Syntactic Phrases, Syntactic Compounds, or Lexical Compounds?: An Exploration of the Nature and the Theoretical Implications of the Mandarin VO Forms

Jing Gao

MPhil thesis, University of Oxford
April 2016
# TABLE OF CONTENTS

1 Introduction ......................................................................................................................3
   1.1 Formation of the Modern Chinese lexicon .................................................................4
   1.2 Definition of “word” and “compound” .....................................................................4
   1.3 Applying the Lexical Integrity Hypothesis to Chinese ..............................................5
   1.4 The VO constructions ......................................................................................... 7

2 Literature review ............................................................................................................8
   2.1 Chao’s work .................................................................................................. 8
   2.2 Li & Thompson’s work .....................................................................................9
   2.3 Huang’s work ................................................................................................10
   2.4 Packard’ work ............................................................................................... 10
   2.5 Yip’s work ......................................................................................................11
   2.6 Bound vs. free morphemes ..............................................................................13

3 Criteria for identification .............................................................................................14
   3.1 Phrasal criteria ...................................................................................................15
      3.1.1 Object topicalization ..................................................................................16
      3.1.2 Ellipsis .....................................................................................................17
      3.1.3 Coordination ...........................................................................................18
   3.2 Syntactic compound criteria .............................................................................19
      3.2.1 Aspect marking .......................................................................................19
      3.2.2 Object modification ...............................................................................24
      3.2.3 Reduplication ........................................................................................24
   3.3 Lexical compound criteria .................................................................................25
      3.3.1 Reduplication ........................................................................................25
      3.3.2 Phrase Structure Condition ...................................................................25
   3.4 Idiomatic meaning ..............................................................................................26

4 A continuum ..................................................................................................................28
   4.1 Gradience and features ....................................................................................28
   4.2 Where on the scale ..........................................................................................30
      4.2.1 Frequency ..............................................................................................30
      4.2.2 Context ..................................................................................................31
      4.2.3 Level of education ...............................................................................32
      4.2.4 Summary ...............................................................................................32

5 Modeling the Mandarin VO constructions .................................................................32
   5.1 Construction morphology ................................................................................32
   5.2 Using the CM to model the Mandarin VO forms ...............................................34

6 Mandarin VO compounding as noun incorporation ..............................................36
   6.1 The nature of the Mandarin VO compounding ................................................36
   6.2 Previous work on incorporation in Chinese ......................................................40
      6.2.1 Hsu’s work ...........................................................................................40
   6.3 Types of noun incorporation ...........................................................................42
   6.4 “Subject incorporation” and continuum in noun incorporation ......................44
   6.5 Types of NI in Mandarin ...............................................................................45
   6.6 Implications on morphological typology .........................................................46

7 Future work ..................................................................................................................46

8 Conclusion .......................................................................................................................47

Selected bibliography .........................................................................................................49
List of abbreviation
Adj adjective
ASP aspect
AUX auxiliary
BB bound bound
BF bound free
CL classifier
CM construction morphology
FB free bound
FF free free
GEN genitive
IA item-and-arrangement
IN incorporated noun
IP item-and-process
LIH the Lexical Integrity Hypothesis
LC Lexical compound
NEG negation
N noun
NI noun incorporation
O object
OM objective maker
PSC the Phrase Structure Condition
RES resultative
SC syntactic compound
SFP sentence final particle
SP syntactic phrase
SUF suffix
V verb
VO verb-object
VP verb phrase
1 Introduction

Modern Chinese Mandarin has long had a reputation for being a language that "does not have morphology". Though it indeed lacks some of the more salient morphological expressions commonly found in many of the more-studied and better-understood Indo-European family members, such as grammatical case markers and verbal declension, the language displays a number of morphological phenomena (and/or syntactic when it is not quite so clear in which domain a particular expression should be analyzed) that pose problems of a most interesting sort; and competent native speakers of Chinese, like speakers of any other language, have implicit knowledge about what rules and constraints there are and how their language follows its massive inventory of morphosyntactic rules. For example, Mandarin possesses a range of derivational suffixes. One of these is -hua, which functions as a verbal suffix (somewhat similar to the English -fy). It can follow nouns, adjectives, and verbs to create a whole list of derivational verbs, as in [cheng-shi]-hua town-city-SUF "[city]-SUF" "urbanize", [fu-za]-hua compound-miscellaneous-SUF "[complicated]-SUF" "complicate", and jian-hua simplify-SUF "simplify". As another example, Mandarin makes active and extensive use of zero-derivation, as in ni de lian hong le you GEN face red SFP "your face becomes red", where the adjective hong "red" is converted into a verb meaning "redden", and in [jiao-bian] re ren fan crafty-argue cause person annoyed "[arguing in an unreasonable manner] annoys people", where jiao-bian "to argue unreasonably", originally a verb, is converted to a noun that represents the action of what the verb embodies.

Such phenomena clearly prove that Mandarin is by no means morphology-deprived. An even more intriguing phenomenon is the Mandarin Verb-Object (VO) forms. The VO forms are of particular interest because they often exhibit behaviors that resemble a verb phrase (VP) rather than one holistic morphological unit, yet at the same time show a tighter syntactic/semantic connection between the constituting morphemes (the verb and the object). Consequently, in non-formal works on Chinese morphology, most prominently in teaching Chinese as a foreign language (see, for example, Chinese Grammar without Tears, Integrated Chinese, New Practical Chinese Reader), the VO forms are granted "word" status with a distinct name li-he-ci separate-unite-word "separable word (compound)", reflecting the VO forms’ idiosyncrasy of having both phrase-like and word-like properties. The purpose of this thesis is to explore this particular aspect of Chinese

---

1 Unless otherwise specified, the dictionary referred to for all Chinese lexemes in this thesis is Oxford FLTRP English-Chinese Chinese-English Dictionary.
2 "SFP" is short for "sentence-final particle". Prevalent in all varieties of Chinese, these particles occur at the end of a sentence to express modality, register, or other pragmatic effects. They are considered minimal lexemes and carry no referential meaning. Most commonly seen SFPs in Mandarin include a, ba, le, la, ma, ne, ou, and ya. Chao (1968: 149) describes SFPs as "in construction with a preceding phrase or sentence, though phonetically closely attached to the syllable immediately preceding it".
3 Nor does the history of Chinese present a morphology-impoverished picture. In fact, some linguists (see, for example, Baxter & Sagart 1997, Karlgren 1956) hypothesise that Chinese in its earlier stages had perhaps more morphological expressions than contemporary Chinese. Though how earlier Chinese manifests its morphology is out of the scope of this thesis, I would like to quickly name an example: in Classical Chinese, it is rather common to change a word’s class through tone modulation, some of which are preserved and are the origin of many of the polyphones in the modern language.
morphology: the indeterminacy of a VO form’s status as a compound or as a verb phrase. This thesis will look through a substantial number of examples and discuss the nature, possible explanations, and consequences of this indeterminacy.

I shall present in details the problems the VO forms pose for morphosyntax in later parts of the introduction. Before that, I shall first give a brief explanation of the genesis of the Modern Chinese lexicon, and what it means to say “word” and “compound” in this thesis.

1.1 Formation of the Modern Chinese lexicon

Modern Chinese’s lexicon is derived primarily from Classical Chinese. In Classical Chinese, which is the language of the classic literature from the end of the Spring and Autumn period (5th century BC) through to the end of the Han Dynasty (2nd century AD) and which also was used for almost all formal writing in China until the early 20th century (Norman 1988), words are monomorphemic and monosyllabic, with one syllable corresponding to one morpheme and one morpheme forming one word (Baxter 1992, Masini 1993). While there were some polysyllabic words, their existence was rare: monosyllabic words overwhelmingly outnumbered polysyllabic words. But among Chinese speakers, Classical Chinese has been largely replaced by written vernacular Chinese (a.k.a. baihua), a style of writing that is similar to modern spoken Mandarin Chinese. Baihua started its fast evolution starting from the Qin Dynasty (221 BC). During Ming and Qing dynasties (1368–1912), baihua began to be used extensively in novels, but formal writing continued to use classical Chinese. A prominent feature of the baihua literature is its substantial use of polysyllabic words (compared with Classical Chinese writings), and, among these, disyllabic words. In a study of polysyllabic words’ rise to predominance, Masini (1993) takes some excerpts from three Ming/Qing novels – Romance of the Three Kingdoms (1321), Dream of the Red Chamber (1791), The Heroes and Heroines (ca 1860) – and counts that the ratio between monosyllabic and polysyllabic words was approximately 1:1 (p. 121). Depending on the excerpts chosen, statistics can vary. Different extracts from Journey to the West (1592) and Dream of the Red Chamber (1791) for example, yield a rough ratio of 7:3 for monosyllables versus polysyllables (p. 122). This ratio increased dramatically in the literary works written after 1949, where the percentage of monosyllabic and polysyllabic words was 14.2 and 85.8 respectively (73.7% of the latter being disyllabic) (p. 121).

1.2 Definition of “word” and “compound”

The lexicon encompasses human’s knowledge of words. Yet, what exactly is “word”? Identifying “word” has never been easy. Many morphological textbooks devote an entire chapter to explaining what “word” is. Matthews (1991: 208) thus remarks when he begins his section “What are words?”: “there have been many definitions of the word, and if any had been successful I would have given it long ago, instead of dodging the issue until now.” Linguists recognize that “word” has associated with it a variety of features: phonological features, grammatical features, semantic features, among others. Attempts have thus been made to identify “word” using a combination of lists of phonological, grammatical, and semantic criteria, as reflected in Wells (1947:99): “because of their insufficiency, the phonemic criteria of a word must be supplemented, for every or nearly every language, by criteria of the second kind... the grammatical.”
But it is not the case that phonological criteria and grammatical criteria (or other criteria) always coincide and map onto an identical unit. Combining different lists of criteria thus “lead(s) to conflicts and ambiguities” (Dixon 2010: 2). Recent linguistic works acknowledge such a problem, and decide that “(the) best practice is not to try to combine criteria of different types, but to apply them separately and then compare the results” (ibid.). That is, we should draw on phonological principles to determine only a “phonological word”, and grammatical principles a “grammatical word”.

In Aronoff and Fudeman (2011), a “phonological word” is defined as “a string of sounds that behaves as a unit for certain kinds of phonological processes, especially stress or accent”. Yet, with a “phonological” definition, we might easily confuse some phrases with words, as multiple words are often collapsed together into a large pronunciation unit in actual speech and affects how stress/accent is assigned. In addition, my thesis is focused on the morphosyntactic properties of word forms. Thus “phonological word” will not be the definition of word I adopt for this thesis.

A syntactic word is a form that can take up, independently, a syntactic slot. In tree representations, a syntactic word is often designated as $X_0$. According to Packard (2000: 12), syntactic word might be “the most current linguistic characterization of the notion ‘word’”. In this thesis, a lot of my discussions will center on how much syntactic freedom an element has, what syntactic role it can take or project, etc., and I examine “wordhood” primarily by looking at how a form behaves in a larger phrase and/or a sentence syntactically. “Syntactic word” will be my primary reference when I talk about words.

A morphological word is usually understood as the result of a word-formation rule (p. 11). This understanding is helpful to the notion of compounds, which, by definition, are derived from some formation process. Di Sciullo and Williams (in Packard 2000: 11) describe morphological words as "the set of items comprising morphemes and the output of the rules of morpheme combination." The concept of morphological word can be very useful for studying Chinese words, as the majority of the Mandarin words are polymorphic and Mandarin operates various derivational rules (cf. section 1). However, in this thesis I examine words by looking at their syntactic behaviors.

As with “word”, there is no single definition of “compound”. One thing to keep in mind, however, is that a compound is a lexeme. In Minkova & Stockwell’s (2009) study on English words, compounds are divided into syntactic compounds and lexical compounds. Booij (2010) also divides compounds into syntactic and lexical compounds in his discussion of Dutch. Syntactic compound is a convenient intermediate stage between syntactic phrases and lexical compounds; syntactic phrases show considerable flexibility in manipulating syntactic roles, while lexical compounds exhibit little syntactic freedom. In this thesis, I also make a distinction between syntactic compounds and lexical compounds, which will prove to be very profitable for discussions on the VO forms. In many earlier works, however, no clear distinction is drawn between syntactic compounds and lexical compounds, and linguistic constructs are roughly divided into words and phrases. Thus, when I refer to a previous work which does not specify which type of compound is being discussed, I take its “compound” as lexical compound.

1.3 Applying the Lexical Integrity Hypothesis to Chinese
In the generative tradition, the opacity of the morphological realm to operations of syntax is phrased as the Lexical Integrity Hypothesis (LIH): syntactic transformations are not applicable to word-internal structures (Aronoff 2012). For example, we know that *greenhouse* is one word rather a joint string of two separate words, because *a very greenhouse is nonsensical, and a green and blue house* means something completely different (example from Aronoff 2012). The LIH is very much likely applicable cross-linguistically, and has been used as an important tool to determine wordhood in many languages (cf. Dutch examples in Booij 2004).

The LIH also holds in Chinese compounding. All forms of compounds, with the exception of the VO forms, are shown to follow the LIH. Examples from four different compound categories are presented below to demonstrate the LIH’s general applicability in Chinese. The examples are: (1) *lū-shi* law-teacher “lawyer” and *yi-shi* medicine-teacher “physician” ([N N]N); (2) *jie-jue* solve-execute “solve” ([V V]V); (3) *chang-zhu* often-live “permanently reside” ([Adv V]V); (4) *tong-ku* sad-painful “painful” ([Adj Adj]Adj) and *tong-kuai* sad-happy “satisfying” ([Adj Adj]Adj).

(1) a. Lisi *shí yi* ge [lū-shi] jian [yi-shi]  
   Lisi AUX one CL law-teacher and medicine-teacher  
   “Lisi is a lawyer and physician.”

   b. *Lisi *shí yi* ge [lū-jian-yi]-shi*  
   *Lisi AUX one CL law-and-heal-teacher

(2) a. Lisi *jie-jue le zhe ge* [wen-ti]  
   Lisi solve-execute ASP this CLA ask-problem  
   “Lisi solved this problem.”

   *Lisi solve-ASP-execute this CLA ask-problem

(3) a. *wo chang-zhu* zai [ying-guo]  
   I often-live in England-country  
   I reside in Britain.

   b. *wo hen chang-zhu* zai [ying-guo]  
   *I very often-live in England-country

   write discuss-essay let I sad-painful and sad-happy ASP  
   “Writing my thesis is both distressing and gratifying.”

   b. *xie [lun-wen] rang wo [tong-ku-bing-kuai] zhe*  
   *write discuss-essay let I sad painful-and-happy ASP
Examples (1)-(4) suggest that the LIH holds universally in Chinese. If it happens that a compound word can break the LIH, it is much more likely that the compound is not fully lexicalized and thus still maintains some syntactic freedom, rather than that the LIH could be less effective to certain word type/word. If we claim the latter, we would then need to explain why it is that the LIH is rigorous to all other word types/words but suddenly loses its rigor under some circumstance.

It might be helpful to make an additional note here that in works on Chinese morphology (and in this thesis as well), notations such as “NN” and “VV” do not represent an agglutination of any two nouns/verbs. A verb can comprise an indefinite number of morphemes, one or more than one. “V” in “VV”, on the other hand, refers to just one verbal morpheme. “VV” then represents a compound which is composed of two morphemes both of the verb form class; each of the two morphemes might be either free or bound, and may or may not stand as a word alone.

1.4 The VO forms

In this thesis, the terms “VO forms”, “VO constructions”, and “VO structures” are used neutrally as umbrella terms to refer to any type of “verb + object” combination; they have no implications for whether an individual “verb + object” combination is a phrase or a compound. I choose to use the terms in such a way because this is indeed how they are used in linguistics study in general: we have both morphological forms and syntactic forms, morphological constructions and syntactic constructions, morphology structures and syntactic structures.

This clearly is not the case in previous discussions. In his 1968 work for example, Chao uses “VO constructions” to denote only syntactic VP phrases. Unless quoting a previous work, I shall use “constructions”, “forms”, “structures” as cover terms, and a VO form is labeled “phrase” or “compound” only when its status as a phrase or as a compound is confirmed (in the context in which it appears).

A VO form consists of a verb and an object-like NP, both contributing to the meaning of the compound structure. Modern Chinese is largely an SVO language, and the VO form reflects this word order: the morpheme on the left is of the form class verb, the morpheme on the right is of the form class noun. VO forms are mostly bimorphemic and disyllabic. Cases of multimorphemic and multisyllabic VO forms sometimes occur (e.g., tiao-[shan-yang] jump-goat “play leapfrog”), as with other types of compounds (e.g., [lian-he]-guo joint-nation “United Nations”, an [AdjN]N compound). Examples of VO forms are given below to demonstrate this compound structure:

- tiao-wu 跳舞 jump-dance “to dance”
- chi-fan 吃饭 eat-meal “to eat”
- sheng-bing 生病 grow-disease “to get ill”

While the VO construction takes on the form of a compound verb, it often maintains some syntactic freedom and exhibits phrase behaviors. Take, for example, the VO form cao-xin carry-heart “to concern”.

(5) Lisi hen cao-xin zhe jian shi
   Lisi much carry-heart this CL matter
   “Lisi concerned himself with this matter.”
In the example of the VV compound jie-jue in sentence (2a), the aspect marker –le can only follow jie-jue; when it separates the two morphemes constituting the compound, as in (2b), the result becomes ungrammatical. The inseparability of the constituting morphemes suggests that the two morphemes form a holistic unit, a lexical compound which is inaccessible to syntactic movement per the LIH. This is not the case with cao-xin. In (6), the two constituting morphemes cao and xin are separated not only by an aspect marker, but also by a time modifier yi-bei-zi. Yet the resulting sentence is completely grammatical. It may thus be very tempting to claim that cao-xin, unlike jie-jue, is not used as a compound, but as a verb phrase. However, in (5) cao-xin shows word properties and functions as one holistic transitive verb, followed by an object zhe jian shi. It is not possible to interpret this sentence structure as two objects, xin and zhe jian shi, following one verb cao, because it would be ungrammatical to have a direct object following a verb and then an indirect object immediately following the direct object. Compare, for example, the two different ways of using xie-xin write-letter “write a letter”:

(7) a. wo hui xie xin gei ta
    I will write letter to him
    “I’ll write him a letter.”

b. *wo hui xie xin ta
    I will write letter him

The VO forms thus pose a serious problem to the study of syntax and morphology: they exhibit both word and phrase behaviors.

2 Literature review

The indeterminacy of a VO form’s word/phrase status naturally suggests three possibilities: (a) a VO form is stored in speakers’ lexicon as a (syntactic) word (i.e., a lexical compound), but is analyzed as a phrase under some circumstances; (b) a VO form is a syntactic phrase but is lexicalized under some condition; (c) a VO form is stored in speakers’ lexicon both as a compound and as a phrase. All three possibilities have been explored by previous linguists and their positions vary.

2.1 Chao’s work

The first modern linguistic study on the problems of the Mandarin VO forms started with Chao (1968). In his seminal work, Chao gives a detailed discussion on “VO compounds”. According to Chao, a VO form achieves wordhood status under one or more of the following conditions: (a) at least one of the constituting morphemes is bound; (b) the object is in neutral tone; (c) the compound is exocentric; (d) the compound has “lexicality”, i.e., the meaning of the compound is specialized; and (e) the constituting morphemes are inseparable.
Particularly interesting among these is criterion (b), as it is a phonological criterion. Chao’s examples of VO compounds defined by neutral tone on the object include *xiu-xing* cultivate-conduct “to practice Buddhism or Taoism” and *de-zui* get-offense “to offend”. I personally find these examples to be very unconvincing, as is this criterion, because Mandarin speakers nowadays pronounce the *xing* in *xiu-xing* and *zui* in *de-zui* just in the same way they pronounce these morphemes independently. Since Chao’s writing is from the 1970s and the Chinese language underwent some major change (Mandarin as the standard national language did not come into being until 1932 following the New Culture Movement and came to be popularized in the next four decades), it could be very possible that Chao’s discussions on the language’s phonology are less relevant than his discussions on morphosyntax.

In addition to the five criteria, Chao also discusses the potentiality of using “frequency of association” as a criterion for determining wordhood, though he does not place it along with the five criteria presented above. In discussing “frequency of association”, Chao makes the point that VO forms that occur more frequently such as *fang-xin* drop-mind “to relax” tend to lexicalize as words.

What is special about Chao’s work is that he suggests a there is a degree of “wordhood”/“phrasehood” among the VO forms. On the criterion of the separation of the verb and object in the VO form, Chao posits five “degrees” of separability (1968: 426), and deems the VO forms that are least separable to be the most word-like. In the order of increasing separability and hence decreasing “wordhood” and increasing “phrasehood”, Chao posits the following: (a) “solid” VO forms that are “truly inseparable” (e.g., *yan-shi* loathe-world “to be world-weary”); (b) VO forms that admit suffixes and complements to the verb (e.g., *zu-ge* organize-cabinet “to organize a cabinet” and *zu-le-ge* organize-ASP-cabinet “to have organized a cabinet”); (c) VO forms that admit modifiers to the object (e.g., *zhu-yi* pour-mind “to pay attention” and *zhu-[yi-dian]-yi* pour-a-little-mind “to pay a little attention”); (d) VO forms that allow inversion of the verb and object; and (e) VO forms that allow the separation of the verb and object in questions and answers. However, Chao does not specify why he chooses to rank the five degrees in the particular order he gives.

2.2. Li & Thompson’s work

Li & Thompson (1981: 73-81) generally follow Chao’s criteria but exclude Chao’s neutral tone criterion. They also give an explicit discussion on the criterion that VO words usually do not take direct objects (pp. 76-77). Li & Thompson use the word *ge-ming* remove-mandate “to revolutionize” as an example of a VO compound as it satisfies the following criteria: it (a) has a bound morpheme *ge*; (b) has a non-compositional meaning; and (c) allows nothing to insert in-between the two constituting morphemes.

Li & Thompson seem to hold the view that all VO forms should be recognized as compounds, but the VO-type compound is different from other types in that the vast majority of the VO compounds are separable, and how separable each VO compound is is subject to individual examination (p. 75). What is most significant about Li & Thompson’s work, I think, is that they acknowledge the diachronic development of Chinese that the VO indeterminacy encapsulates. Since most VO compounds come from syntactic phrases in Classical Chinese, their simultaneously being compounds and phrases reflect a gradual lexicalization
process: phrases become increasingly more inseparable morphosyntactically and more idiomatic in meaning over time (p. 80). Because diachronic change takes time to show its full effect, Li & Thompson suggest that changes in the forms' morphosyntactic and semantic properties cannot be discrete. On one end of the change process we find phrase (with features of separability and compositionality) and on the other end we find compounds (with features of inseparability and idiomaticity). Furthermore, Li & Thompson correctly note that the degree of development is different in different VO compounds, and how separable and idiomatic any particular VO compound is cannot be predicted and has to be learned individually (ibid.).

2.3 Huang’s work

Huang (1984) challenges all five of Chao’s criteria. First, Huang singles out one criterion out of Chao’s criteria (a), (b), (c), and (e): the Lexical Integrity Hypothesis. In essence, Huang takes any act that separates the two constituting morphemes of a VO form as an indication of phrasehood. Huang (pp. 62-66) also excludes compositionality of meaning as a useful criterion for identifying words, since, he argues, there are plenty of examples of idiomatic phrases (Huang’s example: gua yang-tou, mai gou-rou hang goat-head, sell dog-meat “to bait and switch”).

Huang’s solution (pp. 68-69) to the VO problem is that such forms “have a dual status, either as words or as phrases... determined by independent principles of grammar and by the context of its occurrence.” The “context of occurrence” that Huang particularly is referring to involves an object following the VO form, which Huang terms “the Phrase Structure Condition” (PSC) (p. 54). Essentially, the PSC states that when a VO form is followed by an object, it is then used as one compound, as the PSC does not allow a verb to be followed by two objects. On the other hand, when the VO form is not followed by an object, the PSC does not apply, and the VO form makes a phrase. Later linguists (e.g., Dai 1997, Packard 2000) largely accept the validity of the PSC. However, they find Huang’s particular use of the PSC too strict, as there is no reason to claim that a VO form is absolutely not a compound if it appears sentence-finally (and thus not being followed by an object), nor is there any reason to claim that a VO form cannot be a compound when it appears in the middle of a sentence and is not followed by a direct object.

2.4 Packard’s work

Following Huang, Packard gives three criteria for determining word status, “any of which is independently sufficient to indicate wordhood”: (a) (adapted from Huang’s PSC:) when the VO form may be followed by an object; (b) when one of the constituting morphemes is a bound morpheme; and (c), when the meaning of the VO form is specialized (2000: 118). Along with the wordhood criteria, Packard give two phrase criteria: a VO form is a syntactic phrase when its object is (a) modified (e.g., by expressions of time or quantification) or (b) moved (e.g., via topicalization) (ibid.).

Packard makes a special note that he has not included the modification of the VO verb by aspect markers such as –le and –guo as an indication of syntactic identity because Packard considers these morphemes to be “part of the word formation component rather than part of syntax because they are examples of word-internal inflectional marking that operates on the head of the VO word, viz.,
the verb.” (p. 119) This claim, however, seems to be rather Indo-European centered; it doesn’t apply well in Chinese. An immediate problem Packard would need to explain is why it is the case that some aspect markers can operate on the head of a VO form while some other markers cannot operate on the head of the same VO form. For example, *chu-guo-chai exit-ASP-errand “have been away on business” and *chuo-chai-le exit-errand-ASP “have gone away on business” are both grammatical, but *chu-le-chai exit-ASP-errand and *chu-chai-guo exit-errand-ASP are not. I shall give more details in section 3.2.1 to clarify why I am against treating the V-ASP-O form as word-internal inflection.

Packard also suggests that the VO form lexicalization process is crucially linked with the process of “solidifying” morphemes (2000: 115). He thinks that the more oftentimes a VO form is used as a word, to a greater extent will the VO form be lexicalized, and the constituting morphemes of a VO form will, eventually, become bound morphemes. Yet, even when “the VO form has been lexicalized to the point where the verb or object are not free morphemes and is therefore technically not available as syntactic phrase”, the VO form is “still subject to reanalysis as a phrase, because virtually any two-syllable verb in Mandarin may be reanalyzed as a limited, ‘ersatz’ VO syntactic phrasal structure.” The example Packard uses to demonstrate this is the reanalysis of the word you-mo, “tease”, a phonetic borrowing of the English word “humor” (2000: 116). This word goes through reanalysis in the following sentences (from Huang 1984: 65).

(8) wo chang-chang you-mo ta
    I often-often tease he
    “I often tease him.”

(9) wo you-le ta yi mo
    I hu-ASP he one -mour
    “I teased him once.”
    (lit. “I hu-ed him one –mour”)

Like Huang, Packard (2000: 115) claims that VO forms are capable of having dual statuses as both words and phrases. But, contrary to Huang, Packard proposes that the underlying identity of all VO forms is “as words (italics Packard’s) listed in the lexicon”, and that “once a VO form attains word status, it is always listed as a word, even though it may still occur in syntax as a VO phrase.”

2.5 Yip’s work
Though not focused on the problems of the VO forms, Yip’s work (2002: 90-93) gives a clear presentation of the general picture of the syntactic versus lexical analyses of Mandarin compound forms, some of which are particularly relevant to the VO forms. Yip emphasizes the syntactic origins of many compounds, and subsequently claims that “[t]he origin of the modern Chinese lexicon thus grants the possibility of analyzing the internal composition of a Chinese word in syntactic terms” (2000: 90). Yip also uses a quote from Selkirk (1982: 2) to support his view, who proposes that Chinese word structure “has the same general formal properties as syntactic structure”, and is, moreover, “generated by the same sort of rule system.”
Such acknowledgement does not mean that we may “equate a syntactically oriented di- (or poly-) syllabic lexeme with a free syntactic construction of similar arrangement or motivation” (Yip 2000: 90), however. In fact, as Baxter and Sagart (1998) notes, the differences between words and their paraphrastic syntactic phrases are manifold. Yip (2000: 90–92) compiles five types of differences.

First, an established lexeme has non-compositional meaning, or, in Yip’s words, it is “semantically non-additive of its constituent elements” (p. 90). Examples Yip uses to support this claim include the compound ci-yan pierce-eye “offensive to the eye” and the idiom chi-niu-pi blow-ox-hide “to brag, boast”. In neither of the two is the meaning of the holistic lexeme synchronically relatable to the semantics of the individual constituting morphemes. Yip notes that in some cases this non-compositionality comes from “meaning retrieved from implicit cultural underpinnings” being “added on to the explicit literal meanings” (p. 91). For example, lang-yan wolf-smoke is not a mere “wolf smoke”, but “smoke from burning wolves’ dung at northern border posts in ancient China to signal alarm of foreign attack” (p. 91). In other cases, a lexeme’s meaning may “deviate dramatically (and even misleadingly)” from its literal meaning. Examples include wawa-yu baby-fish “salamander”, which certainly is not a fish nor looks like one. Regardless of which case it is, the point is: speakers “rightly register the intended meanings of these established words in their minds as holistic units” (p. 91).

Second, when a morpheme has two meanings (we may also take the approach that they are two homomorphic morphemes), one of which refers to a broader, more general category, and the other to a more specific type under the general category, the syntactic phrase usually chooses the narrower meaning morpheme, and the compound, though sharing the same form, takes on the broader meaning⁴ (p. 91). In Yip’s words, the morpheme in a morphological construction is “to cater for theoretically endless cases of a similar nature (sic)”, whereas the morpheme in a syntactic construction is “only used to specify a one-off case” (p. 91). For example, the compound chi-fan eat-meal “to eat a meal” refers to the eating of all meals alike, regardless of what one actually eats, be it noodles, rice, pizza, or porridge, etc.; whereas the phrase chi fan “to eat cooked rice” refers particularly to an act of eating cooked rice as opposed to other possibilities such as chi mian eat noodles “to eat noodles”⁵. Similarly, the compound mai-cai buy-dish means “to buy (any kind of) non-staple food (particularly food which is usually eaten to go with rice)”, while the phrase mai cai means “to buy vegetables”, as opposed to buying meat, chicken, etc.

Third, a compound does not necessarily take on the word class of any one of its constituting morphemes/lexemes, while a syntactic phrase always reflects the word class of one of its constituents (p. 91). Yip’s examples include he-li conform with-reason (V N) “be reasonable” (adjective), xing-wei do-do (V V) “behavior” (noun), and wu-se substance-color (N N) “to seek out (qualified people)” (verb).

Fourth, a compound which shows an internal structure of a certain type of syntactic make-up does not necessarily follow the same grammatical rules as the

---

⁴ Another way of looking at it would be to think that the meaning gets broadened in the compound (cf. discussions on intensional versus extensional meanings in section 6).

⁵ Hyphen is hereby used only to explicitly indicate word status; there is no differentiation in forms at all in actual writing.
corresponding syntactic phrase (p. 91). This observation is particularly recorded for the VO constructions. Yip notices that compound verbs which are “intra-lexically already of a ‘verb + object’ structure” (p. 92) such as dong-yuan move-members “to mobilize” and fu-ze shoulder-responsibility “be responsible for” are, nevertheless, commonly used as transitive verbs to form verb phrases such as dong-yuan qun-zhong “to mobilize the masses” and fu-ze zhe jian shi “be responsible for this matter”.

Finally, Yip notes that “an established lexeme is capable of moving between different or even contradictory semantic and syntactic planes or levels” (p. 92). For example, gu means “buy” in gu-jiu “buy wine” but “sell” in shi-jia-er-gu “wait to sell at a good price”, na means “accept” in cai-na “to adopt” but “pay” in na-shui “pay taxes”, and qian refers to “past” in qian-ren previous-person “predecessor” but “future” in qian-jing future-situation “prospect”. This, Yip claims, also explains “the seeming irrationality built into such fixed yet contradictory pairs of words and set expressions” (p. 92), as seen in [jiu-huo]-che rescue-fire-car “fire truck” versus [mie-huo]-qi [distinguish-fire]-equipment “fire extinguisher”.

2.6 Bound vs. free morphemes
In all the works, it is agreed that the problem of indeterminacy only occurs when at least one of the morphemes of the relevant VO form is bound. This could seem true intuitively and even rather self-explaining: when both morphemes are free, we can always maneuver around the VO form’s constituting morphemes so as to apply syntactic movement. However, my data have convinced me that this simply is not true. There are examples of VO forms that are made up of two free morphemes but nonetheless are always used as lexical compounds. It is just not possible to apply syntactic transformations to them. One example is cheng-gong accomplish-success “to succeed”. Except in contexts which simulate a Classical Chinese feel, or in set phrases which are inherited from Classical Chinese, cheng-gong is always an inseparable bimorphemic compound.

(10) a. wo cheng-gong guo
I accomplish-achievement ASP
“[I (once) succeeded.”

b. *wo cheng-guo-gong

(11) a. ni cheng-gong le ma?
you accomplish-achievement ASP SFP
“Did you succeed?”

b. *gong, ni cheng le ma

(12) [(a), (c), and (e) are all set phrases from Classical Chinese]

---

6 In earlier discussions (cf. section 3.2), I talk about using “being followed by an object” as a word criterion. This problem will be further commented on in section 4.3, in which I argue this criterion works because there are different types of noun incorporation, one of which produces transitive verbs, and some of the Mandarin VO compounds are of such type.
a. gong-cheng-bu-ju
   achievement-accomplish-NEG-claim
   "claim no credit for one's meritorious service"

b. *cheng-gong-bu-ju

c. gong-cheng-ming-jiu
   achievement-accomplish-fame-attain
   "achieve success and win recognition"

d. *cheng-gong-ming-jiu

e. gong-cheng-shen-tui
   achievement-accomplish-oneself-withdraw
   "retire once mission has been completed"

f. *cheng-gong-shen-tui

   It is also agreed universally that the VO indeterminacy only happens with disyllabic VO forms, otherwise speakers will readily recognize the given VO form as a phrase. This probably has a lot to do with Mandarin’s general preference for disyllabic words, which I shall discuss in more details in section 3.3.

3 Criteria for identification

As shown in literature review, previous analyses have all taken a binary approach: criteria have been proposed for identifying VO compounds and VO phrases. The actual picture, however, is more complicated than a dichotomy. This complexity is also noted by Chao (1968: 426-8). Though he follows the "compound vs. phrase" path, he suggests that there is a degree of "wordhood"/"phrasehood" among the VO forms. There are, Chao posits (p. 426), five “degrees” of separability, and the VO forms that are least separable are the most word-like (a detailed account on Chao’s position is given in section 2.1). The findings of my own analyses converge to Chao’s insights to some extent. Many VO forms can be generically classified as “compounds” or “phrases” according to any set of criteria discussed in the literature, but even for two VO forms which are both considered “compounds”, how closely each resembles a word may differ greatly. For example, chu-ban (FB) emit-edition “publish” and shang-feng (FB) injure-disease.causing.element "catch a cold" are both considered to be “compounds” by Packard’s criterion of specialized meaning, yet they exhibit hugely diverging behaviors which suggest that they are better thought of as different types of compounds:

(13) a. Lisi chu-ban guo liang ben shu
   Lisi emit-edition ASP two CL book
   “lisi has published two books.”

b. *lisi chu-guo-ban liang ben shu

c. *lisi chu-guo-ban
I shall argue that a Mandarin VO form may take on one or more of the following three identities: a VO phrase (a VP), a syntactic compound (SC), or a lexical compound (LC). As mentioned in section 1.2., syntactic compound is an intermediate stage between phrase and lexical compound: strong cohesion is formed between its constituents, yet it remains subject to certain syntactic movement. This tripartite approach does not equate to saying that there are three clear-cut categories and a VO form is always assigned to one of the three categories without any ambiguity. Rather, the three categories are better understood as constituting a continuum, with “phrase” at one end and “lexical compound” at the other. Each of the categories itself is more like a cline than like a rigorous cutting-point on the continuum.

It is very important to note that a VO form has only one identity at one time. Every time a VO form is used, it is used either as a lexical compound, or a syntactic compound, or a VP phrase; ambiguity of form status does not exist in any one single utterance. Thus, the indeterminacy, take again the example of cao-xin carry-heart “to concern”, comes from the fact that it is used as a lexical compound in (5) but moves away from being a lexical compound in (6). In other words, no matter what status(es) a VO form is capable of having, it is never simultaneously a compound and a phrase in a specific sentence.

The question then naturally arises that how we can recognize the different identities of a VO form. In the following parts of this section, I provide my own criteria for identifying if a VO form is a verb phrase, a syntactic compound, or a lexical compound in the sentence it appears.

3.1 Phrase criteria

A verb phrase is the “freest” form a VO construction can be; a VP should be able to permit various syntactic movements, including, for example, having the object topicalized. A prerequisite for a Mandarin VO form to be a phrase is that its two constituting lexemes/morphemes must both be free. This requisite should be fairly self-explanatory: if, for example, the verb morpheme of a VO form is a bond morpheme and thus cannot stand alone, then it is not possible to move the object to the first position of the sentence (topicalize the object) as this would leave the verb morpheme by itself; in the same vein, if the noun morpheme of a VO form is a bond morpheme and has to co-occur with the verb morpheme, then it will not be available for topicalization.

While a VO form cannot possibly assume a phrase status unless it is made up of two free morphemes/lexemes, the reverse is not necessarily true, as the example of cheng-gong (cf. sentences (10)-(12)) shows. It is possible that a VO form constituted out of two free morphemes has become fully lexicalized and that its VP form is no longer in use. While its constituting morphemes are free per se, the whole VO form is not available for being used as a VP anymore. Comprising two free morphemes thus cannot be an indication of phrasehood. To determine a VO form’s VP status, I propose the following three criteria: topicalization, ellipsis, and coordination.
3.1.1 Object topicalization

Topicalization is a phenomenon observed widely across languages. It involves the process of making a constituent into the topic of a sentence by moving the constituent, which canonically would have been further to the right (in a language that writes and reads from left to right), to a more prominent position at the front of the sentence (Radford 2009). In the English example “This man I do not know.”, this man is topicalized and fronted to the first position of the sentence. In Mandarin, topicalization is also an active syntactic process. The following example shows how topicalization can be used in Mandarin. In (15b), the constituent zhe ge ren is topicalized and moved to the first position:

(15) a. wo gen-ben bu ren-shi zhe ge ren
   I totally NEG recognize-know this CL person
   “I don’t even know this person.”

b. zhe ge ren, wo gen-ben bu ren-shi
   “This person, I don’t even know.”

The appropriateness of using topicalization as an indication of phrasehood is rooted in its very nature: per the Lexical Integrity Hypothesis, the internal parts of a word may not be available for syntactic manipulation; and topicalization is a mechanism of syntax. Topicalization indicates phrase status and not syntactic compound because the verb and the object are no longer within the same hierarchical structure (other than the sentence), i.e., in a tree representation, the topicalized object and the verb are not under the same branch node. If in a particular sentence the object of a VO form is topicalized, then that VO form in that sentence is a verb phrase.

In the literature, Chao’s criterion (d) – inversion of the verb and the object – comes very close to topicalization. It differs from topicalization in that a mere switch of position between the verb and the object does not result in the object being moved to the first position of the sentence. But inversion really should be recognized as a type of topicalization, since even when the object and the verb are merely inversed, the object is de facto topicalized, with the object being moved to a more prominent position closer to the front of the sentence. An additional type of evidence in favor of inversion being a type of topicalization is that when an inversion occurs, a clearly perceivable stress is placed onto the object, and the object oftentimes receives the main stress of the entire sentence. Examples of topicalization by moving the object to the first position and topicalization by inversing the verb and the object are given below. In (16b), fan is assigned a stress and the main stress of the sentence. A lexical compound, on the other hand, may not have its object topicalized.

(16) a. fan, wo hai mei chi ne
   meal I still not eat SFP
   “Meal, I haven’t had yet.”

b. wo fan hai mei chi ne
   I meal still not eat SFP
“I haven’t had (my) meal yet.”

3.1.2 Ellipsis

Like topicalization, ellipsis is a highly active syntactic mechanism in a variety of languages. The peculiarity of ellipsis is that while one or more words are omitted, their meaning seems to stay, as the omitted words are nevertheless understood in the context of the remaining elements. Multiple types of ellipsis have been acknowledged in theoretical syntax, including gapping (e.g., I cast my vote for Tom and you cast your vote for Jerry), VP ellipsis (e.g., She can read Chinese; I can read Chinese, too), answer ellipsis (e.g., – What did you have for lunch? – I had Salad for lunch), noun ellipsis (e.g., I read three books and she read two books), to name a few. Particularly relevant to my discussions on the Mandarin VO forms status are answer ellipsis, gapping, and noun ellipsis.

Answer ellipsis may conform to many speakers’ intuitive idea of what “word” is: elliptical construction which resolves in a single-word answer often coincides with general speakers’ intuition to characterize “word” as the smallest unit of that language that can stand alone. This vague characterization certainly has its problems: syntactic restraints can affect whether a word can form a single-word answer or not. For example, we do not find it acceptable to answer to “whose book is this” with “my”, even though we agree that my is a word. It so happens that per syntactic rules, my is a determiner and generally appears alongside a noun (example from Aronoff 2010).

In my case of the Mandarin VO forms, however, this is not a problem, since the phenomenon of ellipsis is taken as an indicator of word/phrase status, but not the other way around, i.e., being a word/phrase does not equate to being able to be omitted or have a part of it omitted. Specifically, if the verb or the object of a VO form is omitted in a sentence, then the VO form in that sentence is a verb phrase. Ellipsis signals phrasehood because the omitted verb/object is not dominated by the same branch node as the remaining object/verb is where the VO form appears. In the literature, Chao’s criterion (e) – separating the verb and the object in questions and answers – is in line with answer ellipsis. Examples of ellipsis in Mandarin are as bellow.

**Answer ellipsis:**

(17) – ni chi fan hai shi mian
you eat rice or AUX noodle
“Would you like rice or noodles?”/ “Do you (usually) eat rice or noodles?”
– mian
noodle
“Noodles.”

**Noun ellipsis (in question sentence) and answer ellipsis:**

(18) – ni chou yan bu chou?
you take.in cigarette NEG take.in
OR ni chou bu chou yan?
you take.in NEG take.in cigarette
“Do you smoke or not?”
– bu chou
NEG take.in
“I don’t smoke.”

3.1.3 Coordination

Another common syntactic mechanism, coordination joins together two or more elements (which usually are constituents, though not always) to produce a complex syntactic structure. The joint elements are, for most of the times, of the same syntactic category (e.g., V + V she will eat and sleep), but mismatch also happens (e.g. NP + VP she is a teacher and loves her pupils).

Though coordination is common in Mandarin, when it is used to link two objects together after a verb, it is used relatively infrequently. This happens very likely owning to, I think, the Mandarin language’s general preference for disyllabic words. This preference is demonstrated in corpus study. Masini (1993) for example, notes that in Mandarin, disyllabic words assume a predominant presence among polysyllabic words, while polysyllabic words heavily outnumber monosyllabic words (cf. section 1.2). Mandarin’s disyllabicity preference can also be manifested through the curious phenomenon of elastic word length. It has been well noted that many “Mandarin words” have elastic length (Guo 1938, Duanmu & Lu 1991, Duanmu 1998, 2002): they can be either disyllabic or monosyllabic, e.g., mei coal “coal” vs. mei-tan coal-charcoal “coal” and xue study “study” vs. xue-xi study-study “study”. Naturally, linguists recognize that mei and mei-tan, with different morphological and phonological structures, i.e., different forms, are two distinct lexemes. In a less formal way, Mandarin linguists (ibid.) refer to them as “words having elastic length” because semantically, they are not distinguished from each other. Speakers’ choice of which lexeme is to be used is therefore not so much based on their meaning, but more on the phonological context. For example, when choosing between mei and mei-tan to link with a morpheme to form a compound, speakers prefer mei over mei-tan, and produce mei-kuang coal-mine “coal mine”, mei-qi coal-gas “gas”, and mei-zha coal-dregs “coal cinder”, but not ??mei-tan-kuang, *mei-tan-qi, and ??mei-tan-zha. In a similar vein, for creating a phrase consisting of two disyllabic compounds, mei-tan gong-ren “coal mine workers” and mei-tan ji-tuan “coal mine company” are chosen over *mei-gong-ren and *mei-ji-tuan. This preference might also be the reason behind the fact that indeterminacy happens only with disyllabic VO forms, as trisyllabic VO forms are automatically ruled out as being capable of being lexical compounds.

An example of coordination of the object is given below:

(19) – ni chi fan hai shi mian
you eat rice or AUX noodle
“Would you like rice or noodles?”/ “Do you (usually) eat rice or noodles?”

Coordination of the verb happens even less frequently, very possibly due again to the language’s preference for disyllabic words. As we shall see in the following sentences, coordination is possible for two disyllabic words, but not for two monosyllabic words.

(20) a. wo bian-pai bing lu-zhi yan-chu
I arrange-order and record-make performance-CLA
b. *wo pai bing lu yan-chu
   I arrange and record performance-CLA

3.2 Syntactic compound criteria

Between the verb phrases and the lexical compounds we find the syntactic compounds. As the name suggests, an SC shows some syntactic fluidity but at the same time maintains the cohesion between the V and the O. The LIH is violated to a certain extent, usually by having some constituent inserting into the SC, separating the V and the O. This is not the case in an LC. But SCs are not VPs either: they do not have full syntactic freedom, and the cohesion between an SC’s two constituents is preserved.

I suggest a set of three criteria for identifying a VO form’s SC status: (a) aspect marking; (b) object modification; (c) reduplication. Each and every one of the three criteria is independent of any other, and any one of the three criteria should be sufficient for indicating an SC identity. If a VO form shows behavior which is captured by any one of the three criteria, then the VO form, in that particular environment, is produced and/or received as an SC. Criteria (a) and (b) have already been discussed rather extensively in earlier works. Criterion (a) has especially been a topic of debate. Packard (2000) dismisses considering aspect marking as an indication of non-wordhood and treats the form V-ASP-O as “word-internal inflection”. I would like to add new information about Mandarin aspect markers to challenge the “internal inflection” treatment and show that aspect marking is actually a very effective criterion for identifying SCs. I also propose that criterion (c) is an additional useful tool for identifying SCs.

3.2.1 Aspect marking

Aspect marking in Chinese is achieved generally, if not exclusively, through affixing aspect markers. In most literature works on Chinese grammar, only three particles are generally recognized and researched on as aspect markers, namely, –le, –guo, and –zhe (Chu 1998, Xiao & McEnery 2004). Whether there exist other aspect markers, or to put it more precisely, whether we should identify other morphemes that also have the function of marking aspect but behave in different morphosyntactic ways from the widely acknowledged three has largely been an issue of controversy. In more recent research, most linguists (ibid.) take the view that –le, –guo, and –zhe are not the only aspect markers, but opinions differ hugely on how many more are out there. Chu (1998) opines that there are more than three, but probably not that many aspect markers in Chinese. Additional aspect markers identified by him include –zai and –qilai. Xiao & McEnery (2004) however, include nine more types of aspect markers. I specify that Xiao & McEnery talk about “other types of aspect markers” rather than “other aspect markers” because they group some aspect markers together as forming one type of aspect marking. Xiao & McEnery (p. 6) note that some features of their additional aspect markers deviate from the generalizations made for –le, –guo, and –zhe, but because they encode aspect information nevertheless, they should be accordingly labeled.

As an example, the marker –zai, which as an aspect marker (it could have other uses, e.g., to express being at a location, somewhat similar to English prepositions “in” or “at”, as in wo zai Shanghai I in Shanghai “I am in Shanghai.”)
expresses that an action is ongoing, and is placed ahead of a verb rather than behind it, e.g., wo zai [chang-ge] 1 ASP sing-song “I'm singing.”, contrary to the regular post-verb position of Mandarin aspect markers. I adopt, nonetheless, the marker –qilai for my SC criteria, for the reason that it is deemed to fit very well into the system of aspect-marking despite its behaving morphologically and syntactically different from the other three, and also that it fits very well into our particular case on hand. The four aspect markers I include for indicating SC status are briefly discussed below:

The aspect marker –le is the perfective aspect marker and expresses a “perfective” viewpoint in the sense that the speaker views a specific event as an integral whole (Chu 1998: 25), e.g., lis i qu le Beijing lisi go to-ASP Beijing “Lisi has gone to Beijing.”; lisi mai le yi ge wan-ju lisi buy ASP one CL play-tool “Lisi bought a toy.”

The aspect marker –guo is the experiential marker in Chinese and it resembles the English perfect in that it marks some past event(s) as relevant to the present state (Xiao & McEnery 2004: 260), e.g., lisi qu guo Beijing Lisi go ASP Beijing “Lisi has been to Beijing.”; lisi mai guo yi ge wan-ju Lisi buy ASP one CL play-tool “Lisi (once) bought a toy.”

The aspect marker –zhe expresses a durative viewpoint; it indicates that the speaker views the progression of an event as the most salient (Chu 1998: 182), e.g., huang-di zuo zhe jiao-zi chu-xing emperor-emperor sit ASP sedan.chair-SUFFIX “The emperor locomotes (by) sitting in a sedan chair.” –zhe can express both the continuation of a state and the continuation of an action.

The aspect marker –qilai is the inchoative aspect marker. Specifically, it signals the inception of an event rather than a change of state (Chu 1998: 38). Using –qilai indicates that the speaker is concerned with the starting and continuation of an event, e.g. ta shuo zhe ku qi-lai he talk ASP cry ASP “While talking, he started to cry.” A fascinating idiosyncratic particle, –qilai can only appear in the form of Verb-qi-Object-lai or Verb-qilai. Compare, for example, the VO form chang-ge sing-song “sing” and the VV compound xing-dong practice-move “take action”. The corresponding phrases of the two words with –qilai are chang-qi-ge-lai and xing-dong-qilai, respectively, while *chang-ge-qilai and *xing-qi-dong-lai are ungrammatical.

Examples above have shown that in Mandarin, aspect markers appear immediately after verbs (in the peculiar case of –qilai, –qi and –lai are separated when an object is present, and only –qi immediately follows the verb). If a VO form is used as an LC, then aspect markers, when employed, should follow the whole VO form, instead of splitting the V and the O.

While earlier linguists (Chao 1968, Li & Thompson 1981) use the position of aspect markers as an indication of wordhood/phrasehood, Packard (2000) dismisses this practice. Packard claims that aspect markers are “properly considered part of word formation, specifically that aspect of word formation comprising inflection” (p. 118-9); and that they should be considered “part of the word formation component rather than part of syntax because they are examples of word-internal inflectional marking that operates on the head of the V-O word, viz., the verb” (p. 119). If Packard were correct, we would then not be able to infer anything about the status of a VO form when we see an aspect marker inserted into it between the V and the O, as we might be looking at an internally inflected word, or a VP with its verb inflected.
In addition to Packard’s claim of word-internal inflection, another challenge to the validity of the aspect marker criterion comes from recent morphology study on how inflected verbs are stored and accessed by speakers. Traditionally linguists have considered that aspect markers work in a rule-based manner to form inflected verbs, but empirical evidence from experiments suggests that inflected verb forms, in at least some of the world’s languages, are more like independent word-forms that are learned by speakers using rote memory and are individually stored in speaker’s lexicon, just like their corresponding non-inflected forms (Bybee 1985).

General discussions on word-internal inflection and rote learning of inflected forms are sound and valid in their own right. But neither of the two hypotheses applies to the Mandarin VO forms, because aspect marker insertion in Mandarin is not word-internal inflection on the head. In fact, it is doubtful whether Mandarin aspect marking should be considered in the same way as the canonical type of inflection. There seems to little support – other than intuition spawned largely out of understanding of the Indo-European languages – for the claim that the Mandarin aspect markers are actually inflectional morphemes. I present the following evidence to support my view.

Evidence i. Chinese aspect markers are a lot more “versatile” than, say, the English inflectional morphemes –ed (past tense marker) and –ing (progressive marker). In (21) and (22), for example, the aspect markers are modifying the entire VPs (qilai modifying bian de kai-xin, guo modifying ba wo re ku), rather than just having some verbs inflected:

(21)  ru-he rang zi-ji bian de kai-xin qilai?
as-how make self-self become AUX open-heart ASP
“How can one make oneself happy?”

(22)  zhangsan ba wo re ku guo
zhangsan OM me cause cry ASP
“Zhangsan made me to cry.”

(23)  fan hai re zhe, kuai chi ba
meal still hot ASP, quick eat SFP
“Food is still warm. Be quick and eat it.”

The Mandarin aspect markers also show little selectivity as to which types of words they are preceded by. They do not need always follow verbs. In (21) and (23), for example, aspect markers qilai and zhe are each preceded by an adjective. This contrasts with the more canonical inflectional morphemes, which have a high selectivity and consistently appear after/before one type of words only, e.g., English –ed only appears after verbs (Zwicky & Pullum 1983).

Evidence ii. The function of an inflectional morpheme is to assign a grammatical property to a word. The English past participle inflectional morphemes –en and noun plural inflectional morpheme –s, for example, assign aspect and plurality to a word, respectively. Ultimately, inflection should give back to us a word. Now consider the Mandarin aspect marker –qilai: on what basis can we claim that chang-qi-ge-lai is a word? If –qilai is an inflectional morpheme, why is it that we are produced non-words through the use of –qilai?
Evidence iii. Though it is not entirely impossible, it is quite rare cross-linguistically for a language to have only one type of inflection. Normally we would see inflections for several grammatical features in a language which actually has inflection in its grammar, e.g., a language may show inflection for tense, person, number, and case. In Mandarin, however, other than the dubious “inflectional” aspect markers, no other types of inflection have been identified. It is very unusual for a language to have inflection, but only for verb tense and nothing else. On top of that, Mandarin is in general not particularly known for being an inflectional language. If that is the case, why, then, are we confident that the aspect markers in Mandarin represent inflection, and, the only type of inflection?

Evidence iv. In contrast to how inflectional morphemes are usually handled in lexicography, all of the Mandarin aspect markers are listed out in Mandarin dictionaries7, i.e., they have their own entries as lexemes (a note for the more inquisitive readers: they are listed as auxiliaries). These dictionaries, written by native speakers who most likely do not have the same type of knowledge of the language as theoretical linguists, probably better reflect the intuitive knowledge the native speakers have about their language. This may suggest that the way the aspect markers are recognized by native Mandarin speakers is very different from the way the more established examples of inflectional morphemes are recognized by their native speakers.

Based on these four types of evidence, I am strongly against treating Mandarin aspect markers as inflectional morphemes. They could, potentially, become inflectional morphemes in the future. Some linguists have proposed that the traditionally recognized three aspect markers, i.e., –le, –guo, and –zhe, are results of grammaticalization (Xiao & McEnery 2004). While we know from the history of the language that this is true diachronically, my evidence suggests that as of now, the markers have not been grammaticalized to the extent that they become full inflectional morphemes. While determining what they are if they are not inflectional morphemes requires much more evidence and is out of the scope of this thesis, my position is not affected: these aspect markers are not inflectional morphemes. It would then make little sense to see V-ASP-O as word-internal inflection. Even if the aspect markers represented inflection, I find the word-internal inflection approach problematic. I present two arguments to challenge this approach.

First, it is rather common in Mandarin that the V and the O of a VO form are separated not just by an aspect marker, but also other types of object modifier, such as a time modifier, a numeral plus a classifier, a genitive modifier, or just an adjective. Here are some examples:

(24) du guo yi ben shu
     read ASP one CL book
     “have read one book”

(25) mai le ta yi da bao cai
     buy ASP his/her one huge CL vegetable
     “bought one huge packet of veggies from him/her”

If, as Packard claims, the examples above consist of a head-inflected VO word rather than a verb phrase, we are essentially claiming that it is possible to construct a word in Mandarin that has within it all sorts of syntactic structures, which clearly violates our understanding of “word”. The concept of “word” may not even exist in Mandarin anymore, as virtually any phrase, once inflected, can be called a word. If, on the other hand, we recognize the above examples as VPs, then Packard would need to explain what makes the inflection in them so special that they are not head-inflected VOs. We would need a better explanation than “as long as there are no other constituents following the aspect marker in-between the V and the O, it is word-internal inflection on the head, otherwise the VO form represents not an internally-inflected word but an inflected VP”.

Perhaps the biggest question the word-internal inflection approach would need to explain is why we have the following results:

(26) a. wo dan-xin  guo zhe jian shi  
   I carry-heart ASP this CL matter  
   “I have worried about this matter.”

   b. *wo dan-guo-xin  zhe jian shi  
   *I carry-ASP-heart this CL matter

(27) a. wo wei zhe jian shi  dan-xin guo  
   I for this CL matter carry-heart ASP  
   “I have worried about this matter.”

   b. wo wei zhe jian shi  dan guo xin  
   I for this CL matter carry ASP heart  
   “I have worried about this matter.”

In (26a), the VO form dan-xin is followed by another object, which suggests that the VO form has been fully lexicalized and dan-xin is now one holistic word, a lexical compound (cf. section 1.4). When this happens, i.e., dan-xin is used as an LC, a “bona fide” complex word, and “internal inflection” on the head dan becomes ungrammatical, as in (26b). This suggests, ironically, that when a VO form takes on “word-internal inflection”, it is then not a “word”. This is further supported by the sentence pair in (27). Both (27a) and (27b) are grammatical: when dan-xin is not used as an LC (its otherwise direct object now becomes an adjunct argument and does not immediately follow dan-xin), it is possible to have an aspect marker either after dan-xin or splitting it.

In summary, the idea of word-internal inflection does not work well with Mandarin; and we have various types of evidence supporting that Mandarin aspect marking would be better understood not as inflection. Having an aspect marker inserted in-between the V and the O indicates that the VO form can have some syntactic fluidity, while at the same time maintains strong cohesion between the two constituents. Thus, aspect marker insertion is, I think, an effective indication of SC status.

3.2.2 Object modification
As mentioned briefly in 3.2.1, object modification is oftentimes seen combining with aspect marking. The validity of using object modification as an SC criterion is built pretty much on the same ground as that of aspect marking criterion. Object modification means that additional constituent(s) are inserted in-between the V and the O, signaling some syntactic fluidity for the two morphemes. Yet the V and the O also show strong cohesion between them, as the O does not move out of the object position projected by the V. Mandarin sees a range of possible modifiers in object modification (cf. section 3.2.1). Two examples of object modification are given below:

(28) (genitive modifier)
kan ni de shu!
look you GEN book
“Read your book! (Do not mind other businesses.)”

(29) (adjective modifier)
chi hao-chi de fan
eat good-eat AUX meal
“eat delicious food”

(30) (time modifier)
shui san tian (de) jiao
sleep(v.) three day (AUX) sleep(n.)
“take a sleep for three days”

3.2.3 Reduplication
Reduplication is a fascinating phenomenon in Chinese, and has surprisingly been much underrepresented regarding its implications in the word/phrase indeterminacy problem in previous discussions. Linguists who have worked on the problem of reduplication have mostly included it as a type of aspect marking. Xiao & McEnery (2004: 151) call it “delimitative”, which indicates that a situation lasts for only a small amount of time. They also note that only volitional verbs go be assigned this aspect.

Though reduplication is often considered a type of aspect marking, its morphosyntactic idiosyncrasies are certainly very much different from those of the aspect markers discussed in 3.2.1. Reduplication does not involve one fixed marker. Instead, it works by following a format: $W_V \rightarrow W_V W_V$. For example, for a VV compound huo-dong live-move “to exercise” we can derive huo-dong-huo-dong “to exercise a little bit”. In some sense, the aspect marker in this case is the word itself. The relevance of reduplication to SC can be demonstrated by the following example:

(31) zhe jian shi ni cao cao xin
this CL matter you carry carry heart
“lit. Concern yourself a little bit for this matter.”
“Spend some time attending to this matter.”

Since reduplication works by applying to the word, when a VO form is used as an SC, i.e., the V and the O are recognized as separate verb and noun,
reduplication results in a VVO form. This implies that the two constituents of an SC are granted some syntactic freedom and are processed as a verb projecting a noun.

3.3 Lexical compound criteria

In comparison with being used as phrases or SCs, the VO forms are less frequently used as LCs, and the number of indications of LC status is perhaps, coincidentally, proportionally smaller. My set of criteria contains two: the first is reduplication, the second is drawn from Huang’s (1984) Phrase Structure Condition. As with the phrase and the SC criteria, the two criteria are independent of each other, and a VO form showing any of the two signals is used as an LC in the environment.

3.3.1 Reduplication

As shown in 3.2.3, reduplication reduplicates the verb in an SC, and produces a VVO pattern. With an LC, on the other hand, reduplication produces a VOVO pattern, since an LC is a fully lexicalized item (cf. the example of the VV compound huo-dong in section 3.2.3). For instance, in additional to being a VP and an SC, cao-xin may also be used as an LC. (This should not be surprising. As mentioned earlier, the Mandarin VO problems are complicated precisely because the VO forms often show different identities in different contexts, “morphing” from a phrase to a compound or vice versa.) When cao-xin is used as an LC, it produces the expression cao-xin-cao-xin, the meaning of which is not essentially different from cao-cao-xin: cao-xin-cao-xin “spend some time and effort (on something)

The VOVO reduplication pattern conforms well to the LIH. In an LC, each of the two constituting morphemes no longer maintains its syntactic status; they form a tight, holistic lexical unit. The internal structure in an LC is obscured and inaccessible for other processes. Any syntactic/morphological process recognizes only one item when it is applied to an LC. Hence the VOVO pattern.

3.3.2 Phrase Structure Condition

Though Huang’s Phrase Structure Condition (1984) has been questioned and criticized in succeeding works by some linguists (Dai 1997), I find it to be a very powerful tool in identifying LCs. In fact, I think that no other rule is more reliable than Huang’s PSC. PSC essentially states that when a VO form is followed by an object, the VO form has to be being used as an LC (Huang 1984).

Huang’s PSC is particularly effective in explaining why we have the following sentence pairs. The different types of sentences show that dan-xin is a very versatile VO form, and can be used either as a VP, an SC, or an MC. If dan-xin can take on either the SC and the LC identity, why would (33b) be ungrammatical? No other criterion can give a satisfying explanation other than the PSC: if dan is separated from xin, dan is then used as an individual verb and projects an argument, the position of which is filled by xin. When dan-xin is used as an LC, dan-xin as one verb projects an argument, and the position is filled by zhe jian shi. Vice versa, when being followed by another argument, dan-xin in this context is an LC, which, under the LIH, does not allow its internal structure to be manipulated. The insertion of an aspect marker hence makes the sentence ungrammatical. When the oblique argument zhe jian shi is rearranged as an adjunct and precedes dan-xin,
the VO form can then again be either an SC or a VP, and aspect marker insertion does not result in ungrammaticality (cf. section 1.4).

(32) a. wo [dan-xin] guo
    I carry-heart ASP
    “I was worried.”

    b. wo dan guo xin
    I carry ASP heart
    “I was worried.”

(33) a. wo [dan-xin] guo zhe jian shi
    I carry-heart ASP this CL matter
    “I was worried about this matter.”

    b. *wo dan guo xin zhe jian shi
    *I carry ASP heart this CL matter

(34) a. wo wei zhe jian shi [dan-xin] guo
    I for this CL matter carry-heart ASP
    “I was worried about this matter.”

    b. wo wei zhe jian shi dan guo xin
    I for this CL matter carry ASP heart
    “I was worried about this matter.”

3.4 Idiomatic meaning

In many of the existing discussions (Chao 1968, Li & Thompson 1981, Packard 2000), specialized (other frequently used expressions include “non-compositional”, “idiomatic”, “lexicalized”) meaning has been taken as an indication of word status (cf. section 2). While this may sound valid intuitively, there are a couple of things that need to be explained should we adopt it as a wordhood criterion. First, there are numerous examples of idiomatic phrases which have specialized meaning but are no in way thought of and used as words. Huang (1984: 62-6) notes this challenge too when he rules out compositionality of meaning as a useful tool for identifying words, citing the set phrase *gua yang-tou, mai gou-rou “lit. hang a goat’s head, sell a dog’s meat” “to bait and switch” as an example. If specialized meaning stands for wordhood, we would then make wrong understanding of the many idioms we find in Chinese. I’d like to add, as a second challenge, that with specialized meaning as a wordhood criterion, we

---

8While it is not clear how many idioms in total there are in modern Chinese, largely because of the problem of definition, there are counts on the number of *chengyu*, which are perhaps the most well-known type of idioms in Chinese. Often referred to as Chinese idioms or four-character idioms/expressions – as they are usually made up of four characters – *chengyu* were widely used in Classical Chinese and are still common in vernacular Chinese writing and in the spoken language today. *Chengyu* are not the only type of idioms in Chinese, but they differ from other types in that they have literary origins, deriving mainly from classical literature, whereas other idioms come mostly from vernacular speech. The most stringent definition yields about 5,000 *chengyu*, though some dictionaries list over 20,000 (Oxford FLTRP English-Chinese Chinese-English Dictionary).
would easily run into the problem of assigning conflicting statuses to a VO form in one setting. The following examples show how common it is to have a non-word VO form which nevertheless maintains a non-compositional meaning (and with some VO forms, for example the VO forms in (35) (37), and (38), the non-compositional meaning is the VO form's only possible meaning):

(35)  
\textit{da-che} hit-car “ride a cab”  
\textit{lisi bang wo da le liang che}  
lisi help I hit ASP CLA car  
“lisi helped me to get a cab.”

(36)  
\textit{ting-hua} listen-words “to obey”  
\textit{ting ma-ma de hua}  
listen mother-mother GEN words  
“Follow mom’s words.”/ “Be obedient to mom.”

(37)  
\textit{zou-shen} walk-spirit “to lose concentration”  
\textit{wo zou le yi xia-wu shen}  
I walk ASP all next-noon spirit  
“I couldn’t concentration the entire afternoon.”

(38)  
\textit{yao-lian} ask-face “have a sense of shame”  
\textit{lian ni dou bu yao le}  
face you even NEG ask SFP  
“You don’t even have a sense of shame.”

We know per wordhood/phrasehood criteria in earlier sections that none of the VO forms in (35) through (38) is a lexical compound. If we accept that specialized meaning signals wordhood, then the VO forms in (35) to (38) would be a non-word and a word simultaneously.

Thus, I strongly oppose the applicability of specialized meaning as a criterion for word status. The problems of idiomatic phrases and conflicting statuses are clear evidence of specialized meaning being merely a semantic feature and nothing else.

As a matter of fact, I have become increasingly convinced through my data analyses that we should treat a form’s meaning and a form's morphosyntactic features in such a way that they are separated onto two distinct levels: the meaning of a form belongs to the semantic level and has no influence on properties derived from other domains; the syntactic and/or morphological properties of a form originate on the morphosyntactic level and are not affected by features of other domains. This is not equated to saying that features from different levels/domains cannot interact with each other, however. They can, which is why there may be very strong correlation between a certain morphological/syntactic feature and a certain semantic feature (for example, a lexicalized VO tends to have idiomatic meaning). But the connection is a correlation, not a causation. We can note a tendency, but it is very dangerous to say any particular association is entailment, and it would be wrong to claim that one is a defining criterion of the other. The essence is: having or not having a semantic feature, or any semantic feature, does not alter a construction’s morphosyntactic properties. Similar
examples are regularly found in other languages as well. Take English: the semantic feature of plurality does not, by itself, say anything about whether "books" is a word or not, and having a specialized meaning per se does not tell us if “kick” in “kick the bucket” should be inflected or not.

4  A continuum
4.1  Gradience and features
The VP-LC continuum should encourage us to think of the morphosyntactic categories (VP, SC, LC) as possible morphosyntactic properties, which a VO form can or cannot take on, rather than static statuses/states. I give some examples of expressions with features below:

tiao-wu 跳舞 (FF) jump-dance “to dance”
morphological features: [+verb phrase], [+syntactic compound], [-lexical compound]
semantic features: [-specialized meaning]
As VP: wu wo bu hui tiao dance I NEG know jump “I can’t dance.”
As SC: ta tiao le yì tian wu she jump ASP one CL dance “She danced the entire day.”
   tiao tiao wu “(Come) dance a little while!”

cao-xin 操心 (FF) hold-heart “to be concerned (about)”
morphological features: [+verb phrase], [+syntactic compound], [+lexical compound]
semantic features: [+specialized meaning]
As VP: xin ta gen-ben bu cao heart he at.all NEG carry “He doesn’t care at all.”
As SC: ta gen-ben mei cao guo xin he at.all NEG carry ASP heart “He’s never cared.”
As LC: ta hen cao-xin zhe jian shi he very carry-heart this CL matter

shang-feng 伤风 (FF) injure-disease. causing. element “catch a cold”
morphosyntactic features: [-verb phrase], [+syntactic compound], [+lexical compound]
semantic features: [+specialized meaning]
As SC: ta shang le da feng he injure ASP huge disease “He’s got a terrible cold.”
As LC: ta shang feng hao jiu he injure disease well long “He’s had a cold for a while.”

sheng-zhi 升值 (FB) rise-value “appreciate”
morphosyntactic features: [-verb phrase], [+syntactic compound], [+lexical compound]
semantic features: [-specialized meaning]
As SC: zhe chu fang-chan sheng le zhi this CL house-property rise ASP value “This property has gained in value.”
As LC: zhe chu fang-chan sheng-zhi san bei this CL house-property rise-value three multiple “The value of this property has tripled.”
si-guo 思过 (BF) think-fault “reflect on one’s errors”
morphosyntactic features:
[–verb phrase], [+syntactic compound], [+lexical compound]
semantic features:
[+specialized meaning]
As SP: ni si hao guo le zai he wo shuo hua
“you think well fault ASP again with me speak word”
“Don’t talk with me until you’ve realized what you’ve wronged.”
As LP: si-guo-si-guo

chao-sheng 朝圣 (BB) pilgrimage-sage “make a pilgrimage”
morphosyntactic features:
[–verb phrase], [+syntactic compound], [+lexical compound]
semantic features:
[+specialized meaning]
As SC: ta dao Xizang chao guo sheng
“he arrive Tibet pilgrimage ASP sage”
“He’s been on a pilgrimage to Tibet.”
As LC: chao-sheng Xizang pilgrimage-sage Tibet “go on a pilgrimage to Tibet”

chu-ban 出版 (FB) emit-edition “publish”
morphosyntactic features:
[–verb phrase], [–syntactic compound], [+lexical compound]
semantic features:
[+specialized meaning]
As LC: wo chu-ban le yi ben shu
“I emit-edition ASP one CL book”
“I’ve published a book”

shi-wang 失望 (BB) lose-hope “lose heart”
morphosyntactic features:
[–verb phrase], [–syntactic compound], [+lexical compound]
semantic features:
[+–specialized meaning]
As LC: bu yao shi-wang NEG will lose-heart “Don’t lose hope!”

4.2 Where on the scale
With the VO forms being expressed as taking on different morphosyntactic features and consequently being placed at different places along the VP-LC continuum, immediately following is the question that where on the continuum a VO form stands. Other than some prerequisites such as a VO form cannot be used as a phrase unless both of its two constituents are free morphemes, there are no set rules that can determine where a particular VO form is on the VP-LC scale: where a VO is placed on the continuum is very much determined discretely. And to make things even more complicated, the same VO form may be interpreted by individual speakers differently: the same VO form may take on properties of an SC in one speaker’s language, but used only as an LC by another speaker. There are, however, identifiable factors which influence how an individual may choose to
interpret a VO form. I propose that the following three factors – frequency of use, context in which the VO form appears, and a speaker’s level of education – can affect where on the continuum a speaker chooses to place a VO form. Since the Mandarin VO compounding essentially represents a language change (from syntactic phrase to lexical compound) (cf. section 1.1), some insights from historical linguistics have proved to be especially helpful in understanding the influencing factors.

4.2.1 Frequency

Frequency has been commonly recognized to play an important role – and sometimes a precondition – in many linguistic phenomena, particularly the ones involving language change (Aitchison 2001, Bybee 2003). Yet exactly how it influences change – whether it catalyzes it, or keeps it in check – depends on what kind of change is being talked about and which scholars are taking about it. For example, it is argued that the more frequently a form is used, the less likely less likely it would be subject to external influence the more likely it will stay unchanged in the language, making them the ideal words for comparative reconstruction (Campbell 2013). In a different case concerning sound change, some other people argue that more frequently used forms might be affected by a language change more quickly, and a sound change might be actuated earlier among the more frequently used words in lexical diffusion (Phillips 1984).

Linguists working on compounding in other languages have noted how frequently a form is used can correlate with how likely it will go through compounding. For example, Mithun (1984: 848) suggests that there is a positive correlation between frequency and compounding (though she never explicitly uses the word “frequency”). Simply put, compounding does not just happen, it is “done for a reason” (p. 848). Some entity, quality, or activity becomes “nameworthy in its own right” because it is “recognized sufficiently often” (p. 848). Thus, for instance, “bus money or lunch money are more likely nominal compounds than sock money or screwdriver money” (p. 848). In the same vein, mount-climbing or berry-picking are more possible verbal compounds than roof-climbing or cactus-picking. Similarly, Booij notes that “nameworthy and conventional activities” (2010: 98) are likely to be associated with verb-noun compounding.

My observations of the Mandarin VO forms yield similar findings. A VO form which denotes an activity that is practiced on a regular basis and common to average speaker’s everyday life may consequently become “nameworthy” and is given a designated name, i.e., it becomes a specialized LC (as is the case in Mithun’s and Booij’s descriptions). A best example of this might be chi-fan, which eventually develops into a compound refers to the habitual, generic action of “eating a meal”. This contrasts with the VP chi-fan, which refers to the specific action of “eating cooked rice”. Unfortunately, how “frequent” is frequent, however “nameworthy” is nameworthy, etc., are extremely difficult to define. While frequency may be of help in explaining why a VO is used in a particular way, it might be of very little help in predicting where a VO may stand on the VP-MC continuum.

4.2.2 Context

The context in which a VO form is used has a huge impact on how much internal fluidity speakers will perceive in the VO form in that context. If a VO form appears in writings which imitate Classical Chinese writings, then the VO form will
be given greater fluidity, as speakers (who have some training in Classical Chinese) will start to process what they read following a monomorphemic rule, oftentimes without themselves realizing it. Now that the new rule says every word is monomorphemic/monosyllabic, the disyllabic VO forms will be processed as VPs as a result. Compare, for example, the following two phrases:

(39) *gong hai mei cheng  
    success still NEG achieve

(40) gong wei cheng  
    success NEG achieve  
    “success has not been achieved yet”

In section 2, I present cheng-gong as an example of a VO form that has become fully lexicalized and is always used as an LC; no syntactic movement can be applied to its two constituting morphemes. This explains why (39) is ungrammatical. However, the phrase in (40), which expresses the exact same meaning as (39) and is the equivalent of (39) in Classical Chinese, is grammatical. It should be noted that even if (40) is used in a modern context, it still maintains its grammaticality, for the negation marker wei simulates a Classical Chinese style and invokes monomorphemic processing. It should also be noted that (40) is not just an obsolete expression cited merely for the sake of some “pre-emptive” linguistic research. Modern usage simulating Classical Chinese is by no means rare. Classical Chinese poetry (especially poems composed during 618-1279) and the Four Great Classical Novels⁹ – the former written in Classical Chinese and the later partly in Classical Chinese and partly in baihua – are widely read, thanks to the preservation of the Chinese characters. Selected classical poems, essays, and excerpts from the Four Great Classical Novels are taught in primary and secondary school, and many Mandarin speakers have some knowledge of Classical Chinese.

4.2.3 Level of education

A speaker’s level of education can also play a role in where on the continuum the speaker places a VO form. In general, speakers with a more proficient knowledge of Classical Chinese are likely to perceive a higher degree of fluidity in some VO forms. Consider, for example, the following word:

qu-shi leave-world “pass away” 去世

morphological features:
[-verb phrase], [-syntactic compound], [+morphological compound]

semantic features:
[+specialized meaning]

Though it may seem that deriving the word’s meaning from its constituents should be straightforward, in actuality, the morpheme qu denoting “leave” is not productive in modern Chinese (it is usually only understood as “go”). Thus, for speakers less familiar with Classical Chinese, the internal structure of qu-shi might

⁹ The four novels are Water Margin (14th century), Romance of the Three Kingdoms (14th century), Journey to the West (16th century), and Dream of the Red Chamber (18th century).
be less visible. For speakers with a more proficient knowledge of Classical Chinese, on the other hand, the two constituents of *qu-shi* may be given greater syntactic status. As a result, for some speakers, *qu-shi* can only be a lexical compound, and the expression *qu-le-shi* would be ungrammatical. For some other speakers, *qu-shi* may be allowed some SC properties. They might, for example, accept expressions such as *qu-le-shi* leave-ASP-world “have passed away” in addition to *qu-shi-le*. Furthermore, they might create some new expressions such as *qu-guo* 去国 leave-country “leave one’s home country” and *qu-jia* 去家 leave-home “leave one’s home”, based on their understanding of the internal structure of *qu-shi*. The influence of a speaker’s education in where (s)he places a VO form also echoes an interesting statement in linguistics that everyone uses a language a bit differently.

4.2.4 Summary

In summary, where a VO form stands on the continuum is more or less determined individually. Two VO forms may look very similar (e.g., they could be both made up of BB morphemes, or even having a shared morpheme), but differ quite a lot in their morphosyntactic properties. Three factors have a general influence on where a VO form is placed on the VP-LC continuum: a VO form’s frequency of use, the context in which a VO form appears, and individual speaker’s knowledge of Classical Chinese.

The case of the Mandarin VO forms echoes many insights from historical linguistics, which is not surprising, considering the fact that the Mandarin VO compounding is one of the many changes that happened during the language’s development from being monomorphemic to polymorphemic.

5 Modeling the Mandarin VO constructions

The biggest deficiency in previous discussions (Chao 1968, Li & Thompson 1981, Huang 1984, Packard 2000) is found in their “isolating” the Mandarin VO problems. Little reference has been made to morphological theories in general, nor have there been any attempts to take a more extended point of view and link the VO problems to other similar compounding phenomena (in Mandarin and in other languages). Each piece of the works succeeds fairly well in describing the characteristics of the various Mandarin VO forms, but none touches on questions such as why there are different degrees of “separability”, how we can explain what we see in Mandarin on a theoretical level, etc. This section aims to understand the Mandarin VO forms from a theoretical perspective. I offer my understanding of how the VO forms are represented in the lexicon, and suggest that Construction Morphology is the best tool to make sense of the Mandarin VO problems. Later in section 6, I shall show that the Mandarin phenomenon feeds well into a larger picture, a pattern that in actuality is prevalent in many of the world’s languages. I shall explore the nature of the Mandarin VO forms and why they show different degrees of cohesion between their constituents.

5.1 Construction morphology

In modeling the Mandarin VO forms, the more traditional theories which focus on the use of morphemes and their combinations such as the item-and-arrangement approach and the item-and-process approach probably all fall short. Neither of the two approaches can explain well, or perhaps at all, why some of the derived VO forms can maintain some syntactic freedom, and why there are great
variations in the degrees of syntactic freedom among the individual VO forms which are all derived from the same “arrangement” or “process”. We would need to use tools which permit high degrees of fluidity for modeling the Mandarin case, and I would like to propose that the best model for analyzing the Mandarin VO forms is the theory of Construction Morphology (CM).

Construction Morphology is built on the idea of Construction Grammar. Michaelis & Lambrecht (1996: 216) summarize the fundamentals of Construction Grammar as follows:

“In Construction Grammar, the grammar represents an inventory of form-meaning-function complexes, in which words are distinguished from grammatical constructions only with regard to their internal complexity. The inventory of constructions is not unstructured; it is more like a map than a shopping list. Elements in this inventory are related through inheritance hierarchies, containing more or less general patterns.”

Booij, who works extensively on building the CM framework, interprets this quotation as suggesting that “both syntactic patterns and word formation patterns might be seen as constructions” (2007: 34).

CM essentially sees word formation patterns as “abstract schemas that generalize over sets of existing complex words with a systematic correlation between form and meaning” (p. 34). The schemas do more than just generalizing over existing words; they also detail how new complex words can be created. For example, English deverbal nouns ending in –er can be represented in the following schema:

(41) \[ [a]_v \text{er} ]_N \rightarrow \text{“one who Vs”} \]

This schema is both a generalization about the form and meaning of the –er deverbal nouns already listed in the lexicon, and the basis for coining new –er nouns from verbs (Booij 2010: 2). Speakers coin new words by replacing the variable \( a \) with a concrete verb. According to Booij, the crucial difference between schemas and analogy is that speakers do not need to pick out a specific word and coin a new word by analogy with the existent word, but have an abstract schema to use as a guideline for coining new words (p. 2). The relation between a schema and the individual words that conform to the schema is that of “instantiation”: each of the nouns ending with –er from the group of “one who Vs” instantiates the schema in (41).

The schemas of CM also look somewhat like the generative rules for explaining productive word formation, such as Aronoff’s (1976) word formation rules. The equivalent word formation rule for the above construction schema, for example, can be written as:

(42) \[ [x]_v \rightarrow [[x]_v \text{er}]_N \text{Semantics: “one who Vs habitually, professionally”} \]

(Booij 2010: 4)

Booij argues CM schemas have a number of advantages over generative rules. One key difference is that schemas can be both source-oriented and product- or output-oriented while rules are always source-oriented (p. 4).
Another advantage is that the CM can unify two schemas without having to have an intermediate level (p. 7). This is possible because, critically, the CM is a function relating form to meaning, while a generative word formation rule is a function taking in a word form and yielding a word form. Caballero and Inkelas (2013: 107) encapsulate the essentials as such: Construction Morphology is a lexicalist theory "with a rich lexicon or construction composed of product/output-oriented schemas that relate form to meaning".

5.2 Using the CM to model the Mandarin VO forms

Under the CM framework, Mandarin VO compounding can be represented by the following schema:

\[ (43) \quad [[a][b][N]][V] \leftrightarrow [\text{SEM}_k \text{ with relation R to SEM}_j](b \text{ is the argument of } a) \]

(adapted from Booij’s (2010) schema for Dutch compounds)

The left-right arrow stands for “correspondence”. The lower-case letters stand for variables. Variables \(a\) and \(b\) are arbitrary but not completely random: a requisite of this schema is that \(b\) functions as the argument of \(a\). \(V\) and \(N\) represent syntactic categories. Variables \(k\), \(i\), and \(j\) are lexical indexes on the properties of words, including a word’s phonological, syntactic, and semantic properties. CM is about pairing form and meaning, and the general meaning contribution of this compounding schema is specified. However, the nature of \(R\) is not specified. It is “determined for each individual compound on the basis of the meaning of the compound constituents, and encyclopedic and contextual knowledge” (Booij 2010: 17).

I promote using CM schemas to model the Mandarin VO forms because I see the following advantages of applying the CM theory to make sense of the Mandarin case.

First, as a mapping between forms and meaning, rather than a mapping between forms and forms (the generative word formation rules, for example, are mapping relationships between forms and forms), a CM schema gives us great flexibility in interpreting the outcome of the schema. We do not need to label a derived form in the first place. The schema never says it is, for example, a lexical compound that we will get out of the compounding process. What the schema says is that we get a certain VN string of the syntactic category V.

Second, CM permits that the derived forms can maintain their “fluidity” and take on multiple morphosyntactic features. CM assumes that the lexicon lists simplex words, complex words, as well as the abstract schemas. This conception avoids the Rule-List Fallacy (Langacker 1987), the assumption that there are two types of mental representations: abstract descriptions of patterns (which the CM schemas are) and lists of exceptions. The rule-list division “was originally designed to prevent redundant encoding and achieve economic description” (Harris 1997). An item conforming to a rule would not also be separately memorized, which means that a listed construct (be it a complex word or an idiomatic phrase) cannot be linked to a rule at the same time. Such division fits not as well with modern understanding of the brain, which recognizes that “the brain has vast storage resources and may use massive redundant encodings” (ibid.). Under the CM framework, a construct can be listed and linked to a schema
simultaneously, which allows a Mandarin VO form to remain fluid, capable of manifesting both phrase properties and compound properties.

Following CM’s “fluidity permit”, it becomes almost self-explanatory with CM why reanalysis can happen. Since the abstract schemas are listed in the lexicon along with words, speakers are constantly exposed – whether they are aware of it or not – to the schemas, including schema (43), which generalizes over the existing VO forms and generates new ones. When a loan word enters into the lexicon, it becomes potentially subject to reanalysis if it conforms to the schema pattern. While this does not make CM really stand out from the rest of all possible morphology theories – after all, we might as well invoke reanalysis by having in mind the word formation rules or making analogy – the CM schema is favorable in that as a correspondence between form and meaning, it also forecasts a “redistribution” of meaning to a VO form’s constituents in addition to the morphological/syntactic reanalysis. When reanalysis happens, it involves more than just reassigning syntactic statuses (e.g., the noun morpheme which originally had no independent syntactic role now becomes an independent argument of the verb and of the clause), but also reassigning semantics. For instance, the phonetic English loanword you-mo together means “make a humorous comment” (cf. section 2.4). The verb morpheme you has only one meaning in regular use, “to imprison”, and mo by itself is only used as a verb morpheme. But through reanalysis, you somewhat registers the meaning “to make”, and mo gets close to mean “a humorous comment” in you-ta-yi-mo “make a humorous comment to him”. In other theories, only changes in forms are predicted. We would then need extra specifications for semantic reanalysis.

As a fourth advantage, CM easily explains why the semantics of a derived form and that of the independent counterparts of its constituents can vary from being straightforward to being idiosyncratic. As mentioned earlier in this section, the nature of R, i.e., the semantic relationship between the two constituents, is not specified in the general compounding schema, but to be determined individually, “on the basis of the meaning of the compound constituents, and encyclopedic and contextual knowledge” (Booij 2010: 17). Thus, despite being born out of the same schema, some VO forms may have specialized meaning, while the meaning of some other VO forms can be compositional.

Last but not least, with CM, we do not need to worry about the underlying status(es) of the VO forms. While it is easy for linguists to agree that the surface status of a VO form can be either a word or a phrase, the underlying status of the VO form has been contentiously debated (cf. section 2). Among the proposed set of possibilities, namely (a) as a word but reanalyzed as a phrase in some surface forms; (b) as a syntactically derived phrase but becomes lexicalized; and (c) stored both as a compound word and as a phrase, more recent linguists (Packard 2000) have sided with the third possibility.

My research, however, has led me to become increasingly doubtful about the assumption that the VO forms must have a fixed underlying representation. If we can just step away from the idea of “definiteness” for a moment, we can immediately see the following questions coming: on what ground can we say that the VO forms must have some fixed underlying representation(s)? If the VO forms have “ambiguous” identities on the surface level, why could it not be the case that they do not have a fixed, clear underlying representation (or representations) to
begin with? A clear underlying representation becomes especially questionable when we consider the following problems:

While the features and identifying criteria can characterize and categorize well the VO forms’ different identities, and help us understand the VO forms, they rely on the fact that we already know what morphosyntactic properties, and thus what identities a VO form has. This is different from, for example, the English plurality rule. When we say that the English plurals /s/, /z/, and /ς/ all come from the same underlying representation /z/, we have a clear set of rules that maps an underlying representation to an actual occurrence. This is not the case with the Mandarin VO forms. There has been no success in identifying rules that predict what identities a VO form can have. Perhaps, there has been no success simply because we would be taking a wrong direction if we tried to find such rules.

But if chu-ban “to publish” and chi-fan “to eat” have the same underlying status(es), without adequate grouping rules, how do we explain the fact that chu-ban is only used as an LC, while chi-fan can be used either as a VP, an SC, or an LC? With the CM, which allows simplex words, complex words, and the abstract schemas all stored in the lexicon, we can do with knowing a VO form is somewhere among the vast amount of storage – and possibly represented more than once – but not having to know where precisely it is. In fact, I feel this “indifference” is in actuality the right approach to understanding how the VO forms are stored in the lexicon. Not only are the VO forms themselves “ambiguous” to begin with, the degrees of “ambiguity” of the VO forms also differ from individual to individual. With such variance on the surface level, and without adequate grouping rules (what we have are descriptions of their manifested properties), I doubt if a fixed underlying form would work well representing the actual picture.

In summary, its permission for “no static identities” and vast individual variations makes the CM schema a much-preferred tool for making sense of the Mandarin VO forms. It captures well the VO forms’ multiple statuses, availability for reanalysis, and individual differences.

6 Mandarin VO compounding as noun incorporation

6.1 The nature of the Mandarin VO compounding

The identities of the Mandarin VO forms may be hugely debatable, but the origin of the word/phrase indeterminacy is uncontroversial: the well-recorded diachronic development of the Chinese language shows that as Chinese moved from monosyllabic and monomorphic to polysyllabic10 and polymorphemic, a group of compound verbs formed out of an object combining with its verb began to appear in the language. Yet, the process of “the compounding of a noun stem with a verb to form a complex verb” (Mithun 1994: 5023) is by no means exclusive to Mandarin. This process has been generally referred to as “noun incorporation” (NI), and has been found to be active in “a wide range of genetically unrelated languages scattered throughout the world” (ibid.). Instantiations of NI have been investigated in various languages. Many surveys look into polysynthetic languages (cf. examples of Native American languages and Bantu languages in Mithun 1984), but more analytic languages are included as well (cf. Dutch and English examples in Booij 2010). In all examples, some commonalities are found regarding the compounding’s origin and its status in language use:

---

10 “Polysyllabic” refers to Chinese words. Chinese morphemes have remained monosyllabic.
1) NI originates from the “verb + object” syntactic structure (which prompts Mithun (1984: 847) to claim that “noun incorporation is perhaps the most nearly syntactic of all morphological processes”). The N (the object) bears a specific semantic relationship to its host V, oftentimes as the patient of the verb, but can also be location, instrument, etc;

2) verbs derived from NI are in coexistence with their syntactic paraphrases; the derived verbs do not drive their respective syntactic phrases out of use.

The examples of the Mandarin VO forms discussed in section 3 have clearly demonstrated that the second of the two claims above holds true for Mandarin: this is why we encounter the problem of indeterminacy in the first place. We also know from the birth of the modern Chinese lexicon (cf. section 1.1) that Chinese VO compounds are derived, too, from the language’s syntactic VO phrases. I thus propose that the nature of the phenomenon of the Mandarin VO constructions is precisely that of noun incorporation. Though the type of morphology that Mandarin has is vastly different from the types of morphology of the languages in which NI has traditionally been studied, divergence in morphological typology does not in any way change the facts about the Mandarin VO forms’ origin and status of usage: what we see in Chinese VO forms is noun incorporation. There are no fundamental differences between the Mandarin VO compounding and other cases of NI. This should hardly be surprising, if we think about the many statistical tendencies observed cross-linguistically, including what Hopper and Thompson (1980) describes as “a general tendency among languages for verbs to coalesce with indefinite direct objects”. What is surprising, however, is the dearth of attempts to try to link the Mandarin VO forms with the general discussions of NI, as has been done in many other languages.

A major reason for this, I think, traces back to Mandarin’s general lack of markers. The fact that the Mandarin noun forms are inflectionally inert (they do not take on morphological markers for, e.g., case, definiteness, or plurality) yields a deceptive result: the VO compound and its parallel phrase share the exact same form. This is not the case in languages with overt inflectional markings, where incorporated nouns (INs) and syntactically independent nouns are easily given differentiated forms and it is much more straightforward to tell if a noun has been incorporated, whether fully or at least to some extent. Compare, for example, the English sentences he is berry-picking and he is picking berries.

Another conspicuous difference between Mandarin and other commonly cited languages for discussing NI, say, Chukchi and Mohawk, is so plain and obvious that it may even sound a little banal to pronounce it: Mandarin words tend to be considerably shorter. The vast majority of Mandarin words are disyllabic (cf. 1.1 and 3.1.3). In Chukchi and Mohawk, on the other hand, one easily encounters long words, as these languages regularly express concepts by constructing very long words out of multiple morphemes. Having been mostly presented with examples of multi-syllabic and multi-morphemic words, NI has probably been more or less associated with “long words”. Examples from less synthetic languages

---

11 Chukchi is a Paleosiberian language spoken by the Chukchi people in the easternmost extremity of Siberia. Mohawk is an Iroquoi language spoken by the Mohawk nation in the United States (mainly New York, Wisconsin, and Oklahoma) and Canada (Ontario and Quebec). Both languages are synthetic languages: Chukchi is an agglutinative language and Mohawk is a polysynthetic language.
do not help NI to move away from this image, either. *Mountain-climb*, an English NI-derived compound, for instance, certainly does not appear to be short.

Thus, the picture presented by the Mandarin VO forms does not look quite like the other pictures of NI as seen in the literature, and previous studies have not made a link between the Mandarin compounding and the general NI phenomenon. Mandarin’s morphological invariance, which results in little differentiation in forms between its syntactic phrases and the derived compounds, together with a lexicon characterized by “short” words, which deviates from the more familiar image of NI, obscure the nature of the language’s VO compounding process, which is not fundamentally different from that of Chukchi or Mohawk or English.

A third shared feature of NI may further reveal the nature of the Mandarin VO compounding:

3) the incorporated nouns generally have “less individual salience than separate nominals” (Mithun 1986: 33).

Mithun does not elaborate what she specifically means by “individual salience”. Her examples suggest that there are two types of change in “individual salience”. The first type can be demonstrated through one of Mithun’s Mohawk examples, extracted from a discussion on the importance of corn (for the complete text, see Mithun 1984: 869). When corn is mentioned for the first time in the discourse, it is expressed by a separate noun. As the discussion moves on to how corn was planted and how it grew, corn becomes “thematic”, and is incorporated with the verb. But when the text continues on to describing how people take the husks off down the ear in harvesting, the actual kernels of corn is brought back into the center of attention, and this gain in individual salience is again signaled by the use of an independent noun. Thus, in this type of noun incorporation, individual salience revolves around the level of attention the speaker wants to assign to the noun in discourse. When a noun is brought up for the first time, and/or when it is intended to be paid extra attention to, it has greater individual salience and is used in a separate nominal form. When the speaker perceives little or less individual salience in the noun, it is likely to appear incorporated.

Another type of reduction in saliency occurs when a generic noun is incorporated to qualify a verb rather than functioning as the argument of the verb itself, and a more specific external NP functions as the verb’s patient (*ibid.*). Again Mithun provides an example from Mohawk (for the full example, see Mithun 1984: 870). In this example, the topic that the verb introduces, rabahbót “bullhead”, is an external independent noun, while the verb itself appears with an incorporated classifier -*itsy*- “fish”. My interpretation of her example is that this type of different degrees of “individual salience” centers on the contrast between *intensional* and *extensional* meaning. In semantics, intension and extension are compared often in correlative words that indicate the reference of a term or concept: “‘intension’ indicates the internal content of a term or concept that constitutes its formal definition; and ‘extension’ indicates its range of applicability by naming the particular objects that it denotes” (definition from *Encyclopedia Britannica*). For example, the intension of “car” as a substantive is “road vehicle typically with four wheels and powered by an internal-combustion engine”; its extension, on the other hand, embraces such things as saloon cars, sports cars, and hatchback cars.

In Mithun’s Mohawk example, -*itsy*- is incorporated and it refers to the broad concept of “fish”, i.e., it expresses an intensional meaning. The NI-derived
verbs refer to unitary actions, such as “fry fish”. What particular type of fish is being fried has little bearing on the general reference of “fry fish”. By contrast, *rabahbót* appears as an independent nominal, and it expresses an extensional meaning. Mithun thus suggests that an IN is likely to express an intensional meaning, while a separate nominal, being external and independent, can be as specific as it needs to be and is likely to express an extensional meaning.

The same feature is found in English NI. In *he is off berry-picking* (example from Mithun 1984: 849), the incorporated noun *berry* “does not refer to a specific berry, nor to a particular bushful of berries: it qualifies the V, describing the type of picking in progress” (p. 849). That is, *berry* expresses an intensional meaning, referring to a general fruit type.

It is important to note that we are looking at a correlation between incorporated/independent noun and extensional/intensional meaning. The autonomy of properties of different levels is not compromised (cf. section 3.4). We are speaking of general tendencies, not causal relationships, or definitions, or regularities. We do not have evidence supporting that with incorporation a noun form must shift meaning, or that because a noun form expresses an intensional meaning it has to be incorporated. We cannot make the statement that a separate nominal cannot take on an intensional meaning, or that expressing an intensional meaning indicates a status of being incorporated. In addition, how intensional/extensional is “intensional/extensional” can be an ever-adjusting comparison, varied according to individual speakers and relevant context.

The Mandarin VO forms also exhibit this correlation between intensional/extensional meaning and incorporated/separate noun forms. In pairs of Mandarin words in which such a comparison can be drawn, we find that the scope of reference of the noun stem in an NI-derived verb is usually broader than that of a separate noun. More striking is a phenomenon which is hard to find in other languages, and which is even more revealing than the Mohawk example (in the “fish” example, the incorporated form and the separate noun do not share the same noun stem, and we would then expect that their reference should differ): since Mandarin nouns are inflectionally inert and take no morphological markers for case/plurality/definiteness, and homonymy is prevalent in Mandarin, in some pairs of the VO forms, the “same” noun stem (no changes in form or pronunciation) expresses an intensional meaning as a separate noun, and extensional meaning as an IN. An example is discussed earlier on in section 2.5: the VO form *chi-fan* refers to the eating of all meals alike regardless of what one eats, when it functions as a word; but when it functions as a phrase, it is used to refer particularly to the act of eating “cooked rice”, as opposed to other possibilities such as *chi mian* “eat noodles”. Of course, we may hesitate to say that it is the same noun stem that appears in the word *chi-fan* and in the phrase *chi-fan*. Instead, we may want to call the two *fan* homonymic lexemes/morphemes, since they have different meanings, albeit the same form and pronunciation. Either way, we get the same result: it is more likely that the phrase form has an extensional reference and the word form has an intensional reference.

In actual speech, speakers usually inadvertently signal whether they are using the intensional *fan* or the extensional *fan* by placing a very slight stress onto the latter, or, a more perceivable stress when they are intentionally drawing hearers’ attention. This happens generally, not just with *fan*. Oftentimes it is the only overt hint of extension over intension. Other aspects of the sounds, such as
overall pronunciation and tone, of the morphemes are not comprised to indicate intension/extension.

The differentiation between intension and extension provides additional support for my tripartite approach. While all three forms of chi-fan – the phrase, the syntactic compound, and the lexical compound – are capable of expressing either an intensional or extensional meaning, statistically the phrase chi-fan and the LC chi-fan both manifest a relatively more visible correlation with extensional and intensional meaning, respectively. It is less secure to establish a similar correlation with the SC chi-fan: it is more difficult to say if the SC chi-fan is more likely to be used to express an extensional meaning or an intensional meaning. (44) and (45) provide examples of the SC chi-fan being used as to express intensional and extensional meaning, respectively. Speakers decide which meaning they want to express based on their communicational needs, and hearers make spontaneous and accurate judgement about which meaning speakers are trying to convey depending on the context.

(44) Intensional as a syntactic compound:
   ni chi guo fan le me?
you eat ASP meal ASP SFP
"Have you had your meal?"

(45) Extensonal as a syntactic compound:
   shao chi dian fan, duo chi dian cai
   little eat CL cooked.rice much eat CL dish
   "Eat less carbs, but more vegetables and meat."

In summary, the Mandarin VO compounds are just like VO compounds from other languages in their shared features of syntactic origin, co-existence with “parent” VO phrases, and association with intensional meaning. They are all products of the same compounding process named “noun incorporation”. Because different languages have different morphological systems, it is natural for every language to develop its own peculiarities in the process, but the essence is the same. The nature of the Mandarin VO compounding is noun incorporation.

6.2 Previous work on incorporation in Chinese
6.2.1 Hsu’s work
   A very small number of research works have at all included discussions on
   the process of NI in Chinese compound formation. One of these is Kylie Hsu’s
   identifies five types of morphosyntactic structures, and claims that NI occurs in
   each: “adverb compounding”, “adjective compounding”, “verb compounding”,
   “noun compounding”, and “idioms” (ibid.). Among the five types, “verb
   compounding” is the one of relevance to my discussion. Yet Hsu’s view on NI in
   Chinese is clearly going into the completely opposite direction, as demonstrated
   by her examples of you-yong swim-swim “to swim” (p. 85, examples slightly
   modified to match the format of the other examples in this thesis):

(46) a. wo mei tian you-yong ban ge xiaoshi
    I every day swim-swim half CL hour
“I swim every day for half an hour.”

b. wo mei tian you-ban-ge-xiaoshi-yong
   I every day swim-half-CL-hour-swim
   “I swim for half an hour every day.”

According to Hsu, sentence (46b) is derived from NI, which involves the implanting of the noun phrase ban-ge-xiaoshi into the verb you-yong and forms the “long compound verb you-ban-ge-xiaoshi-yong” (p. 85). Hsu’s claim, in my personal view, is simply misleading. It is true that some of the most striking examples of NI come from languages in which it is possible to literally split up a verb to have a noun placed inside the verb, yet that does not mean that every language that has NI does the same thing, nor does it mean that a compounding process is not NI unless the noun or noun phrase is breaking up the verb. In fact, numerous instances have shown that a large number of languages do not split up a verb to implant a noun (cf. examples in Mithun 1984).

There are several types of evidence against Hsu’s treatment of you ban ge xiao-shi yong as a verbal compound derived from NI. The biggest challenge, first of all, comes from the syntactic status of ban ge xiao-shi. An analysis of the syntactic roles of the constituents in the following two sentences shows that “half an hour”, albeit a noun phrase, functions as an adjectival modifier modifying yong (cf. modifier insertion in syntactic compounds in section 3.2.2). Sentence (47b) uses a paraphrastic de expression and reveals the NP’s adjectival modifier status12:

(47) a. wo mei tian you ban-ge-xiaoshi-yong
   I every day swim half-CL-hour-swim
   “I swim for half an hour every day.”

b. wo mei tian you ban-ge-xiaoshi-de yong
   I every day swim half-CL-hour GEN-swim
   “lit. I take a half-an-hour’s swim every day.”
   “I swim for half an hour every day.”

The NP’s status as an adjectival modifier also explains why the “compound verb” you-ban-ge-xiaoshi-yong, as Hsu phrases, “can alternatively be analyzed as a verb phrase”: it is not “alternatively” analyzed as a verb phrase; it is a verb phrase.

In addition, Hsu’s treatment would cause a huge problem of identifying compounds in Chinese. If splitting you-yong with ban-ge-xiaoshi were an instance of noun incorporation, and the derived constituent were a compound, then we would be having an infinite number of NI-derived compounds just by replacing “half an hour” with “one minute”, “two minutes”, “thirty hours” (if we have “every year” in lieu of “every day”), “thirty hours and one minute”, etc. While some definition of “compound” might support that the number of the compounds in a language is infinite, it is not clear whether Hsu builds her argument under such a framework. Unless she does, her current argument would be unsound.

12 In Mandarin, the constructions of “adjectival modifier + de + noun” and “adjectival modifier + noun” can alternate with each other in many circumstances. In what circumstances is alternation not possible is not of concern to my discussion here; what is of concern is that when alternation is possible, the two alternating forms express the same meaning (cf. Xu 2016).
Unfortunately, Hsu does not give enough information to make clear exactly what kind of reference she is making (e.g., what is a compound?). Among the five types of situations, “verb compounding” happens to be least featured – Hsu spares less than one page for basically a mere mention of it. The biggest pitfall that most likely causes confusion, I think, is that Hsu does not include any discussions on the internal structure of you-yong. She does not clarify if she thinks that you-yong has an internal verb + object structure, or if she is treating it as a lexical compound devoid of such a structure. It looks like that the latter is the case, and this may very possibly be the cause of Hsu’s misleading analyses.

In summary, Hsu’s example does present a NI-derived verb, but the incorporated noun is not “half an hour”, nor is the derived verb you-ge-xiaoshi-yong. The real incorporation process is the compounding of the noun stem –yong with the verb stem –you, producing you-yong, which has both an LC representation and an SC representation.

### 6.3 Types of noun incorporation

Since NI is a highly active and productive mechanism, it would not be surprising that there are varied types of NI. Nor would it be surprising that anytime we look at a language, we may find NI affecting different VOs to different degrees: some may have completed the process, some may have just begun the process. In her seminal paper, Mithun (1984) classifies four types of NI. The different types represent different degrees of incorporation. They are used for different purposes, and produce compound verbs of distinct typological features. Not every language has all four categories, and it is not unusual for a language to have only one or some of the four classifications. I draw on Mithun’ Gunwinggu examples (from Mithun 1984) to demonstrate what the four types are and what characteristics each of them has. According to Mithun (p. 866), this Australian language of western Arnhem Land exhibits extensive NI of all four types.

Type I NI creates lexical compounds. This type of NI creates new items that will actually enter the lexicon (under the traditional morphological framework; under the CM framework, non-lexical compounds are also stored the lexicon). It yields compounds denoting unified concepts, and the compounds often have non-compositional meanings, as the Gunwinggu examples (p. 866) show:

(48)  
bo:-re \text{water-go}  
bo: ṅu \text{water-eat}  
wog-benmigda \text{word-forget}  

“To flow” \text{“to drink”} \text{“to disobey”}

A few characteristics of Type I NI are noted. In Type I NI, an IN differs from a “regular”, independent nominal in both its syntactic and semantic features. Syntactically, it does not have the status of a distinct argument of the clause;

\[\text{13 One reason why some people may take such an approach, I suspect, is that the morpheme yong is both a verb morpheme and a noun morpheme, and Hsu’s analyses seem to be based on the assumption that yong in you-yong is a verbal morpheme. Yet in speaker’s actual usage (and mind), it is apparent that yong is a noun morpheme and thought of as the object of you in you-yong, as proved by its capability to be preceded by an adjectival modifier.}\]
semantically, an IN does not refer to a specific entity. The IN thus appears unaccompanied by markers such as case markers and definiteness markers, or syntactic elements such as demonstratives and numerals (p. 856). In line with the IN’s generic reference and loss of syntactic status, the derived verbs tend to be used “in contexts without specific, individuated patients”, and usually describe habitual, conventional activities, or institutionalized state. Mithun defines a Type I NI-derived verb compound to be “an intransitive predicate denoting a unitary concept” (p. 856).

In Type II NI, an IN also shows noticeable differences from a stand-alone nominal syntactically and semantically. Type II INs bear a close resemblance to Type I INs: they do not have their own syntactic status, and appear without morphological markers. In both types of NI, an IN and its qualified verb together form one unit. The key distinction between the two types of NI lies in “their effect on the rest of the clause” (p. 856). Type I NI derives intransitive verbs from transitive ones, i.e., the valency of the verb is thus lowered. Type II NI, on the other hand, does not lower the verb’s valency, because it “advances an oblique argument into the case position” originally held by the now-incorporated object (p. 856). A transitive verb is still transitive after incorporation. Thus, when a transitive verb incorporates its direct object, another argument of the clause, e.g., an instrument, location, or possessor, may “step up” and occupy the object role (a case role) vacated by the IN. For this reason, Mithun calls Type II NI “a lexical device for manipulating case relations within clauses” (p. 859). Examples of Type II NI in Gunwinggu (taken from Mithun 1984: 866) are as follows:

(49) namegbe biru-dur-aynbom.
   that(man) he/him-heart-speared
   “He speared that man in the heart.”

(50) giŋa benedan’-bog-nay.
   crocodile they.two.near-footprints-saw
   “They saw the footprints of a crocodile.”

In (49), *dur* is incorporated with the transitive verb “spear” and *namegbe* assumes the object role. In (50), *bog* is incorporated with the transitive verb “see” and the possessor argument *giŋa* assumes the object role.

Type III NI is used primarily for pragmatic purposes. An example of Type III NI is the earlier Mohawk example, in which “corn” becomes incorporated (and also loses individual salience) after it has been previously mentioned. Mithun describes this type of NI as “to background known or incidental information in discourse” (p. 867). Type III NI is pragmatically based, not lexically. This type of NI is flexible and often happens impromptu. A noun which is incorporated under one circumstance may stand as an independent nominal under another. The CM model can explain this well: since speakers are constantly exposed to the relevant construction schema, impromptu happens easily.

Finally, Type IV NI happens when speakers incorporate a generic noun stem to qualify a verb, to “narrow the scope” of a verb (p. 867). Like Type III NI, Type IV NI is associated with loss of nominal salience. An external NP, which contains detailed and specific information, follows the derived verb to function as the patient of the verb. The Mohawk “fish” example demonstrate this type of NI.
6.4 "Subject incorporation" and continuum in noun incorporation

So far almost all examples of NI seem to only involve incorporation of a direct object with a transitive verb. Yet we would be wrong to think that NI only happens to transitive verbs and their objects. NI affects intransitive verbs, too, in which case it is the subject of the clause that becomes incorporated. As with Type II NI, in which a direct object is incorporated with a transitive verb and another argument fills the object position of the newly produced transitive verb, a subject can also be incorporated with an intransitive verb, and another argument may be promoted to subject status.

"Subject incorporation" features prominently in Mandarin along with NI. The derived compound verbs are usually intransitive and need another argument to take the subject position. For example, lian-hong face-redden "feel awkward" is a "subject-predicate" NV compound derived by incorporating lian with hong. In the following sentence, wo "I" fills the subject role:

(51) \(\text{wo lian-hong le} \)  
I face-redden ASP  
"I started to feel uneasy."

Though comparatively less common, it is also possible to have transitive verbs produced from "subject incorporation", i.e., a complex verb derived from "subject incorporation" may require one argument to fill the agent role and a second argument to be its patient. Xin-teng heart-ache "grudge" provides a nice example:

(52) \(\text{wo bu jing-chang mai dong-xi, yin-wei wo xin-teng qian} \)  
I NEG regular-often buy item cause-do I heart-ache money  
"I don't regularly make purchases, because I'm not willing to spend."

Interestingly, while xin-teng can function as a transitive verb and take an object, it may also function as an intransitive verb and project only one argument to fill the subject position, as in xin-teng "feel upset":

(53) \(\text{ta shang de hen li-hai, wo men hen xin-teng} \)  
he hurt AUX very severe I PL very heart-ache  
"He is badly injured and we feel very upset."

Perhaps even more interesting is the observation that the "indeterminacy problem" is also found in the Mandarin NV forms. In (54) for example, lian-hong is split apart, with an adverb inserting between the two constituting morphemes.

(54) \(\text{wo lian dou hong le} \)  
I face even redden SFP  
lit. "I feel so ashamed that my face starts to redden."

The problems of the Mandarin NV forms, unfortunately, cannot be afforded to be discussed in details in this thesis, but it is advisable to keep them in mind, for they seem to suggest that any type of incorporation process is likely to result
In ambiguities in morphosyntactic identity, for incorporation essentially represents a change in language use. Like any linguistic change, incorporation does not develop overnight. At any given point in a language's development, incorporation is more likely to be an ongoing process rather than a static status. Stems affected by incorporation cannot immediately become fully incorporated. Incorporated forms, likewise, do not instantly become permanent. Some forms may quickly be widely adopted and rapidly become lexicalized. Some may appear and hover around for a while before eventually achieving fully lexicalized forms, with their non-fully lexicalized forms in co-existence (e.g., *chi-fan, dan-xin, cao-xin*) or with them indefinitely in dormancy (e.g., *cheng-gong*). Some may never become completely lexicalized and "get stuck" on the incorporation processing ladder, which, reflected in the Mandarin case, is embodied by the many VO forms that can be VPs and SCs but not LCs. At any given time when we observe a language, we are probably looking at many derived verbs scattered everywhere along the scale of not-incorporated to fully-incorporated. Their distribution implies that NI creates a continuum rather than boundaries, and it is precisely because of the gradience feature of the NI process itself that we also have the VPs, SCs, and LCs – the products of NI – constituting a continuum rather than three distinct categories.

It thus comes as no surprise that among the different types of NI, some – namely, Type I and Type II – produce more fully incorporated forms than the other types. In these two types, an IN forms a holistic unit with the verb and loses its syntactic role. In Type III and Type IV NI, nouns are rather "loosely" incorporated with verbs, in the sense that the derived verbs are created for pragmatic use and the nouns in question do not regularly go through incorporation.

NI's continuum nature is furthermore empirically supported by what Mithun describes as "an implicational hierarchy" (1984: 874). Through an examination of over 100 languages, Mithun finds that the different NI types are not random but follow a hierarchy. Languages with productive Type IV NI also have Type III NI. Languages with productive Type III NI also show Type II. And languages with productive Type II also contain Type I NI. This hierarchy suggests that NI, once appears, "develops along a specific path" (p. 874). It starts with Type I NI, then proceeds to Type II. In polysynthetic languages system, NI development may eventually extend to the discourse level.

### 6.5 Types of NI in Mandarin

Once we establish an understanding of the nature of the Mandarin VO compounding as NI, we can also understand the nature of the VO forms' having ambiguous statuses. We see in previous sections that in all languages that have been demonstrated to have NI, Mandarin included, there exists a continuum of how more or less fully a noun has been incorporated with the verb. The degree of cohesion between the constituting morphemes of a compound is different in different types of NI-derived verbs as well as in different verbs derived from the same type of NI. It does not happen in any language that a derived complex verb becomes instantly and completely lexical. The "indeterminable" statuses of the Mandarin VO forms, thus, is in nature a reflection of the different degrees of noun incorporation. Though uncertainties about the extent of incorporation – and in turn the degree of cohesion between the constituents of the compound – occur in other languages as well, the undifferentiated forms of the Mandarin words and phrases surely enlarge the ambiguity.
Mandarin VO forms regularly show two types of NI: Type I and Type II NI. This observation is in line with Mithun's implicational hierarchy and her reflection that NI at the discourse level usually happens in polysynthetic language (which Mandarin certainly is not). One interesting and rather unique aspect of the Mandarin NI development is that a Type I NI compound can keep developing into a Type II NI compound without losing its Type I form. This is why words like cao-xin can be totally versatile, capable of being either a VP, an SC, or an LC. Cao-xin first developed into a Type I NI compound, its constituents losing (some of) their syntactic status and forming a strong cohesion between themselves. But cao-xin did not stop at Stage I. It kept developing: the two constituents lost more of their syntactic role; xin became more fully incorporated with cao; an even stronger cohesion was formed between the two constituents. Eventually, xin became completely incorporated, its syntactic position completely vacated, and a new argument could now take up the vacated object role left by xin. We see this in cao-xin's capability of being followed by an object (cf. sentence (5)).

With NI, we can now also better understand why it would be ungrammatical to insert an aspect marker into cao-xin when it is followed by an object. The real reason for the verb's projecting an object argument is that xin has become fully incorporated and thus releases the object position it originally held. Since cao-xin as it is used in the context is a fully incorporated form, it is not possible to reach into the internal structure of cao-xin per the LIH. The uniqueness of the Mandarin case, however, is that the Type I compound and the Type II compound of the same form are currently both stored in the lexicon, which further validates the suitability of using the CM to model the Mandarin VO forms, as CM can permit storing the Type I NI cao-xin in the lexicon, and not losing it when it goes on to develop into the Type II NI cao-xin, and eventually having both Type I and Type II cao-xin, along with the abstract schema (43), stored in the lexicon.

6.6 Implications on morphological typology

The phenomenon of NI in Chinese should perhaps also prompt linguists to give a second thought to the traditional morphological typology. NI is oftentimes thought of as a hallmark of polysynthetic languages (Sapir 1911). Yet it is not unusual for languages of other morphological types to be perfectly capable of using verb + object as a compounding process, and there may be no fundamental differences between the NI process of the polysynthetic languages and the verb + object compounding process of the non-polysynthetic languages. The verb + object compounding in Mandarin, for example, is precisely noun incorporation. The morphology of these different linguistic systems can seem almost incomparable superficially, but the “wrong” types of morphology should not deter us from seeing the commonalities of the different languages.

7 Future work

While more theoretical work is to be carried out with the Mandarin VO forms, I would be very interested in the prospect of combining experimental strands of research with theories of the Mandarin VO forms. For further work on the VO forms, I would like to collect empirical evidence on how effective my proposed influencing factors are. An effective corpus study may be helpful in testing hypotheses on the effect of context and frequency, while some field work can answer questions regarding the effect of education. Perhaps even more
exciting is the possibility of bringing insights from psycholinguistic research. It could be very productive to use experimental methods to test hypotheses on the Mandarin VO forms and investigate how Mandarin speakers process compounds. Questions that are to be explored include, for example, how and to what extent do speakers recognize the syntactic/semantic relationship between the constituting morphemes when they use compounds.

Many associated questions are also looking intriguing. For example, what should we make of the NV forms? Is incorporation the only type of compounding process in Mandarin that would result in forms with multiple identities, as we see in the VO forms and very briefly in the NV forms? And what about compounds with “fixed status”? If all Mandarin compounds were born out of a monomorphemic lexicon, why can’t they be flexible? The VV compounds, for example, are mostly lexical. What type of compounding process is behind the VV compounds? All these questions might eventually feed into each other, and offer a better understanding of the Chinese morphology, which, as we have seen, has important commonalities with languages that seem to have incomparable morphological systems with that of Chinese.

8 Conclusion

In this thesis I present the curious case of the Mandarin VO forms. The Mandarin VO forms are remarkable in that many of them are capable of having multiple morphosyntactic statuses. Many VO forms show properties of lexical compounds, syntactic phrases, as well as an intermediate stage, syntactic compounds. I thus argue that rather than the traditional binary approach which makes the vague distinction between words and phrases, a tripartite model is more effective in explaining the many characteristics that the VO forms are capable of having. I then give my own criteria for determining when a VO form is used as a verb phrase, a syntactic compound, or a lexical compound. In particular, I support making inferences about a form’s syntactic identity from aspect marker insertion and argue against the interpretation of “word-internal inflection”, reject the validity of using idiomatic meaning to infer about a form’s syntactic status, and advocate the autonomy of the different aspects of a linguistic constituent.

I am also unsatisfied with the “isolation” of the past studies on the Mandarin VO forms. Many morphological theories have been advanced in the past years, and few have been applied to try to explain the phenomena in Chinese. I propose that Construction Morphology is a powerful tool for making sense of the Mandarin VO forms. In addition, the compounding of a noun stem and a verb stem to produce a complex verb – known as “noun incorporation” – is a common morphological process cross-linguistically, yet few attempts have been made to link the Mandarin case with the general discussions. I argue that the nature of the Mandarin VO compounding is precisely noun incorporation, despite its being traditionally associated with polysynthetic languages.

Much work is still to be done, of course. Apart from further evidence which can be collected to give additional support to some of the arguments in this thesis, questions on related processes such as subject-predicate compounding, verb-verb compounding, etc., arise and need to be addressed, and research on these questions can in turn shed light on verb-object compounding. This thesis only leads to many more exciting questions of the morphology of Chinese, which, interestingly, has been thought of for quite some time as “non-existent”.
As a final remark, I’d like to conclude this thesis with a quote by Bernhard Karlsgren, frequently credited as the first linguist to study Chinese using modern linguistic methods, taken from one of his minor monographs titled “The Chinese Language: An Essay on Its Nature and History” (1949). It remains one of the most beautiful quotes I know of.

“It is a well-known saying that with every language you learn, you acquire one more soul. ... [Y]our thoughts are compelled to leave the tracks made familiar to you by your own language and you are enabled to raise yourself to a higher vantage point. You can come to realize that fundamentally identical ideas may be given form in widely varying ways and expressed in completely different language categories from those you are accustomed to in your mother tongue. ... Now when we move to the other side of the globe, to a language which for thousands of years has been living an independent life practically untouched by alien influence, and which has gone through its own particular development and formed a richly faceted literary language apart from its everyday vernacular, we can clearly expect to enter into a strange world, deviating much farther from all that we are accustomed to in the Indo-European tongues, which are all cognate to the English language. ... It is precisely this peculiar nature of the Chinese language that we want to give some idea of, some insight, however elementary, into the Chinese soul as it is revealed in the language, the most powerful instrument of thought.”

To me it serves as a constant reminder – however romanticized his words are and perhaps even more so my interpretation – that we can never look too closely into a language while at the same time there is always something grander out there; that even after the logic behind a language is broken down and the various data examined, after the picture gets messy and the magic seemingly wanes, language shall never lose its fascination, for it is immensely beautiful, and a genuine wonder of human beings indeed.
Selected bibliography:


