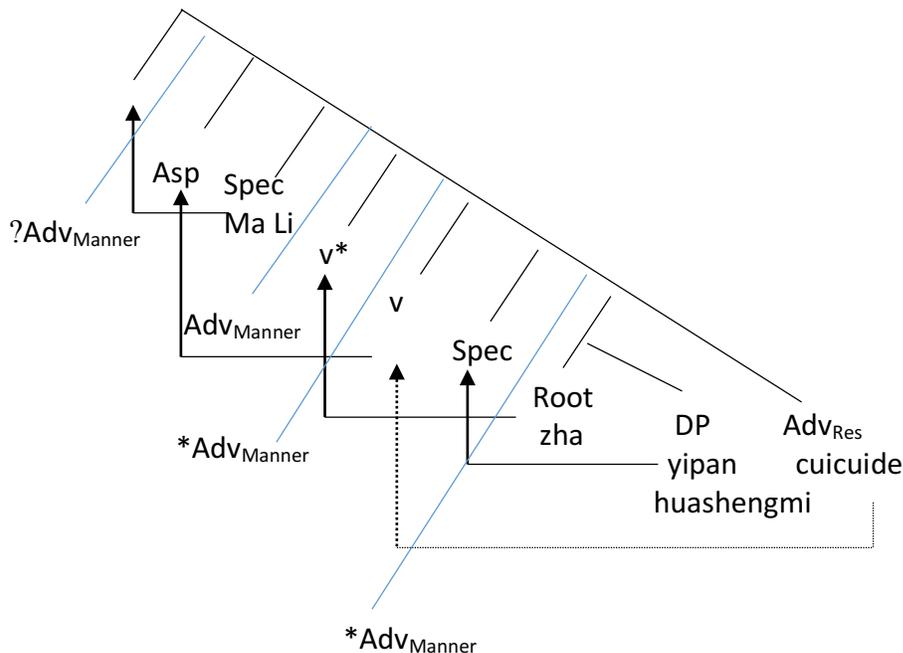
Adverbs (both manner and resultative) share lexical meanings, as discussed in section 1, chapter 4. They differ in the concrete features: either with the manner modifying feature or

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[34] In Chinese, the manner adverb is allowed in the specifier of v*, within the v*P shell structure, which is corresponding to Paul (2000). I further propose that the manner adverb is also possible in the specifier of Asp but only in the pseudo-conjunction in Chinese, so a question mark is added in the Spec-Asp for extra conditions.

the resultative property. Recall the head raising operation in adverb resultatives. The [CAT] feature triggers head raising of the categoryless root, and create a verbal label for it. The [uASP] feature in the lower v needs a specific aspectual component to fulfill. If manner adverbs occur between the lower v and the Root, the manner adverb is considered as the closer candidate to the lower v, compared to the resultative adverb, since both may bear verbal aspectual features. The manner adverb will therefore intervene in the head raising operation Res-to-v in the structure. In order to make Res-to-v possible, the intervening manner adverb must move out (to a higher position, e.g. to the Spec-v* in general or the Spec-Asp only in the pseuo-conjunction). Moreover, manner adverbs are not allowed between the higher v* and the lower v, which is due to the pre-established head selection relationship between the v* and the Root before the splitting takes place. Before the v* splits into two adjacent light verbs, the head-head selection relationship is established between the v* and the Root. Thus, manner adverbs cannot occur between these two adjacent light verbs in the v-splitting structure. In contrast, the manner adverb can appear in the specifier of v* as expected, with the surface order right before the resultative adverb. (I will also show that the manner adverb is possible to be contained in the aspectual phrase only in the pseudo-conjunction in Chinese in section 3, chapter 4, in which a regular manner adverb and a resultative adverb occur right before the activity verb.)

Thus, the distribution of manner adverbs in Chinese adverb resultatives reflects intervention effect in head movement. This is different from the existing literature, and may deserve more future investigation in cross-linguistic contexts.

2.4 Contrast to English adverb resultatives

It is worth comparing this Chinese structure with comparable ones in English. In English, two resultative patterns are classified: typical and pseudo resultatives. In the typical pattern, the resultant adverb predicates on the postverbal argument. In the pseudo pattern, the resultant adverb predicates on an explicit argument. I suppose a non-symmetric syntactic relation of the postverbal argument and the resultant predicate in these two resultative patterns in English. English adverb resultatives are different from Chinese counterparts, specifically due to lacking a v-splitting structure in English.

Let us start with the typical adverb resultative in English in (21a). The resultative adverb *beautifully* is base-generated in the head Res. The object DP *the room* enters the derivation in the sister node of Res.[35] In the configuration {DP, Res}, no shared feature is agreed between DP and Res, so one of them needs to move out for the labeling purpose. The non-phasal head Root merges into the derivation with v, creating a verb category. Root triggers the causee DP to move to the specifier of Root; the shared $\langle\varphi,\varphi\rangle$ feature as such. The derivation is presented in (21b).

(21) a. *They decorated the room beautifully.*

---

[35] In English, the causee object is analysed as the sister to the resultative head Res. This is widely accepted in the existing labeling analysis. Unlike Chinese, I distinguish the selected and unselected objects in non-symmetric relationships in chapter 3. The different treatment is supported by the empirical argument structure in these two languages: (i) compounding and DE-resultative structures exist in Chinese, but absent in English; (ii) unselected argument is common in Chinese, but rarely possible in English.

b.
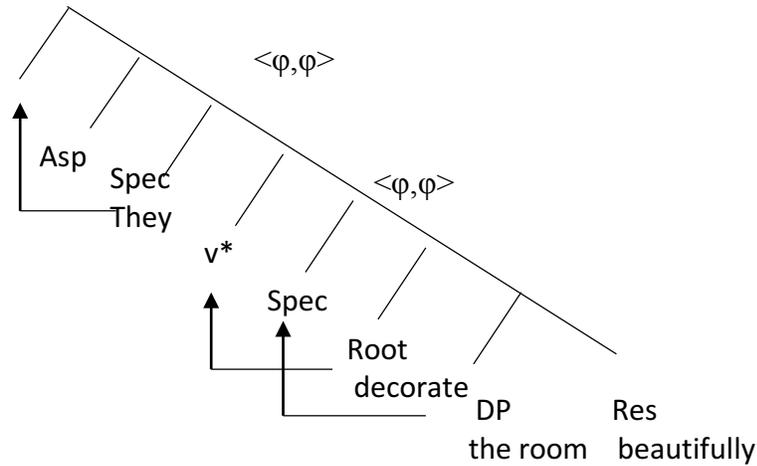
In contrast, in the pseudo adverb resultative pattern in (22a), the resultant predicate orients to the event argument. That is, the adverb *wide* can also predicate of the event of opening the door. The resultant adverb *wide* is base-generated in the head Res, projecting the phrasal Res. The categoryless root enters the derivation, and the object derives in the sister node of Root. No labeling can be created, since Root is a weak head, and there is no shared feature in the configuration {Root, DP}. Root triggers the causee DP to move to the specifier of Root; the shared <φ,φ> feature as such. The phasal head v* enters the derivation, triggering Root to merge with it, so a verbal category is created for Root. The subject agent is derived in the specifier of v*; and in the configuration {Spec, v*}, the phasal head v* is labeled. The derivational process is seen in (22).

(22) a. *I opened the door wide.*

b.

Asp
Spec
I
v*
Spec
Root
open
DP
the door
Res
wide
⟨φ,φ⟩
⟨φ,φ⟩
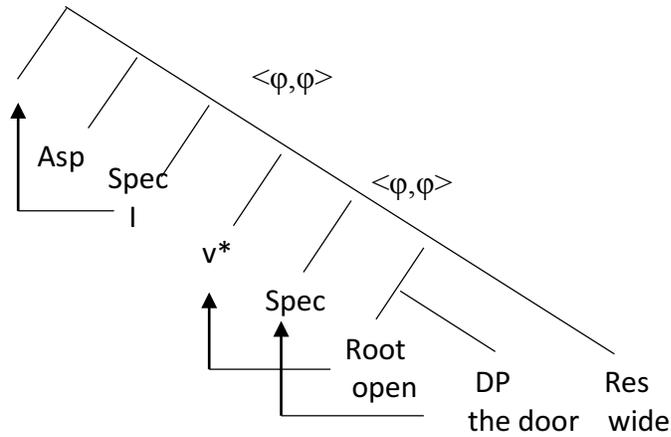
In English, the regular and the pseudo adverb resultatives are treated differently. In (21), a non-sister relation between the object and the activity verb is modelled in regular adverb resultatives, as widely analysed in general literature. However, a sister relation between the object and the activity verb is explained in pseudo-resultatives, as in (22). The different treatment provides a unified syntactic model to distinguish these patterns: they share a similar base but differ in the sister relation between the activity verb and the postverbal argument.

3. Adverb Conjunction

In this section, I extend the adverb resultative pattern to a complex structure, which contains multiple adverbs. The typical adverb conjunction and a pseudo conjunction relationship will be distinguished, and different derivational methods are justified. No one else has accounted for how the word order takes place in the same way.

In Chinese, two facts can distinguish pseudo-conjunctions from regular adverbial conjunctions: the word order and the ellipsis of conjunction *-er-* ('-and-'). First, in pseudo-conjunctions, the manner adverb has to go first, and the resultative adverb comes second, as in (23b). But if we get two manner adverbs, there is no ordering relationship; they can come in each order, as in (23a). The second property is that the conjunction *-er- "and"* cannot be omitted in the pseudo-conjunction, but it is possible to do so in regular adverbial conjunctions, as in (24). Through the contrast in (23) and (24), we can see what is typical adverb conjunction and what is pseudo-conjunction in Chinese.

(23) Ordering contrast
    a. *Tamen (kuaisu er xixin-de)/(xixin er kuaisu-de)*   *zhuangshi le   yi-jian wuzi.*
       they   (quickly conj. carefully)/(carefully conj. quickly) decorate Asp one-Cl room.
       'They decorated a room quickly and carefully.'
    b. *Ma Li (kuaisu   er   cuicuide)/(*cuicui er kuaisu-de) zha le   yi   pan   huashengmi.*
       Ma Li quickly conj.   crisp/(* crisp conj. quickly)   fry ASP one plate peanut
       'Ma Li quickly fried one plate of peanuts, and as the result the peanuts
        became crisp.'

(24) Ellipsis contrast
    a. *Tamen kuaisu (er)   xixin-de   zhuangshi le   zhe-jian wuzi.*
       they   quickly conj   beautiful-ly decorated Asp this-Cl   room
       'They decorated the room quickly and carefully.'
    b. *Tamen kuaisu *(er) cuicui-de zha le   yi   pan huashengmi.*
       they   quickly   conj. crisply   zha Asp one-Cl peanut
       'They quickly fried one plate of peanuts, and as the result the peanuts became crisp.'

In the following section, I will explain the adverb distribution in conjunction in section 3.1. In section 3.2, a special case is explained in adverb conjunction, where the resultative adverb is a reduplicative adverb. I will provide phonetic constraints to the reduplicative form in Chinese. In section 3.3, my analysis is compared with other approaches. Through

the comparison, we can see a v-splitting model offers a unified model. The cyclic head raising is also explained, which is a novel result.

3.1 Adverb distribution in conjunction

3.1.1 Flexible orders in typical conjunction

Turning to adverb conjunctions, a relatively free order is recognized in both English and Chinese in typical conjunctions. In (25a), *quickly* and *beautifully* are both manner adverbs, developing the regular adverbial conjunction. These two adverbs can appear in preverbal or sentence-final positions in English. The order between these adverbs are flexible. Either *quickly* precedes *beautifully* or *beautifully* precedes *quickly*. The flexible order is also well predicted in Chinese typical adverb conjunction in (25b), although the adverb conjunction only occurs in the preverbal position. [36]

(25) a. *They (quickly and beautifully) (beautifully and quickly) decorated the room (quickly and beautifully) (beautifully and quickly).*
   b. *Tamen (kuaisu er   jingmei-de)/(jingmei er kuaisu-de)   zhuangshi le zhe-jian wuzi (*).*
      they   (quickly and beautifully)/(beautifully and quickly)   decorate Asp this-Cl room
      'They decorated the room quickly and beautifully (beautifully and quickly).'

---

[36] The sentence-final conjunction in Chinese may be partially accepted when a comma intonation occurs, but this is not the typical context-independent pattern.
   (viii) ?*Tamen zhuangshi le   zhejian wuzi, **kuaisi   er   jingmeide**.*
         they   decorate   Asp this-Cl room, quickly and beautifully
   'They decorated the room quickly and beautifully.'

The regular adverbial conjunction is represented in (26a). Following Chomsky (2013, 2014), in the configuration {and,{AdvP$_1$, AdvP$_2$}}, the functional head *and* is a non-phasal head, which cannot label itself. Either AdvP$_1$ or AdvP$_2$ moves to spec-*and* and strengthens the non-phasal head. The conjunct adverb phrases are two sister items; they are in equivalent distance to be moved out to spec-*and*. Thus a free order is well predicted in the typical conjunction in (26a). The regular and typical conjunction is different from the pseudo-conjunction, in which the resultative adverb enters the derivation as a resultative predicate, but the manner adverb does in the specifier of a functional head, as in (26b). The word order of pseudo-conjunction will be explained in detail in section 3.1.2.

(26) a. typical adverb conjunction

Conj
and

AdvP$_1$ AdvP$_2$
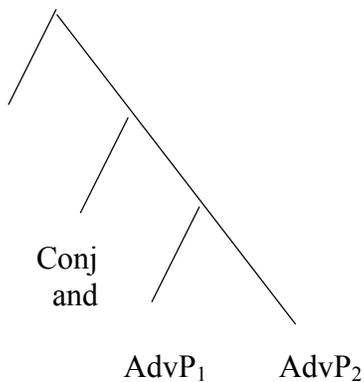
b. pseudo adverb conjunction
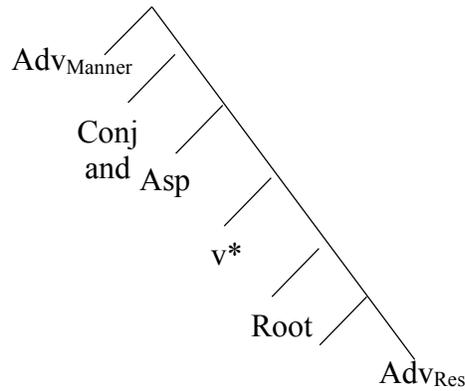
3.1.2 Asymmetric orders in pseudo-conjunction

The pseudo-conjunction (with a scoping-over relation) shows a fixed surface order in both English and Chinese. The manner adverb *quickly* linearly precedes the resultative adverb *beautifully* in the preverbal position in English and Chinese. The sentence-final pseudo-conjunction in English presents freer adverb orders, which is impossible in Chinese.

(27) a. *They (quickly and beautifully)/(*beautifully and quickly) decorated the room (quickly and beautifully)/(beautifully and quickly).*
    b. *Ma Li (kuaisu er jingmeide)/(*jingmei er kuaisude)   zhuangshi le yijian wuzi (*).*
      Ma Li (quickly and beautifully)/(*beautifully and quickly) decorated Asp one-Cl room
   'Ma Li decorated one room quickly and beautifully.'

The general distribution of adverbs in English and Chinese is represented in (28).

(28) a. Pseudo-conjunction pattern in English

b. Pseudo-conjunction in Chinese

The contrast is predicted by the account already presented. First, in the preverbal position,

kuaisu 'quickly' is supposed to be adjoined to the immediate projection of functional head

Asp in the pseudo-conjunction, but the resultative adverb *jingmeide* 'beautifully' undergoes a cyclic head movement from Res to Asp. The distribution of preverbal pseudo-conjuncts *quickly* and *beautifully* is actually in a Spec-Head relation, corresponding to the spell-out order as such. Second, for the sentence-final pseudo-conjunction in English, the resultative adverb *beautifully* is base-generated in the resultative head Res. The manner adverb q*uickly* (projecting into AdvP) is then left or right adjoined to the merged projection of Causee and Root. Thus a flexible sentence-final order is sketched in English, which does not exist in Chinese.

The contrast in these two languages is due to two parametric settings: head-movement (for resultative adverbs) and directionality of adjunction (for manner adverbs). The first factor enables multiple head movements in Chinese. In Chinese, we have resultative head in-situ (DE-phrasal resultatives), Res-to-v movement (Compounding resultatives) and Res-to-v-to-Asp movement (Preverbal Adv-resultatives). In English, either resultative head in-situ (sentence-final resultatives) or Res-to-Asp movement (Preverbal Adv-resultatives). The underlying difference is due to the internal structures of vP: two light verbs in Chinese, but one in English. This parameter determines the distribution of resultative adverbs across languages. The second parameter is why both left and right adjunctions of adverbs are licensed in English (as discussed in Bowers 1993 and Geuder 2002), but only the left adjunction is in Chinese.

3.1.3 Ellipsis of *and*-conjunction

The conjunction (*and* or *er*) sometimes can be omitted in the adverbial conjunction.

(29) Ellipsis in typical conjunctions
    a. *They quickly (**and**) beautifully decorated the room.*[37]
    b. *They decorated the room quickly (**and**) beautifully.*
    c. *Tamen kuaisu (**er**) jingmeide zhuangshi le zhe-jian wuzi.*
      they quickly conj beautiful-ly decorated Asp this-Cl room
      'They decorated the room quickly and beautifully.'

(30) Ellipsis in pseudo-conjunctions
    a. *They decorated the room quickly (**and**) beautifully.*
    b. *They quickly *(**and**) beautifully decorated the room.*
    c. *Tamen kuaisu *(**er**) jingmeide zhuangshi le zhejian wuzi.*
      they quickly conj. beautifully decorate Asp this-Cl room
      'They quickly decorated the room; as a result, the room became beautiful.'

In English, *and* can be omitted in both preverbal and sentence-final positions in typical conjunctions, as in (29a) and (29b), but it is ungrammatical in the pseudo-conjunction in (30b). In Chinese, *er*-ellipsis is acceptable in the typical conjunction, as in (29c), but not possible in the pseudo-conjunction, as in (30c). The ellipsis contrast is repeated in (31).

(31) The ellipsis contrast in English and Chinese

and-Ellipsis	Typical Conjunction	Pseudo-conjunction	
		Preverbal	Postverbal
English	Yes	No	Yes
Chinese	Yes	No	N/A

---

[37] The preverbal *and*-ellipsis is less acceptable than the sentence-final ellipsis.

Through the contrast, we can see the *er*/*and*-ellipsis is possible in the typical conjunction (in both English and Chinese), or in the postverbal pseudo-conjunction (as we have seen in English). I address the ellipsis possibility in term of ellipsis constraints, as in (32).

(32) *Ellipsis constraints*: The ellipsis of the conjunction *and* is allowed:

    (i) when multiple conjunct parts are in typical parallel conjunctions;
    (ii) when multiple conjunct parts are in non-preverbal pseudo-conjunctions.

I propose that the contrast reflects adjacency constraint at the syntax-phonology interface in the pseudo-conjunction. In preverbal conjunctions, the manner adverb (AdvP to be precise) derives in Spec-Asp in the pseudo-conjunction; the resultative adverb is base-generated in the head Res, undergoing cyclic head movement to the functional head Asp. The conjunction words *er*/*and* are a mandatory rescue for the adjacency linearization, as observed in pseudo-conjunctions in English and Chinese.

However, in postverbal conjunction structures, the manner adverb (AdvP to be precise) is derived in Spec-Root, and the resultative adverb is base-generated in the resultative head Res. The pseudo-conjunction words *er*/*and* merge with the intermediate projection of Root. The mismatched manner and resultative categories are not adjacent, licensing an optional conjunction *er*/*and* in pseudo-conjunctions. The adjacency constraint of asymmetry conjunction gives rise to the prosodic *and*-ellipsis (and *er*-ellipsis) in preverbal pseudo-conjunctions, but not in postverbal ones.

3.2 Reduplicative constraints in adverb conjunction

In this section, let us look at a special case in adverb conjunction, in which a reduplicative adverb is used. I will identify phonological constraints to the reduplicative adverb in conjunction. The interface explanation supports my syntactic treatment of adverb conjunction.

In (33a), the reduplicated resultative adverb takes place in the preverbal position. In (33b), no conjunction is allowed between *kuaisu* 'quickly' and the reduplicative resultative adverb *crisp* in Chinese, although the pseudo conjunction is possible if the result adverb is a non-reduplicated one (33c).

(33) a. *Ma Li cuicuide zha le   yi   pan huashengmi.*
     Ma Li crisp   fry Asp one plate peanut
     'Ma Li fried a plate of peanuts, and as result the peanuts became crisp.'
  b. **Ma Li kuaisu er   cuicuide zha le   yi   pan   huashengmi.*
     Ma Li quickly conj. crisp   fry ASP one   plate peanut
     Intentional: 'Ma Li quickly fried one plate of peanuts, and as the result the peanuts
     became crisp.'
  c. *Tamen kuaisu *(er)   jingmeide zhuangshi le   zhejian wuzi.*
     they   quickly conj. beautifully decorate Asp this-Cl room
     Intentional: 'They quickly decorated the room; as a result, the room became
     beautiful.'

In this section, I will provide the supplementary interface analysis, explaining the conjunction ellipsis is also associated with the phonological constraints of reduplicated adverbs, as a post-syntactic operation. The reduplicative form consists of a base and a reduplicant, with full or partial copy of the base. The *cuicuide* 'crisp'-type adverbs in

Chinese are formed as full reduplication, in which the base and the reduplicant share the same form. Duanmu (2005) claims that Mandarin Chinese has two types of syllables: full syllables and weak syllables. Full syllables are usually content words in Chinese, and they are long with tones. Weak syllables are usually function words, which are short and have no tones (i.e. light tone). According to Duanmu (2005), in *crisp*-type adverbs, the bases are full syllables and heavy with two morae, whereas the reduplicants are weak syllables and light with one mora. The extra appendix *-de* is added to the reduplicative form, which is also a weak syllable without tones. The structure of copy reduplication is represented as two syllable trochees, with a canonical stress on the leftmost syllable. The matrix of copy reduplication like *crisp*-type adverbs is illustrated:

(34) a. [[H]L<L>]_{Reduplication} (<L> standing for the extrametrical syllable, represented by "-de")

    b.   W
          ⟋⌢

        F   App

      σ   σ σ

     μ μ μ μ

     | | | |

     cu i cui de
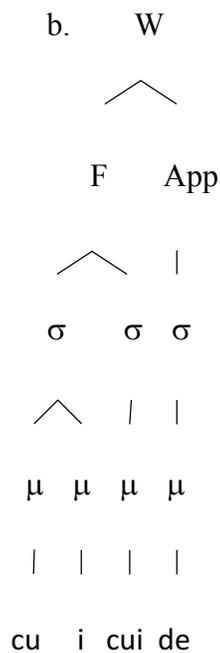
It now appears that the non-licensing conjunction between *crisp*-type adverbs and manner adverbs (like *quickly*) is caused by the violation of phonological constraints after head movement. This is the conjunction hypothesis in (35).

(35) *Hypothesis*: The conjunction is phonologically licensed only when the weights of the peak composition of multiple conjuncts are balanced.

The peak of the object-oriented resultative adverb *crisp* is a trimoraic structure, and the peak of the manner adverb quickly is a word with four morae. The weight of the peak composition is unbalanced when considering the two conjunct forms together. However, if the manner adverb and the resultative adverb share the same moraic structure, the pseudo conjunction is allowed, as we can see for the manner *kuaisude* 'quickly' and the resultative *jingmeide* 'beautifully'. This hypothesis is supported by the assumption that the peak composition and the linear prominence relations of syllables are more constrained than the overall syllable or mora count of the word (Minkova 2002), as in (36).

(36) a. *cuicui* in [*kuaisu er cuicui*]$_{Conjunction}$< *kuaisu* in [*kuaisu er cuicui*]$_{conjunction}$
"crispy in [quickly and crispy]$_{Conjunction}$<[quickly and crispy]$_{Conjunction}$"
b. *jingmei* in [*kuaisu er jingmei*]$_{Conjunction}$= *kuaisu* in [*kuaisu er jingmei*]$_{conjunction}$
"beautifully in [quickly and beautifully]$_{Conjunction}$=[quickly and beautifully]$_{Conjunction}$"

In short, special limitations on conjoined manner and resultative adverbs are also due to the phonological output filter. An unsatisfied mora filter causes a clash in the conjunction between reduplicative adverbs and manner modifiers. The phonetic and phonological output constraints support my syntactic analysis of adverb conjunction.

4. Comparison with other approaches

In this section, I will compare my v-splitting analysis of resultative adverbs with other approaches. I consider analyses which explain preverbal resultant adverbs as attributive modifiers (Lu 1986), adverbial constituents (Lu 2003; Zhang 2005), and the resultative predicates (Xiong 2013). Through the comparison, we can see the v-splitting approach not only better explains the motivation of head raising, but also works better for the complex adverb conjunction structure.

Lu (1986) argues that a resultative adverb is originally the attributive modifier of the object, undergoing a raising operation to the preverbal position. However, Lu (2003) and Zhang (2005) analyse the adverb as adverbial rather than attributive, since adverbial constituents carry different semantic properties from attributive modifiers, such as a transient-permanent distinction and a volitional-involitional distinction.

(37) a. *Ta heiheide ran le   toufa.*
        he black   dye Asp hair
        'He dyed his hair, and as a result his hair became black.'
     b. *Ta ran le   heiheide toufa.*
        he dye Asp black   hair
        'He dyed his black hair, and the color of his hair became unknown.'   (Lu 2003: 103)

In (37a), the adverb *heiheide* 'black' denotes the transient property of the hair as a result of dyeing his hair. The transient property *heiheide* is the result of the dyeing event, not an intrinsic property of the hair. However, in (37b), the adverb *heiheide* 'black' describes the

intrinsic and permanent property of hair is black; it is unknown of the dyeing color of his hair. The transient and permanent semantic contrast is analysed for the adverb in different patterns.

However, the phenomena are more complex. More semantic distinctions between attributive and adverbial constituents are observed in (38). In (38a), the preverbal adverb *shenshende* 'deep' describes the volitional change of state as a result of the digging event. That is, the agent digs the hole in order to make it becomes deep. However, in (38b), the state *shenshende* 'deep' is an unvolitional description of the hole. The attributive adjective *deep* functions as a modifier of the hole.

(38) a. *Haizi zai shatan shang shenshende wa le   yi   ge dong.*
         child   beach on   deep   dig Asp one Cl hole
         'The children dug a hole, and as a result the hole was deep.'
    b. *Haizai zai shatan shang wa le   yi   ge shenshende dong.*
         child   beach on   dig Asp one CL deep   hole
         'The children dug a deep hole on the beach.'   (Zhang 2005: 21-25)

Based on these semantic distinctions between attributive adjectives and adverbial adverbs, Xiong (2013) analyses the preverbal resultant adverb as a predicate of PRO. The clause (formed by PRO+resultative adverb) functions as the initial complement of the postverbal argument. The resultant adverb enters the derivation as a predicate of an empty PRO controlled by the object argument. The resultant adverb moves out of the VP shell, triggered by extra focus information. The activity verb also undergoes multiple head movement in VP shell structures, ending up with the surface preverbal adverb. Xiong's derivation of (39a) is presented in (39b).

(39) a. *Ma Li yanyande qi   le yi wan cha.*
        Ma Li strong   make Asp one bowl tea
        'Ma Li made a cup of tea, and as a result the tea is very strong.'
    b. [$_{FocP}$ [Ma Li]$_j$ [Pro$_i$ yanyande] Foc [$_{CausP}$ [Ma Li]$_j$ Caus [$_{BecP}$ [yi wan cha$_i$] Bec [$_{VP}$
        Pro$_i$ yanyande] V qi]]]]   (Xiong 2013)

Xiong (2013) analyses the resultant adverb as the predicate of PRO, which is c-commanded

by the object in the control theory. The combination projection functions as the specifier of

the activity verb phrase. The activity verb cyclically moves: V-to-Bec-to-Caus.

Compare my v-splitting analysis with Xiong's (2013) analysis, both approaches follow the

similar head raising line. However, two main differences are observed. First, Xiong's (2013)

focalized motivation does not match the interpretation in these sentences, since we cannot

get an obvious focal reading in this structure. In my proposal, the feature-driven motivation

along with the phonological and morphological filters at least provided predictable head

raising, finally as in the surface order. Second, Xiong's analysis just focuses on the adverb

pattern, and does not extend to other structures. In my analysis, the preverbal adverb

functions as the resultant predicate, undergoing head movement to the lower light verb v,

and cyclically to Asp out of v*P. The splitting analysis not only provides a unified model

for adverb resultatives, compounding resultatives and DE-resultatives, but works better to

explore the conjunction relationship of multiple adverbs, as none of the literature has

accounted for.

5. Summary

In this chapter, I have discussed the v-splitting analysis on adverb resultatives. The resultative adverb is analysed as the resultant predicate; whereas the manner adverb is accounted for as the modification of predicate, occupying the specifier of immediate projection. In Chinese, multiple adjacent light verbs are supposed in the v-splitting model, and successive cyclic head movement Res-to-v-Asp is hypothesized. The motivation is provided by feature checking and feature inheritance. I also compare Chinese and English adverb resultatives, proposing that English carries the mono-layer light verb structure and Chinese carries the splitting light verbs. In addition, I have specified the adverb conjunction. Ambiguous readings are observed, which can be classified into typical conjunction and pseudo conjunction. In the typical conjunction, double adverbs are derived in the specifier position of Asp, as a combined conjunct form. In the pseudo-conjunction, the resultant predicate is originally generated as the resultant predicate, moving to the lower light verb v, and cyclically to the v*P-external Asp. The adjacent surface order is realized by the morphologically realization of *er/and*. Thus, we can see the pseudo-conjunction interpretation.

Chapter 5

Cross-linguistic study on Resultative Patterns

This chapter broadens the empirical base to investigate resultative patterns in another two languages. One is in Shanghai dialect, one of the southern dialects spoken in Shanghai city in China; the other is in Innu-aimûn, an Algonquian language spoken in northeastern Canada. I have selected an analytical language (Shanghai dialect, which is similar to Mandarin Chinese) and polysynthetic language (Innu-aimûn, which is totally different from Mandarin Chinese), in order to further investigate the underlying syntactic representation of resultatives across languages.

1. Serial Verb Resultatives in Shanghai Dialect

In Shanghai dialect, three types of resultative patterns are observed. The first type is marked by markers *lai* (来) or *le* (勒), or occasionally by the marker *de* (得) in (1a) (Basciano 2017). This is similar to the DE-resultative pattern in Mandarin Chinese. The second type is V1-V2-Obj, which is the same as the Mandarin compounding resultatives in (1b). The third type employs serial verbs, with an intervening Causee object (Huang 1996; Williams 2008). The serial verb resultative pattern contains an activity verb, then an object, followed by a predicate, which signifies a change of state, as a result of the action denoted by the activity event in (1c).

(1) a. *Ta so-le   Yefan   xieqi   hao.*
  He cook-LAI dinner terribly good
  'He cooked the dinner well.'
 b. *Chang ma yi   cho.*
  load   full one car
  'load a car full'   (adapted from Basciano 2017)
 c. *ngu so   yi su.*
  I   cook it crisp
  'I cook it crisp.'   (Huang 1996)

The Shanghai pattern in (1a) is similar to the DE-resultative pattern in Mandarin Chinese. The activity verb is followed by a particle-like marker *le/lai/de*. The Shanghai pattern in (1b) is similar to the compounding resultative pattern in Mandarin Chinese, in which the activity verb is immediately followed by the resultative predicate. Shanghai patterns in (1a) and (1b) share a similar underlying representation with Mandarin DE and compounding resultatives: both derive from a v-splitting structure, as I have discussed in chapter 3.

However, the serial verb pattern in (1c) exists in Shanghai dialect, but it is impossible in Mandarin Chinese. Among the three types in Shanghai dialect, the serial verb resultative pattern is regarded as the old-fashioned one, and it is not widely used nowadays in Shanghai dialect. In this chapter, I will focus on the serial verb resultative pattern in Shanghai dialect, represented as 'Sub+V1+Obj+V2'. I show that serial verb resultatives in Shanghai dialect bear a different underlying representation from resultatives in Mandarin Chinese (Compounding, De-resultatives and Adverb resultatives). The serial verb resultatives in Shanghai dialect derive from a mono-layer vP structure, and the linearization results from the absence of 'Res-to-v' head movement in the serial verb resultative pattern.

1.1 Distinctions in syntactic behaviors

In this section, I will compare the serial verb pattern in Shanghai dialect and the compounding pattern in Mandarin Chinese. Both patterns consist of an activity verb and a resultative predicate, but differ in the position of the postverbal argument (between V1-V2 in Mandarin, before V1-V2 sequence in Shanghai dialect). The order V-Res-DP$_{CAUSEE}$ is observed in compounding resultatives, and V-DP$_{CAUSEE}$-Res in serial verb resultatives. Through the comparison across dialects, we learn more about the structural properties before analysing the underlying derivation.

Four distinct syntactic behaviors are observed between these two constructions: occurrence of aspectual 'LE', the syllabic structure of the postverbal argument, argument sharing between the two predicates, and a specificity restriction for the postverbal argument. I show that these differences are explained by the analysis proposed here.

First, Chinese has a rich aspectual representation, and LE is one perfective aspectual marker, used to indicate the completion of an action (Lin 2004). The perfective aspectual marker LE may co-occur with either atelic or telic verbs, denoting the boundaries of an event (Lin 2004).

In (2a), the aspectual LE indicates the inception point of the event denoted by the atelic state predicate *bing* 'sick'. In (2b), the aspectual marker LE co-occurs with the compounding resultative pattern. The compounding verb *xie-wan* 'write-complete'

functions as a resultative predicate, and LE is added to supplement the completion of the event (Lin 2004). However, the completive usage of aspectual LE is not possible in Shanghai serial verb resultatives in (2c).

(2) a. *Ta bing le.*
    he sick ASP
    'He's sick. (He has become sick.)'
  b. *Wo xie-wan   le   yi feng xin.*
    I   write-complete ASP one Cl   letter
    'I completed a letter.' [I am no longer writing]   (Lin 2004)
  c. *Ngu so (*le) yi su (*le).*
    I   cook   it crisp
    'I cook it crisp.'   (based on Huang 1996)

Second, as far as the object is concerned, the object in the serial verb pattern in Shanghai dialect is usually confined to pronouns. Cheng & Yang (2016) further argue that the object in Shanghai serial verb resultatives must be a mono-syllabic item. For an object other than pronouns, it is usually topicalized. It is then placed before the subject of the sentence, represented as: Obj+Sub+V1+V2. The internal structure of the postverbal argument shows distinctions between the serial verb pattern and the compounding pattern. A phrasal constituent appears in compounding resultatives (unless a topicalized or focalized phrase is mentioned in the sentence-initial position), as we can see in (3a-3b). However, a monosyllabic pronoun is necessary in serial verb resultatives, without any overt topicalized or focalized phrase in the sentence-initial position, as we can note in (3c-3e). The asymmetric syntactic constituents (phrasal or pronoun) in the object also supports that the postverbal argument is less productive and more context-dependent in serial verb resultatives.

(3) a. *Tamen zha hu   le yi pan huashengmi.*
    they   fry overcook Asp one plate peanut
    'They fried a plate of peanuts, and made the peanuts overcooked.'
  b. *(Zhe zhi niao,) Tamen da si   le ta.*
    this Cl bird   they   hit dead Asp it
    Literal: 'As for this bird, they hit it, and made it dead.'
  c. *Ngu so   yi su.*
    I   cook it crisp
    'I cook it crisp.'
  d. *Ngu so   yi pan husemi su.*
    I   cook one plate peanut crisp
  e. *Husemi, Ngu so yi su.*
    peanut   I   fry it crisp

The exclusively pronominal-usage requires that serial verb resultatives must be highly context-dependent, and the antecedent of the pronoun is supposed to be known by language participants. The pronoun object in serial verb resultatives is normally the S-selected argument of the activity verb, carrying a specific and definite reading in the object. As we can see in (4), the pronoun *yi* 'it' is understood as the patient argument, which undergoes a frying event, and becomes *su* 'crisp' as a result. It is not possible for *yi* 'one' to be interpreted as an instrument argument.

(4) *Ngu so yi su.*
   I   fry it crisp
   'I fried it crisp.'
  (*yi*=peanut; *yi*=pan)

Third, argument sharing between the activity verb and the resultative predicate is optional in compounding resultatives, but obligatory in serial verb resultatives. This property is consistent with the pronoun-usage of serial verb resultatives in Shanghai dialect. In compounding resultatives, the argument structure between these two predicates and the

postverb argument is complex, since the postverbal argument is not necessarily the S-selected complement of the activity verb. The postverbal argument in (5a) is the common argument shared by the activity verb and the resultative predicate. In (5b), however, the postverbal argument is the argument of the resultative predicate, since the activity verb *ku* 'cry' is an ergative verb, without any s-selected complement. In the serial verb pattern, only the pronoun 'it' can be used in the postverbal argument, and the argument is always shared by two predicates. This is seen by the contrast in (5c) and (5d). The argument sharing contrast indicates the structural relation between the postverbal argument and the activity verb is more flexible in the compounding pattern, but less productive in the serial verb pattern.

(5) a. *Tamen zha hu   le yi   pan huashengmi.*
        they   fry overcook Asp one plate peanut
      'They fried a plate of peanuts, and made the peanuts overcooked.'
    b. *Ta ku shi le   shoupa.*
        he cry wet Asp handkerchief
      'They cried the handkerchief wet.'   (Cheng and Huang 1994)
    c. *Ngu so   yi su.*
        I   cook it crisp
      'I cook it crisp.'   (Huang 1996)
    d. **Ngu so   pingdiguo hu.*
        I   cook pan   burnt

Fourth, the pronominal contrast in postverbal arguments above entails specificity difference between these two patterns in (6). In compounding resultatives, either specific or unspecific postverbal arguments are allowed, while only the specific reading is possible in serial verb resultatives. It is not surprising that the pronoun usage is expected to denote specific interpretation. As I have explained, in chapter 3, the specificity asymmetry is

created by the labeling algorithm, corresponding to two different landing sites of Causee in two patterns.

(6) a. *Ma Li zha hu   le yi/na   pan huashengmi.*
      Ma Li fry overcooked   ASP one/that plate peanut
      'Ma Li fried a plate of peanuts, and the peanuts became overcooked.'
  b. *Ngu so   yi/(*yi pan huashengmi) su.*
     I   cook it/one plate peanut   crisp
     'I cook it crisp.'

The differences are identified between Mandarin compounding and Shanghai serial verb resultatives in (7), which present an overview of these two resultative patterns in Chinese dialects.

(7) Structural Properties in Two Resultative Patterns

Distinctions	Compounding Resultatives	Serial Verb Resultatives
Aspect '*le*'	Co-occurrence	No co-occurrence
Internal structure of object	Phrasal and polysyllabic	Monosyllabic pronoun
Argument sharing of object	May or may not share between V & R	Must share between V & R
Specificity restriction of object	Specific/non-specific	Specific

The serial verb resultative pattern in Shanghai dialect suggests a new perspective on the diachronic development of modern Chinese from existing literature. The serial verb pattern in Shanghai dialect is similar to the serial order in middle Chinese, which is represented by V+X+Res. In middle Chinese, the resultative structure consists of an activity verb and a resultant predicate. These two verbs are separated by the patient of the activity verb or the modifier of the resultant predicate, and this pattern is called "the separable resultative structure" (Shi 2002: 48).

(8) a. *Huan jianglang jue.*
    Call Jiang-lang awake
    'Call Jiang-lang awake!'
  b. *Fen   rou-shi   shen jun.*
    distribute meat-food very even
    'He distributed meat and food very evenly.'   (Shi 2002)

Shi (2002) argues that from the separate resultative pattern in middle Chinese to the compounding resultative pattern in Modern Chinese, a fusion process occurs between the activity verb and the resultant predicate, which corresponds to the disyllabification tendency within the phonological development of Chinese.

In contrast, I maintain that the activity verb and the resultant predicate in both patterns are underlying separate. I propose that from the serial verb pattern to the compounding pattern, the light verb system must have changed from a mono-layer light verb into multiple layers, i.e. a v-splitting hypothesis. In the serial verb pattern, the resultant predicate is analysed as the head Res, projecting into a phrasal ResP. The features on the light verb in the mono-

layer structure correspond to the sum of features upon multiple split light verbs. The verbal-relevant features upon the single light verb are therefore stronger than those in one layer of split light verbs in the v-splitting structure.

The absence of the v-splitting structure in serial verb resultatives means that the aspectual *le* also cannot be used in serial verb resultatives. In serial verb resultatives, the mono-layer light verb is strong enough, and it does not need to add an extra verbal affix-like *le* to express the accomplishment of the action. However, in compounding resultatives, the light verb does split into multiple layers; *le* enters the derivation in the lower light verb. The lower light verb (as one layer of the split light verbs) is not as strong as the single light verb; the verbal affix-like *le* triggers the resultant predicate Res to move to the lower light verb, forming the *Res+le* cluster. The landing site of the resultant predicate Res and the aspectual *le* (i.e. the *Res+le* complex) work together to indicate the accomplishment (and the change of state) of an action.

Historically, then, the light verb system changes from a simple structure to a complex structure: mono-layered in serial verb resultatives and multiple layers in compounding resultatives. Accordingly, different syntactic effects of the light verb are observed, including *le*-occurrence, head movement, and others.

1.2 Labeling derivation

1.2.1 Analysis in detail

After describing the main syntactic properties in serial verb resultatives, I now analyse the derivational process for example (9a). The resultative predicate is again analyzed as Res, projecting into a phrasal constituent. In the configuration {DP, Root}, there are no shared features between these two sister phrases, so one of them has to move out, leaving the head of the remaining category as the label. The categoryless weak Root enters the derivation. As before, since Root is a weak non-phasal head, it cannot be a label by itself. It gets strengthened by triggering DP from the sister to the Root to the specifier of Root. For the phasal head v*, it originally carries [CAT] features, SPEC-features, φ-features, and [uASP] features. The [CAT] feature in v* can trigger Root to merge with v*, creating a verbal category for Root. The [uASP] in the light verb is checked and valued by the interpretable [ASP] in the Asp, a functional head outside the v*P.[38] Root inherits SPEC-features and φ-features from the phasal head v*. The shifted DP and Root share φ-features and SPEC-features, so the label are such. The shared <SPEC,SPEC> feature pair ensures a specific reading in the object DP, as in the postverbal argument *yi* 'it'. The subject *ngu* 'I' enters the derivation in the specifier of v*. In the configuration {Spec, v*}, the phasal head v* becomes the label of the configuration, when the subject later raises up. The derivation process is presented in (9b).

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[38] In the pattern, the resultative head Res contains the interpretable [ASP] feature, as one of the free variation (discussed in compounding and DE-resultatives), so it does not undergo head raising and stays in-situ.

(9) a. *Ngu so   yi   su.*
      I   cook it   crisp
      'I cook it crisp.'   (Huang 1996)
      b.
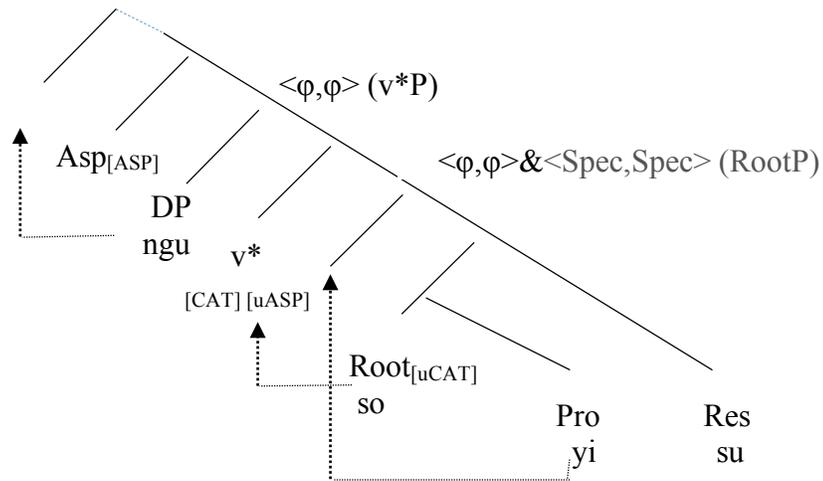
The pronominal status of the causee is not a consequence of the derivation described up to

this point. Instead, it can be related to a specific morphological property of resultative v in

Shanghai dialect.

For the limited category of the postverbal argument, I propose that a morphological merger

(M-merger) operation must apply in this serial verb pattern (Marantz 1984). A M-merger

operation occurs between the light verb and its object, to produce a strong and fixed

combination. That is, the morphological merger applies between the shifted object and the

'v*+Root' complex, resulting in a 'v*+Root+DP' complex. The m-merger operation

requires a monosyllabic object, and the monosyllabic pronoun is used as the only causee

argument in Shanghai dialect.

(10) M-merger in Shanghai dialect
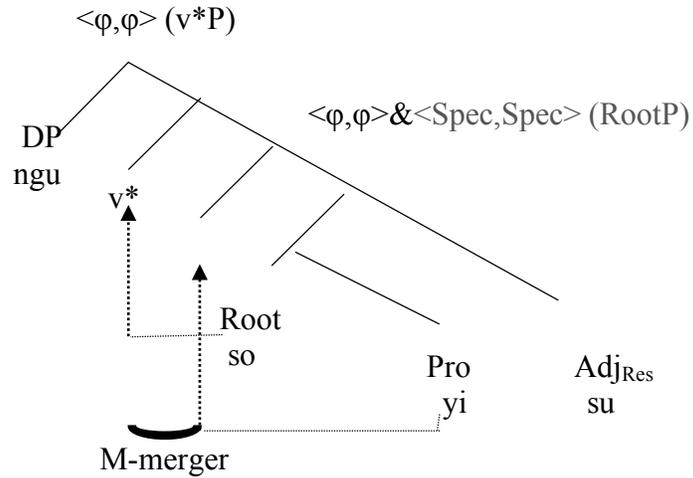
The idea of a m-merger operation between the landing site of the verb root and its object is also supported by the prosody. In the serial verb resultative pattern 'Sub+V1+Obj+V2', the sentence is generally divided into three prosodic/semantic groups: [Sub], [V1+Obj], [V2]. The words within the same semantic group are generally regarded as a more semantically-close combination, so it may be pronounced with shorter pause. The phonetic spectrum of (11a) is presented in (11b). It roughly shows that the phonetic duration between the ending of the activity verb root and the initial of the object tend to be shorter than the separated sounds. If this hypothesis is correct, the short duration and pause between the activity verb root and the postverbal pronoun provides supporting evidence to the m-merger operation between these two items. More phonetic evidence on the m-merger hypothesis needs to be examined in future research, since the prosodic features are far more complicated and may vary by multiple factors (e.g. phonological context, even age/gender of speakers, or many others).

(11) a. *Ngu so yi su.*
     /ŋu sɔ ɦi su/
      I   fry it crisp
   'I fried it, and as a result it became crisp.'
   b. Phonetic spectrum[39]

/ŋu/   /sɔ/   /ɦi/   /su/   /a/

Ngu so yi su.
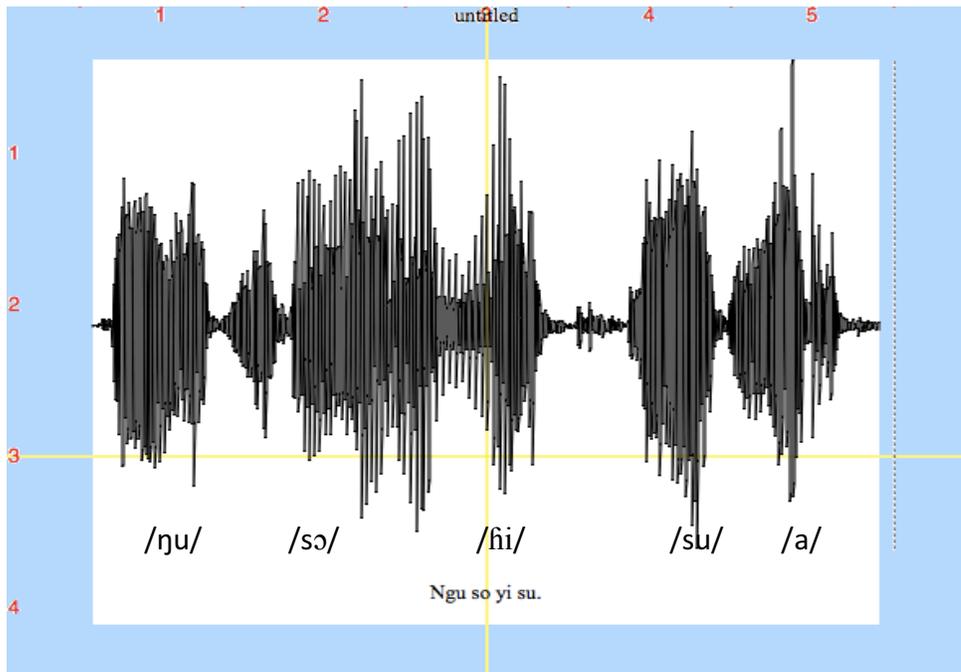
1.2.2 Cross-linguistic evidence on morphological merger

The idea that a particular morphological operation takes place in Shanghai is supported by

comparable phenomena in a very different context in French and Fijian. The morphological

merger is observed in yes-no questions and *wh*-questions in French. In addition,

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[39] According to the phonetic spectrum, we can see the native speaker tend to add /a/-sound to the sentence-final position, which is an optional intonation marker in Shanghai dialect.

morphological merger is also tested for pronouns/proper names with the verb in Fijian (Urk 2019).

Starting from French, we can see the basic sentence structure in the SVO order in (12), when the object is not a necessarily pronoun. In the declarative sentence, either the pronoun subject or the nominal subject occupy the same position.

(12) declarative sentences

  a. *Paul a   vendu son camion.*
     Paul has sold   his truck
     'Paul has sold his truck.'
  b. *Il a   vendu son camion.*
     he has sold his truck
     'He has sold his truck.'
  c. *Vous avez vendu son camion.*
     you have sold   his truck
     'You have sold his truck.'   (Kayne 1972)

French has T-to-C head movement in yes-no sentences (Den Besten 1983). As we can see in (13a) and (13b), the auxiliary undergoes T-to-C head movement, in which pronouns are used. However, through the contrast in (13c) and (13d) with a third person proper name subject, we can see that the auxiliary also undergoes T-to-C head movement, but both the proper name and an extra co-indexed pronoun must be used in this context. Two complications are observed in yes-no sentences. First, within the pronoun context, *-t-* is added between the inverted auxiliary and the third person subject. For instance, in (13b), *-t-* is inserted between the auxiliary *a* 'has' and the vowel-initial third person pronoun subject *il* 'he', but it is impossible in the second person pronoun in (13a). Second, within

the non-pronoun context (i.e. the subject is the third person proper name *Paul*), -*t*- is used

between the inversed auxiliary *a* 'has' and the pronoun *il* 'he' in (13d). However, -*t*-

insertion is not permitted, if the subject is not the third person proper name in (13a).


(13) Yes-No questions

  a. *Avez-vous vendu son camion?*
    have-you sold his truck
   'Have you sold his truck?'
  b. *A-t-il vendu son camion?*
    has-??-he sold his truck
   'Has he sold his truck?'
  c.*A-Paul vendu son camion?*
    Has-Paul sold his truck
   'Has Paul sold his truck?'
  d. *Paul a-t-il vendu son camion?*
    Paul has-??-he sold his truck
   'Has Paul sold his truck?'   (Kayne 1972)

I suppose that a morphological merger operation occurs between C and the specifier of T

after T-to-C movement. The -*t*- insertion is a morphological effect of the m-merger. The

m-merger operation only occurs when the subject is the third person, and this then forces it

to be pronominal. The derivation is presented in (14).

(14) M-merger in yes-no questions
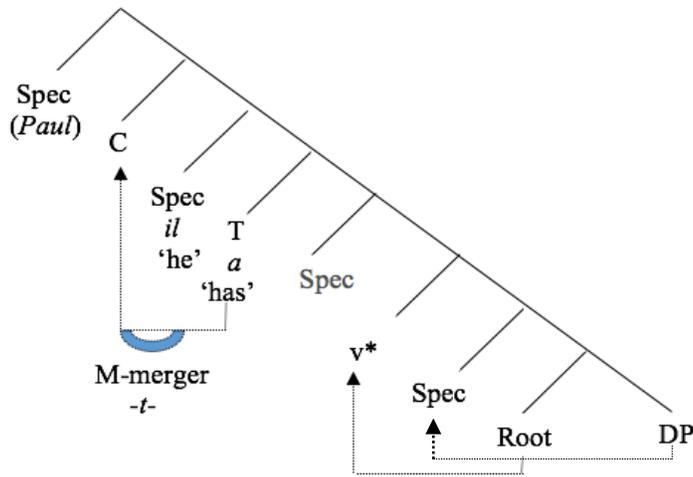
In addition to yes-no questions, a similar -t- insertion is observed in *wh*-questions in French. When the subject is the third person pronoun in (15b), -t- is added between the raised auxiliary *a* 'has' and the pronoun *il* 'he'. The same -t- insertion is also found, if the subject is the third person proper name, as in (15d). -t- is inserted between *a* 'has' and *il* 'he', with a proper name *Paul* immediately precedes the inversed auxiliary.

(15) *Wh*-questions

  a. *Quand avez-vous vendu son camion?*
    when have-you sold   his truck
    'When did you sell his truck?'
  b. *Quand a-t-il   vendu son camion?*
    when has-??-he sold   his truck
    'When did he sell his truck?'
  c.**Quand a-Paul vendu son camion?*
    when has-Paul sold   his truck
  d. *Quand Paul a-t-il   vendu son camion?*
    when Paul has-??-he sold his truck
    'When did Paul sell his truck?'   (Kayne 1972)

In *wh*-questions, I suppose m-merger also occurs. Head movement T-to-C occurs and the *wh*-expression occupies the specifier of C. M-merger is supposed between C and the specifier of T. The *-t-* insertion is again the morphological realization of m-merger. The *wh*-expression occupies the specifier of C in (15b); the *wh*-expression and the third person proper name respectively occupy multiple specifiers of C in (15d). The m-merger operation in French *wh*-questions is provided in (16).

(16)
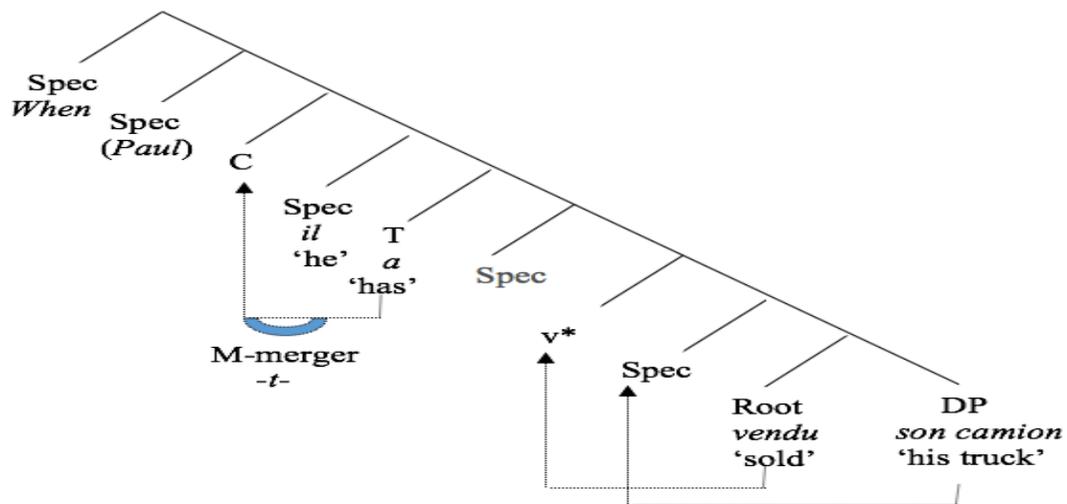
M-merger in French provides cross-linguistic evidence on the m-merger hypothesis, as I have proposed in Shanghai serial verb resultatives.

Next, let us see more cross-linguistic evidence about morphological merger in Fijian (Urk 2019). In Fijian, pronoun/proper name objects fall into the verb-adjacent order, and the articles are not allowed in between. Urk (2019) claims that morphological merger occurs between pronoun/proper name objects and the verb at PF. The details are presented as follows.

(17) Two types of objects in Fijian:
  a. *e   a   [vp kau-ti   au/Jone mail] ko   Eroni.*
    3SG PST   bring-TR.PR 1SG/Jone DIR ART.PR Eroni
    'Eroni brought me/Jone.'
  b. *e   a   [vp kau-ta   ___ mail] na   ilokoloko ko   Eroni.*
    3SG PST bring-TR.N   DIR ART.N pillow   ART.PR Eroni
    'Eroni brought the pillow(s).'   (Urk 2019)

In Fijian, differential object marking is observed in (17). As for pronoun and proper name objects, they must occur right adjacent to the verb, and their article *ko/o* cannot remain in between (17a). However, for common name objects, they locate outside the VP, and the article *na* is used for the common name object *ilokoloko* 'pillow' (17b).

Urk (2019) argues that adjacency surface of Fijian pronouns and proper name objects (17a) results from morphological merger with a verb at PF. Morphological merger is realized through Embick and Noyer's Local Dislocation, as in (18a). The local dislocation is kind of rebracketing. After dislocation, pronouns/proper names become part of the verbal projection. Morphological merger of (17a) is represented in (18b).

(18) a. Local Dislocation of pronoun/proper name object:
   [$_{vP}$ V+v [Jone]] → [$_{vP}$ V+v+Jone [~~Jone~~]]
   b.
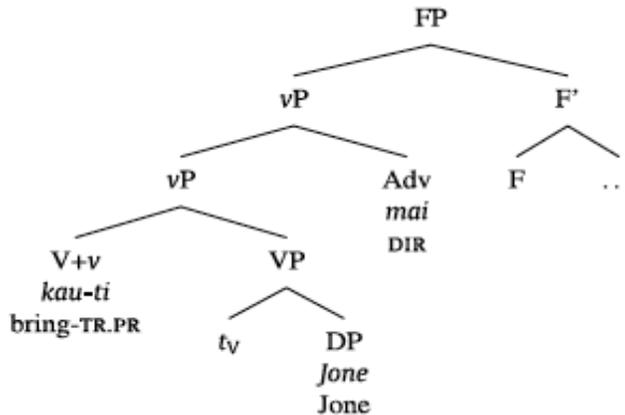
(Urk 2019)

The assumption of morphological merger is based on the observation that pronouns/proper

names can be analysed as objects of a higher verb across a clause boundary (Urk 2019).

Let us see the example (19) of object marking in embedded clauses.

(19) a. *au   kila-i   [$_{CP}$(*ko) cei   e   a   rai-ca   na   cava].*
      1SG know-TR.PR   ART.PR who 3SG PST see-TR.N ART.N what
      'I know who saw what.'
   b. *au   kila-i   [$_{CP}$ (*ko) Eroni e   na   sure-ti   Jone].*
      1SG know-TR.PR   ART.PR Eroni 3SG FUT invite-TR.PR Jone
      'I know Eroni will invite Jone.'

In (19a), we can see the embedded *wh*-cleft with the *wh*-pronoun *cei* 'who', in which the

article *ko* is omitted and the -C*i* suffix is attached to the higher verb. In (19b), similar object

marking is found for proper names in the embedded clause.

Urk's (2019) core argument is reminiscent of long-distance agreement outside a finite CP

in Innu-aimûn (Branigan and MacKenzie 2002) or raising-to-object across clause boundary

(Deal 2016; Zyman 2018). However, Urk argues that pronouns/proper names in the embedded clauses in Fijian do not undergo any object agreement or shifting, but can be only analysed as the object of the higher verb, when there are not any blocking constituents in between.

To summarise, extra supporting empirical evidence for M-merger is introduced in Fijian. The core idea of morphological merger in Fijian (Urk 2019) is similar to what I have assumed in Shanghai serial verb resultatives, in which the postverbal pronoun undergoes M-merger with the root at PF.

1.3 Explanation on syntactic distinctions

After analysing the syntactic derivation, now it becomes possible to examine the distinctions between Shanghai serial verb resultatives and Mandarin compounding resultatives.

First, let us recall the derivational model of Mandarin compounding resultatives in (20). In the v-splitting case with a non-selected object in (20b), the postverbal argument originates in the sister node of the Res in the unselected pattern, later moving to the specifier of the Root. However, the postverbal argument enters the derivation as the sister to the Root in the selected pattern in (20a), and later moves to the specifier of the Root. Cyclic head movement Res-to-v-Asp is necessary in compounding resultatives in (21a) and (21b).

(20) a. *Ma Li zha hu   le   yi/na   pan huashengmi.* (selected)
     Ma Li fry   overcooked   ASP one/that plate peanut
   'Ma Li fried a plate of peanuts, and the peanuts became overcooked.'
   b. *Ma Li zha hu   le   yi/na   ge pingdiguo.* (unselected)
   Ma Li fry   overcooked   ASP one/that CL pan
     'Ma Li fried something, and the pan became overcooked.'

(21) a. the selected pattern
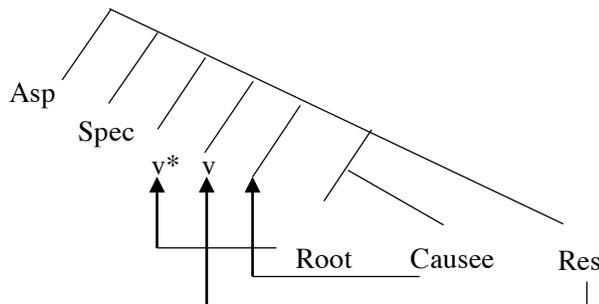
   b. the unselected pattern
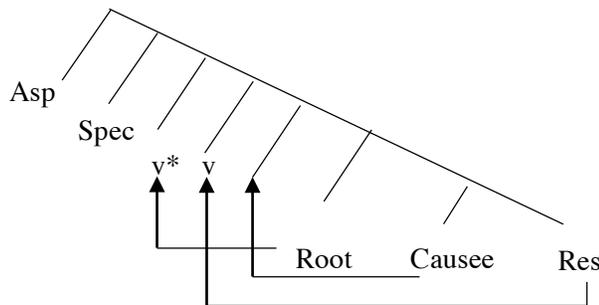
Unlike Mandarin resultatives, a one-layer light verb structure is sufficient in Shanghai serial verb resultatives. In the Shanghai serial verb pattern, the postverbal argument (i.e. the pronoun) is the selected object by the activity verb, due to the M-merger operation. The resultative adjective enters the derivation as a predicate, without undergoing head raising operation. The postverbal argument moves out of the configuration {DP, Root} to the

specifier of Root, since no shared features are available between the DP and the Root. The categoryless weak Root enters the derivation, and no labels can be made by itself. In serial verb resultatives, I proposed two alternative proposals which ensure similar specific readings in the postverbal argument. If the Root inherit SPEC-features from the light verb v*, then the Root and the shifted DP will share <SPEC,SPEC> features, and make the SPEC-feature pair the label. Alternatively, the M-merger operation ensures that the postverbal argument is restricted to an exclusively closed category (i.e. pronouns) with a specific reading.

(22) a. *Ngu so   yi su.*
      I   cook it crisp
      'I cook it crisp.'   (Huang 1996)
    b.
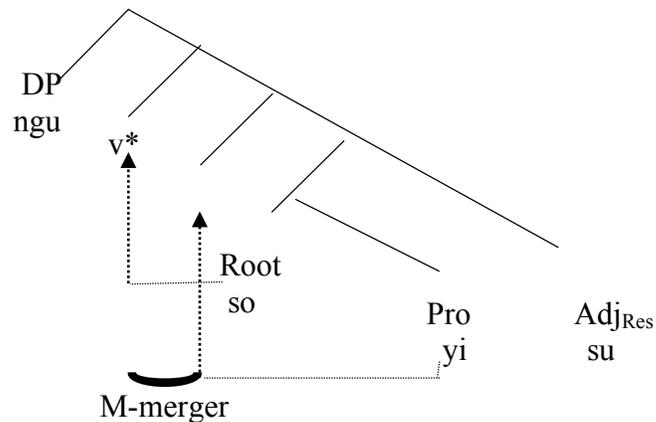
Given four syntactic differences between compounding and serial verb resultatives, I will explain the distinction one by one in the following section.

First, occurrence of the aspectual marker LE in compounding resultatives supports the Res-to-v head movement in this pattern. The perfective marker LE is used to express the accomplishment of an action, and it is analyzed as a verbal affix in the lower v. The [uASP] feature upon the lower light verb v triggers the Res-to-v head movement, ending up with a *'Res+le'* complex. In compounding resultatives, the [uASP] feature upon the lower light verb v is checked by the Asp outside the v*P, and is co-realized by the landing of Res and the aspectual LE. However, in serial verb resultatives, a mono-layer light verb is supposed, and all aspectual features persist in v*. Without the split structure, the light verb v* in serial verb resultatives is stronger, and it does not need an extra perfective aspectual marker LE or raise a resultative predicate to express the accomplishment state of the action. That is, the aspectual feature upon the single light verb v in serial verb resultatives is stronger than the lower light verb of a splitting model in compounding resultatives.

Second, the internal structure of the postverbal argument is different in two patterns. A phrasal constituent can be used in compounding resultatives, but a pronoun is exclusively used in serial verb resultatives. The M-merger operation can explain the limited usage of the postverbal argument. The light verb and the shifted causee form the complex component, as a result of M-merger. Only pronouns can be placed in the serial verb pattern; objects rather than pronouns are usually topicalized, ending up with the compounding V1-V2 pattern. Accordingly, the syllabic structure of the postverbal argument is also distinct: multiple syllables in the former, but only monosyllabic pronouns in the latter.

Third, argument sharing between two predicates is optional in compounding resultatives, but obligatory in the serial verb pattern. In compounding resultatives, the selection relation between the activity verb and the object is loose and flexible. I have supposed that the S-selected object is derived in the sister node of the verb root; whereas the unselected object enters the derivation in the sister node of the resultative predicate. The distinct underlying representations create different semantic relation between the activity verb and its object. However, in Shanghai serial verb resultatives, the object is strictly S-selected by the activity verb, confining it into the core argument. This is consistent with the M-merger operation, which limits the object into the core argument of the verb. That is, it rules out non-core argument in the object position, such as instrument, goal, location, etc.

The selection contrast between Mandarin and Shanghai dialect may be relevant to the light verb system. The light verb in the mono-layer structure is more restrictive than the v-splitting structure. If the direction of this hypothesis is acceptable, it may imply that the diachronic development of the light verb system also reflects changes on selection feasibility. The selection ability in the mono-layer (in middle Chinese, as remained in Shanghai dialect) is more restrictive, but less restrictive in the v-splitting structure (in modern Chinese, as noted in Mandarin). This hypothesis needs more theoretical and empirical evidence in future investigations, but it at least implies that the diachronic development of the light verb system may affect selectional properties of the verb root.

Fourth, the specificity asymmetry in these two patterns correlates with two different landing sites of the Causee. In compounding resultatives, Root inherits uninterpretable φ-features

and optional SPEC-features from the lower light verb v (indirectly from the higher light verb v*), thus LA takes the shared $<\varphi,\varphi>$ feature (and the optional $<SPEC,SPEC>$ feature pair) between Root and the moved Causee as the label. The $<\varphi,\varphi>$ feature pair creates an optional specificity. In Serial verb resultatives, the specific interpretation can be explained through two possibilities. First, Root inherits SPEC-features and φ-features from the light verb v*, thus Root and the shifted Causee contain the $<SPEC,SPEC>$ feature pair in common. LA takes the shared feature as the label. Second, an alternative answer is about the m-merger hypothesis. If φ-features but not SPEC-features are inherited from v* to Root, the shared feature between Root and the raised causee object is $<\varphi,\varphi>$ feature pair. The label of the merger result is $<\varphi,\varphi>$. The M-merger operation is applied between the activity verb and the shifted object; the object is frozen and limited to a particular category-pronoun. The pronoun constriction is responsible for the specific reading in the object in Shanghai serial verb resultatives. Either SPEC-feature inheritance or φ-feature inheritance plus M-merger can ensure the specific interpretation in the postverbal object.

1.4 Feature-inheritance exuberance

While there is as yet no strong theoretical foundation for the syntactic distinctions in Mandarin and Shanghai dialects, it may be worthwhile to speculate on the deeper motivations for the differences between v-splitting and single-v structures. In this section, I will explore feature-inheritance distinction in the light verb system.

Asymmetric specificity readings are observed (in section 1.3): specific in serial verb resultatives and DE-resultatives, but optional in compounding and adverb resultatives. The distinction is explained by different feature checking. This is further explored in terms of degrees of exuberance in multiple feature inheritance in this section. No literature has claimed in this way before. I speculate feature inheriting continuum should exist in multiple resultative patterns, and I try to address it in terms of feature exuberance. Let us see how feature exuberance is reflected in feature inheritance in the resultative construction.

In Chinese compounding and adverb resultatives, the v-splitting structure is proposed, and [uASP] features, SPEC-features, and φ-features are originally upon the higher v*, and transfer to the lower v. In this case, the lower v is exuberant to further transfer φ-features to Root, but optionally transfers SPEC-features to Root. Thus, either specific or non-specific arguments are observed.

In DE-resultatives, similarly, a v-splitting structure is proposed, the lower light verb v is overtly realized by the particle-like DE. The lower v inherits [uASP] features and φ-features from the higher v* and then transfers to Root. In this case, the lower v is more exuberant to further transfer SPEC-features to Root. Thus, specific argument is always possible in DE-resultatives.

In serial verb resultatives, a mono-layer light verb structure is proposed. Root may inherit either SPEC-feature or φ-features (plus M-merger) from the phasal head v*; either way contributes to the specific reading in Shanghai serial verb resultatives. That is, the light

verb v* is less exuberant to transfer SPEC-features to the Root in an optional way. If SPEC-features are inherited from v* to Root, a specific pair label is created <SPEC, SPEC>. If φ-features are inherited from v* from Root, the post-syntactic M-merger between Root and the object also makes the object an exclusive category. That is, both possibilities of feature inheritance create a specific object in Shanghai pattern.

Considering feature inheriting ability in these resultative patterns, I draw up an exuberance continuum, as in (23). The DE-resultative patterns contain fairly exuberant light verbs, which can transfer SPEC-features to the Root. In contrast, the light verbs in compounding/adverb/serial verb patterns are less exuberant, and they just optionally transfer SPEC-features to the Root when feature inheritance takes place.

(23) *Feature-Inheritance Exuberance*

DE-phrasal pattern > Serial verb pattern/Compounding/Adverb pattern

SPEC-features to Root
(more exuberant v)

Optional SPEC-features to Root
(less exuberant v)
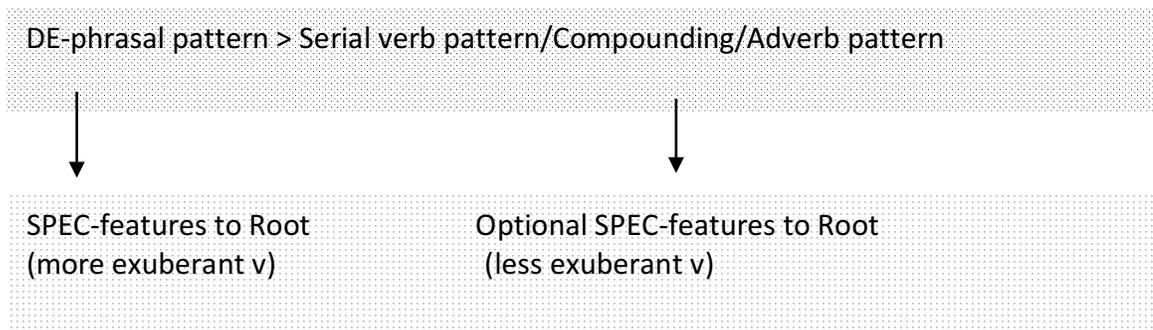
These differences in multiple feature inheritance consequently create asymmetric specificity of the postverbal argument in Mandarin and Shanghai dialect. Different feature inheritance exuberance makes different features inherit from the phasal head finally to the Root. Accordingly, asymmetric specific readings are observed for postverbal arguments across dialects.

After comparing serial verb resultatives in Shanghai dialect and Mandarin Chinese resultatives, we can see a mono-layer light verb is supposed in Shanghai pattern, but a v-splitting structure in Mandarin pattern. The light verb system is different across dialects in Chinese, although both dialects belong to the same language family: Sino-Tibetan languages.

Recall regular English resultatives and Shanghai serial verb resultatives. We can see both languages derive from a mono-layer light verb system. However, they differ in the category of the postverbal argument and the sister relation between the Root and the causee object. In English, the postverbal argument is flexible, and it can be either a phrasal or a pronominal argument. The causee object and the regular resultative adverb enter the derivation as sisters, according to the existing labeling analyses. In Shanghai dialect, the causee object limits to the pronoun, as a result of the M-merger operation. The causee object syntactically derives as the sister of the Root in a unanimous way.

2. Resultatives in Innu-aimûn

Next, I will move on to a polysynthetic language: Innu-aimûn, and see how the resultative pattern works in this language. More cross-linguistic study may assist us to have a better understanding of the resultative patterns in general.

Innu-aimûn, also known as Montagnais, is an Algonquian language spoken in northeastern Canada (Branigan & MacKenzie 2002). In Innu-aimûn, the resultative predicates describe the change of a state applying to a core argument of the verb (typically an object or unaccusative subject), as a result of the activity denoted by the verb (Branigan 2018). In this section, I will compare the derivation between Innu-aimûn resultatives and counterparts in English and Chinese. In Innu-aimûn, a resultative item is situated before the root of the verb in a complex verb structure. It seems the resultative item is first raised to the edge of a phasal domain, which is then available to undergo further head movement to T and C. Multiple strategies are applied to break symmetry as a labeling requirement: φ-features agreement in English, A-displacement in Innu-aimûn, and φ-features agreement/Adv-displacement in Chinese.

2.1 Labeling derivation

In this section, the derivation of the resultative pattern in Innu-aimûn will be analysed from the labeling-based perspective, based on Branigan (2018). In Innu-aimûn, the resultant predicate moves to the phase edge, and the displacement of the resultant predicate is triggered by breaking symmetry as a labeling requirement.

In Innu-aimûn, the color term can be used as a preverb in the resultative verbal structure. The color term *shîpeku* 'green' in (24a) and *kashteu* 'black' in (24b) describe the state of the object as a result of completion of the painting action.

(24) a. *Pien shîpeku-peshaim[u] mitshuâpinnû.*
    Pien shîpeku=peshaim[u]   mitshuâp-innû.
    Peter green-paint   house
    'Peter painted the house green.'
  b. *Ânî kashteu-peshaim[u].*
    Ânî kashteu=peshaim[u].
   Annie black=paint
    'Annie painted it black.'   (Branigan 2018: 208)

Let us consider (24a) for example to see the derivation in Innu-aimûn resultative construction. The adjective *shîpeku* 'green' enters the derivation as the resultant predicate. The object *mitshuâp-innû* 'house' originates as the sister node of the resultant predicate. The root *pesh* 'paint' enters the derivation, and then merges to the light verb -*aim*, creating a verbal category. The subject *Pien* 'Peter' derives in the specifier of the merging result v+*pesh*. In the exocentric configuration {DP, Adj}, one of the constituents must move out, since no shared features agree between these two constituents. Following Branigan (2018), the resultant predicate *shîpeku* 'green', rather than the object DP *mitshuâp-innû* 'house', is displaced. The displacement of Adj is the only strategy possible to break the exocentric symmetry in Innu-aimûn, since φ-features are unmatched between the light verb and the object as the complement of v (Branigan 2018).

(25) The resultant Adj-displacement in v*P
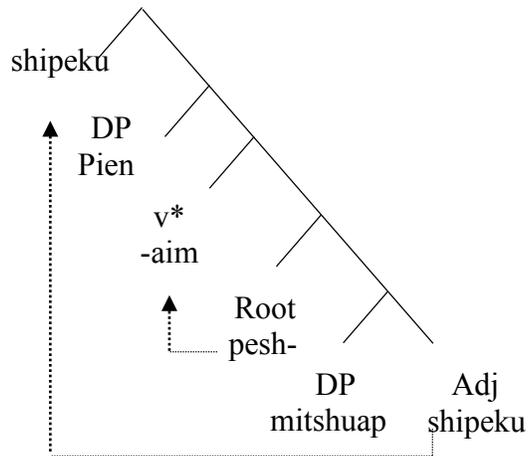
Branigan (2018) argues that nominals in Innu-aimûn bear different features from English. In English, nominals carry Person, Number and Gender features. However, In Innu-aimûn, the features differ, depending on the animacy of nominals. Inanimate nominals contain Number and Gender features, but not the Person feature, since the first and the second person are not distinguished. Animate nominals contain more complete features: Number, Gender, Person, and Proximate/Obviate distinction. The number of φ-features is different between animate and inanimate nouns, and the nominal agreement system in Innu-aimûn is less easily checked. In the configuration {DP, Adj} in the resultative pattern in (24), the object DP *mitshuap* 'the house' cannot raise to the specifier position of Root to create <φ,φ> labels. Instead, movement of the resultant predicate AP *shipeku* 'green' is the only way to break the symmetry.

Displacement of the resultant predicate is an adjunction operation, landing in the edge of the v*P phase (Branigan 2018). Beyond v*P, multiple head movement takes place. T can attract the resultant predicate *shipeku* 'green', and then the 'Root+v' cluster *peshaim* 'paint' in a 'tucking-in' fashion. In this language, T accommodates multiple heads, ending up with the tucking-in order (Collins 2002). Multiple head movement of (24a) is further represented in (26).

(26)
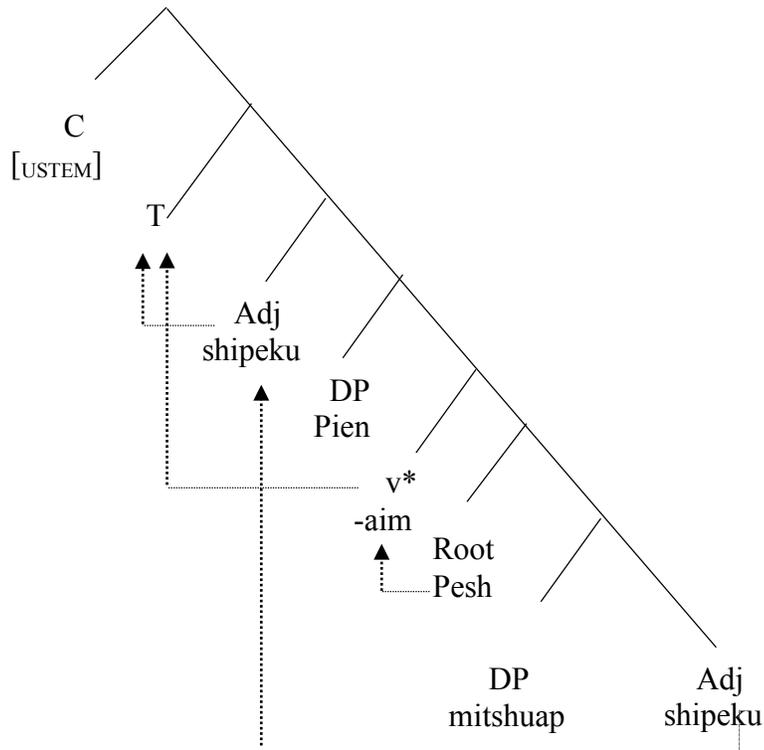
More supporting evidence is found in locative goal resultant in Innu-aimûn. In addition to the color terms used as the resultant predicate, the locative goal predicates reflect a similar displacement operation to the edge of the v*P domain in Innu-aimûn.

(27) a. *natakamaim^u*

    natakam   -aim-
    towards the shore   use a tool or walk
    'S/he goes towards the shore, the bank, by paddling, by swimming.'
   b. *natakamassekaim^u*

    natakam+essek   -aim-
    toward the shore+muskeg   use a tool or walk
    'S/he goes towards the side of the muskeg by walking.'   (Branigan 2018)

Let us take (27b) for example. I will adopt Branigan's (2018) analysis that the locative resultant state undergoes incorporation with its object argument. The incorporated combination moves to a higher functional light preposition *p*. The verb root *-aim-* moves to the higher light verb v*, creating a verbal category. Like the resultant color terms, the incorporated locative predicate raises to the edge of the phasal v*P domain. The derivational structure is represented in (28).

(28)
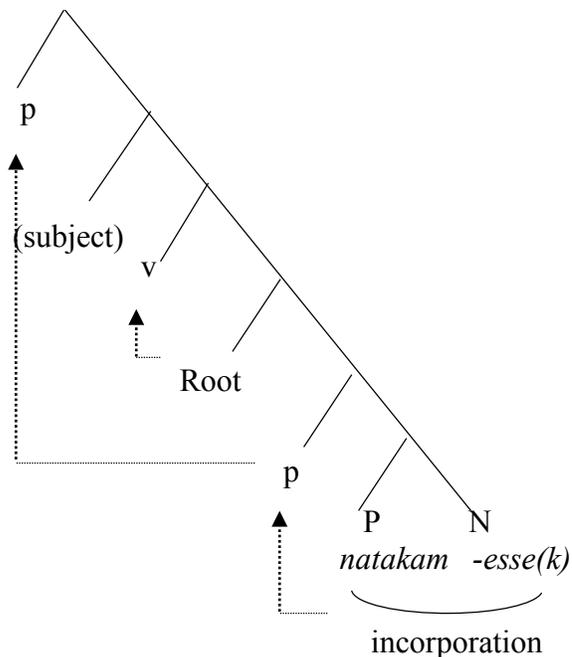
In Innu-aimûn, resultant predicates (e.g. color terms or locative predicates) share a similar displacement operation to the edge of the phasal v*P domain. The syntactic motivation again is to break the symmetry as a labeling strategy.

2.2 Strategies of symmetry-breaking

In this section, I compare various labeling mechanisms in Innu-aimûn, English, and Chinese, proposing that different labeling strategies are used to break the unlabeled symmetric configuration in the v*P phasal domain across languages. The symmetry-breaking indicates how parametric head raising takes place across languages.

As discussed above, in Innu-aimûn, the displacement of the resultant predicate is the only strategy to break the symmetry in the unlabeled configuration {DP, Adj}, since the <φ,φ> features in nominals cannot be matched with the features in the light verb (and the verb root) (Branigan 2008).

However, in English, the mechanism to break symmetry is to raise the nominal DP out of the exocentric configuration. Since <φ,φ> features matching is possible in the English agreement system. In English resultatives, the resultant adjective enters the derivation as the predicate Res, projecting into the phrasal ResP. The object originates as the sister of the resultant predicate. The verb root raises to the higher functional v*, making it a verbal category. Uninterpretable φ-features originated from the phasal head v*, transferring to the verb root, as a consequence of feature inheritance. Interpretable φ-features in English

nominals are matched in the agreement system, so <φ,φ> labels are constructed in v*P. DP-displacement to the specifier of Root is the strategy to break the uninterpretable symmetric configuration {DP, AP}.

(29) a. *Peter paints the house green.*
   b. <φ,φ> features matching in English
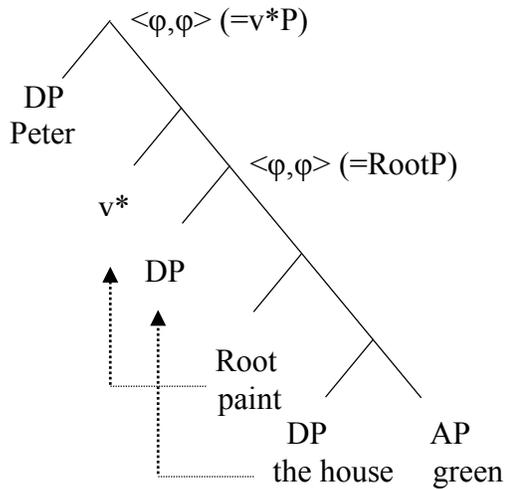
In Chinese, two mechanisms are used together to break the unlabeled configuration. I will suppose that both <φ,φ> features matching and resultative predicate displacement are observed in compounding resultatives and adverb resultatives, but English-like <φ,φ> features matching is found in DE-resultatives.

Let us start with the unselected compounding pattern in (30a) for example. The v-splitting structure is hypothesized in Chinese compounding resultatives, as I have discussed in chapter 3. In order to break symmetry of an unlabeled configuration {DP, Res}, both the object DP and the resultant predicate raise out of the configuration, as in (31a).

Two symmetry-breaking strategies are also applied in the selected pattern (30b). The only difference is the sister relation between the Root and the postverbal argument, as represented in {Root, DP$_{causee}$}. The object DP moves out to the specifier of Root, and the resultant predicate raises out to the lower v, later to the Asp, as in (31b). Double ways are applied to break symmetry in both unselected and selected compounding patterns.

(30) a. *Ma Li ku shi le   yi   tiao shoupa.*
     Ma Li cry wet ASP one CL handkerchief
     'Mary cried, and as a result one handkerchief became wet.'
  b. *Ma Li zha cui   le   yi pan   huashengmi.*
     Ma Li fry crisp ASP one plate peanut
     'Ma Li fried a plate of peanuts, and as a result the peanuts became crisp.'

(31) Double mechanisms to break symmetry in compounding resultatives
    a. The unselected pattern
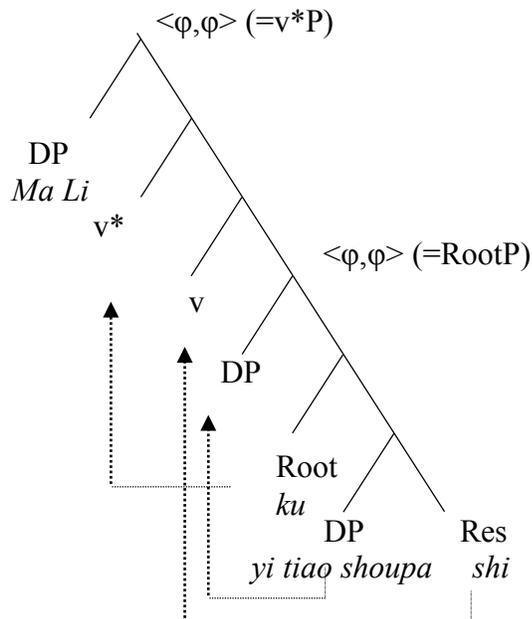
b. The selected pattern
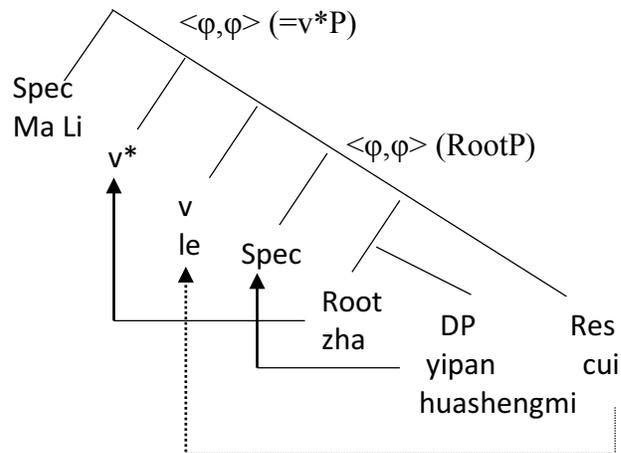
In adverb resultatives, both DP-displacement and Res-movement are also used to break symmetry. The DP-displacement out of {Root, DP} is triggered by <φ,φ> feature matching in the agreement system; Res-to-v movement is motivated by the feature checking between multiple verbal heads.

(32) a. *Ma Li cuicuide zha le   yi   pan huashengmi.*
     Mary crisp   fry ASP one plate peanut
     'Mary fried one plate of peanuts, and as result these peanuts became crisp.'

b. Double mechanisms to break symmetry in adverb resultatives
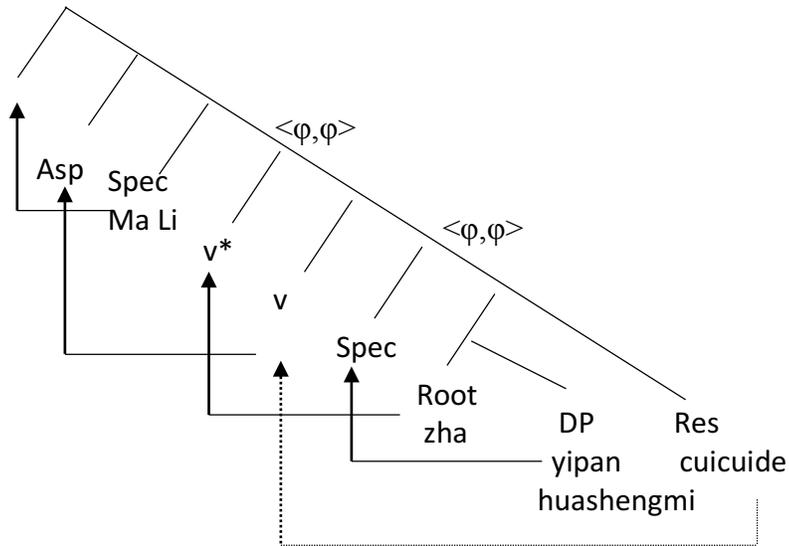
However, in Chinese DE-resultatives, DP-displacement is the only strategy to break symmetry in an uninterpretable configuration, which is similar with English resultatives. Take the selected pattern (33a) for example. In the configuration {DP, ResP}, only the object DP *Li Si* moves out to break symmetry. The resultative predicate stays in situ, since the [ASPECTUAL] feature in the lower v is overtly realized by the resultative particle DE.

(33) a. *Zhang San xia   de Li si wawadaku.*
    Zhang San frighten DE Li Si cry.loud
    'Zhang San frightened Li Si, and as a result Li Si became crying loudly.'

b. <SPEC,SPEC> labeling in symmetry-breaking in DE-resultatives

Asp $\langle\varphi,\varphi\rangle$ (=v*P)

DP
Zhang San

v*

v
de

DP

Root
da

$\langle$SPEC,SPEC$\rangle$ (=RootP)

DP   ResP
Li Si   *wawadaku*

Given the strategies to symmetry-breaking in Innu-aimûn, English, and Chinese, we can see their parametric variation on symmetry-breaking. First, Adj_{Res}-displacement in Innu-aimûn is the only strategy to symmetry-breaking. Second, $\langle\varphi,\varphi\rangle$ features labeling in the agreement system in vP in English. Third, double strategies are applied in Chinese: (i) both $\langle\varphi,\varphi\rangle$ features labeling and the resultant predicate displacement in compounding resultatives and adverb-resultatives; (ii) the <SPEC,SPEC> feature-matching in DE-resultatives, which is parallel to English $\langle\varphi,\varphi\rangle$ feature-labeling. The underlying distinction is depending on whether agreement can produce a $\langle\varphi,\varphi\rangle$ label, or the (strength of) features in the light verb system.

The symmetry-breaking distinction helps us clarify how VP agreement works in different language contexts. It may also shed some light on the parametric setting across languages in the labeling theory.

3. Summary

In this chapter, I have provided two cross-linguistic(/dialect) studies on resultative patterns. One is Shanghai dialect, a southern Chinese dialect; the other is Innu-aimûn, an Algonquian language spoken in northeastern Canada. The cross-linguistic studies concern with parametric variation on head movement in different languages.

First, unlike the v-splitting structure hypothesized in Mandarin Chinese, a mono-v structure is proposed in Shanghai serial verb resultatives. The hypothesis is supported by a series of different syntactic behaviors between Shanghai dialect and Mandarin Chinese: occurrence of aspectual 'LE', the syllabic structure of the postverbal argument, argument sharing between the two predicates, and a specificity restriction for the postverbal argument. A post-syntactic M-merger is proposed in Shanghai dialect, which produces the limited category of the postverbal argument. The distinction between Shanghai dialect and Mandarin Chinese indicates the evolution of light verb system in Chinese: from a simple and mono-layer in the serial verb pattern, to a more complex multiple-layer structure in compounding/DE-/Adverb-resultatives.

Second, in the polysynthetic Innu-aimûn, the resultant predicate undergoes raising (adjunction) operation to the phase edge of v*P, which is the only strategy to break symmetry of an uninterpretable configuration in Innu-aimûn. Considering Innu-aimûn, English and Chinese, parametric variation on symmetry-breaking are proposed: <φ,φ>

features matching in the agreement system in VP in English, Result-raising in Innu-aimûn, both $<\varphi,\varphi>$($/<$SPEC,SPEC$>$) features labeling and Result-raising in Chinese. The underlying mechanism is depending on whether agreement can produce a $<\varphi,\varphi>$ label in the vP agreement system.

I have demonstrated labeling-based analyses for Shanghai serial verb resultatives and the preverbal complex resultative verb structure in Innu-aimûn. Both patterns are compared with multiple resultative patterns in Mandarin Chinese (e.g. compounding/DE-/Adverb resultatives). The discrepancy of structural characteristics is explained by the parametric variation of cyclic head movement, light verb system, and symmetry-breaking in labeling algorithm. The micro-parametric (between Mandarin and Shanghai dialect) and macro-parametric (between Chinese and Innu-aimûn) studies in this chapter provide more empirical evidence on the syntactic nature of resultatives in generative grammar.

Chapter 6

Concluding Remarks

1. Conclusion and Implication

In this thesis, I have presented derivational analyses of resultative patterns in Mandarin Chinese and extended them to Shanghai dialect and Innu-aimûn. Compared to current discussions, an important difference in this thesis is that a v-splitting structure is proposed in Mandarin Chinese, which is absent in Shanghai dialect and Innu-aimûn.

First, I derive two widely acknowledged patterns in Mandarin (compounding resultatives and DE-resultatives) from the v-splitting structure, in which the phasal head v* splits into multiple adjacent light verbs, represented by v* for a higher one and v for a lower one. In compounding resultatives, the resultative predicate undergoes a non-local head movement, Res-to-v, across the categoryless Root. The long-distance feasibility is justified with feature checking and moving precedence considerations. In DE-resultatives, the particle-like -*de* is realized in the lower light verb within the v-splitting structure, leaving the resultative predicate in-situ. After analysing the common underlying v-splitting base, I respectively explained structural differences between compounding and DE-resultatives in terms of orientation effects and symmetric asymmetry. I argue that two typical resultative patterns in Mandarin derive from similar v-splitting structures, but vary in the parametric setting of head movement. Res-to-v movement exists in the compounding pattern, but is lacking in

the DE-resultative pattern. The parametric distinction is triggered by [ASPECTUAL] features inherited from v* to v in the v-splitting structure.

Second, in the case of adverb-resultatives, a similar v-splitting structure is proposed, and successive cyclic head movement Res-to-v-to-Asp is tested. The resultative predicate first moves from the original secondary predication to the lower light verb, and continuously raises outside of the VP shell structure, landing in Asp. The first step of movement Res-to-v is triggered by the [uASP] features in the lower light verb (originally from the phasal head v*). The second step of movement v-to-Asp is motivated by the phonological and morphological filters in the lower v. Thus, the resultative predicate ends up in the preverbal position. Given the similar underlying base between adverb-resultatives and the other two widely acknowledged resultatives (i.e. compounding and DE-resultatives), I proposed that adverb-resultatives share similar v-splitting base with compounding resultatives and DE-resultatives, which develop into the broad sense of resultatives in Mandarin Chinese.

Third, the scope of the study is extended from Mandarin Chinese to other dialects and languages. For the cross-dialectal exploration, I analyse the serial verb resultative pattern in Shanghai dialect. Unlike Mandarin Chinese, a mono-layer light verb is tested in this pattern. A post-syntactic M-merger is proposed, resulting in a postverbal category-confined object. The M-merger hypothesis is investigated in French *yes-no* questions and *Wh*-questions as well as Fijian pronouns and proper names. The analogical data provide supporting empirical evidence on M-merger, as a post-syntactic operation at PF. In addition to the cross-dialectal study, a macro-parametric case study is conducted in Innu-aimûn.

Unlike Chinese (including Mandarin Chinese or Shanghai dialect), Innu-aimûn is a polysynthetic language; a pre-verbal resultative adjective item is used in the complex verb structure. Based on Branigan (2018), I explain that the resultative predicate is raised to the edge of the phasal v*P, as the only strategy to break the symmetry in the labeling algorithm.

Through the micro-parametric study (i.e. between Mandarin Chinese and Shanghai dialect), I tend to propose the diachronic development of the light verb system in Chinese from a mono-layer to a multiple v-splitting structure. The serial verb resultative pattern in Shanghai dialect is reminiscent of the pattern in Middle Chinese, so the comparative study between the Shanghai pattern and the Mandarin pattern may provide us some insight about the historical development of the light verb system in Chinese.

Through the macro-parametric exploration (i.e. extending to resultatives in Innu-aimûn), multiple head movement in non-local head movement in Innu-aimûn is discussed. I propose that multiple strategical ways are applied to break symmetry in the labeling algorithm across languages. As it is argued in English by Chomsky (2013, 2014), $\langle\varphi,\varphi\rangle$ features are set-matched in the VP agreement system in English. However, given result-raising in Innu-aimûn, Branigan (2018) argues that the displacement of the resultative adjective is the only way to break symmetry. Through the comparative study in this thesis, I have proposed that two strategies are used for the symmetry-breaking in Chinese. Both $\langle\varphi,\varphi\rangle$ (or parallel $\langle$SPEC,SPEC$\rangle$) features matching and Result-raising are applied for the symmetry-breaking. The underlying mechanism depends on whether agreement within the VP shell

structure can produce a <φ,φ> label. It can be also supplemented by Result-raising to break the symmetry of unlabeled configuration.

In this thesis, the labeling-based analyses on a set of resultative patterns are meant to provide a systematic perspective on how resultatives work in Mandarin Chinese, Shanghai dialect and Innu-aimûn. However, more cross-linguistic researches should still be conducted in order to present a better understanding of the resultative construction in general.

2. Future Research

The v-splitting hypothesis, head movement and adverbial intervention effects in (non-local) head movement supposed in this thesis might be applied to explore a series of other resultative-relevant patterns, such as the BA-construction in (1) and (2), the BEI-construction in (3) and (4), the causative construction in (5), the verb copying construction in (6), and many other constructions in Chinese.

(1) *Ni   ba   fan   zhu lan   le.*
   you BA rice cook soft PRF
   'You have cooked the rice soft.'

(2) *Jundui ba diren   da de luohualiushui.*
   troop   BA enemy hit DE utterly.routed
   'The troop has utterly routed the enemy.'

(3) *Fan bei ni zhu lan le.*
   Rice BEI you cook soft PRF

'The rice has been cooked soft by you.'

(4) *Diren bei jundui da de luohualiushui.*
    enemy BEI troop hit DE utterly.routed
    'The enemy has been utterly routed by the troop.'

(5) *Haizi de yifu   ba mama xi   de lei ji   le.*
    child 's clothes BA mother wash DE tired extremely PRF
    'Washing the children's clothes has got mother extremely tired.'

(adapted from Shi 1992)

(6) *Zhangsan qi   ma   qi lei le.*
    Zhangsan ride horse ride tired PRF
    'Zhangsan ride the horse and as a result Zhangsan got tired.'
    'Zhangsan ride the horse and as a result the horse got tired.'

(adapted from Cheng 2007)

A series of relevant questions need to be investigated in future research:

(i) What are the syntactic derivations in the above patterns? Whether the v-splitting hypothesis is applied in these resultative-relevant constructions?

(ii) What are the syntactic similarities and differences among these patterns? How to explain the distinctions and similarities in the labeling-based approach?

(iii) Is there any verb or root undergoing head movement? If yes, whether manner adverbs reflect adverbial intervention effects in (long or short) head movement?

Future investigation extending to various more 'complex' resultative pattern can provide more empirical evidence to test the hypothesis I proposed in this thesis. Hopefully, it will help us get a better understanding on the resultative construction in more broad sense as well as the syntactic nature of head movement in the labeling-based approach.

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