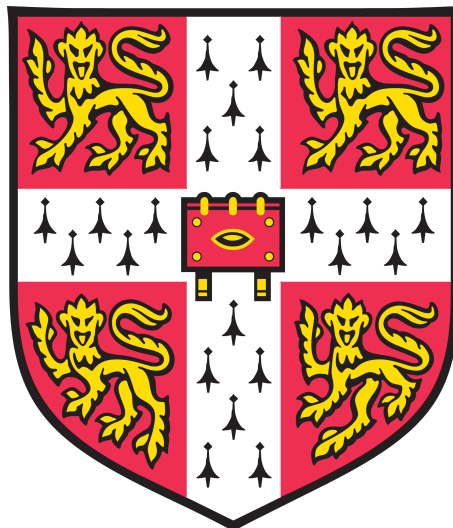# Structural Variation in Chinese Compound Verbs

—A Comparative Study of Standard Mandarin and Dongying Dialect

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Abstract

This is a morphosyntactic study of the structural variation in Chinese compound verbs based on comparative data from standard Mandarin and Dongying dialect. Theoretically, realizing the difficulties previous studies have encountered concerning the word-phrase distinction of Chinese, we build our theoretical model within the Distributed Morphology (DM) framework. Crucially, we stay faithfully to the idea of lexical decomposition and treat the Root as a category-less container that cannot project, head, or label but merely links up sound and meaning at Spell-Out. We further identify Root with the Edge Feature, which merges with the categorial feature ("little x") and initiates the derivation. We design a Cartographic "skeleton" for Chinese sentence structure which features an elaborately split verbal domain (VoiceP-AktP-vP) for the various compound verbs and a split-CP domain for the sentence-final particles. As a result, aspect is split into Asp (outer/viewpoint aspect) and Akt (inner/situation aspect; Aktionsart) in our model, with the External Argument introducing Voice inserted in between. Importantly, we assume phase-based Multiple Spell-Out for syntactic derivation and PF-oriented mechanisms for linearization. Empirically, we combine diachronic and synchronic perspectives to analyze Chinese compound verbs and attribute their booming to a single phonological trigger (Disyllabification) in Chinese history. We also provide historical data to demonstrate their development process. Eventually, we account for the Mandarin *vs.* Dongying variation in compound verbs by proposing that they represent structures of different diachronic stages. Dongying generally shows more "ancient" characteristics in compound structure, whereas Mandarin shows the sign of multiple diachronic grammars synchronically realized as the omnipresent Register-Effect. We leave the formal study of this effect to future research.

Declaration: This dissertation is the result of my own work and includes nothing which is the outcome of work done in collaboration except where specifically indicated in the text.

Word Count: 18, 950

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Chapter 1

Introduction

1.1 Compound verbs: A typological overview

Chinese compound verbs are typologically special. First, since Chinese has no inflection, the compounding components are simply put next to each other in the same way as they are put next to other elements, e.g. *kai* "open" in *da-kai* "hit-open→open" and *kai-le* "open-ASP→has opened". Second, the elements that can become compounding components in Chinese are extremely abundant. Almost all the traditional parts-of-speech can be combined to yield a "gestalt verb" (Packard's (2000) term), e.g. $hong_A$-huo_N "red-fire→boom", zuo_N-you_N "left-right→control", gan_V-en_N "feel-grace→feel grateful". Such high productivity and little constraint[1] make Chinese compound verbs very different from those in other languages.

For example, conventionally recognized compound verbs in English consist of two verbs (Altenberg and Vago 2010; Quirk et al. 1985), e.g. *stir-fry*, which are quite limited in number (Lieber 1992, p. 80). In German and Hungarian, a large part of compound verbs are made up from a preverb and a base verb (Kiefer 2009; Neef 2009), e.g. GER *an-rufen* "on-call→call", HUN *el-repül* "away-fly". In Japanese and Korean, there are abundant V-V compounds of the English type, but they are subject to more morphological restrictions, such as conjunctive/infinitive inflection of the first component, e.g. JAP *os-i-taosu* "push-CONJ-topple", KOR *teul-eo-kata* "enter-INF-go→go into". In short, compound verbs are cross-linguistically restricted in both type and form, but Chinese is generally free from such constraints.

In fact, the special characteristics of Chinese compound verbs are still more, which give

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[1] Probably the only constraint is that the components be semantically related, but even this is not definite, as *ad hoc* links could always be readily constructed.

rise to a series of interesting (and often controversial) phenomena, such as the word-phrase distinction, separability, etc. Moreover, since compound verbs are at the interface of morphology and syntax, they are correlated with some important syntactic issue like verb-movement and argument structure. These all fall in the scope of this thesis.

A note on terminology should be made here. "Compound" and "compound verb" are both loosely defined terms (Bauer 2000), which tend to have different coverage in different works (e.g. Booij 2012; Harley 2006; Spencer 2001). Leaving the terminology confusion aside, "compound verb" in this thesis is a cover term for the various conventionally perceived complex verbal units.

1.2 Mandarin *vs.* Dongying

Having defined the topic of this study, we are to specify our source of data. Specifically, we will take two varieties of Chinese as our research object, i.e. standard Mandarin and Dongying dialect (henceforth Mandarin and Dongying). Dongying is a Mandarin dialect spoken in North China near the Yellow River Delta. It differs from standard Mandarin in many ways. While the phonological difference is salient, the syntactic difference is more nuanced. We are to focus on the variation in compound verbs in the two varieties and see what it reveals about the Chinese language.

As this thesis concerns cross-dialectal comparison, before we start, it is reasonable to have an overview of the linguistic reality in China. Mandarin is defined as "the common language of modern Han people with Beijing pronunciation as its standard pronunciation, Northern Chinese as its foundation dialect, and canonical modern Vernacular Chinese works as its grammatical norms" (cf. B.-R. Huang and Liao 2007, p. 1). As we can see, this definition is essentially vague. First, Northern Chinese is a wide scope. Therefore, the grammatical foundation of Mandarin is hybrid in nature. Second, "Vernacular Chinese" is a notion advanced during the Vernacular Chinese Movement (1919) (B.-R. Huang and Liao 2007, p. 3), with a body of works featuring a mixture of classical and modern usage. Thus, a consequence of following those works as grammatical norms is a mixed grammatical system.

Another point to note is that Mandarin is actually not the Primary Linguistic Data (PLD) to many Chinese speakers, which has led to the formation of various "dialectal Mandarins" (Kuang and Yi 2013; M. Li 2009). Besides, recent surveys show that a large number of speakers did not pick up Mandarin until they grew up (H. Liu 2006; X.-Y. Liu 1999; F.-L. Wu 2015). Considering that the popularizing of Mandarin only gained momentum

in late 1980s (L.-S. Guo 2004), dialectal influence is still strong among Chinese speakers. These facts above reveal a form of grammatical competition or "Multiple Grammars" (Kroch and Taylor 1997; Roeper 1999). Our case is slightly more complicated, since Mandarin itself is already a language of hybrid grammatical make-up.

In Chapter 2, we will review some previous studies and present our initial data. Chapter 3 develops our theoretical model. In particular, we will combine Minimalism with Distributed Morphology and design a Cartographic skeleton for Chinese sentence structure. In Chapter 4 and 5, we will approach the compound verbs from diachronic and synchronic perspectives and demonstrate that the observed variation actually reflects different development stages. We will also attempt to give a reason for the synchronic co-existence of various structures and a motivation for their diachronic existence. Chapter 6 concludes our study.

Chapter 2

Chinese Compound Verbs

2.1 Literature review

2.1.1 Traditional studies

The major concern of traditional Chinese grammarians regarding compound verbs is their classification. Under the general idea of word structure-phrase structure isomorphism for Chinese, linguists have proposed seven types of compound verbs, i.e. *zhuwei* (subject-predicate), *pianzheng* (modifier-head), *binglie* (coordination), *shubu* (predicate-complement), *dongbin* (verb-object), *liandong* (Serial Verb Construction; SVC), and *jianyu* (Bi-functional Constituent Construction; BCC) (Chao 1968; Lü 1942; Z.-W. Lu 1957; Rao 1993; Ren 1981; B. Zhang 2002; Zhou 1991, etc.). Following are some examples. Note that these are also the fundamental phrasal relations in Modern Chinese.

Classification	Example
Subject-predicate	*di-zhen* "earth-quake"
Modifier-head	*man-pao* "slow-run"
Coordination	*yue-du* "read-read"
Predicate-complement	*ti-gao* "raise-high→improve"
Verb-object	*chi-fan* "eat-meal"
Serial-verb	*feng-cun* "seal-store"
Bi-functional	*cui-mian* "urge-sleep→hypnotize"

Table 2.1: Traditional classification of Chinese compound verbs

Grammarians have correctly observed the structural correspondence between constituents of different levels in Chinese and successfully classified the observed structural relations

on a comprehensive level. However, traditional studies also face problems. First, they only achieve descriptive adequacy. Second, they do not say much except for the observed component adjacency and macro-relation-types. The real sticky problems regarding compound verbs, e.g. component and category flexibility, are left unsolved. Third, some items may be labeled as more than one type, e.g. *dou-xiao* "amuse-laugh", which can be classified as predicate-complement, bi-functional, and serial-verb equally well.

2.1.2 Generative studies

Generative studies of Chinese compound verbs are mostly on two particular types, i.e. resultatives and V-O compounds.

2.1.2.1 Resultatives

In the past few decades, we have seen numerous studies on the valency, argument structure, semantic ambiguity, etc. of resultative compounds. Generative studies of Chinese resultatives usually start with their ambiguous semantics. A typical example is:

(1) Baoyu qi-lei-le ma. (Y.-F. Li 1990, p. 187)
    Baoyu ride-tired-LE[1] horse
    "Baoyu rode the horse and as a result Baoyu/the horse got tired."

In (1), it is *Baoyu* that rides the horse and either *Baoyu* or *the horse* that gets tired. Y.-F. Li (1990, 1995) first observes this phenomenon and analyzes it within his joint GB-framework of theta-identification, structured theta-grid, head-feature percolation, and causative hierarchy (Grimshaw 1990).

However, many people (e.g. L.-S. L. Cheng 1997; J.-X. Shen 2004; C.-H. Shi 2007, 2008; Song 2003, etc.) argue that this approach cannot extend to more data. Besides, researchers do not always agree on the availability of the various readings (L.-S. L. Cheng 1997; C.-H. Shi 2007). C.-T. J. Huang (2010) further points out that the availability and readiness of a subject-oriented reading "is clearly sensitive to pragmatic and lexical-semantic factors". Realizing these problems, researchers have made various improving efforts. For example, Sybesma (1999), Sybesma and Y. Shen (2006), and Zou (1994) claim that resultative compounds are derived in syntax, via small clause movement (Hoekstra 1988, 1992). C.-T. J. Huang (1992) further proposes that the sentence object is base-generated with the main verb and unites the two resultative constructions in Modern Chinese, i.e. the resultative compounds and the *de*-resultatives.

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[1]Opinions vary concerning the function of *le*. Before going into it, we simply gloss it as LE.

In a word, syntactic analyses have received wider welcome for their simplicity and united explanation for the various transitivity scenarios. First, in both C.-T. J. Huang (1992) and Sybesma (1999) there is a natural transition between transitives and unaccusatives. Then, Huang's (1992, 2010) analysis also explains the unergative-causative variation in Chinese resultatives. However, we also notice problems in these approaches. First, the semantic ambiguity in (1) still lacks an account (L.-S. L. Cheng 1997). Second, these approaches abound in terms like unergative, unaccusative, inchoative, etc., which leaves us with two questions: *i*) are they syntactic/semantic primitives? If not, can they be "minimalized" in the spirit of Occam's razor? *ii*) are they universally equally well-defined?

For the first question, our answer is no, and we will introduce a more Minimalist approach for the transitivity types in Chapter 3. For the second question, we also notice some challenging facts. Admittedly, in morphologically richer languages we can tell whether a verb is transitive or inchoative by its morphology. In English, although morphology does not help much, we know where to find the subject and thus voice information is unambiguous. However, such hints are not universal. For example, in topic-prominent languages, the preverbal NP (i.e. the topic) is not always the subject, and when a topic-prominent language is also morphologically poor and radically pro-drop, one often needs to rely on pragmatics to speculate meaning and structure. This is precisely the case of Chinese, e.g. without context we do not really know whether *zha-kai* "blow up" in (2) is transitive or inchoative, nor do we know whether *shitou* "stone", being the topic, is subject or object.

(2)   [TOPIC Shitou] [COMMENT zha-kai-le].   (Mandarin)
           stone.SUB/OBJ   blow-apart-LE
      "The stone (some people/by itself) blew up."

In a word, the perceived transitivity types may be emergent in nature, and their "cross-type alternation" may be epiphenomenal.

2.1.2.2   V-O compounds

V-O compounds in Chinese form a challenge for both object licencing and the word-phrase boundary. Due to their uncertain word/phrase identity, they are often called *liheci* "separable words" (Z.-W. Lu 1957). As many have noticed, the object-type here varies immensely, as in Table 2.2.

As for the unselectedness of objects, there are four representative approaches in the literature. We use *chi-shitang* "eat-canteen→eat at canteen" (cf. Sun and Y.-F. Li 2010) as an example to illustrate these approaches.

Object-type	Example
Patient	*xi-shou* "wash-hand"
Manner	*bao-yue* "rent-month→rent by month"
Instrument	*kai-dao* "open-knife→open with knife→perform an operation"
Time	*bai-nian* "salute-New Year→ pay a New Year call"
Cause	*wo-bing* "lie-illness→lie in bed because of illness"
Purpose	*si-jie* "die-virtue→die for virtue"
Result	*zuo-shi* "compose-poem"
Location	*guang-jie* "stroll-street→stroll on the street→go shopping"
Theme	*xia-yu* "descend-rain→rain"

Table 2.2: Object-types in V-O compounds (adapted from Qin 2012)

(3) a. Prep-drop: $_{\text{VP}}$[eat $_{\text{PP}}$[(at) $_{\text{NP}}$[canteen]]] (NP selected by a null P)

(cf. J. Cheng 2009; J.-M. Guo 1999; Y.-Z. Yang 2007a,b)

b. Light verb movement: $_{v\text{P}}$[eat$_i$-AT $_{\text{VP}}$[$_{\text{NP}}$[canteen] $_{\text{V'}}$[t$_i$]]] (V→AT)

(cf. Feng 2005; T.-H. Lin 2001; Tsai 2007)

c. Applicative construction: $_{\text{ApplP}}$[eat$_i$-Appl $_{\text{VP}}$[$_{\text{NP}}$[canteen] $_{\text{V'}}$[t$_i$]]] (V→Appl)

(cf. Sun 2009)

d. Lexical characteristics: $_{\sqrt{V}\text{P}}$[$\sqrt{EAT}$ $_{\text{NP}}$[canteen]] (Lexical root $\sqrt{V}$ selects NP)

(cf. Sun and Y.-F. Li 2010)

As Sun and Y.-F. Li (2010) points out, the prep-drop approach is the least likely, because the dropped preposition is not recoverable, e.g. *chi zai shitang* "eat at canteen". The light verb approach is attractive, but the proposed light verbs (i.e. AT/USE/FOR) are far from enough to cover the data. The Appl-approach assumes universality, but the oblique objects in Chinese and the applicative arguments in Pylkkänen (2008) are fundamentally different—in Chinese when an oblique object is present the Patient object must be absent. Recognizing this, Sun and Y.-F. Li (2010) turn to the Lexicon-Syntax interface for explanation. Their gist is that a verb consists of a lexical root and some event/situation typer(s) (ST). Languages differ in the ST-shells wrapping the root. In highly analytical languages (e.g. Chinese) the lexical verb can appear as "bare root". Thus, all its encoded participant information is exposed to syntax, and any NP that does not go against common sense can enter the object slot.

We can see the lexical decomposition idea behind this approach, but it still relies on a highly elaborate Lexicon. Besides, Sun (2010, 2011) and Sun and Y.-F. Li (2010) all show uncertainty towards the wordhood of V-O compounds. Concerning this point, there are four positions in the literature (cf. W. Hu 2013): *i)* they are words (e.g. R. Guo 1996; Zhao

1984), *ii*) they are phrases (e.g. Hong 1957; Lü 1979; L. Wang 1946), *iii*) they have dual identity depending on the context (e.g. Chao 1968; Z.-W. Lu 1957; D.-X. Zhu 1982), and *iv*) they are neither words nor phrases, but represent a transitional stage of lexicalization (e.g. Dong 2002; L.-D. Li 1990; Yu 1989).

Two influential generative works on the identity of separable words are C.-T. J. Huang (1984) and H.-M. Zhang (1992), who both argue for a combined position of dual identity plus ongoing lexicalization. C.-T. J. Huang (1984) classifies separable words into three groups based on their ability to take an additional object and separability, as in Table 2.3.

	A (Compounds)	B (Separable Words)	C (Phrases)
Inseparable?	+	−	−
Additional object?	+	+	−
Examples	*chu-ban* "publish", *zhu-yi* "pay attention", *guan-xin* "care about"	*fu-ze* "take responsibility", *dan-xin* "worry about", *you-mo* "be humorous"	*bo-pi* "peel", *chi-fan* "eat", *sheng-qi* "be angry"

Table 2.3: Huang's grouping of Chinese V-O items (adapted from W. Hu 2013, p. 232)

H.-M. Zhang (1992) argues against this grouping claiming that some Group C items are intuitively words, e.g. *sheng-qi* "be angry" and reallocates them into Group B. But as W. Hu (2013) points out, Zhang's reallocation does not achieve much concerning word/phrase distinction either, since the reallocated items are still not in Group A. Hu denies the reliability of any syntactic diagnostic for the word/phrase identity of V-O items. We agree on this point. Besides, we find that Group A items are not necessarily "words" either, as in (4)

(4) a. Kaiche shang gaosu   *zhu* dian *yi*.   (*newspaper*)
        drive   ascend high-way ZHU some YI
        "When driving on the high-way, pay some attention (to security)."

   b. Dajia   bangmang *guan* xia *xin* a!   (*BBS*)
      everybody help   GUAN once XIN A
      "People, please help and show some care!"

Additionally, the difficulty to define the idendity of V-O separable words is supported by neural-linguistic experiment. As Zhang and Jiang's (2010) Event-Related Potential (ERP) experiment shows, separable words are totally different from real compounds in both storage form and semantic processing. They argue that their experimental results do not support any previous identification (i.e. words, phrases, or dual identity). In sum, generative linguists have endeavored to connect Chinese data to cross-linguistic

patterns, but their conclusions are not easy to defend given the flexibility in the data.

2.2 Compound verbs in Mandarin *vs.* Dongying

An initial comparison of Mandarin and Dongying compound verbs following the traditional classification discloses a number of distinctions. A first point is that among the seven types, only four show regular syntactic variation, i.e. predicate-complement, verb-object, SVC, and BCC, while the other three (subject-predicate, modifier-head, coordination) only differ in the existence/absence of individual items, as in (5).

(5)

Type	Example	M	D
Sub-pred	*yan-hong* "eye-red⇸be jealous"	+	−
	sin-kou "heart-ruthless⇸violent-tempered"	−	+
Mod-head	*bian-fang* "all over-visit⇸travel all over"	+	−
	chao-la "madly-talk⇸brag"	−	+
Coordination	*gong-ji* "attack-attack⇸attack"	+	−
	shi-duo "pick-pick⇸tidy up"	−	+

When an item of these three types exists in both varieties, it behaves without variation, i.e. as an inseparable verbal unit, as in (6).

(6) a. Sichuan *di-zhen*-le.   (Mandarin)

   Sichuan earth-quake-LE[2]

   "There was an earthquake in Sichuan."

   b. Sichuæ *di-zhen*-liæ[3]   (Dongying)[4]

   Sichuan earth-quake-LIE

   "There was an earthquake in Sichuan."

As for the other four types, the lexically-based existence/absence distinction still holds. Moreover, their separability and interaction with grammatical morphemes vary as well.

2.2.1 Predicate-complement compounds

First observe the resultative below.

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[4]We temporarily gloss all instances of *le* as LE.

[4]This is the Dongying counterpart of the Mandarin sentence-final-*le*. We temporarily gloss it as LIE.

[4]We use *pinyin* to represent Dongying, resorting to IPA when necessary.

(7) a. Ta *da-sui*-le   huaping.   (Mandarin)

      he hit-broken-LE vase

      "He broke the vase."

   b. Ta *da-sui*   huaping-le.

      he hit-broken vase-LE

      "He broke the vase."

   c. (?) Ta *da-sui*-le   huaping-le.

      he hit-broken-LE vase-LE

      "He broke the vase."

   d. Te *da-sui*-liu   huapingr-liæ.   (Dongying)

      he hit-broken-LE vase-LIE

      "He broke the vase."

   e. *Te *da-sui*-liu huapingr.

   f. *Te *da-sui* huapingr-liæ.

In Mandarin, (7a-b-c) are all acceptable. (7a) only exists in "isolated written register" (henceforth IWR); in spoken language, (7b) sounds more natural than (7c), though still less perfect than *ba*-construction (8). By contrast, Dongying only allows (7d) and *ba*-construction (8b). This pattern holds for most (if not all) resultatives.

(8) a. Ta ba huaping *da-sui*-le.   (Mandarin)

      he BA vase   hit-broken-LE

      "He broke the vase."

   b. Te mæ ne-huapingr lai   *da-sui*-liæ.[5]   (Dongying)

      he BA the-vase   LAI hit-broken-LIE

      "He broke the vase."

As for other subtypes of predicate-complements, the variation is more complex. First let's look at directionals. For simplex (monosyllabic) directionals see (9).

(9) a. Xiaohong *jian-xia*-le   toufa.   (Mandarin)

      Xiaohong cut-down-LE hair

      "Xiaohong cut down (her) hair."

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[5]In Dongying, *ba*-construction is realized as *mæ (ne-)…lai V*, wherein *ne* "that" functions like a quasi-definite article, and *lai* is a meaningless filler grammaticalized from "come".

  b. * Xiaohong *jiao-he*-liu toufa.   (Dongying)
    Xiaohong cut-down-LE hair

  c. Xiaohong *jiao-he* toufa *(lai)-liæ
    Xiaohong cut-down hair *(come)-LIE
    "Xiaohong cut down (her) hair."

  d. Xiaogang *pa-shang*-le shan.   (Mandarin)
    Xiaogang climb-up-LE mountain
    "Xiaogang climbed up the mountain."

  e. * Xiaogang *pa-hang*-liu shan.   (Dongying)
    Xiaogang climb-up-LE mountain

  f. Xiaogang *pa-hang* shan *(qu-)liæ.
    Xiaogang climb-up mountain *(go)-LIE

As we can see, IWR-sentences are acceptable in Mandarin (9a)(9d) but forbidden in Dongying (9b)(9e). In Dongying, LE cannot be attached to the compound, but requires an additional *lai/qu* "come/go→hither/thither" following the object (9c)(9f). (9) only involves transitive cases. Intransitive directionals must be expressed by complex (i.e. disyllabic) complements as in (10). A complex directional consists of a simplex directional plus *lai/qu* "come/go→hither/thither".

(10) a. Ta *zou-jin-qu*-le.   (Mandarin)
    he walk-in-go-LE
    "He walked in."

  b. Ta *zou*-le *jin-qu.*
    he walk-LE in-go
    "He walked in."

  c. Te *zou-zin-qu*-liæ.   (Dongying)
    he walk-in-go-LIE
    "He walked in."

  d. * Te *zou*-liu *zin-qu.*
    he walk-LE in-go

  e. Te *zou*-liu *zin-qu*-liæ.
    he walk-LE in-go-LIE
    "He **walked** in."

There are also transitive complex directionals, as in (11). As to separability, an intransitive complex directional VD$_1$D$_2$ in Mandarin can only be separated from one place, i.e. V-( )-D$_1$D$_2$ (10b); a transitive one can be separated from two places, i.e. V-( )-D$_1$-( )-D$_2$ (11b)(11c). In Dongying, whether an intransitive directional is separated by LE (10e) or not (10c) does not influence acceptability (though note the reading difference).

(11) a. Xiaoming *gua-shang-qu*-le denglong(??-le).   (Mandarin)
Xiaoming hang-up-go-LE lantern(*-LE)
"Xiaoming hang up the lantern."

  b. Xiaoming *gua-shang* denglong *qu*-le.
Xiaoming hang-up   lantern   go-LE
"Xiaoming hang up the lantern."

  c. Xiaoming *gua*-le   denglong *shangqu*-le.
Xiaoming hang-up lantern   go-LE
"Xiaoming hang up the lantern."

Like in Mandarin, transitive complex directionals in Dongying can also appear either as a whole or in separation, but when it appears as a whole it cannot take LE (12a). Also note the phonological change in Dongying. When *shang* is separated from the verb base, it must retain a full tone and a full initial consonant (*shàng*) (12c). By contrast, when it is attached to the verb it must be reduced to neutral tone and undergo initial consonant lenition (*hang*) (12a)(12b).

(12) a. Xiaoming *gua-hang-qu*(*-liu) denglong(-liæ).   (Dongying)
Xiaoming hang-up-go(*-LE) lantern(-LIE)

  b. Xiaoming *gua-hang* denglong *qu*-liæ.
Xiaoming hang-up   lantern   go-LIE

  c. Xiaoming *gua*-liu   denglong *shang-qu*-liæ.
Xiaoming hang-LE lantern   up-go-LIE
"Xiaoming hang up the lantern."

In sum, the behavior of directionals is complicated in both Mandarin and Dongying. An overall observation is that they are highly separable. Besides, in Dongying the sentence reading changes with the directional configuration. Last, the IWR-effect may disappear when the object alters (13).

(13) Xiaoming *gua-hang-qu*-liu yi-guo denglong.   (Dongying)
Xiaoming hang-up-go-LE one-CL lantern
"Xiaoming hang up a lantern."

There is still a third type of complement in predicate-complement compounds, i.e. phase complement (Chao's (1968) term, henceforth PC), which marks action phase. PCs can be monosyllabic (simplex) or disyllabic (complex), and their syntactic behaviors show variation. For example:

(14) a. Xiaoming *chi-wan*-le   fan.   (Mandarin)
        Xiaoming eat-finish-LE meal
        "Xiaoming has finished eating."

    b. Xiaoming *chi-wan*   fan-le.
        Xiaoming eat-finish meal-LE

    c. (?) Xiaoming *chi-wan*-le   fan-le.
          Xiaoming eat-finish-LE meal-LE

    d. * Xiaoming *chi-wæ*-liu   fæ.   (Dongying)
          Xiaoming eat-finish-LE meal

    e. Xiaoming *chi-wæ*(-liu)   fæ-liæ.
        Xiaoming eat-finish(-LE) meal-LIE
        "Xiaoming has finished eating."

The simplex-PC *chi-wan* "eat-finish" behaves like resultatives in being inseparable and showing IWR-effect (14). However, unlike resultatives, *chi-wan* does not compulsorily take LE in Dongying; though this is not equally true for all simplex-PCs (15).

(15) a. Xiaoming *zu-hao*(-liu)   fæ-liæ.   (Dongying)
        Xiaoming make-good(-LE) meal-LIE
        "Xiaoming has cooked out the meal."

    b. Ne-tian *xia-kai*(-liu)   yu-liæ.
        the-sky down-open(-LE) rain-LIE
        "It began to rain."

    c. Xiaohong *zhua-zhu*(??-liu)   shengzi-liæ.
        Xiaohong catch-stop(??-LE) rope-LIE
        "Xiaohong caught hold of the rope."

    d. Xiaogang *he-hang*(*-liu)   nai-liæ.
        Xiaogang drink-up(*-LE) milk-LIE
        "Xiaogang drank up the milk."
        "Xiaogang (finally) had milk to drink. (he didn't have before)"

    e. Xiaowei *shang-hang*(*-liu) xiao-liæ.

        Xiaowei up-up(*-LE)   school-LIE

        "Xiaowei (finally) went to school. (he didn't have the chance before)"

In (15), *zu-hao* "cook out" and *xia-kai* "begin to rain" behave exactly like *chi-wan* "eat-finish"; *zhua-zhu* "catch hold of" with LE is marginally acceptable, whereas *he-hang* "drink up/finally be able to drink" and *shang-hang* "finally be able to go to" cannot be attached with LE. This is probably relevant to the PC's property—*wan/hao/kai/zhu* "finish/good/open/stop" are verb/resultative-like[6], while *hang* "up" is directional-like. Also, while (15c) is marked, the situation is reversed when we change the object to (16); the sentence is only acceptable with LE attached to compound and without *liæ*.

(16) Xiaohong *zhua-zhu*-liu   tiao shengzi(*-liæ).   (Dongying)

      Xiaohong catch-stop-LE CL   rope(*-LIE)

      "Xiaohong caught hold of a rope."

Complex-PCs are limited in number, see (17) for the example of *qi-lai* "rise-come→begin to". As we can see, an intransitive complex-PC compound can be separated by LE in Mandarin, but not in Dongying.

(17)   a. Xiaohong *ku-qi-lai*-le.   (Mandarin)

          Xiaohong cry-rise-come-LE

          "Xiaohong began to cry."

       b. Xiaohong *ku*-le   *qi-lai.*

          Xiaohong cry-LE rise-come

          "Xiaohong began to cry."

       c. Xiaohong *ku-qie-lai*-liæ.   (Dongying)

          Xiaohong cry-rise-come-LIE

          "Xiaohong began to cry."

       d. * Xiaohong *ku*-liu   *qie-lai*(-liæ.)

           Xiaohong cry-LE rise-come(-LIE)

In transitive cases, both Mandarin and Dongying only allow one natural structure, i.e. *V-qi-O-lai* "begin to V-O", as in (18).

(18)   a. Tamen *shuo-qi* hua   *lai*-le.   (Mandarin; Dongying the same)

          they   talk-rise words come-LE

          "They began to talk."

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[6]Adjectives are classified as stative verbs in Chinese.

   b. * Tamen *shuo-qi-lai*(-le)   hua(-le).
      they   talk-rise-up(-LE) words(-LE)

   c. * Tamen *shuo* hua   *qi-lai*-le.
      they   talk words rise-come-LE

Additionally, *qi-lai* "rise-come" can be used as directional like other complex directionals in (10). In sum, phase complements is a mixed group, including verb-like, resultative-like, and directional-like cases. Their connections and distinctions are to be studied.

A last variation of predicate-complements concerns the Potential Construction. As in (19), the distinction lies in the affirmative case, where Mandarin uses *de*, while Dongying uses stacked LEs. The negative potential shows no variation.

(19) a. Wo *chi*-de-*wan*.   (Mandarin)
        I   eat-DE-finish
        "I can finish eating."

      b. Wo *chi*-bu-*wan*.
        I   eat-not-finish
        "I can't finish eating."

      c. Wo *chi*-wæ-liu-liu.   (Dongying)
        I   eat-finish-LE-LE
        "I can finish eating."

      d. Wo *chi*-bu-*wæ*.
        I   eat-not-finish
        "I can't finish eating."

2.2.2 V-O compounds

For V-O compounds, the variation mainly concerns separability. (20) is a simplest case.

(20) a. Xiaoming *bi*(?-le)   *ye*-le.   (Mandarin)
        Xiaoming finish(?-LE) course-LE
        "Xiaoming has graduated."

      b. Xiaoming *bi*(?)(-liu)   *ye*-liæ.   (Dongying)
        Xiaoming finish(?)(-LE) course-LIE
        "Xiaoming has graduated."

Like most V-O compounds, *bi-ye* "graduate" can be used separatedly in the form of [V-LE-O-LE]. However, in Mandarin the separated form is marked (at least for *bi-ye*) (20a); in Dongying, the unseparated form is either marked (20b) or unacceptable (21).

(21) a. Xiaoming *chi**(-liu) *fæ*-liæ.   (Dongying)
Xiaoming eat*(-LE) meal-LIE
"Xiaoming has eaten."

b. Xiaoming *shui**(-liu) *jiao*-liæ.
Xiaoming sleep*(-LE) JIAO-LIE
"Xiaoming has went to bed."

In Dongying, most Mandarin V-O compounds either do not exist (22) or are only used intransitively (23).

(22)

Meaning	Mandarin	Dongying
"care for"	*guan-xin* "relate-heart"	*siang-siang-zhou* "frequently thinking" (periphrastic)
"blame"	*man-yuan* "bury-grudge"	*yuan* "grudge" (simple verb)
"offend"	*de-zui* "get-sin"	*re-zhou* "offend-PC" (pred-comp)

(23) a. Laoshi rang Xiaoming *zhu-yi*   zhejian shi.   (Mandarin)
teacher let   Xiaoming pour-attention this matter
"The teacher asks Xiaoming to pay attention to this matter."

b. Xiaogang zongshi *cha-zui*   bieren-de   duihua.
Xiaogang always insert-mouth other people-GEN dialogue
"Xiaogang always cut in others' dialogues."

c. Laoshi   zhao Xiaoming dai-zhejian shir-hang *zhu-yi*-zhoudiær.   (Dongying)
teacher seek Xiaoming be at-this   matter-on pour-attention-IMPERATIVE
"The teacher asks that Xiaoming pay attention to this matter."

d. Rengge shuohuar, Xiaogang guang *cha-zui.*
others   talk   Xiaogang always insert-mouth
"When others are talking, Xiaogang always cuts in."

Occasionally we see truly transitive V-O compounds in Dongying (24) (mainly Mandarin "loan words"), which are only used when there is no lexical/periphrastic alternative, and seldom by people with little education or mass media exposure.

(24) a. Guowuyuæ jiang *chu-tai*-liu guo sin zhengce. (Dongying)
state council just out-stage-LE CL new policy
"The State Council has just put forward a new policy."

b. ɲeguo yuan-liou jiang cong-meiguo *zin-kou*-liu tai jiqi.
that hospital-in just from-USA enter-mouth-LE CL machine
"In that hospital there has just imported a new machine from USA."

2.2.3 SVC and BCC compounds

Finally, Mandarin abounds in SVC and BCC compounds, which are mostly high-register items non-existent in authentic Dongying vocabulary. But nowadays many items are borrowed from Mandarin with almost identical behavior, except for the occasional IWR-effect related with "double-LE". Following is an example of BCC.

(25) a. Xuexiao ba ta *quan-tui*-le. (Mandarin)
school BA he persuade-withdraw-LE
"The school persuaded him to drop out."

b. Rengge xiaowu-liou mæ-te-lai ɲæ-liu jia-qu-liæ. (Authentic Dongying)
they school-in BA-he-LAI chase-LE home-go-LIE
"They in the school (i.e. the teachers) chased him to go home."

c. Xuexiao-liou mæ-te-lai *quæ-tui*-liæ. (Mandarinized Dongying)
school-in BA-he-LAI persuade-withdraw-LIE
"In the school (teachers) have persuaded him to drop out."

Non-loan SVCs rarely occur in Dongying, but we do find a few authentic BCCs. At first sight, they behave just like resultatives, with the same IWR-effect and "double-LE" effect (26). Although the object may occupy different positions, in all cases the compound remains combined.

(26) a. Baba ba baobao *dou-xiao*-le. (Mandarin)
daddy BA baby amuse-laugh-LE
"Daddy made the baby laugh."

b. Baba *dou-xiao*-le baobao(-le)
daddy amuse-laugh-LE baby(-LE)

c. Baba mæ-ne-wawa-lai *qiu-siao*-liæ. (Dongying)
daddy BA-the-baby-LAI amuse-laugh-LIE
"Daddy made the baby laugh."

17

    d. Baba *qiu-siao**(-liu)   wawa*(-liæ).
       daddy amuse-laugh*(-LE) baby*(-LIE)

However, unlike resultatives (inseparable except Potential Construction), BCCs can be separated by the bi-functional constituent, in which case a ZHE/LE (presumably an aspect-marker) is compulsory after the first verbal component in Dongying but not in Mandarin (27).

(27) a. Baba *dou*(-zhe)   baobao *xiao*-le.   (Mandarin)
        daddy amuse(-ZHE) baby   laugh-LE
        "Daddy made the baby laugh."

      b. Baba *qiu**(-zhou)   wawa *siao*-liæ.   (Dongying)
        daddy amuse*(-ZHE) baby   laugh-LIE
        "Daddy made the baby laugh."

      c. Laoshi *jiao*(-le) Xiaoming *lai*-le.   (Mandarin)
        teacher call(-LE) Xiaoming come-LE
        "The teacher called Xiaoming to come."

      d. Compare: Laoshi *jiao-lai*-le   Xiaoming.
              teacher call-come-LE Xiaoming
        "The teacher called Xiaoming to come."

      e. Laoshi *jiao**(-liu) Xiaoming *lai*-liæ.   (Dongying)
        teacher call*(-LE) Xiaoming come-LIE
        "The teacher called Xiaoming to come."

      f. Compare: Laoshi *jiao-lai*(-liu)   Xiaoming-liæ.
              teacher call-come(-LE) Xiaoming-LIE
        "The teacher called Xiaoming to come."

The bi-functional constituent can be absent but the middle-ZHE/LE must be present in Dongying, whereas it must be absent in Mandarin (28).

(28) a. *Ting**(-zhou) (rengge) *shuo* te kao-hang   daxiao-liæ.   (Dongying)
        hear*(-ZHE) (others) say   he take exam-up university-LIE
        "(I) heard (people) say that he was admitted into university."

      b. *Ting*(*-zhe) (bieren) *shuo* ta kao-shang   daxue-le.   (Mandarin)
        hear(*-ZHE) (others) say   he take exam-up university-LE
        "(I) heard (people) say that he was admitted into university."

Furthermore, *jiao-lai* "call-come" is more separable than *dou-xiao* "amuse-laugh", as in the following (quasi-intransitive) *ba*-constructions. Again, this phenomenon is clearer in Dongying than in Mandarin, as separation is marked in Mandarin (29a) but unmarked in Dongying (29c). The behavior of *jiao-lai* "call-come" is reminiscent of directionals.

(29) a. Laoshi ba Xiaoming *jiao*(?-le) *lai*-le.   (Mandarin)
        teacher BA Xiaoming call(?-LE) come-LE
        "The teacher called Xiaoming to come."

   b. Baba   ba baobao *dou*(*-le)   *xiao*-le.
      daddy BA baby   amuse(*-LE) laugh-LE
      "Daddy made the baby laugh."

   c. Laoshi   mæ-Xiaoming-lai *jiao*(?)(-liu) *lai*-liæ.   (Dongying)
      teacher BA-Xiaoming-LAI call(?)(-LE) come-LIE
      "The teacher called Xiaoming to come."

   d. Baba   mæ-wawa-lai *qiu*(*-liu)   *siao*-liæ.
      daddy BA-baby-LAI amuse(*-LE)   laugh-LIE
      "Daddy made the baby laugh."

Based on the above observation, we have the impression that just like PC-compounds, BCC-compounds also have hybrid members. Some are more like resultatives (e.g. *dou-xiao* "amuse-laugh"), some like directionals (e.g. *jiao-lai* "call-come"), and still some appear unique (e.g. *ting-shuo* "hear-say").

Last but not least, although SVC-compounds are less troublesome (as they do not naturally exist) in Dongying, we cannot ignore the curious behavior of items like *song-gei* "send-give→give (as gift)". When used in combination, it must be adjacent in Mandarin (30a) but separated by LE in Dongying (30b). Among the LEs attached to *gei/ji* and *Xiaohong* in (30), maximally one can be present in Mandarin, whereas minimally one must be present in Dongying.

(30) a. Xiaoming *song*- (*) -*gei*(-le) Xiaohong(-le) yi-ben shu.   (Mandarin)
        Xiaoming send (*) give(-LE) Xiaohong(-LE) one-CL book
        "Xiaoming gave Xiaohong a book (as gift)."

   b. Xiaoming *song**(-liu) *ji*(-liu)   Xiaohong(-liu) yi-benr shu.   (Dongying)
      Xiaoming send*(-LE) give(-LE) Xiaohong(-LE) one-CL book
      "Xiaoming gave Xiaohong a book (as gift)."

Thus, an extreme case is the "zero-LE" *vs.* "triple-LE" contrast in (31a)-(31b).

(31) a. Xiaoming *song-gei*   Xiaohong yi-ben shu.   (Mandarin)
        Xiaoming send-give Xiaohong one-CL book
        "Xiaoming gave Xiaohong a book (as gift)."

    b. Xiaoming *song*-liu *ji*-liu   Xiaohong-liu yi-benr shu.   (Dongying)
        Xiaoming send-LE give-LE Xiaohong-LE one-CL book
        "Xiaoming gave Xiaohong a book (as gift)."

An even crazier case is the (marginal) acceptability of "quadruple-LE"[7] in Dongying in the existence of the adverbial *yizæ* "already" (32a). In comparison, its Mandarin counterpart allows utmost two LEs (like elsewhere) (32b), with "single-LE" (final) being preferred.

(32) a. Xiaoming yizæ   *song*-liu *ji*-liu   Xiaohong-liu yi-benr shu-liæ. (Dongying)
        Xiaoming already send-LE give-LE Xiaohong-LE one-CL book-LIE
        "Xiaoming has already gave Xiaohong a book (as gift)."

    b. Xiaoming yijing   *song-gei*(-le)   Xiaohong(-le) yi-ben shu-le.   (Mandarin)
        Xiaoming already send-give(-LE) Xiaohong(-LE) one-CL book-ASP
        "Xiaoming has already gave Xiaohong a book (as gift)."

Meanwhile, both varieties allow Direct Object to be inserted between *song* and *gei/ji* (33), with no clear syntactic variation except for the omnipresent LE-effects[8]. At this point, we remain agnostic to the category of *gei/ji*.

(33) a. Xiaoming *song*-le yi-ben shu *gei*(-le)   Xiaohong.   (Mandarin)
        Xiaoming send-LE one-CL book give(-LE) Xiaohong
        "Xiaoming gave a book to Xiaohong (as gift)."

    b. Xiaoming *song*-liu yi-benr shu *ji*(-liu)   Xiaohong(-liæ).   (Dongying)
        Xiaoming send-LE one-CL book give(-LE) Xiaohong(-LIE)
        "Xiaoming gave a book to Xiaohong (as gift)."

Above are all our synchronic data.

2.3 Summary

In this chapter, we have reviewed previous studies relevant to Chinese compound verbs and presented our data. As we have seen, traditional studies have a comprehensive classification but are merely descriptive; generative studies have focused on some tricky

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[7]Ignore the *liu-liæ* contrast for now.
[8]In this case, the preferred choice in both varieties is the one without optional LE.

subtypes but are often hard to defend due to data flexibility. In addition, both camps have only studied Mandarin but do not concern cross-dialectal variation. Considering these, we set the following goals for this thesis. First, we need a theory that well settles the controversial issues, e.g. the vagueness of word/phrase boundary. Second, we favor a model that can explain the variation between Mandarin and Dongying data. Third, we want to achieve both descriptive and explanatory adequacy. The first two goals will be the focus of the next chapter. As for the third, a comprehensive account entails a systematic analysis concatenating the various distinctions. Insofar as our data suggest, we indeed observe parallel variation, e.g. predicate-complements and BCCs. This is reminiscent of the clustering diachronic changes motivated by a single parameter-change discussed in Roberts (2007, 2014). We will make a similar historical analysis and see how it molds synchronic variation in Chinese.

Chapter 3

Theoretical Model

This chapter develops the theoretical model of this thesis. Section 3.1 introduces the theoretical background. Section 3.2 depicts our conception of Chinese sentence structure.

3.1 Theoretical framework

Ever since Chomsky put forward the idea of "beyond explanatory adequacy" (cf. Chomsky 2004), significant advances have been witnessed in the generative enterprise. First and foremost, linguistic theories have been greatly "simplified" (and refined) within the Minimalist Program (cf. Chomsky 1995). Second, more and more attention is paid to linguistic interfaces. Third, there has been a gradual shift of focus from formalizing rules to finding motivations. As Chomsky (2004, p. 104) puts it: "I will assume here an approach to the study of language that takes the object of inquiry to be an internal property of persons." The theoretical model developed here is basically in line with the spirit of MP in a broad sense. We endeavor to make our model conceptually coherent and connect it with the general evolution of human language.

3.1.1 Abandoning Lexicalism

Since Chomsky (1970), the Lexicon has been viewed as another generative engine (besides syntax). As a successor of GB, MP naturally takes a Lexicalist view and assumes that lexical items are created separately before being inserted into syntax as atoms, hence the Lexical Integrity Hypothesis (LIH) (cf. Di Sciullo and Williams 1987; Lapointe 1980).

However, Lexicalism has long been disputed (e.g. Marchand 1969; Levi 1978; Bauer 1998; Spencer 1991; Giegerich 2004). W. Hu (2013) summarizes three problems of LIH: *i*) it re-

Perspective	Definition of "word"
Orthographic	defined by writing conventions
Sociological	as perceived by native speakers
Lexical	idiosyncratic, arbitrary pairings of sound and meaning (listeme)
Semantic	a unitary concept
Phonological	a word-sized entity against phonological (e.g. prosodic) criteria
Morphological	the output of a word-formation rule
Syntactic	a syntactically free form (syntactic atoms; X^0)
Psycholinguistic	*vis-à-vis* the operation of the language processor

Table 3.1: Eight perspectives of wordhood (adapted from Packard 2000, pp. 7–14)

lies on "word", which is a debated notion; *ii*) it is an empirical generalization rather than a theoretical thesis; *iii*) it is often used as a criterion for word/phrase distinction, which is circular against (i). Clearly, the core problem is wordhood. Apart from well-known challenges like English N-N compounds (cf. Bauer 1998) and Chinese V-O compounds, the different perspectives on "word" in Table 3.1 also complicate the situation.

As we have seen, linguists cannot agree on the wordhood of Chinese separable words partly due to their different perspectives, e.g. Huang's (1984) syntactic perspective, Zhang's (1992) sociological perspective, and Feng's (1997) phonological perspective. A further complication in Chinese is that the word-morpheme boundary is also vague.

First, Chinese morphemes are all monosyllabic, each corresponding to a character. While Mandarin morphemes are mostly bound (cf. Packard 2000, p. 77), their "boundness" is only relative. For instance, *peng* and *you* in *peng-you* "friend" cannot stand freely in sentences, but can combine with other morphemes to produce similar units, e.g. *qin-peng* "relative and friend", *gao-peng* "tall-friend→distinguished friend", *hao-you* "good friend", *lao-you* "old friend", etc. Such units *a*) are intuitively words (though their English counterparts are phrases); *b*) exist in unlimited numbers and show phrase-like productivity; *c*) show various degrees of idiosyncrasy; *d*) pass LIH test. Given (a) (c) (d), they are listemes; given (b), they are unlikely to be listed. This is paradoxical.

Second, given the complex vocabulary make-up and register system of Mandarin, the co-existence of archaic and modern usage is common. Defining *peng* and *you* as bound ignores examples like *wo wu peng wu you* "I no friend no friend→I have no friend" and *yi hu jiu, er san you* "one bottle wine, two three friend (news title, describing ideal life)". Note that these are not idioms, but are produced consciously. As R. Li (1952) says: "the meanings of individual characters [whether free or bound] are still living in speakers' brains." (cf. Feng 1997) Packard (2000, p. 1) also mentions "Chinese native speakers

possess implicit knowledge about the structure and use of words". According to Lexicalism, morphemes that are historically isogenous yet have developed separate syntactic, semantic and/or phonological properties are separate listemes. However, given their omnipresence in Chinese, such a Lexicon must be extremely redundant.

The above points lead us to the question of what the Lexicon contains. Researchers often make different decisions on this question (e.g. C.-T. J. Huang 1984; Packard 1997, 2000; Sun and Y.-F. Li 2010). Such decisions are fine separately, but problematic when viewed together, because they often target the same Lexicon in the same language. In our understanding, any elaboration of the Lexicon is just a paraphrasing of the portion of data being examined. Thus, we are in a position to abandon *i)* Lexicalism, and *ii)* any elaboration on the Lexicon. This naturally brings us to Distributed Morphology (DM).

3.1.2   Distributed Morphology and the Root

Although DM (Halle and Marantz 1993, 1994, et seq.) was first proposed as a "mixed" model to mediate two competing morphological theories—morpheme-based morphology (e.g. Lieber 1980) and word-based morphology (e.g. Anderson 1992)—its theoretical inspirations are much wider. "Distributed" refers to "the separation of properties which in other theories are collected in the Lexicon" (Harley and Noyer 1999). The Lexicalist Lexicon is distributed in three lists—Narrow Lexicon (morphosyntactic features; provided by UG), Vocabulary (Vocabulary Items; language-specific phonological forms), and Encyclopedia (non-linguistic knowledge). Since these lists are non-computational and have clearly defined content, the "superpower" of Lexicon is removed. The most basic DM assumptions are: *i)* Vocabulary late insertion, i.e. Narrow Syntax (NS) only works with abstract features (morphemes); *ii)* Underspecification, i.e. VIs are not fully specified for their inserting position and compete for insertion; *iii)* Syntactic-hierarchical-structure-all-the-way-down, i.e. words and phrases are constructed by identical mechanisms in (broad) syntax (the only generative engine, cf. Marantz 2001).

In standard DM theory (cf. Harley and Noyer 1999), morphemes include f-morphemes (functional/abstract) and l-morphemes (lexical/contentful). The former are morphosyntactic features; the latter are called Roots ($\sqrt{}$). Roots are acategorial/uncategorized and must be licensed by the nearest c-commanding f-morpheme known as categorizer or "little x" (e.g. *v, n, a*). Thus, traditional lexical categories are merely a derived phenomenon with no universal significance. This is known as L-morpheme Hypothesis (cf. Marantz 1997; Harley 1995; Harley and Noyer 1999, 2000). More recently, it has been combined with Lexical Decomposition Hypothesis, i.e. all lexical categories are com-

posed of category-less Roots and category-assigning heads (cf. Embick and Noyer 2007; Marantz 2001).

Until today, Roots remain controversial. On one hand, their insertion is disputed. Since Pfau (2000), Roots have been standardly assumed to be "language-specific combinations of sound and meaning" listed in Narrow Lexicon, i.e. they are not subject to Late Insertion (cf. Embick and Noyer 2007, p. 295). However, Roots defined as such have little difference from Lexicalist LIs. In fact, this definition mixes two primitive concepts, i.e. Root identity ($\sqrt{}$) and Root reference ($\{\Phi, \Sigma\}$). On the other hand, disagreement occurs concerning Roots' syntactic behavior. Some researchers (e.g. Acquaviva 2008; Alexiadou 2014; Borer 2003, 2009, 2014; De Belder 2011) believe Roots are "radically syntactically deficient" and cannot take complement or head phrase, some others (e.g. Cuervo 2014) believe they CAN (but not necessarily) take ONE (and only one) complement, still others (e.g. Harley 2014a) regard them as non-special syntactic objects (SOs) that can merge with XP and project $\sqrt{}$P[1]. Note that the idea lying behind the original proposal of Root is lexical decomposition, according to which Roots are category-less. As Harris (1996, p. 105) articulates: "Roots have no morphosyntactic category, no gender, and no form of class affiliation." Thus, if we are to strictly follow lexical decomposition, we cannot endow Root with abilities entailing a category.

Furthermore, if we stick to lexical decomposition, even the "meaningfulness" of Roots—though assumed by DM founders[2]—becomes dubious, because "meaning presupposes at least a categorization in semantic types, which in turn presupposes a syntactic category"[3] (Acquaviva 2008). In line with Acquaviva (2008) and Pfau (2000, 2009), Harley (2014a) adopts an index notation approach, i.e. Roots are individuated by a numerical address linking instructions for phonological and semantic realizations. A numbered Root such as $\sqrt{}_{279}$ may serve to bridge PF-instructions related with /teɪp/ and LF-instructions related with "tape". Borer (2014) further argues that Roots do not even link meaning; semantic instructions are always assigned to labeled constituents as a whole.

We remain agnostic to the details, because as Harley (2014b, p. 447) says: "the discussion of Roots' essential natures, in and out of syntax, is far from over." One common point in the above arguments is: Root in a faithful DM sense is more like a container rather than the content(s). Let's use human as a metaphor. Without any worldly feature (e.g. name, sex, race) a human is still a human; this is the only "proto-feature" that matters to the

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[1] As Cuervo (2014) states, this is a "much less popular" view.

[2] Marantz (1997) defines Roots as "things with special meanings", and Marantz (2001) specifies that roots can mean entities, states, or events.

[3] For example, by saying $\sqrt{\overline{\text{HAMMER}}}$ means a tool, we are presupposing a nominal category. What is perceived as meaningful is not the Root but the combination [n, $\sqrt{\overline{\text{HAMMER}}}$].

universe as well as the "container" that enables human to get involved in the world. The same is true for Roots—Root, as a "container", also enables sound and meaning to get involved in the same cognitive space. Without Root, sound and meaning merely stay in their separate zone, and there would not be language. This leads us to the speculation that Root is a milestone in the evolution of human language. We will come back to this later. For now, let's briefly go over some other DM assumptions and end this section.

The Morphological Structure (MS) is a component with dual identity. On one hand, it is interpretive as part of PF; on the other hand, it is also computational by virtue of syntax-all-the-way-down. This is unsurprising, because DM simply "magnifies" the syntax-phonology interface, and as an interface, MS certainly have properties of both sides. Apart from Vocabulary Insertion (VIn), MS also involves the following operations.

MS-Operation	Description		
M-Merger	structural exchange by head-to-head affixation	(i)	in NS ≈ Head Movement
		(ii)	at MS before VIn = Lowering
		(iii)	at MS after VIn = Local Dislocation
Fusion	combining different nodes to a new single node realized by one VI		
Fission	splitting one node into many and realizing them by different VIs		
Impoverishment	the deletion of morphosyntactic features in certain contexts		
Readjustment Rules	idiosyncratic rules applied to individual VI or class of VIs		

Table 3.2: MS-Operations (cf. Embick & Noyer 2001; Harley & Noyer 1999; Siddiqi 2009)

3.1.3 Head Movement and Linearization

In DM, Head Movement (HM) is an NS-version of M-Merger (cf. Harley and Noyer 1999). Hierarchical structure exists until VIn; thus HM and Lowering apply to approximately the same structure, though at different timing and in different direction. Researchers dispute over M-Merger, e.g. Julien (2002) argues that DM only permits HM as defined by Baker (1988, 1996), W. Hu (2013) further redefines HM and argues that the ideal workspace for HM is MS. We agree that both Julien (2002) and W. Hu (2013) are inspiring, but will not abandon M-Merger as a whole, because attributing all HM-like phenomena (both NS and PF) to HM may end up being renaming M-Merger.

A detailed comparison of different views is beyond our scope. Since M-Merger is still assumed by most DM researchers, we simply follow the mainstream. For simplification, we treat NS M-Merger as HM in the general sense. Thus, an important thing for us is that HM should be properly motivated. To this end Citko's (2008) Project Both Theory

(PBT) as suggested by W. Hu (2013) is a nice approach. This approach does not treat HM as head-adjunction, but as tree-expanding Re-merger (i.e. Internal Merge). Thus, HM is a process where the moved head (Goal) projects and labels. Citko (2008) further proposes that in HM both Probe and Goal project, hence Project Both (PB). PB assumes that the labels of Probe and Goal combine into a composite one.

Now let's turn to the trigger of HM. Matushansky (2006) regards all syntactic movement as feature-valuation plus Re-merger, but differentiates the specific features that trigger XP-movement and HM—the former by Agree while the latter by c-selection, i.e. a head selects the syntactic category of the head of its complement. C-selection is realized by a c-feature via HM. Matushansky assumes c-feature to be the uninterpretable counterpart of categorial feature. Significantly, the categorial feature of a lexical head may determine the c-feature of a series of functional heads within the same Extended Projection. Matushansky further identifies the interpretable categorial feature as the DM categorizer. Nevertheless, she does not mention what triggers the Merger of "little x" and Root. There are plenty of literature on Initial Merger in both MP and DM (e.g. Chomsky 1994; De Belder 2011; De Belder and van Craenenbroeck 2011; Guimarães 2000; W. Hu 2013). What concerns us is how this issue correlates with our conception of the Root.

W. Hu (2013) argues that the Root, being featureless, can be regarded as carrying an [uF], which he defines as an unvalued categorial feature ([uC]). Thus, Root is simultaneously Probe (carrying [uF]) and Goal (attracted by v). According to PB, Root-qua-Probe can project and label. Hu also identifies this [uF] as Chomsky's (2005) Edge Feature (EF), which he dubs as "unvalued". This approach is innovative but conceptually problematic. First, "featureless" does not equal [uF], because [uF] presupposes a feature. Second, Root is category-less and cannot project; what projects is the categorizer. Third, equating Root with Probe and EF with [uC] is misunderstanding Chomsky's words. On one hand, although Chomsky (2008, p. 151) describes EF as "of the Probe", his "Probe" refers to LI instead of Root. On the other hand, Chomsky (ibid.) mentions "EF-Probe does not involve feature-matching" but says nothing about its value. In fact, he only clarifies EF as "uninterpretable" (Chomsky 2007, p. 11), but this does not strictly equal "unvalued" (cf. Bošković 2011; Pesetsky and Torrego 2007); W. Hu (2013, p. 128) himself also recognizes that EF simply does not "involve different values", hence being "valueless" instead of "unvalued". In a word, treating Root as Probe with unvalued feature is ungrounded.

As we have argued, Root is more like a container connecting sound and meaning. This is similar to Boeckx's (2011) explanation on EF. Boeckx represents a lexicalized concept endowed with EF as $\{C\}$, i.e. a concept with a lexical envelope. Crucially, Boeckx conceives the "lexical envelope" as "a mapping instruction to C-I to fetch a concept", which

is exactly how we imagine the Root. Moreover, his claim that "EF, the catalyst for recursive Merge, is the one key property that had to evolve" matches our evolutional idea of the Root, i.e. a biological endowment of the human brain. Thus, we believe that our Root is precisely Boeckx's "envelope-qua-EF". Returning to Initial Merger, we do not assume its trigger to be the same as HM's, because it is not HM by definition (remember that a category-less Root cannot head or project). Instead, we believe the trigger is simply that the "sticky" (Boeckx's term) Root (as EF) craves merging. After Initial Merger, a dummy-LI is ready to participate in later derivation. Note that our EF-Root simply exists throughout the derivation (i.e. "undeletable" in Chomsky's words); it does not label on its own but nonetheless sticks to the categorizer in all the labels onward.

As to linearization, we follow Berwick and Chomsky's (2011) "externalization" view and assume that linearization is confined to PF (cf. Biberauer and Roberts 2013). Following the MP (Chomsky 2000, et seq.) and DM (Marantz 2001, et seq.) Phase Theory, we subscribe to Multiple (and presumably Simultaneous) Spell-Out (Bresnan 1971; Uriagereka 1999). That is, when a phase is finished, the structure in the phase domain is sent to interfaces (Transfer, or non-standardly "Spell-Out" [4]). Phase heads (PHs)—presumably Chomsky's Core Functional Categories (CFCs; *modulo* T for Chomsky) plus DM "little x"—are the (sole) loci of uninterpretable features but can pass them to non-PHs (Feature Inheritance; FI). This entails that all NS-Operations except External Merge (e.g. FI, Agree, Move, Transfer) happen simultaneously on phase level (cf. Citko 2014). As to word-internal phase, "little x" splits the derivation into an "inner domain" (non-compositional) and an "outer domain" (compositional). Thus, Initial Merger features idiosyncrasy (cf. Marantz 2002). Harley (2014b) further proposes a three-layer model for idiomaticity (Figure 3.1).[5]

After Transfer to PF, post-syntactic operations carry out linearization. Many researchers further "magnify" MS to specify when what happens (e.g. Embick and Noyer 2001; Fowlie 2013; Idsardi and Raimy 2013; Myler 2013). Here we only stress one point: VIn is a borderline between morphosyntactic operations and morphophonological rules. Thus prosodic rules (such as Feng's) naturally take place at MS after VIn. As we have seen, prosody only affects acceptability degree but hardly ever determines grammaticality or affects LF interpretation. Our grammar architecture looks like Figure 3.2.

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[4]Strictly speaking, "Spell-Out" only refers to Transfer to PF (cf. Citko 2014); some DM researchers (e.g. Harley and Noyer 1999; Siddiqi 2009) call Vocabulary Insertion itself "Spell-Out".
[5]We treat Kratzerian Voice equally with Chomskyan *v* and only use it because DM already has a *v*.
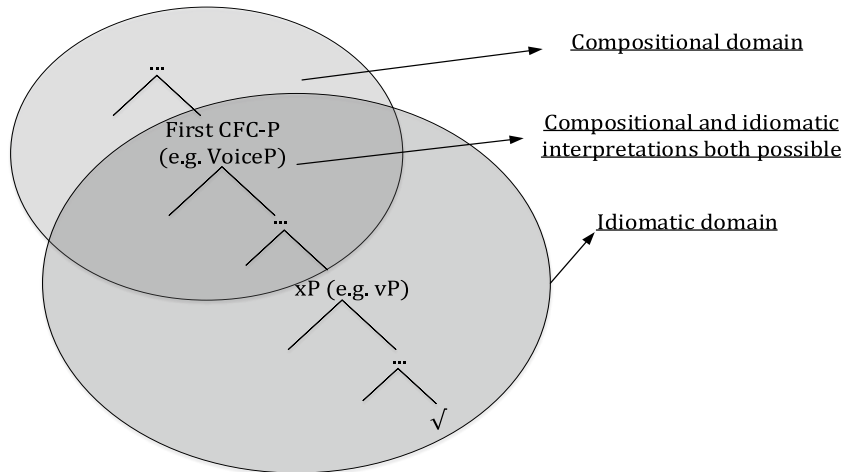
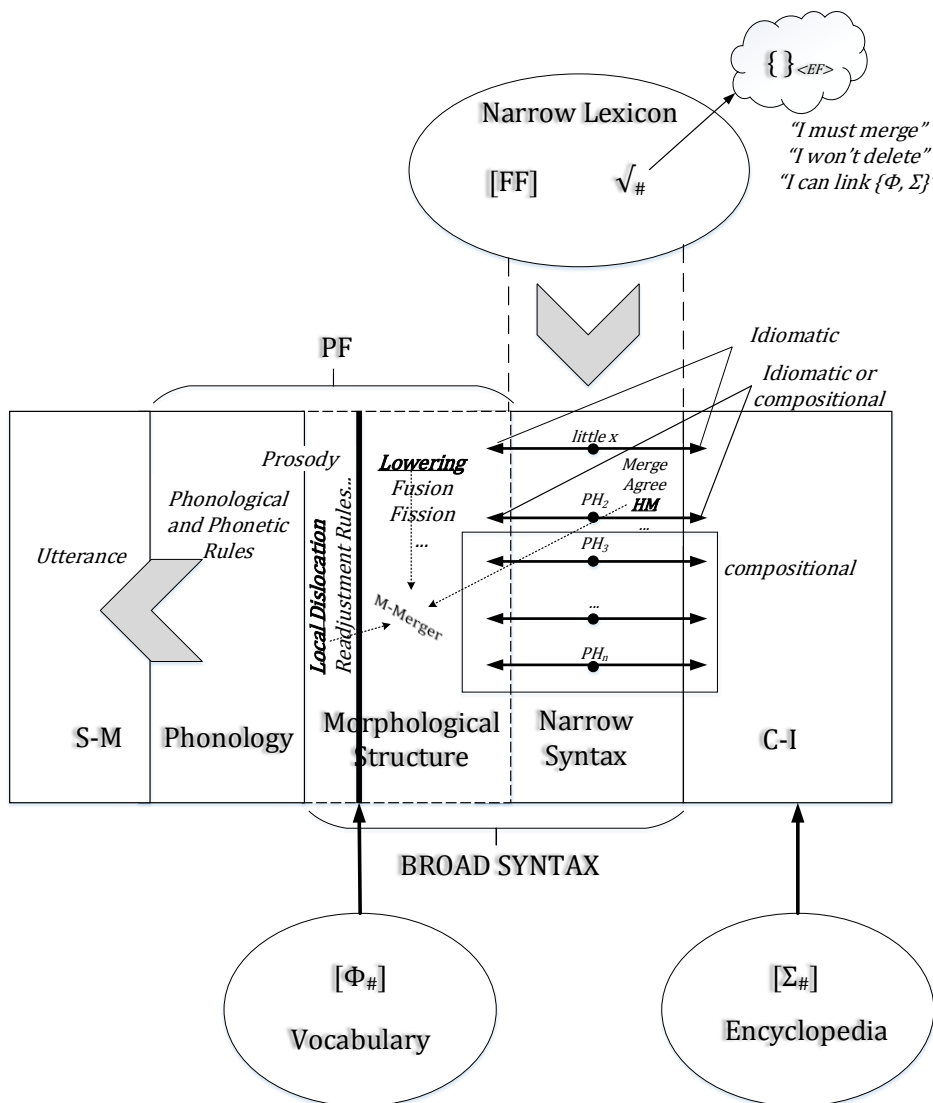Figure 3.1: Phase-based idiomaticity (adapted from Harley 2014b, p. 450)

Figure 3.2: Our Grammar Architecture

3.2 Chinese sentence structure

3.2.1 VoiceP domain

Our understanding of the Chinese sentence structure is directly based on the DM framework. Before we go into the details, several theoretical assumptions need to be declared. First, we follow the lexical decomposition approach (cf. Borer 2005; C.-T. J. Huang 1997; Kan 2007; T.-H. Lin 2001) and argument structure-event structure isomorphism (cf. Cuervo 2003; Hale and Keyser 1993; J. Lin 2004; Pustejovsky 1995; Pylkkänen 2008). Second, we assume a fine-grained hierarchical structure for Chinese sentences similar to the Cartographic approach (cf. Cinque 1999; Rizzi 1997). We are aware that the anti-Cartographic view is gaining popularity (e.g. Boeckx 2010; Gallego 2010; Jordi-Fortuny 2008; Narita 2011; Pietroski 2009), but the influence of Cartography is still significant (e.g. the VP-Shell hypothesis and its subsequent developments). Third, given our conception of the Root, our lexical decomposition is more thorough than many others' (e.g. W. Hu 2013; Kan 2007; J. Lin 2004). Since we do not allow the Root to take any complement or specifier, all arguments are to be introduced by functional heads.

As Marantz (2013) points out, the DM little v has syntactic and semantic dual functions, i.e. it is both a categorizer and an event introducer. Since little v is provided by UG, its different flavors must also directly come from UG. Thus, we should only seek the virtually conceptually necessary primitives. In this respect we generally agree with Cuervo (2003) and Kan (2007) on their three-way partition, i.e. v_{DO}, v_{BE}, and v_{GO}, corresponding to the basic event types (Vendler 1967).

Type of v	Feature specification	Type of single events
v_{DO}	[+dynamic, -inchoative]	Activity
v_{GO}	[+dynamic, +inchoative]	Change (of state)
v_{BE}	[-dynamic]	State

Table 3.3: Three flavors of little v (cf. Kan 2007, p. 60)

By stacking these primitive events we get more complicated types (Table 3.4). Crucially, causatives and inchoatives are bi-eventive structures. Our model differs from Kan's (and Cuervo's) in two ways: *i*) we further assume a v_{TRANS}, which is essentially a variant of v_{DO} responsible for introducing core-objects (i.e. Patients); *ii*) we propose an Akt-head (=Aktionsart) above little v and below Voice.

Combination	Complex event	Example
$v_{DO}+v_{DO}$	Syntactic causative	make wash, make laugh
$v_{DO}+v_{GO}$	Change-of-location causative	roll, drop, *ti-jin* "kick-enter"
$v_{DO}+v_{BE}$	Change-of-state causative	break, burn, close
$v_{BE}+v_{BE}$	Stative/Property causative	*zui-dao* "drunk-fall"
$v_{GO}+v_{BE}$	Inchoative	break, burn, close

Table 3.4: Complex events made up of three primitive little *v*s (cf. Kan 2007, p. 60)

Our first proposal is mainly out of two considerations. First, since we do not allow Root to take idiosyncratic complement as Kan (2007) (among others) does, all objects must be introduced at Spec-*v*. Meanwhile, the contrast of core and non-core objects in Chinese cannot be ignored. By allowing v_{TRANS} to alternate with v_{DO} (and also $v_{BE/GO}$), we can both retain the syntactic distinction of the two object-types and let them be introduced in the same way. This is a formal schematization of what Sun and Y.-F. Li (2010) describe as "not wasting the existing position". In fact, their "bare root" and situation-typers are in the same spirit with our proposal, though they do not further decompose them. Second, many V-O compounds have both idiomatic and compositional readings, e.g. *xi-shou* "wash-hand/quit"; besides, the idiomaticity of some V-O compounds are not easy to tell, because while the idiomatic reading is meant the compositional meaning is also suggested, e.g. *zhu-fan* "boil-rice→cook (including boiling rice)". In Kan's (2007) model, such objects must occupy different positions in different readings (either as Comp-$\sqrt{}$P or as Spec-*v*P), while in our model what alters is not their position but the flavor of *v*. With the object severed out of the Phase Domain of *v*P, idiomaticity becomes non-compulsory; but since the object is below VoiceP, idiomaticity is still possible. Our four flavors of little *v*s are illustrated below (some details are omitted).

(34)

$v_{DO/BE/GO}$P
├── NON-CORE OBJ
└── $v_{DO/BE/GO}$P
    ├── $v_{DO/BE/GO}$
    └── $\sqrt{}_{\#}$

v_{TRANS}P
├── CORE OBJ
└── v_{TRANS}P
    ├── v_{TRANS}
    └── $\sqrt{}_{\#}$
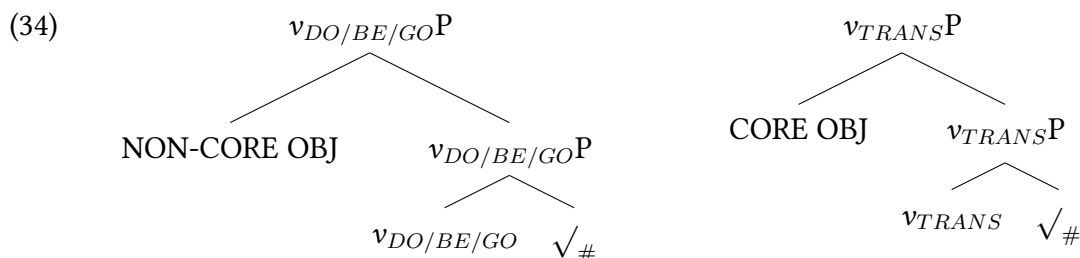
Note that the indifference of non-core-objects to *v*-flavors does not imply the insignificance of the latter, for we need the flavors and their combinations to derive the conventional transitivity types. Now we can answer the question we have raised in Section 2.1.2 regarding the universality of transitivity types—what is universal is not the surface types, but the underlying *v*-flavors and their ability to combine (thanks to HM—and ultimately EF). A specialty of Chinese (presumably due to its lack of inflection, hence no

phonological requirement on *v*-O matching) is that *v* does not really care about object-type (but only sets the event-type); everything just combines into a complex label (e.g. $\{\sqrt{\#}, v_{DO/BE/GO/TRANS}, \text{OBJ}\}$) to be interpreted by LF with the help of Encyclopedia. Freeing *v* from non-core-object-type specification non-necessitates the numerous light verbs (e.g. AT/USE/FOR) which we concluded as descriptive.

Concerning our second proposal, we assume the existence of Akt-head based on both Chinese-specific and cross-linguistic considerations. First, while most components in the conventional V-V compounds are [+V], we also observe certain components (e.g. PC-complements) that are grammaticalized to such an extent that [+V] actually becomes [-V]. According to Chao (1968), PC-complements denote action phase, i.e. they have aspectual contribution. However, they are distinct from real aspectual markers (e.g. *le*) in that they are only used to form compound verbs (i.e. internal to the verbal domain or "inner aspect" in the sense of (MacDonald 2008; Travis 2010)), which indicates their position below VoiceP. Thus, we split aspect into Asp and Akt, with the former taking charge of the sentence (i.e. viewpoint aspect), while the latter taking charge of the verb (i.e. situation aspect/Aktionsart) (35). We will further discuss the historical development of Akt in Chapter 4.

(35)

```
                    AspP
                   /    \
                 Asp    VoiceP
                       /     \
                    Voice    AktP
                            /    \
                          Akt    vP
                                  |
                                 ...
                                 / \
                                v  √#
```
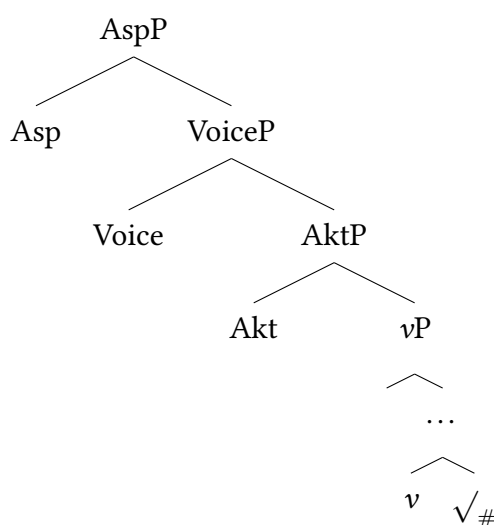
Cross-linguistically, we find the existence of grammaticalized Aktionsart markers to be common. For instance, in German and Hungarian, they are realized as preverbs[6]; in Japanese and Korean, they are realized as affixes, as in Table 3.5. The difference between Chinese and these languages is that in Chinese this marker is essentially a free morpheme (though sometimes used boundly) and its combination with the verb is much less constrained, both of which suggest that it should be in a separate functional projection.[7]

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[6]Some researchers further propose an Aktionsart-Sprachbund (cf. Kiefer 2010).

[7]The Hungarian preverbs have been proposed to be in AspP (e.g. É. Kiss 2002); there is no Akt because in Hungarian viewpoint aspect is expressed by Tense (hence no need to reserve Asp). Nevertheless, É. Kiss's

Language	Akt-marker example
German	**ver**-*alten* "to antiquate" (resultative), **auf**-*lachen* "to burst into laughter" (inchoative)
Hungarian	**meg**-*csinál* "finish-do" (resultative), **be**-*jár* "go all around (somewhere)" (total)
Chinese	*chi*-**wan** "eat-finish" (resultative), *shui*-**zhao** "fall in sleep" (inchoative)
Japanese	*deki*-**agaru** "finish-up" (resultative), *tabe*-**tsukusu** "eat-exhaust→eat up" (exhaustive)
Korean	**teul**-*i-ttwita* "run intensively" (intensive), *ilk-eo*-**peorita** "finish reading" (resultative)

Table 3.5: Grammaticalized Aktionsart markers cross-linguistically

As we have mentioned, Akt only harbors a portion of compounding components in Chinese. Therefore it is not always present, i.e. not a Chomskyian CFC. Besides, Akt in Chinese has an alternative, which we follow Pylkkänen (2008) and Sun (2015) and call Appl. This head is dedicated for Double Object Constructions (DOCs) that involve compound verbs with a grammaticalized Appl component, as in (36).

(36) a. Ta *chi-diao*   wo liang-dai binggan.   (Mandarin)
      he eat-fall.APPL I   two-pack biscuit
      "He ate me (up) two packs of biscuits."

   b. Xiaotou *tou-zou*-le   ta san-bu   shouji.
      thief   steal-walk.APPL-ASP he three-CL mobile
      "The thief stole him (away) three mobiles."

Note that these Appl-markers are essentially also Akt-markers, with the only difference being their ability to introduce an additional applicative object (usually Beneficiary/-Source). Therefore, we view Appl as a special flavor of Akt. The flavoring happens to reflect different transitivity/object types, but they are fundamentally motivated by need of event expressing rather than surface typing. This is a core idea of neo-Davidsonian syntax. Actually Chinese is said to be a typical neo-Davidsonian language (cf. J. Lin 2004). It is a specialty of Chinese that Akt and Appl are united, while in other languages (such as Hungarian in (37)) DOC is not usually realized in the same manner with Aktionsart.

(37) El-lop-tak   tőle   három mobil-t.   (Hungarian)
    away.AKT-steal-PST.3PL from him three   mobile-ACC
    "They stole **away** (AKT) **from** (DOC) him three mobile."

(2008) more recent redefinition of AspP as PredP reveals her consideration that Aktionsart should be confined within verbal domain, which is similar to our split-aspect proposal.

3.2.2 TP-CP domain

While it is now consensus that Aspect exists in Chinese, the existence of Tense is disputed, mainly concerning the finite/non-finite distinction (cf. Y.-F. Li 1985; C.-C. J. Tang 1990; T.-C. C. Tang 2000; Xuan 2007, etc. for pros; and J.-W. Lin 2006; T.-H. J. Lin 2006, 2010a, 2010b; C. Smith and Erbaugh 2005, etc. for cons). Given the chaotic controversy and the prevalent skepticism about the various diagnostics (cf. J.-H. Hu, Pan, and Xu 2001), we remain agnostic in this respect. However, we agree to Cinque's (1999) point that languages may have more than one way to express a functional notion, either via head-morphology or via adverb-qua-specifiers. So we tentatively assume the existence of TP in Chinese which harbors Tense-adverbials like *zuo-tian* "yesterday" and modals like *hui* "will". We do not split TP in this thesis.

Nevertheless, we do need to split CP, especially for the Sentence Final Particles (SFPs) and their interaction with lower structures. Chinese SFPs can be elusive, and studies on them are often conflicting. Traditional grammarians tend to examine their usage in different contexts and list an array of functions for them (cf. Chao 1968). However, this approach is merely descriptive and often encounters problems for mixing core meanings and context meanings (cf. R.-J. R. Wu 2004). Besides, there is still a "meaning minimalist" approach (e.g. Chu 1998; M.-Y. Hu 1981; B.-Y. Li 2006; N. Li and Thompson 1981; R.-J. R. Wu 2004), which features the extraction of SFP-functions from context-effects. Apparently, the latter approach is more compatible with our framework. We generally adopt Li's (2006) split-CP Cartography for Mandarin (38)[8] but with a few revisions.

(38)

Epist >	Disc >	Degree >	Force >	Eval >	Mood >	Deik >	Foc >	Fin
H, L	*a*	*ba, ma*		*ne*		*le*		*de*

A very appealing conclusion of B.-Y. Li (2006) is that SFPs are not sentence-typers, because their co-occurrence with certain sentence-types is neither compulsory nor absolute, hence a context-effect. For example, in the Yes-No question (39a), the "question-marker" *ma* is optional and replaceable by the "exclamation-marker" *ba*; meanwhile, (39b) appears with *ma* but is not a question. Similar problems exist with other alleged sentence-typing particles (cf. B.-Y. Li 2006).

(39) a. Ni guonian   huijia-le-(*ma/ba*)?   (Mandarin)
         you during New Year go home-ASP-(MA/BA)
         "Did you go home for the New Year?"

---

[8]B.-Y. Li (2006) compares Mandarin, Cantonese, and Wenzhou. We only cite her conclusions on Mandarin. Some heads in (38) are empty in Mandarin, but for expository completeness we keep them.

    b. Ke bu shi   *ma*!

       but not COP MA

       "So true!"

Thus, B.-Y. Li (2006) argues (and we agree) that the sentence-typing Force-head is not overtly marked in Mandarin; Force (in Rizzi's (1997) sense)[9] is precisely one of the functional categories Cinque (1999) describes as conceptually existent but grammatically absent. In sum, B.-Y. Li's CP-Cartography reveals two things. First, not every functional head is overtly realized. Second, empirically none of these C-heads is compulsory in Chinese; what appears as sentence-final may be a certain "flavor" of C or not C at all.

At this point we need to make some declarations on headedness. The standard GB linearization mechanism—the Headedness Parameter (HP) (Chomsky 1981, etc.)—is said to be over-predictive (cf. Kayne 2003), while products of the Universal Base Hypothesis (UBH; cf. Kayne 1994) often create awkward situations for Japanese-style languages. As a MP+DM work, we assume NS to be purely hierarchical and leave linearization to PF (cf. Section 3.1.3). To be specific, we imagine the hierarchical structure of NS to be three-dimensional, where no linear-order-qua-head-direction exists at all (as in Figure 3.3). A detailed review of arguments on HP, LCA, and BPS is beyond our scope, but headedness-qua-direction is meaningless in our model; the surface order is likely to be emergent, and not in a one-step manner. We leave this to future research.
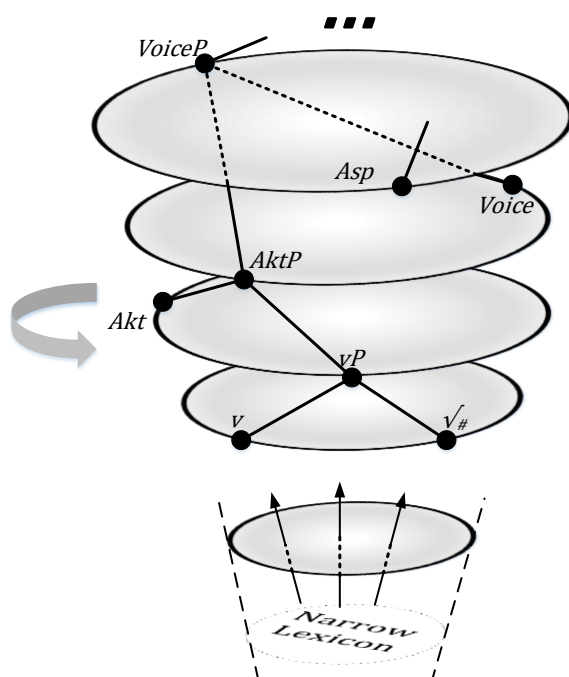

Figure 3.3: A 3D hierarchical structure of syntax

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[9]B.-Y. Li (2006) further splits Rizzi's Force into Force (speech-act force) and Mood (sentence-typing force, (cf. Lohnstein 2000, 2001)).

We mention headedness because SFPs are sentence-final but not head-final; otherwise FOFC (Biberauer, Holmberg, and Roberts 2008, et seq.) would be violated and Chinese would be too special. The sentence-final position of SFP should be the result of LCA, MS-Operations, or a combination (e.g. W. Hu 2013). Besides, some researchers (e.g. T.-H. J. Lin 2006, 2010b; Simpson and X.-Z. Z. Wu 2002; Takita 2009, etc.) propose a Comp-to-Spec Movement (CTSM) for Chinese CP.[10] All these approaches are plausible, but they also encounter difficulties. As for CTSM, since SFPs occupy different heads in the split-CP and surface in a fixed order, CTSM involves a roll-up scenario just like HM. Besides, given the successiveness, if we posit EPP-feature we must posit one for every split-C-head, which is bizarre. As for MS-Operations, since Lowering applies to heads, Local Dislocation requires strict locality, and Fusion/Fission are irrelevant, the most likely mechanism seems to be the PF-linearization method featuring morphophonological Precedence Variables (cf. Idsardi and Raimy 2013; Raimy 2000). However, we must explain why SFPs attach to the entire TP/AspP. A possible account is that when CP-phase completes and everything that needs to Move has moved to the edge, its domain (i.e. TP/AspP) is "immobilized" probably in the LINEARIZE+ATOMIZE fashion suggested by Fowlie (2013), i.e. the constituent is sent to PF as a "frozen" unit, leaving in the hierarchical structure only a bookmark-label (Nunes and Uriagereka 2000). Then, SFP is linearized with TP/AspP-bookmark by the precedence information specified on its Vocabulary Item (a suffix for LE). But we are still faced with the "roll-up" scenario, which undesirably forces us to assume that all relevant split-C-heads are PHs. Here we tentatively propose an alternative approach but leave it to future research. We can posit that just like split-VP, split-CP also involves HM, i.e. the first split-C-head moves up in much the same way with *v*; after C-HM, the complex C-head is linearized with the TP/AspP-bookmark in one go. A concomitant conclusion is that among the split-C-heads, only the highest is the true PH. As an overview, this alternative is better in that it explains not only the linear order but also the roll-up scenario.

Finally, we make a comment on Li's Deictic *le*. Sybesma (1997) proposes that its function is similar to T which anchors the sentence to the time axis of the real world. Many researchers (e.g. Chao 1968; N. Li and Thompson 1981; C. S. Smith 1991; Soh 2008, 2009) who differentiate verb-*le* and sentence-*le* have similar views, though differing in details. However, this amounts to saying that sentence-*le*, though staying in CP, has TP functions, which leads us to ask why it is in CP then. On the other hand, researchers that do not differentiate two *le*s (e.g. M.-J. L. Huang and Davis 1989; Z.-Q. Shi 1990, etc.) usually argue that they are the same morpheme with different functions yielded by different positions. A detailed comparison of various arguments is beyond our scope, as this is

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[10]Also see Aboh (2004) for a cross-linguistic discussion on Comp-to-Spec movement.

not a thesis on *le*. However, given the chaotic controversy, we assume there must be context-effect at work (like studies on SFPs). Therefore, we only believe two points in the literature: *i*) *le* can appear sentence-final, and *ii*) it is at least an aspect marker. Moreover, we (in Chapter 4) will further argue that *le* is also at most an aspect marker; more readings are not *le*'s.

3.3   Summary

In this chapter, we have developed a theoretical model for this thesis. First, we abandoned Lexicalism due to its inappropriateness to analyze Chinese compound verbs and turned to Distributed Morphology. Then, we revised the standard DM theory with special attention to the Root, which we redefined as a material body of EF that has evolved to bridge sound and meaning. Next, we clarified the triggers of Head Movement and Initial Merger in DM terms. Finally, we illustrated our conception of the grammar architecture and the Chinese sentence structure (40). In the next two chapters, we will use our model to analyze Chinese compound verbs from diachronic and synchronic perspectives.

(40)

```
              CP
            /    \
           C      …
                /    \
               C      TP
                    /    \
                 Spec     TP
                        /    \
                       T      AspP
                            /      \
                          Asp      VoiceP
                                 /       \
                              Voice    (Akt/ApplP)
                                       /        \
                                     Spec         …
                                              /      \
                                         (Akt/Appl)    vP
                                                      /  \
                                                     v    …
                                                        /   \
                                                       v    √#
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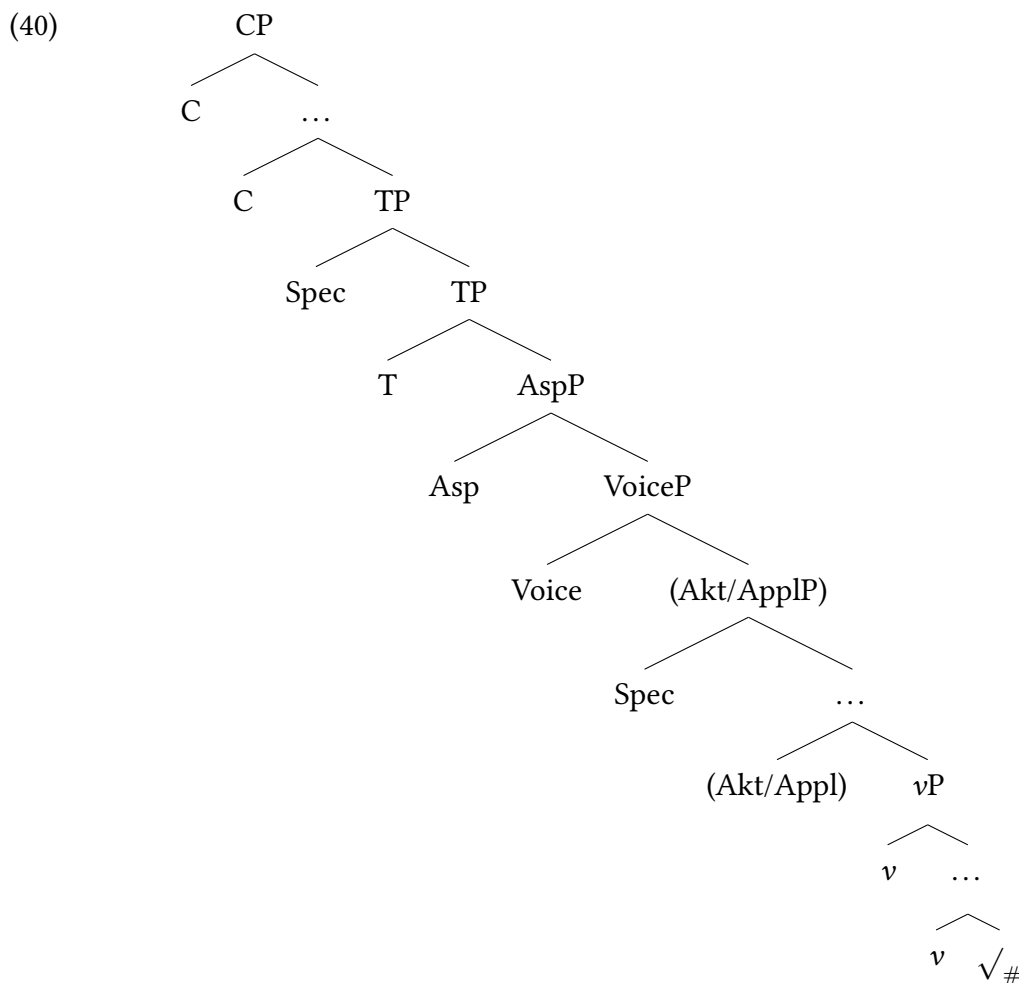
Chapter 4

Diachronic Analysis

This chapter approaches Chinese compound verbs from a diachronic perspective. Section 4.1 is a historical panorama; Section 4.2 presents our step-by-step analysis.

4.1 Historical panorama

Following is a periodization of the Chinese language.

Period	Time
Old Chinese (OC)	700BC–200BC
Middle Chinese (MidC)	199BC–900AD
Early Modern Chinese (EModC)	901AD–1500AD
Modern Chinese (ModC)	1501AD–1919AD
Contemporary Chinese (Mandarin)	1919AD–now

Table 4.1: Periodization of Chinese (adapted from Y.-Z. Shi 2003, p. 21)

As L. Wang (1997, 2004, 2005) points out, the development of Chinese word-formation is a change from monosyllabicity to multisyllabicity [1]. Feng (1997) further reveals that a standard prosodic word (PrWd) in Mandarin is disyllabic. Disyllabification is an important trend in the history of Chinese, which began in 7c. BC and matured by 2c. AD, with 5-12c. AD as a critical period (X.-L. Guo 1997; Y.-Z. Shi 2003). It is generally agreed that the cause of disyllabification is phonological simplification. The process is quite complicated, featuring a series of changes such as the loss of complex consonants and the loss of vowel length contrast (cf. Feng 2005; L. Wang 2005; Xia 2010, etc.). As a result, Chinese

---

[1]In Chinese syllable, morpheme, and character are largely equivalent.

changed from a moraic language to a syllabic language by late OC. Before this change, an individual morpheme could form a foot on it own, but after the change it could only be split into two syllables (e.g. *klong→ku-long* "hole") or combine with another syllable (e.g. *yi→wei-yi* "winding") to satisfy the foot branching requirement (Xia 2010). As Y.-Z. Shi (2003) points out, disyllabification is the most important motivation for the booming of compound words during MidC, whose fundamental condition is frequent adjacency. We dub these as Disyllabification-and-Frequent-Adjacency (DFA).

4.2 Compound verbs in Chinese history

4.2.1 The V-V branch

The V-V branch covers compound verbs whose components are both of verbal source, whatever their contemporary categories. The origin of this branch is undoubtedly the Serial Verb Construction. The earliest SVCs require an overt conjunction (41).
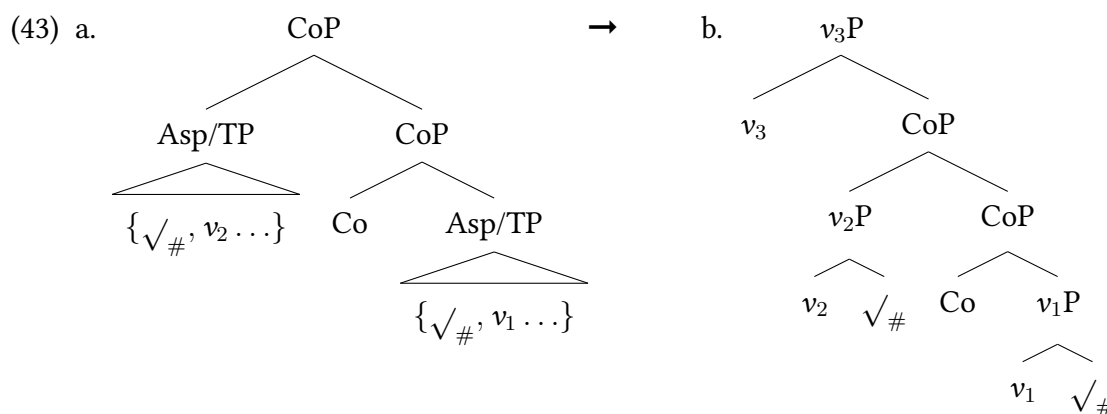
(41) a. Gong nai wei shi *yi* yi wang.   (OC; 8c. BC)
        sir then do poem with give emperor
        "Then the Sir wrote a poem to give to the emperor."

    b. Bao zi hou ji *er* sha zhi.   (OC; 6c. BC)
        leopard from back attack and kill him
        "The leopard attacked him from the back and killed him." (a-b Wei 2005, p. 23)

This conjunction gradually became non-compulsory and finally disappeared (by 10c. AD, cf. Y.-Z. Shi 2003; M.-C. Zhu 1958). A direct consequence of this "con-drop" is the adjacency of two verbs (42).

(42) a. Guang yi jing *she* *sha* zhi.   (MidC; 2c. BC)
        Guang also eventually shoot kill it
        "Guang also eventually shot and killed it."

    b. Nai *shou* *yang* zhi.   (MidC; 1c. AD)
        then receive raise him
        "Then received and raised him."   (a-b Y.-Z. Shi 2003, p. 56)

Since (42) appeared before the critical period of Diysllabification (5-12c. AD), they are simply "con-dropped" SVCs. MidC con-dropped SVCs and Mandarin SVC-compounds involve identical component relation, i.e. two verbs serialized in temporal order. However, their underlying structures cannot be identical, as Mandarin SVC-compounds may

have idiosyncratic semantics. Considering these facts, we assume the components in a Mandarin SVC-compound are separately categorized in coordination and then merged with a verbalizer[2]. The reanalysis is illustrated in (43) (details omitted). Remember that in our model, what the Initial Merger creates (which we conveniently mark as vP) is not a normal "phrase", but merely a "dummy-LI", whose label is essentially only v, though "glued" with a Root. This makes our Initial Merger different from both Lexicalism and standard DM. Given this "gluedness", the first phase (i.e. the categorial phase) differs from later phases in that its head and domain must be transferred as a whole.[3]

(43) a.

$$CoP$$

Asp/TP   CoP

$\{\sqrt{}_{\#}, v_2 \dots\}$ Co   Asp/TP

$\{\sqrt{}_{\#}, v_1 \dots\}$

→ b.

$$v_3P$$

v_3 CoP

v_2P CoP

v_2 $\sqrt{}_{\#}$ Co v_1P

v_1 $\sqrt{}_{\#}$

However, not all SVCs assume the same pattern. First, the structural relation can be either coordination or subordination. We have seen the former, while the latter involves several logical possibilities depending on the v-flavors involved. Assuming that the highest[4] embedding head is always v_{DO}, when the embedded head is also v_{DO}, we get a BCC (44b). Alternatively, when the highest embedded head is v_{TRANS}, we get a transitive BCC (44a), and when it is v_{GO}, we get a causative-resultative structure (44c).[5]

(44) a. Ming   Kua'e-shi er zi fu   er shan.   (OC; 5c. BC)
        order.DO Kua'e-clan two son shoulder.TRANS two mountain
        "(The Lord) orders the two sons of Kua'e to shoulder the two mountains."

    b. Yu zhu   miao zhang   yi.   (OC; 3c. BC)
        I help.DO sprout grow.DO SFP
        "I helped the sprout grow."

---

[2]Another reason is that the compound may take object as a whole, which requires an additional v. The DM "little x" is stackable (cf. Siddiqi 2009).

[3]This is consistent with Borer's (2014) proposal that meaning is not assigned to Root, but to the entire labeled constituent at Spell-Out.

[4]The highest v-head determines the final category of vP.

[5]Examples without reference are collected by us.

c. Huan   Jiang-lang   jue.   (MidC; 5c. AD)

wake.DO Jiang-darling wake.GO

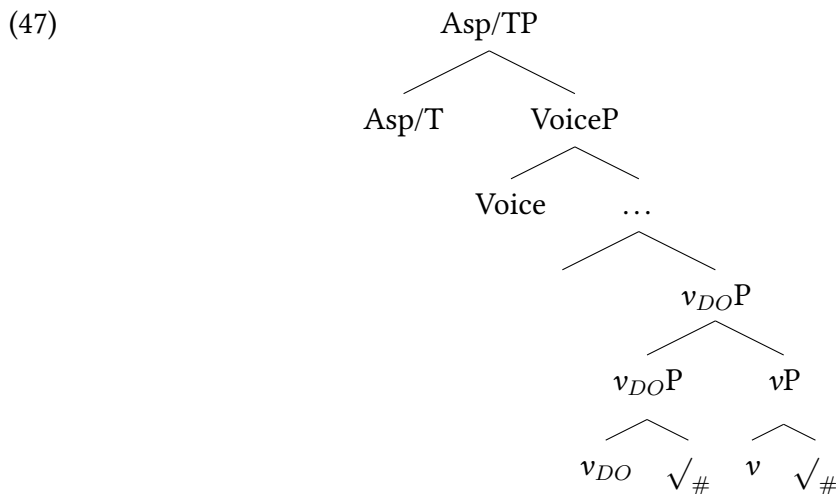"Wake Mr. Jiang (so that he) wakes up."   (b-c Y.-Z. Shi 2003)

Thus, several types in the traditional classification of compound verbs, including Predicate-Complement (PrC), BCC, and SVC, are merely different flavors of their common origin SVC. The sentences in (44) all have the same "skeleton" below.

(45)
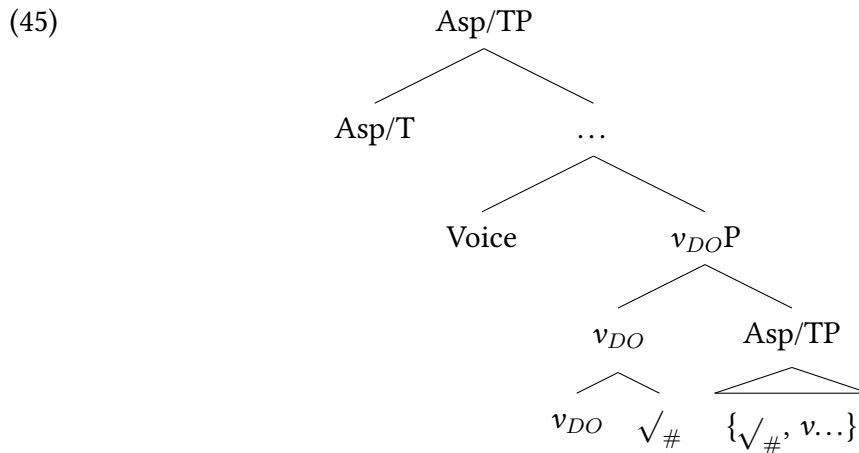
We let the "dummy-LI" $\{\sqrt{\#}, v_{DO}\}$ merge with an AspP/TP because OC subordination involves an embedded "clause". This still holds for the descendant Mandarin compound verbs, though only representing one diachronic stage. According to Y.-Z. Shi (2003), the development of PrC-compounds is three-step. First, we have a normal subordination like (45). Then, around 8c. AD, adjacent disyllabic PrCs began to be perceived as one unit. In the next 5-6 centuries they were reanalyzed as real compounds that could take object. Finally, by 15c. AD this reanalysis stabilized. Crucially, this process overlaps with the critical period of Disyllabification. Shi mentions a further fact as demonstration. Before the reanalysis, there was a place for ADV/NEG/OBJ between the two components (44)(46a), while after reanalysis, such elements were "squeezed out" (46b-46c).

(46) a. Jin Jin ren   zhen   *Wei-hou*   *bu*   si.   (OC; 5c. BC)

now Jin person poison.Vt Wei-marquis.OBJ not.NEG die.Vi

"Now the Jin-person poisoned Marquis Wei (but Wei did) not die."

b. Ji   qi   guan, zhi *fei*   zhen   si.   (EModC; 12c. AD)

already open coffin know not.NEG poison.Vt die.Vi

"(The coroner) opened the coffin and knew (he) wasn't poisoned to death."

c. Xie ji-mou zhen-si   *Xu-hou.*   (ModC; 19c. AD)

leak scheme poison.Vt-die.Vi Xu-empress.OBJ

"(Because she) let out the scheme, (the emperor) poisoned Empress Xu to death."

We deem this as evidence that the "midfield" in the new structure is greatly impoverished—to the extent that one vP directly embeds another, as in (56).

(47)

$$
\begin{array}{c}
\text{Asp/TP} \\
\swarrow \quad \searrow \\
\text{Asp/T} \quad \text{VoiceP} \\
\swarrow \quad \searrow \\
\text{Voice} \quad \ldots \\
\swarrow \quad \searrow \\
v_{DO}\text{P} \\
\swarrow \quad \searrow \\
v_{DO}\text{P} \quad v\text{P} \\
\swarrow \searrow \quad \swarrow \searrow \\
v_{DO} \ \sqrt{}_{\#} \quad v \ \sqrt{}_{\#}
\end{array}
$$

The reanalyzed v_{DO}P is a complex "dummy-LI" whose meaning is optionally idiomatic. Now we can account for the controversy over the semantic orientation of resultatives. Normally, after the reanalyzed structure matures it replaces the old structure. However, since the separate meaning of each dummy-LI is salient, and given the register-effect of Chinese, it is not always easy to tell whether a V-V string assumes (45) or (47). Crucially, the complex dummy-LI in (47) can take an object as a whole, and not necessarily a core-one, e.g. oblique (48a) and pseudo (48b). Sometimes it is not clear whether the object is a core one or a non-core one (48c). For speakers assuming the structure before reanalysis, (48c) has only one reading (object-oriented); for those assuming the reanalyzed structure, both readings are possible.

(48) a. Xiaoyu *chang-ya*-le   houlong.   (Mandarin)
       Xiaoyu sing-hoarse-ASP throat
       "lit. Xiaoyu sang-hoarsed her throat."

     b. Mingming *chi-bao*-le   fan.
        Mingming eat-full-ASP meal
        "lit. Mingming ate-full."

     c. Baoyu *qi-lei*-le   ma.
        Baoyu ride-tired-ASP horse
        "Baoyu rode horse and (Baoyu/the horse) got tired."   (same as (1))

The fact that most speakers intuitively avoid expressions like (48c) in production (C.-H. Shi 2008) suggests that *a)* the reanalysis of such resultatives is unstable, and *b)* until now, the preferred object-type in (47) is still a non-pseudo one. Only in highly idiomatized situations is the reanalyzed structure natural with pseudo-object, e.g. *chi-bao-fan* "eat-

full-meal", *he-zui-jiu* "drink-drunk-alcohol". This is reflected in diachronic data. Since the beginning of subordination-reanalysis (8c. AD) till 18c. AD, subject-oriented reading had been rare. From OC to ModC, situations like (48c) are either expressed by the structure before reanalysis (49a-49c) or simply do not take an object (49b); only in Late ModC to Mandarin can we see (limited) examples like (48b) (Y.-Z. Shi 2003).

(49) a. Qi-Huan-gong yin   jiu   zui.   (OC; 3c. BC)
      Qi-Huan-Sir   drink alcohol drunk
      "Sir Qihuan got drunk."

   b. Shi bao fu   zhen wo.   (MidC; 8c. AD)
      eat full wipe pillow lie
      "lit. (I) ate-full and wiped the pillow and lay down."

   c. Yin   jiu   zui,   zui wei chou.   (ModC; 18c. AD)
      drink alcohol drunk most is   ugly
      "Getting drunk is a most ugly thing."

In short, the synchronic ambiguity is only a diachronic epiphenomenon. Back to our storyline, the reanalyzed PrC-structures further developed, mainly involving complement-grammaticalization. The two major complement-types are resultatives and directionals. While resultatives invariably assumed subordination, directionals were coordinations in OC, and developed subordination-usage in MidC under analogy (Y.-Z. Shi 2003; Y.-F. Yang 2013). Since resultatives and directionals correspond to two conceptual areas—time and space—and can add an endpoint to the event, they both developed aspectual readings. Since this aspect takes scope over the verbal situation (i.e. situation aspect), the new position should be within verbal domain, i.e. the Akt we proposed in Chapter 3. It is now clear that Akt appeared in MidC as a result of DFA.[6] The grammaticalization yielded PCs and abstract directionals (Table 4.2).

Example		V-meaning	Akt-meaning
Temporal	*wan*	"complete"	Resultative
	liao	"end"	Resultative
	diao	"fall"	Res/Exhaustive
Spatial	*shang*	"up"	Res/Exh/Inchoative
	chu	"exit"	Res/Inchoative
	kai	"open"	Inchoative

Table 4.2: Temporal and spatial Akt-markers

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[6]Or alternatively, Akt as a UG notion has always been there, but only entered syntax in MidC.

Note that the grammaticalization of resultatives (ca 10c. AD, N. Li and Y.-Z. Shi 1997) and directionals (11-14c. AD, Y.-F. Yang 2013) occurred during the same period with SVC-reanalysis. The chronology again overlaps with Disyllabification, though resultatives developed faster, which is because directionals (as core vocabulary) are more resistant to bleaching (Y.-Z. Shi 2003, p. 170). This also explains why directionals are synchronically more separable. See the development of resultative *liao* (50) and directional *chu* (51).

(50) a. Shi   zong   ze   nan *liao.*   (MidC; 5c. AD)[7]

       matter complex then hard end.V

       "Complex matters are hard to tackle."   (L. Wang 2005, p. 91)

   b. Yin   shui   *liao*   bian lai.   (MidC; 9c. AD)

       drink water end/AKT then come

       "After finishing drinking (he) will come."

   c. Taizi   cai *wen-liao.*   (MidC; 9c. AD)

       prince just ask-AKT

       "The prince has just asked."   (Y.-Z. Shi 2003, p. 132)

   d. Xiaoxi yi   *shou-liao*   sheng-zhi.   (EModC; 11c. AD)

       Xiaoxi already receive-AKT holy-decree

       "Xiaoxi has already received the imperial edict."

   e. *Bai-liao*   shaonian   tou.   (EModC; 12c. AD)

       white-AKT/ASP young man head

       "A young man's hair turned white."

(51) a. Zou *chu*,   yu   zei   yu men.   (OC; 6c. BC)

       run exit.V encounter bandit at door

       "(He) ran and exited, and encountered bandits at the door."

   b. Cong di   *yong-chu.*   (MidC; 3c. AD)

       from ground gush-exit.Vi

       "(Sound) gushed out from the ground."

   c. Shui   wei   chou, ran hou *pai-chu.*   (MidC; 6c. AD)

       water slightly smelly so   after pat-exit.Vi/Dir

       "After the water gets slightly smelly, pat it out."   (a-c Y.-F. Yang 2013)

---

[7]NB: *liao* "end" is unattested in OC (L. Wang 2005, p. 91).

    d. Bu zhi   xi ye shei *cai-chu.*   (MidC; 8c. AD)

       not know slim leaf who cut-out.Vi/AKT

       "It is unknown who cut out the slim leaves (on the willow)."

As in (50-51), resultatives and directionals both went through three stages, i.e. V (before reanalysis)→V (after reanalysis)→Akt, but some resultatives further developed into Asp[8], while directionals did not (presumably due to their non-temporal nature). Now we are in a position to account for Mandarin *le*. We observe that (50c-50d-50e) are also acceptable if we pronounce *liao* as *le*, which indicates that Mandarin verb-*le* is probably still an Akt-marker. This fits our overall knowledge of the diachronic development of resultatives, i.e. their components have always stayed within VoiceP. Thus, two problems occur if one analyzes verb-*le* as an Asp-marker: *a*) the Voice-gap, i.e. how did it jump to AspP without affecting surface order; *b*) the intuition identification, i.e. why do examples like (50c-50d-50e) involve almost identical structural intuition in MidC and Mandarin.

Therefore, we are prone to believe that verb-*le* is still an Akt-marker today, while its phonological reduction in Mandarin involves a separate reason. Actually, verb-*le* in Dongying is pronounced as *liu* (only half-reduced), hence closer to Akt both distributionally and phonologically. Nevertheless, our redefinition of verb-*le* does not mean all *le*s are Akt-markers, as the 12c. example (50e) already shows dual identity (Akt/Asp). We assume that sentence-*le* (whether sentence-final or not) is the real Asp-marker in ModC. Furthermore, sentence-*le* is not an SFP, and its (occasional) sentence-final position has a separate reason, i.e. the loss of the new-situation introducing discourse-SFP *yi/ye* (52a-52d) in Mandarin. Actually all the OC Force-SFPs are lost in history, e.g. the question-SFP *hu* (52b), the exclamation-SFP *zai* (52c).

(52) a. Yu bing *yi.*   (OC; 6c. BC)

       I   ill   SFP

       "I am ill."

    b. Yu peng   you jiao   er bu xin   *hu?*   (OC; 6c. BC)

       with company friend associate and not faithful SFP

       "(Did I) get along with (my) friends in an unfaithful way?"

    c. Da *zai*!   (OC; 6c. BC)

       big SFP

       "It's so big!"

---

[8]Note the upward direction of grammaticalization here. According to Roberts and Roussou (2003, p. 36): "the diachronic movement of a given morpheme…is always 'upwards' in the structural hierarchy of functional categories."

      d. Men yi   kai   *ye.*   (MidC; 6c. AD)

         door already open SFP

         "The door is already open."

When a sentence ending in Asp-*le* and SFP-*ye/yi* loses the latter, we get the sentence-final-*le*. The loss of Force-SFP was a gradual process. It was optionally dropped in O-ModC but completely lost in Mandarin, hence the unacceptability of (53b). However, the discourse-SFP is preserved in many dialects (X.-N. Liu 1985; Mei 1994), including Dongying (53c), where *le-ye* is contracted as *liæ*. Here, the SFP after ASP is compulsory.

(53) a. Wo xie-liao   zhege qi-*liao.*   (EModC; 14c. AD)

        I   write-AKT this   contract-ASP

        "I have written this contract."   (cf. Mei 1994)

      b. Wo xie-le   zhege qi-*le*(*-ye).   (Mandarin)

        I   write-AKT this   contract-ASP*(-SFP)

        "I have written this contract."

      c. Wo sie-liu   zheguo qi-*liæ.*   (Dongying)

        I   write-AKT this   contract-ASP-SFP

        "I have written this contract"

We do not assume all *le*s are Akt/Asp-markers, as *le* also has its own further development, e.g. *qi-le-guai* "strange-<Prosodic Filler>-strange→so strange (exclamation)". In this thesis, it suffices to realize the various extra *le*s other than Akt-*le* are not effects of compound verbs and not to mix them in our analysis.

Remember that our Root is merely an empty container that—when categorized and transferred—links sound and meaning. However, when not categorized it does not enter the derivation at all, and if the sound it links also qualifies for the exponence of an f-morpheme, nothing prevents it from competing for that position. Thus, in our model grammaticalization amounts to constructing a link between a language-specific $[\Phi]$ and a universal f-morpheme. It is often accompanied with semantic bleaching because as the grammaticalized usage gains momentum, the earlier $\{\Phi, \Sigma\}$ link weakens (due to the constant absence of its linker) and may eventually disappear. Since setting up links is presumably easier for the human brain than creating and storing listemes, we believe our model is more parsimonious. Besides, since linking does not create new entities (and hence cost-free), one item can be simultaneously linked to many others. Thus, usage of different periods can be preserved as long as the existing items and links are not lost. One way to achieve this is by some extra tool not subject to changes in the three Lists which can constantly reinforce the linking. Chinese has such a tool, i.e. the characters.

Figure 4.1 illustrates the grammaticalization of PC-qua-Akt. $\sqrt{}_1$ and $\sqrt{}_2$ are the embedded and embedding Roots in the original resultative. The subordination is restructured into a simplex clause with an AktP, with a new link constructed between $[\Phi_1]$ and Akt.
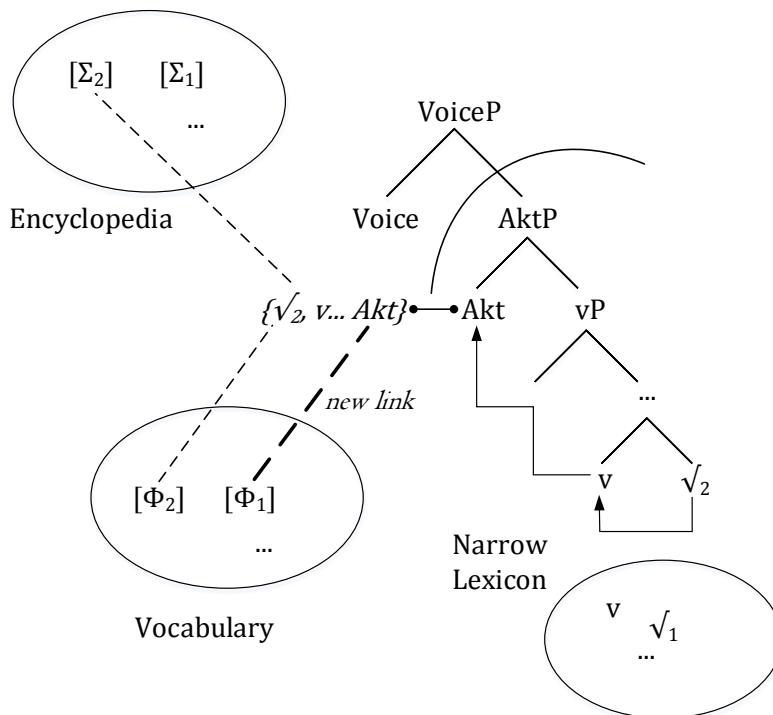

Figure 4.1: The grammaticalization of Phase-Complements

The grammaticalization of directionals is slightly more complex, since they involve two structures. For directional-qua-subordination, the situation is exactly like PC. For directional -qua-coordination, it is one of the coordinated dummy-LI that does not enter the derivation; the remaining story is like PC. As we mentioned in Chapter 3, Akt has an alternative flavor Appl, which can introduce an additional argument to form DOC. The grammaticalization of V-to-Appl and Akt-to-Asp involve the mechanism as in Figure 4.1, which we will not elaborate due to limited space. Note that among all Akt-markers only some PCs (e.g. *liao*, *zhao*, *guo*) got further grammaticalized into Asp.

Apart from SVC and its descendants, the V-V branch also subsumes another type, i.e. Pure-Coordination (PuC). It differs from SVC in that its components do not assume temporal order. PuCs were (and still are) specially created to yield two syllables (cf. Feng 1997; Y.-Z. Shi 2003; L. Wang 2004). Thus, SVC and PuC actually represents two ways to satisfy Disyllabification, i.e. reanalyzing existing strings and creating new strings. By comparing Mandarin SVC and PuC compounds, we notice a further distinction in their idiomaticity degree.

SVC-descendants	Pure-Coordination
cha-shou "check-receive" (SVC)	*jian-cha* "examine-check→check"
ling-yang "receive-nurture→adopt" (SVC)	*yang-yu* "nurture-rear→bring up"
da-sui "hit-broken→break" (PrC)	*qiao-da* "knock-hit→knock"
zou-jin "walk-enter→walk in" (PrC)	*xing-zou* "go-walk→walk"

Table 4.3: SVC-originated and Pure-Coordination compounds in Mandarin

As we can see, the gestalt meaning of PuC-compound is not based on the addition of its components. Given that compulsory idiomaticity is a property of the first phase, and that PuCs are produced by "creation" rather than "reanalysis", we assume that they involve direct Root-Merger[9], and then the complex Root is categorized as a whole. Note that a predetermined order exists between the two Roots so that they need not be linearized in the usual way; this order-fixing is probably a result of frequency, for people often change it conveniently (out of prosodic consideration or personal like) without affecting the gestalt meaning, e.g. *dai-ti vs. ti-dai* "replace-replace". This is because the internal order of the complex Root has no bearing on labeling, and therefore is irrelevant to LF. This property further sets PuCs apart from other compound verbs.

4.2.2   The non-V-V branch

The development of non-V-V compound verbs is less complicated. They involve either a verb and an adjacent constituent or a lexicalized non-V-V unit. The latter is simply Root-Merger plus verbalization, i.e. the non-V-V version of PuC, such as *zuo-you* "left-right→control". The former is more complex. Since in OC most words were monosyllabic, non-V-V strings were simply part of the sentence structure (54a-54b). There were also "lexicalized" units (54c), but not due to DFA.

(54) a. Yun   xing yu   shi.   (OC; 8c. BC)
    cloud go   rain apply
    "Goes the cloud and drops the rain."   (pseudo-Sub-Pred)

    b. Zun   xian   shi neng.   (OC; 6c. BC)
    respect virtuous use able
    "Respect and appoint the virtuous and the talented."   (pseudo-V-O)

---

[9]Although Roots cannot project, head, or label, this does not rule out their stacking, which does not require a category.

    c. OC: *si-kong* "control-construction→Minister of Public Works", *si-ma* "control-horse→Military Minister", *zhi-jinwu* "hold-holy bird→Chief of Capital Guard"

In MidC, units like (54a-54b) began to be perceived as a whole under DFA. However, unlike V-V units, these non-V-V units did not involve complex structure in the first place, hence no need to undergo reanalysis-qua-restructuring. Their semantics were generally compositional. Although some cases had idiomaticity (55), it was optional and merely a moderation on the dummy-LIs' semantic composition.

(55) a. Huan jian biao   *xin-fu.*   (MidC; 5c. AD)
         Huan see document heart-be convinced
         "Huan saw the document and was convinced."   (Sub-Pred)

    b. Er ren   ju   bu *jie-yi.*   (MidC; 5c. AD)
        two person both not insert-intention
        "The two people both did not mind."   (V-O)

    c. *Bu-ru*   Shangshusheng.   (MidC; 5c. AD)
        step$_{<N>}$-enter Shangshusheng
        "lit. (He) entered Shangshusheng by step."   (Mod-Head)

Most ModC and Mandarin non-V-V compounds are of the MidC-type, i.e. adjacency with optional idiomaticity. There are also cases assuming compulsory idiomaticity in one register but compositionality in another, e.g. *li-bai* "rite-worship$_{<RELIGION>}$→week$_{<PLAIN>}$". Note that such register-based idiomaticity variation is different from the optional idiomaticity in (55), because optional idiomaticity is still based on semantic compositionality and seldom involves categorial change. Thus, we posit that non-V-V compounds may have two underlying structures, i.e. Set-Merge of categorized dummy-LIs or Root-Merger plus categorization. However, what units assume which structure is random and register-sensitive.

Finally, we want to make some comments on the lexicalization and separability of compound verbs. In our model, lexicalization simply involves (primary/synthetic) categorization. Primary categorization equals Initial Merger, while synthetic categorization is the re-categorization of some already categorized constituent(s). Since meaning is assigned to the labeled composite as a whole, a crucial step of lexicalization is the construction of a new link between a categorized constituent and a meaning, i.e. the semantic counterpart of grammaticalization. Note that in both Grammaticalization and Lexicalization (G/L) no new listeme is created[10]. The G/L of Chinese compound verbs

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[10]We acknowledge that G/L may involve introduction of new functional notions and new meanings, but these must be created (for separate reasons) before G/L take place; otherwise G/L would be epistemo-

are motivated and conditioned by DFA, because of which two otherwise unrelated or merely loosely related constituents are perceived as one. The process of lexicalization is illustrated in Figure 4.2.
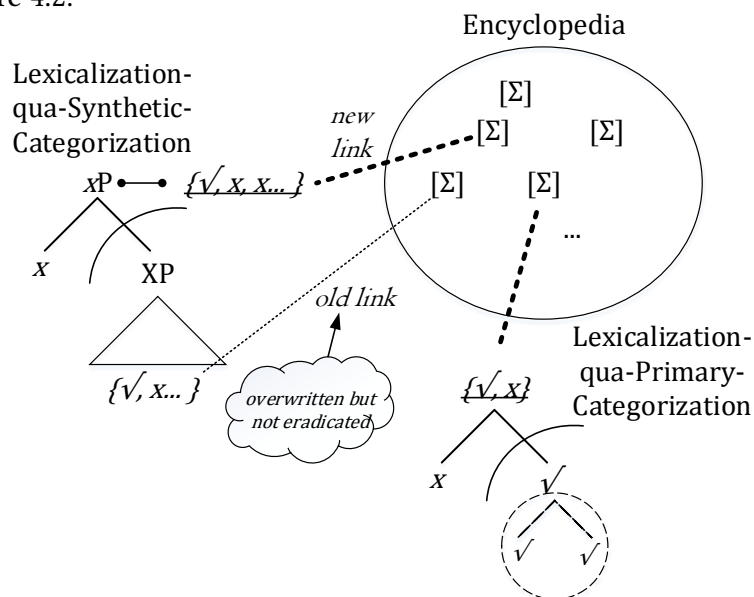

Figure 4.2: Two instances of lexicalization concerning Chinese compound verbs

Given our view on G/L and the register-effect of Chinese, we conclude that the synchronic separability of compound verbs is a diachronic epiphenomenon, because in Chinese, while new links are constantly constructed, old links are also preserved. Now we are in a position to give a definition of the "register-effect".

Register-Effect (RE): The grammar and vocabulary make-up of Mandarin[11]is highly hybrid. New listemes, links, and structures seldom eradicate old ones but tend to co-exist with them synchronically, forming a complex register system.

RE is widely recognized (cf. B.-R. Huang and Liao 2007; W.-H. Wang 2014; Feng 2010, et seq.). As B.-R. Huang and Liao (2007, pp. 258–260) state: "The main body of Mandarin vocabulary consists of archaic, dialectal, loan, professional, and argot components." Crucially, the basic building-blocks (i.e. morphemes) of Chinese "have remained so since their bone-inscription ancestors 3,000 years ago". This scenario is well predicted in our model. With various $\{\sqrt{}_{\#}, \Phi_{\#}, \Sigma_{\#}\}$ links constantly reinforced, the development of Chinese is essentially a "roll-up" accumulation of links, and Mandarin merely manifests this diachronic process in a synchronic fashion. Metaphorically, Mandarin is a language that writes history on its face[12].

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logically ungrounded and logically impossible.

[11]We tentatively reserve this definition for Mandarin because other varieties of Chinese (except probably Cantonese) do not normally mix up different registers as frequently as Mandarin does. This property of Mandarin is probably due to its identity as a standardized common language (cf. Chapter 1).

[12]Inspired by the metaphor for Hungarian that it "wears LF on its sleeve" (É. Kiss 1991).

4.3 Summary

In this chapter, we have done a diachronic analysis of Chinese compound verbs. Compound verbs as a systematic phenomenon appeared in Middle Chinese, with the disyllabification trend as its motivation and frequent adjacency as its condition. Disyllabification itself was a result of phonological simplification. It can be satisfied by either utilizing existing morpheme strings ("utilization") or creating new strings ("creation"). According to the original categories of the adjacent components, we have put compound verbs into two groups: V-V compounds and non-V-V compounds. With the "utilization" method, a most important source of the V-V branch is the Old Chinese Serial Verb Construction (SVC), which (after "con-drop") yielded two types of V-V strings, i.e. coordination and subordination. They further went through a series of reanalysis and grammaticalization. By contrast, the non-V-V branch simply involves picking out two adjacent constituents and applying lexicalization. With the "creation" method, both branches subsume a class of Pure-Coordination (PuC) compounds, which involves Root-Merger and lexicalization.

The entire development process is shown in Figure 4.3. As we can see, the seven traditional types (bold+underline) are comprehensive enough to cover all the main branches we have discussed. Nevertheless, they fail to reveal the underlying relations and therefore may cause confusion, e.g. BCC and PrC are essentially both SVCs. In addition, we have discussed several synchronically controversial issues, i.e. the semantic ambiguity of resultatives, the identity of *le*, and the separability of compound verbs. Finally, we have provided a definition for the Register-Effect of Mandarin, which is a synchronic effect of Mandarin that relies on the preservation of various stages of diachronic development.
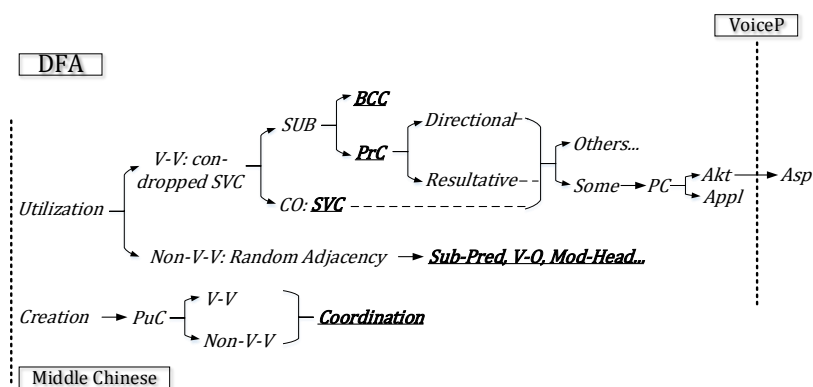

Figure 4.3: The overall development of Chinese compound verbs

Chapter 5

Synchronic Analysis

This chapter analyzes the synchronic variation in compound verbs in Mandarin and Dongying (data set in Chapter 2).

5.1   Boundedness-Effect

In Chapter 2, we observed patterned variation in four (conventional) types of compound verbs in Mandarin *vs.* Dongying, i.e. PrC, V-O, BCC, and SVC. The variation mainly concerns separability and the position/number of LE. As we have argued, the observed variation may not always particularly concern our topic. We have proposed the Register-Effect and now will introduce another general effect—the Boundedness-Effect (BE), which can be defined as follows.

Boundedness-Effect (BE): In Modern Chinese, there is the general requirement that clauses be overtly bounded in temporal, spatial, degree, or other scales. (cf. J.-M. Lu 1988; J.-X. Shen 1995; Y.-Z. Shi 2003; F.-X. Wu 2005; D.-X. Zhu 1982, etc.)

There are many ways to satisfy BE, e.g. object-bounding, PrC-bounding, Asp/Akt-bounding, Adv-bounding, etc. BE is reflected in the Mandarin translations of historical sentences below.

(56) a. Ju   shou pai ma   an.   (OC; 2c. BC)
        raise hand pat horse saddle

   b. Ju-**qi**   shou-**lai**   pai-**zhe** ma-an.   (Mandarin)
        raise-rise.**C** hand-come.**AKT** pat-**ASP** horse-saddle
        "They raised their hands and patted the saddle."

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c. Chen shao   duo   ji-bing.   (MidC; 3c. AD)

   I   young many illness

d. Wo xiaoshihou **hen**-duo   ji-bing   (Mandarin)

   I   young-time very.**ADV**-many illness

   "I was always ill as a child."

Y.-Z. Shi (2003, p. 189) attributes the appearance of BE to the development of PrC in MidC, thus an indirect consequence of Disyllabification. We leave out the details, but only stress that RE and BE are both general characteristics of ModC not limited to compound verbs, although they do make our data appear complex. Bearing this in mind, we will stay to the core properties of compound verbs and marginalize side-effects. Since we now have a more complete picture of the compound verb inventory, we analyze our data in a reorganized way.

5.2   V-V branch

5.2.1   Predicate-complement

Along the V-V branch, the conventionally classified PrC, BCC, and SVC are all descendants of OC SVC. The first variation we observed was the position/number of LE in object-taking resultatives. While Mandarin minimally requires one LE (whichever), in Dongying both must be present.

(57) a. Ta *da-sui*(-le)   huaping(-le).   (Mandarin)

       he hit-broken(-AKT) vase(-ASP)

       "He broke the vase."

      b. Te *da-sui*-liu   huapingr-liæ.   (Dongying)

       he hit-broken-AKT vase-ASP-SFP

       "He broke the vase." (=7)

We propose a structural difference underlying this variation, as in Figure 5.1 (some details omitted). As we can see, resultatives assume subordination in Dongying but simplex clause with complex *v*P in Mandarin, respectively corresponding to the structures before and after SVC-reanalysis in MidC (cf. 43-45). Given BE, clauses should be overtly bounded in ModC, so the Akt-LE in Dongying cannot be omitted. By contrast, in Mandarin the recategorized dummy-LI is bounded by Asp anyway, so Akt-LE is optional. In fact it is more natural to have one LE (whichever) left in Mandarin, presumably out of

economy, because a simplex clause only needs to be bounded once. Remember our earlier proposal that the highest split-C-head is the phase head. This means that in Dongying Force and Asp are in the same Spell-Out domain, hence the possibility of phonological contraction. A corollary of our analysis is that there is no *v*-to-Voice movement in Dongying; the complex *v*-head can only move to as high as Akt[1]. In Mandarin, *v* does not move to Voice in low registers either, but as we will see, it does in high registers such as IWR.
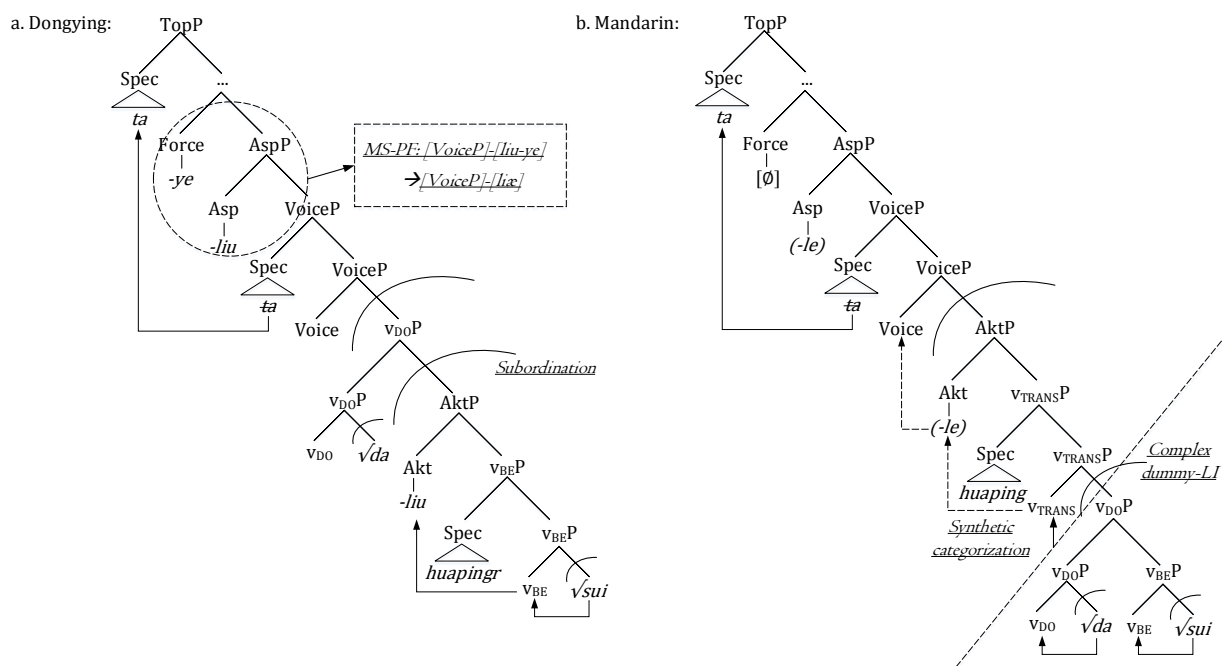
Figure 5.1: Resultative-compound structures in Dongying and Mandarin

The second variation in our data concerns the separability of directionals. The data are quite bewildering but the gist is short, i.e. a complex directional compound can be separated anywhere, by object, LE, and/or *lai/qu*. Here we use the most complicated example in our data to demonstrate our hypothesis, i.e. *gua-()-shang-()-qu* "hang-up-go". The parentheses are open for insertion.

(58) a. Xiaoming *gua-shang*(-*qu*)(-le) denglong(-le). (Mandarin)
          Xiaoming hang-up(-go)(-LE)   lantern(-LE)

     b. Xiaoming *gua-shang*(?-le) denglong (*qu*)(-le).
          Xiaoming hang-up(?-LE)   lantern   (go)(-LE)

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[1]Unfortunately we have not figured out why. We leave this to future research.

c. Xiaoming *gua*(-le)   (denglong) *shang**(-*qu*) (denglong)(-le).
Xiaoming hang(-LE) (lantern)   up*(-go)   (lantern)(-LE)
(a-c)"Xiaoming hang up the lantern."

d. Xiaoming *gua-hang*(-*qu*)(?-liu) denglong-liæ.   (Dongying)
Xiaoming hang-up(-go)(?-LE)   lantern-LE-SFP

e. Xiaoming *gua-hang*(?-liu) denglong (*qu*)-liæ.
Xiaoming hang-up(?-LE)   lantern   (go)-LE-SFP

f. Xiaoming *gua**(-liu)   (denglong) *shang**(-*qu*) (denglong)-liæ.
Xiaoming hang*(-LE) (lantern)   up*(-go)   (lantern)-LE-SFP
(d-f)"Xiaoming hang up the lantern."

As we can see, despite the high flexibility, the only pass-or-crash cases are (58c) and (58f), while others are more about naturalness.[2] Since naturalness degree is the result of many factors, e.g. RE, BE, prosody, etc., it is more reasonable to start with the pass-or-crash variation. As *shang* in Dongying is phonologically unreduced only in (58f), we deem it as a normal verb and propose that (58f) as well as its Mandarin equivalent (58c) are SVC(-qua-subordination)s, whereas all other cases are simplex clauses. The two structures are illustrated in Figure 5.2.
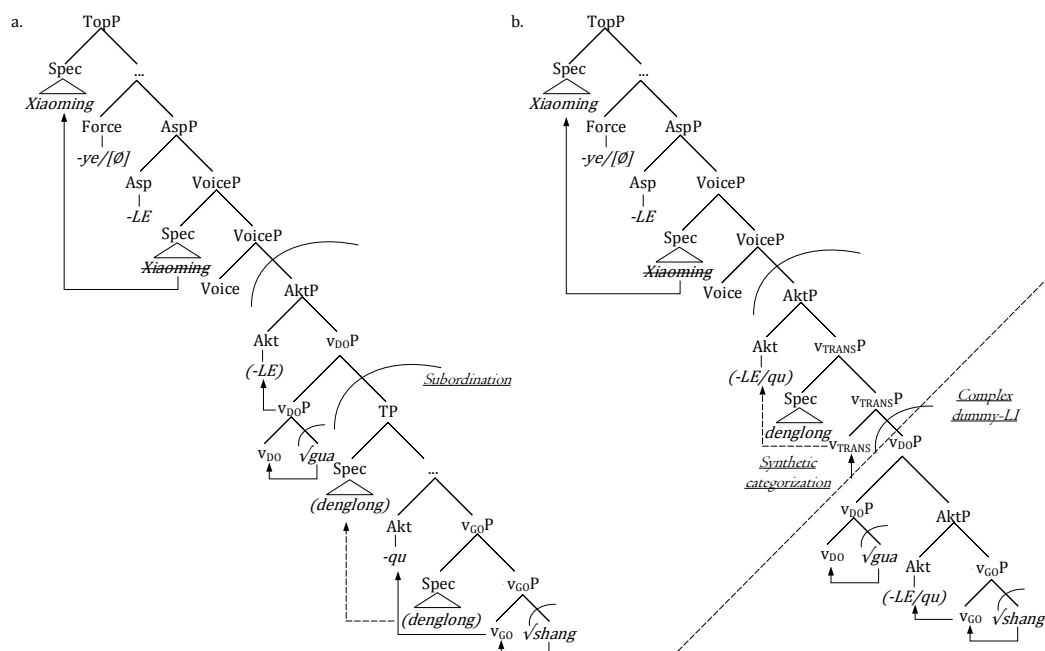

Figure 5.2: Directional-compound structures in Modern Chinese

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[2]Actually the different combinations of the optional elements also affect naturalness degree, but we have no space for an exhaustive presentation.

Crucially, we argue that *qu/lai* in complex directionals are grammaticalized Akt-items just like LE, because their semantics ("go/come") are highly bleached, only left with the abstract spatial notions similar to German *hin/her-* as in *hinab/herauf-*. Besides, the embedded structure in directional-SVCs is a more complete one (TP), as directionals are generally more "conservative" than resultatives in their development (cf. Chapter 4). Thus, the embedded object may further move to Spec-TP (as the unaccusative "subject") but PF has a choice on which copy to spell-out. Empirically both possibilities exist, though the Spell-Out of the higher copy is more natural.

As to the simplex structure, we need to exhaust the possible combinations of the higher and lower Akt-s, which is the source of flexibility. In the example of (58), the two Akt-s each has two possible items LE/*qu*, which yields $3 \times 3 = 9$ possible combinations as in Table 5.1.

$\{H, L\}$	$\varnothing$	qu	LE
$\varnothing$	$\{\varnothing, \varnothing\}$	$\{qu, \varnothing\}$	$\{LE, \varnothing\}$
qu	$\{\varnothing, qu\}$	$\{qu, qu\}$	$\{LE, qu\}$
LE	$\{\varnothing, LE\}$	$\{qu, LE\}$	$\{LE, LE\}$

Table 5.1: Possible Akt-combinations in Figure 5.2(b)

Theoretically, in the absence of other bounding methods, BE can be satisfied when at least one Akt is filled. Empirically, $\{\varnothing, \varnothing\}$ does not exist in the intended reading here[3]. And if the high-Akt is LE we will get a LE_{AKT}-LE_{ASP} string which is nearly forbidden in Mandarin and yields a distinct reading (Potential) in Dongying. Thus, we are left with 5 combinations, which are all grammatical though not equally natural. A last point to note is the additional LE occasionally appearing after the compound verb. Its unnaturalness in three out of the four relevant sentences in (58)[4] indicates that verb-LE is intuitively understood as Akt in ModC, which is superfluous when Akt is already filled.

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[3]Beware of the case below, which looks like $\{\varnothing, \varnothing\}$ but is actually $\{\varnothing, SHANG\}$, where SHANG is used as a contrastive-inchoative Akt-item, an evidence for which is its incompatibility with Akt-LE.

(i) Xiaoming *gua-SHANG*(*-LE)   denglong LE(-ye).   (Mandarin/Dongying)
    Xiaoming hang-up.AKT(*-AKT) lantern   ASP(-SFP)
    "Xiaoming (finally) had a lantern to hang. (he didn't have one before)"

[4]Its naturalness in (58a) only holds when the sentence-final-*le* is absent, which yields the IWR-effect and suggests a different structure. We assume what IWR involves is actually *v*-to-Voice movement (and then either Voice raises in NS or Asp lowers at MS). However, in ModC such sentences only exist in high registers like IWR, verse, lyrics, etc.

Since PCs are Akt-items, they largely fit in our discussion above. The acceptability variation of extra-LE with different PCs (Table 5.2, cf. (15)) has to do with the room for forced reanalysis; the bigger the perceivable (phonological) distinction between the lexical and functional morpheme is, the less possible forced reanalysis is to occur. This also explains why such cases are more tolerable in Mandarin than in Dongying; it is because the distinction is more perceivable in the latter, e.g. *shang* "up$_L$" *vs.* *hang* "INCHOATIVE$_F$". Therefore, the observed acceptability variation is in essence a variation in the easiness of forced reanalysis in [V-Akt-Akt]. By simplex-to-complex reanalysis the two Akt-s can be separated in two clauses, so the sentence becomes acceptable.

(59)   Xiaoming *chi-wan*(?-liu)   fæ   liæ.   (Dongying)
         Xiaoming eat-finish.AKT(?-LE) meal LE-SFP
         "Xiaoming has finished eating."

Example with extra-LE	Acceptable?	
	Dongying	Mandarin
zuo-hao-LE "make-good→finish making"	Y	Y
xia-kai-LE "rain-open→begin raining"	Y	Y
zhua-zhu-LE "hold-stop→hold firmly"	?	Y
he-shang-LE "drink-up→finally have…to drink"	N	Y

Table 5.2: Acceptability of [V-Akt-Akt] in Dongying and Mandarin

Finally, as to the different Potential Constructions for PrC in Mandarin and Dongying, i.e. *V-de-C vs. V-C-LE-LE*, they appear to be totally different ways of expression. Y.-Z. Shi (2003) has analyzed the Mandarin structure with a two-step reanalysis, i.e. [V-*de*] and [[V-*de*]-C]. Our main concern is the interesting LE-stacking phenomenon in Dongying. The example is repeated below.

(60)   Wo *chi-wæ*-liu-liu.   (Dongying)
         I   eat-finish-LE-LE
         "I can finish eating." (=19c)

Since the two LE-s can be stacked, they must be in different positions. And based on the sentence reading, *wæ* "finish" is used as a normal verb in this case. Therefore, we propose the structure in Figure 5.3, where *wæ-liu* forms a Verb-Akt unit embedded by *chi* "eat" (v_{DO}P).
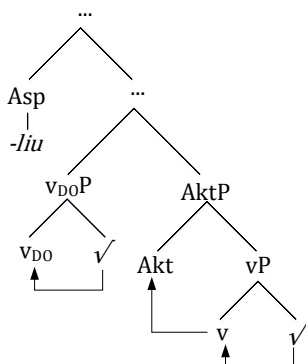
Figure 5.3: The structure of Potential Construction in Dongying

As we can see, the two LE-s are essentially different. One is the embedded Akt, while the other is the embedding Asp. Moreover, we can extend this structure to more cases. For example, given that LE is only one of the Akt-items available in the language, we can replace it with other items, such as QU (61a). In this case, *v*DO is *zi* "squeeze", while the embedded [Akt-*v*P] is *zin-qu* "enter-go.AKT".

(61) a. Zi-Zin-qu   liu-o?
        squeeze-enter-go.AKT ASP-SFP
        "Can you squeeze in there?"

In sum, the observed variation in Mandarin and Dongying reflects different development stages. In the case of resultatives and BCCs, the structures in Dongying are both more like the OC structure, i.e. complex clause with subordination. On the other hand, Mandarin has structures that resemble the reanalyzed structures in MidC. Nevertheless, both Dongying and Mandarin assume the same patterns with respect to directionals, i.e. complex structure in the case of [V-( )-D_1] and simplex structure elsewhere. Specifically, in the former case, V and D_1 are treated as serial verbs. Besides, BE and Akt are closely related in that Akt (as the inner aspect) can properly bound the verbal event. Last but not least, Akt-items in Chinese are an open class which is still under development. They are essentially abstract universal notions (whatever the original meaning) of various kinds, e.g. temporal notions like {LE, SHANG, WAN...} and spatial notions like {LAI, QU...}. In a word, the Akt-position is crucial to the Chinese verbal domain.

5.2.2 BCC and SVC

We have seen that BCC is just a type of SVC, so its variation should also be a variation in SVC-structure. The typical data are repeated below (=(26-28)), which concern three BCC-compounds *dou-xiao* "amuse-laugh", *jiao-lai* "call-come", and *ting-shuo* "hear-say".

(62) a. Baba   *dou*(-zhe)   baobao *xiao*-le.   (Mandarin)
        daddy amuse(-ZHE) baby   laugh-LE
        "Daddy made the baby laugh."

     b. Baba   *dou-xiao*(?)(-le)   baobao(-le)
        daddy amuse-laugh-(?)(-LE) baby(-LE)

     c. Baba   *qiu**(-zhou)   wawa *siao*-liæ.   (Dongying)
        daddy amuse*(-ZHE) baby   laugh-LE-SFP
        "Daddy made the baby laugh."

     d. Baba   *qiu-siao**(-liu)   wawa*(-liæ).
        daddy amuse-laugh*(-LE) baby*(-LE-SFP)

     e. Laoshi *jiao*(-le) Xiaoming *lai*-le.   (Mandarin)
        teacher call(-LE) Xiaoming come-LE
        "The teacher called Xiaoming to come."

     f. Laoshi *jiao**(-liu) Xiaoming *lai*-liæ.   (Dongying)
        teacher call*(-LE) Xiaoming come-LE-SFP
        "The teacher called Xiaoming to come."

     g. *Ting*(*-zhe) (bieren) *shuo* ta kao-shang   daxue-le.   (Mandarin)
        hear(*-ZHE) (others) say   he take exam-up university-LE
        "(I) heard (people) say that he was admitted into university."

     h. *Ting**(-zhou) (rengge) *shuo* te kao-hang   daxiao-liæ.   (Dongying)
        hear*(-ZHE) (others) say   he take exam-up university-LE-SFP
        "(I) heard (people) say that he was admitted into university."

In BCC-compounds with the form [DP_1-V_1-(Asp_1)-(DP_2)-V_2-Asp_2], Mandarin and Dongying differ in the optionality/necessity of Asp_1 (usually ZHE/LE, with certain flexibility). In Mandarin it is either optional as in *dou-xiao/jiao-lai* or compulsorily absent as in *ting-shuo*, while in Dongying it is always compulsory. In addition, most BCC-compounds can be used transitively in Mandarin but not in Dongying. These distinctions can be explained from a historical perspective. The synchronic variation reflects three diachronic stages: *i)* OC-style sentential subordination (a); *ii)* EMidC-style complex-to-simplex

reanalysis (still no adjacency) (b); and *iii)* LMidC-style synthetic categorization (adjacency) (c). Thus, only the third stage involves real compounds. The three structures are represented below.
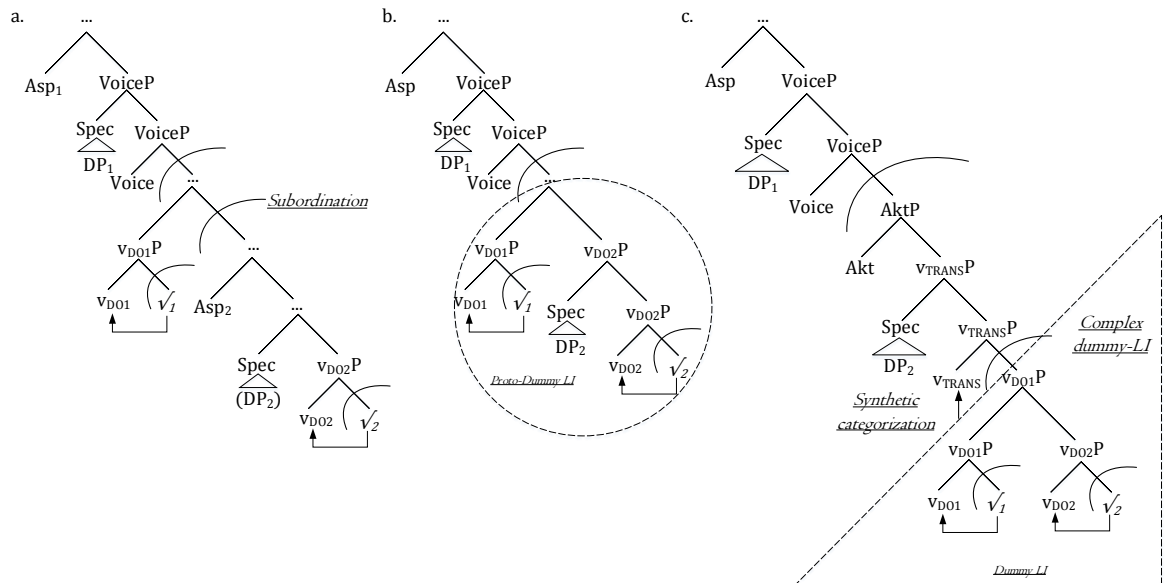

Figure 5.4: Structure of BCC-compounds

As we can see, before reanalysis there can be two Asp-s in BCC, but after it there can only be one. Furthermore, after re-categorization (by v_{TRANS}), the compound verb can take object as a whole, and we see the general IWR-effect (62b)(62d). An evidence for our structuring is the different scope reading of Asp-LE, which in the OC-style (a) only covers the embedded clause, but in the reanalyzed simplex structures (b-c) covers the entire sentence. For instance, when (62a) retains *zhe* the scope of *le* is only "baby laugh" (baby may also cry), whereas when *zhe* is omitted it becomes "daddy amuse baby laugh" (daddy certainly succeeds). Different items may be at different stages, thus yielding different separability, e.g. *dou-xiao* can have all the three structures in both Mandarin and Dongying, while *ting-shuo* assumes only (b-c) in Mandarin and only (a) in Dongying. The general situation is represented in Table 5.3. Dongying is clearly more conservative than Mandarin.

	OC-style	EMidC-style	LMidC-style
Mandarin	?	Y	Y
Dongying	Y	Y	?

Table 5.3: BCC-compound structure-type in Mandarin and Dongying

We can explain the SVC-compound *song-gei* (30-33) in the same way. Mandarin has both OC-style (complex SVC) and MidC-style (simplex with Appl) structures, and forces the

MidC-style reanalysis under adjacency; Dongying only has the OC-style structure, as no adjacency is allowed. GEI has two pronunciations (*gei/ji*) in Mandarin: *ji* is fully [+V], e.g. *ji-yu* "give-give", while *gei* subsumes various grammaticalized readings, e.g. *song-gei* "send-give$_{Appl}$", *gei-ni-xie-xin* "to$_{PREP}$-you-write-letter", *gei-wo-zuo-hao* "for$_{PREP}$-me-sit-well→Sit well!", *gei-ren-da-le* "by$_{PREP}$-people-beat-ASP→got beaten", etc. By contrast, in Dongying it only has one pronunciation *ji*, and has limited grammaticalized readings, arguably only "for/to" (but not "by" and APPL.) Thus, the variation concerning *song-gei* is actually a matter of grammaticalization degree. Besides, with our SVC-analysis we can now explain the "triple/quadruple-LE" phenomena in Dongying (repeated in (63)). When the serial verbs each take an Akt and then get re-categorized as a dummy-LI, there are positions for two more LEs (Akt and Asp), as in Figure 5.5.

(63) Xiaoming yizæ   *song*-liu   *ji*-liu   Xiaohong-liu   yibenr shu-liæ. (Dongying)
     Xiaoming already send-AKT give-AKT Xiaohong-AKT one   book-ASP-SFP
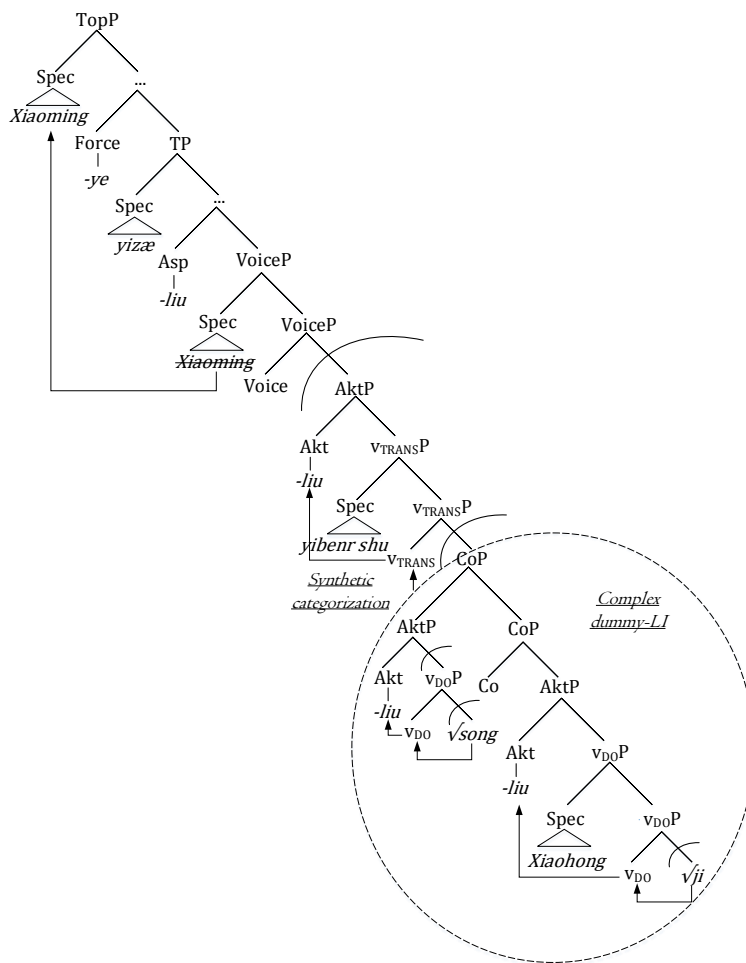   "Xiaoming has already given Xiaohong a book (as gift)." (=32a)

Figure 5.5: Quadruple-LE in Dongying

An issue for future research is why multiple LEs are commonly used in Dongying (and Mandarin to a lesser degree). We speculate that it is a combined result of RE and BE. Given BE (and ultimately Disyllabification), the Akt/Asp positions are generally available in the language; given RE, structures of different stages are preserved and often mingled, especially in spoken registers.

5.3 Non-V-V branch

The only non-V-V branch showing patterned variation in our data are the V-O compounds, as repeated below (=(20)).

(64) a. Xiaoming *bi*(?-le)   *ye*-le.   (Mandarin)
       Xiaoming finish(?-AKT) course-ASP
       "Xiaoming has graduated."

    b. Xiaoming *bi*(?)(-liu)   *ye*-liæ.   (Dongying)
       Xiaoming finish(?)(-AKT) course-ASP-SFP
       "Xiaoming has graduated."

As we can see now, the variation lies in the optionality/necessity of Akt-LE, which surfaces as separability variation. Based on our earlier analysis of the development of V-O compounds and that of LE, we posit two structures for the V-O compounds in Mandarin and Dongying, as in Figure 5.6. Note that the *v*-heads can have different flavors, giving rise to different transitivity-types and object-types. (a) stands for "lexicalized" V-O compounds, i.e. Root-Merger plus categorization. (b) is the normal double-LE case with separated V-O.
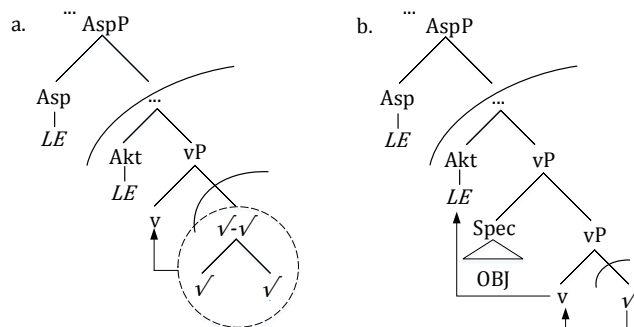

Figure 5.6: Two structures for V-O compounds

In Mandarin there is a general register-split towards V-O compounds. While "double-LE" frequently appears in spoken language, it sounds too casual to be accepted in formal registers. By contrast, Dongying has a strong preference for "double-LE", whereas the [V-O] alternative sounds awkward. This contrast corresponds to the two structures above, i.e. Mandarin favors "lexicalized" V-O compounds (a) while Dongying favors the "phrasal" structure (b). Diachronically, (a) is the later-developed structure under reanalysis, while (b) is the earlier structure before reanalysis. Thus, the structure preference reflects the distinct development stages the two varieties assume. Meanwhile, due to the general tendency of Mandarin to preserve diachronic structures synchronically (RE), the older structure still exists, though only as a register-usage. On the other hand, although Dongying (without RE) can "force" the newer structure (probably under Mandarin influence), using the new structure in Dongying is much more marked than using the older structure in Mandarin, since the new structure has not developed (to a mature state) in Dongying's grammatical system.

5.4   Summary

In this chapter, we have analyzed the data presented in Chapter 2. Our main finding is that the synchronic variation in the two varieties actually reflects different development stages. On one hand, Dongying is generally at an earlier stage, where older structures are still actively used. This is well seen in its preference for the structures before MidC-style reanalysis, i.e. sentential SVC, in several types of compound verbs. On the other hand, Mandarin is at a more advanced stage, where new structures (i.e. those after reanalysis) are assumed by default but older structures also co-exist in various registers. As to the two general types of structures themselves, the one before reanalysis usually assumes complex clause (coordination/subordination) whereas the one after reanalysis usually assumes simplex clause, with the older embedding and embedded (or coordinated) verbs (i.e. "little v+Root"-s) re-categorized as a unit. Thus, the older structure is in a sense looser and the newer more compact, which makes them respectively more compatible with spoken and written registers. This is also reflected in our data, as the older/looser structures are generally preferred in Dongying (which is more spoken) and spoken Mandarin, while the newer/more compact structures are preferred in written Mandarin. By comparing the compound verbs in Mandarin and Dongying, we have not only had a clearer picture of the observed variation, but also gained a better understanding of the general characteristics of the Chinese language.

Chapter 6

Conclusion

In this thesis, we have studied the structural variation in Chinese compound verbs by comparing two varieties of the language—standard Mandarin and Dongying dialect. In Chapter 1, we showed that Chinese compound verbs are a typologically special kind and that the complicated linguistic status of Mandarin makes it reasonable and necessary to carry out comparative research among dialects (especially close-related ones). In Chapter 2, we reviewed previous studies and presented our data. As it is clear now, our first contribution is a careful and detailed presentation of the Dongying data, for this is the first study on Dongying morphosyntax.

Realizing that traditional studies are merely descriptive and that Lexicalist generative studies often encounter challenges from flexible data and varying intuition, and especially with due consideration for the tenability of wordhood, in Chapter 3 we developed our theoretical model within the Distributed Morphology framework. To be specific, we relied on DM's basic assumptions towards the Lexicon and the grammar architecture, but revised the standard theory of Root. Following a strict lexical decomposition path, we built on Harley (2014a,b) and Boeckx (2011) and defined Root as a category-less numbered container that links up sound and meaning at Spell-Out. Crucially, we identified Root with Edge Feature ("envelope") and argued that it is a milestone in human language evolution. Later in the thesis we further argued that "linking" is not only how Root works, but also the fundamental mechanism of human language, according to which grammaticalization and lexicalization are simply processes of constructing new links among the three distributed Lists. Since linking as a cognitive activity is more free than creating listemes, one item can be linked with multiple items simultaneously. Hence, what linking reflects is an Economy scenario of making the most (uses) out of the least (listemes).

In Chapter 4, we used the Cartographic skeleton of Chinese sentence structure developed in Chapter 3 to track compound verbs over history. Following the general consensus on the historical motivation and condition of Chinese compounds, i.e. Disyllabification, we presented the second (i.e. diachronic) data set of this thesis and studied the development of the conventional types. We found that all compound verbs fall in two proto-groups depending on their ways to satisfy disyllabification, i.e. "utilizition" (of existing string) and "creation" (of new string). Our key conclusion was that compound verbs as a systematic and productive inventory appeared in Middle Chinese as a result of reanalysis, grammaticalization, and lexicalization (i.e. constructing new links). Furthermore, due to the Register-Effect, Mandarin tend to preserve diachronic structures synchronically. Therefore, the flexibility of Mandarin data and the conflicting native intuitions actually reveal a blended grammatical system, or even "Multiple Grammars" (Roeper 1999). Importantly, RE is a special property of Mandarin, which is rooted in its history and reality as a standardized common language with hybrid grammatical foundation.

After confirming the motivation, condition, creation mechanism of compound verbs and the source of flexibility. We came back to Mandarin *vs.* Dongying comparison in Chapter 5 and demonstrated that the observed variation actually represents characteristics of different diachronic stages. In particular, Dongying generally has more conservative structures (mostly complex clauses) while Mandarin has more recent structures (reanalyzed simplex clauses). To conclude, the structural variation in Chinese compound verbs nicely reflects the universal fact of language simplification over time and the Chinese specialty of retaining diachronic grammars.

Meanwhile, we have left some issues open for future research. First, due to limited space, we have not been able to make thorough analyses of all the phenomena manifested in our data, but only focused on some key points of variation. Second, we have not really gone into the theoretical implication of Register-Effect. Considering its omnipresence in Mandarin and its huge impact on intuition, it is an interesting next step to make a formal study of its underlying mechanisms, and especially to see how it relates with the Minimalist Program.

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