Directional serial verb constructions in Mandarin: A neo-constructionist approach[1]

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This paper develops Ramchand's first phase syntax theory by investigating the Mandarin
directional serial verb construction. Specifically, the position of the theme argument in these
constructions is investigated, and two major word order variants are identified: the VOV type
and the VVO type. The former are argued to be accomplishments, whereas the latter are
achievements. The analysis embraces Ramchand's spirit that three sub-eventive projections
(InitP, ProcP, and ResP) exist universally as the basic building blocks in the first-phase
syntax, and it proposes that the surface word order alternation and situation type shift is the
consequence of the occurrence/absence of the ResP and the different insertion position of the
directional morphemes.

KEYWORDS: neo-constructionist, serial verb, word order alternation

1. INTRODUCTION

This paper aims to put to the test and further develop Ramchand's first-phase syntax
theory, a neo-constructionist approach, within the empirical domain of DIRECTIONAL
SERIAL VERB CONSTRUCTION (DSVC) in Mandarin Chinese. One example of this
construction is illustrated in

(1)   (a)   Ta   **ji   lai**   le   yi   feng xin.
            3SG   post come PFV   one   CLF   letter
      (b)   Ta   **ji**   le   yi   feng xin **lai**.
            3SG   post PFV   one   CLF   letter come
            'S/He posted one letter (to the speaker).'

Each sentence in (1) contains two verbal morphemes (marked in bold), each of which can be used alone as the main predicate of a sentence. The first verbal morpheme denotes manner of action, whereas the second one encodes directional meaning that indicates the moving path of the direct object. The verbal morphemes may occur adjacent to each other (1-a), or be separated by other syntactic items (1-b), such as a theme argument and/or an aspect marker *le*.

The Mandarin directional serial verb constructions demonstrate properties related to a pervasively observed phenomenon, i.e. 'multiple argument realization', which, according to Levin & Rappaport Hovav (2005: 186-189), has two types of manifestations. The first manifestation concerns the argument alternation of a particular verb. For example, dative alternation (as in (2)), locative alternation, and with/against alternation in English are of this sort.

(2)　dative alternation
　　　(a)　Terry gave the newspaper to Kim. (to variant)
　　　(b)　Terry gave Kim the newspaper. (double object variant)

The other manifestation involves complex event composition by introducing an extra argument-taking predicate, an additional argument, or both, but neither of them are selected by the verb. For example, (3) shows that *run*, a verb that is supposed to select only one argument, can be followed by the unselected argument *the athletes* and the PP *around the track*, giving rise to a complex event structure.

(3)　The coach ran the athletes around the track.

The construction in (1) presents features of both manifestations of multiargument realisation. On the one hand, to some extent, the directional verb *lai* 'come' in (1) is similar to the PP goal argument in a dative construction because it can be interpreted as 'to/towards here'. If we view *lai* as a goal argument and the direct object as a theme, the word order alternation in (1) resembles the double object-dative alternation shown in (2). In this sense, Mandarin DSVCs illustrate argument alternation. On the other hand, the directional verb is not selected by the manner verb. The addition of the directional morpheme gives rise to a complex event in which reference is not only made to a letter-posting event, but also to the moving path/goal of the letter. In this sense, Mandarin DSVCs also resemble complex event compositions, illustrated in (3). Therefore, it is reasonable to subsume this word order alternation phenomenon observed with the Mandarin DSVCs under the label 'multiple argument realization'.

Multiargument realization poses a challenge to the traditional projectionist approaches, which advocate that lexical items have a set of semantic, morphological, and syntactic properties specified in their lexical entry, from which syntactic structures are projected (among others, Chomsky 1981, 1985, Baker 1988, Perlmutter & Postal 1984, Larson 1988, Levin 1993, Levin & Rappaport Hovav 1995, Rappaport Hovav & Levin 1998, Reinhart 2003, 2006, Koontz-Garboden 2009, Rappaport Hovav & Levin 2010, Beavers & Koontz-Garboden 2012,

Wechsler 2015). As Levin & Rappaport Hovav (2005: 189–190) point out, if multiargument realization is restricted to a few delimited classes of verbs, and the inventory of alternations is small, it is reasonable to assume the existence of a small set of polysemous verbs. However, verbs are widely found to be able to appear in a range of syntactic contexts. For example, (4) shows that *siren* is flexible with respect to the syntactic environment it can appear in.

(4)　(a)　The factory horns sirened throughout the raid.
　　(b)　The factory horns sirened midday and everyone broke for lunch.
　　(c)　The police car sirened the Porche to a stop.
　　(d)　The police car sirened up to the accident site.
　　(e)　The police car sirened the daylight out of me.

(Borer 2005a: 8)

It is counterintuitive to assume that *siren* in each case has a different meaning because the core meaning of *siren* across the examples remains the same, i.e. 'emitting a high pitch noise'.

　　However, linguists working on the constructionist models, including the precursor theories such as Hale & Keyser (1993) and the neo-constructionist models such as Kratzer (1996), Marantz (1997), Ritter & Rosen (1998), Erteschik-Shir & Rapoport (2004), Borer (2005a, b), Ramchand (2008), Travis (2010), Folli & Harley (2013), among others, hold the opposite view concerning the division of labour between the lexicon and the syntactic component of the human language faculty. To them, it is the syntactic structure that determines the syntactic properties (e.g. category and argument structure) which were traditionally associated with lexical items. The differences between the variants of argument alternations, such as the transitive, intransitive, and middle *break*, are to be attributed to properties of the associated structures, rather than to properties of distinct (related) lexical entries. Constructionist theories also allow for a natural solution to event composition: the elements that are not licensed by the basic meaning of the verb should find their source in the syntax.

　　Constructionists' models vary with respect to how much information is allocated to the lexical root and how much is related to the functional structure. Radical constructionist approaches (e.g. Borer 2005a, b) claim that the lexical items are merely sound-meaning pairs that do not have any power to generate recursive sentences. For a review of general problems of such radical approaches, see Potts (2008). There are also moderate approaches, which allow the lexical root to contain some syntactic information ranging from category information to syntactic selectional information and degrees of argument-structure information. This paper does not intend to make a strong claim that the constructionist approaches are more advantageous than the projectionist approaches, but to put to the test a particular moderate neo-constructionist model, Ramchand's first-phase syntax theory, in the empirical domain of Mandarin directional serial verb constructions. I will show that

this model, with modifications, has great potential in accounting for the complex word order and interpretation patterns observed in these constructions.

The paper is organised as follows. Section 2 presents different types of DSVCs and demonstrates the distribution of the theme argument. Also, it will be shown that the position of the theme also leads to a shift of the situation type. Section 3 introduces Ramchand's first-phase syntax theory. Section 4 adapts the theory to account for the word order alternation and situation shift. Section 5 summarises the findings and analysis, and it highlights pointers for future work.

2. MANDARIN DIRECTIONAL SERIAL VERB CONSTRUCTION

The V-V clusters shown in (1) are generally referred to as 'compounds' in the Chinese descriptive literature. For example, Chao (1968: 435) categorises them as one type of the so called 'verb-complement compounds'.[2] Li & Thompson (1981) subclassify these verb clusters under the label 'resultative verb compounds' (RVC), where directions are considered as one type of result. However, Paul (2005, 2008) argues that these V-V clusters are not compounds because the direct object and aspect marker can occur within the verb cluster. She suggests that these constructions should receive a similar analysis as the serial verb constructions under Collins (1997)'s definition (see Section 3.1). I agree with Paul's view, thus, the term 'directional serial verb construction' (DSVC) is used instead of the traditional terms.

Much of the descriptive literature has depicted the components of DSVC and possible word orders within DSVCs (among others, Fan 1963, Chao 1968, Liu 1980, Li & Thompson 1981, Zhu 1982, Kimura 1984, Li 1984, Lu 1985, Xiao 1992, Liu 1998, Lü 2000, Lu 2002, Yang 2009, Liu et al. 2019). In Section 2.1 and Section 2.2, I will provide a summarised description based on the previous studies. In Section 2.3, I will further discuss the semantic differences associated with the word order alternation.

2.1. *The verbal components*

As is introduced in Section 1, the components of a directional serial verb construction involve two major types of verbal morphemes: manner verb and directional verb(s). The manner verb can be intransitive, such as *pao* 'run', *zou* 'walk', *piao* 'float', and *gun* 'roll', or transitive, such as *song* 'send', *tui* 'push', and *reng* 'throw', which requires a theme argument. The directional verbs can also be further divided

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[2] The term 'complement', or *buyu*, in the Chinese descriptive literature is basically used to refer to any elements that come after the verb but are not the object of the verb, as opposed to the structural sense in the generative literature. For example, in the verb cluster *zou jin* 'walk enter', *jin* 'enter' is referred to as the 'complement' of *zou*. Likewise, the second morphemes in complex predicates such as *bian huai* 'turn bad', *chi bao* 'eat-full', *ge xin*, *geng xin* 'change new' (renew), *kan jian* 'look see' (see) are all referred to as the complement, and these word V-V or V-Adj clusters are also grouped under the name 'verb-complement compounds' by Chao.

700

Component schema	Examples
1. $V_m V_{deic}$	*song lai* 'send come', *zou qu* 'walk go'
2. $V_m V_{gen}$	*song jin* 'send enter', *zou chu* 'walk exit'
3. $V_m V_{gen} V_{deic}$	*song jin lai* 'send enter come', *zou chu qu* 'walk exit go'
4. $V_{gen} V_{deic}$	*jin lai* 'enter come', *chu qu* 'exit go'

Table 1
Component schemas of Mandarin directional serial verb constructions.

into two subtypes. The first type, including *lai* 'come' and *qu* 'go', denotes deictic directions. The other type encodes general (non-deictic) directions, such as 'upwards' and 'inwards'. The most typical general directional verbs include *shang* 'ascend', *xia* 'descend', *jin* 'enter', *chu* 'exit', and *guo* 'cross'.

To form a DSVC, four possible combinations of the verbs mentioned above are observed:

1. manner verb followed by one deictic verb;
2. manner verb followed by one general directional verb;
3. manner verb followed by both general and deictic directional verbs successively;
4. general directional verb followed by deictic verb (no manner verb).

The abbreviation V_m for the manner verbs, V_{deic} for the deictic verbs, and V_{gen} for the general directional verbs will be used throughout the paper. The component schemas and examples are summarised in Table 1.

2.2. *Position of the theme argument*

In Example (1), we have seen that Schema 1 DSVCs ($V_m V_{deic}$) allow the theme object of V_m to occur after the whole verb cluster, forming a VVO order, or between the two verbal morphemes, forming a VOV order. Another example is provided in (5).

(5) (a) Ta **song lai** le yi wan tang. (**$V_m V_{deic} O$**)
3SG send come PFV one CLF soup
(b) Ta **song** le yi wan tang **lai**. (**$V_m O V_{deic}$**)
3SG send PFV one CLF soup come
'S/He brought one bowl of soup.'

In (5), the position of the perfective aspect marker *le* in both variants is also shown. In the VVO variant (5-a), *le* must occur after the V-V cluster and before the theme object. In the VOV variant (5-b), however, the aspect *le* occurs directly after V_m.

701

However, it is also observed that *le* can be found at the end of the sentence in both variants (glossed as SFP 'sentence final particle'), as in (6).

(6) (a) Ta **song lai** yi wan tang le.
      3SG send come one CLF soup SFP
   (b) Ta **song** yi wan tang **lai** le.
      3SG send one CLF soup come SFP
      'S/He brought one bowl of soup.'

I argue that the *le* at the end of the sentence in (6) should be considered a different morpheme from the sentence internal aspectual *le*, a view siding with Chao (1968), Li & Thompson (1981), Sybesma (1999), among others. The evidence is that the sentences in (7) allow both *le*s to co-occur.

(7) (a) Ta **song lai** le yi wan tang le.
      3SG send come PFV one CLF soup SFP
   (b) Ta **song** le yi wan tang **lai** le.
      3SG send PFV one CLF soup come SFP
      'S/He brought one bowl of soup.'

If the sentence final *le* (SFP) and the sentence internal *le* (PFV) are the same aspectual morpheme, this should not be expected. Also, the surface position of the sentence final *le* in both the VVO and VOV variants does not differentiate the underlying structures of the two variants. In comparison, the sentence internal aspectual *le* provides a more useful diagnostic for us to probe the structures. Therefore, in this paper, I will only account for the position of the sentence internal (PFV) *le*, not the sentence final particle *le*.

Unlike Schema 1, DSVCs of Schema 2 ($V_m V_{gen}$) do not allow the theme to occur after the V_m. As is shown in (8) and (9), only the VVO order is permitted, while the VOV order is banned.

(8) John **na chu** le yi ben shu.
    John take exit PFV one CLF book.
    'John took out a book.'

(9) *John **na** le yi ben shu **chu**.
    John take PFV one CLF book exit.

Nevertheless, (9) can be rescued by adding a locative object after the V_{gen} *chu*, as in (10).

(10) John **na** le yi ben shu **chu** fangjian.
     John take PFV one CLF book exit room.
     'John took a book out of the room.'

A reviewer has pointed out that (10) should be treated as a coordinate construction where the subject rather than the object is the shared argument of V_m and V_{gen} (i.e. 'John took a book and exited the room'). Although the coordination reading is possible for (10), it is not always available with Schema 2 DSVCs. For example, in (11), the only available reading is to take *shu* as the shared argument due to real-world knowledge.

(11) John **na** le yi ben shu **chu** shubao.
      John take PFV one CLF book exit bag.
      'John took a book out of the bag.'

Admittedly, when both the theme object and the locative object are explicit, native speakers tend to either prepose the theme object to a position before the verb cluster, following a particle *ba*, as in (12), or embed the locative in a preverbal PP (*wang…* 'to…'/*cong…* 'from…'), as in (13).

(12) John ba yi ben shu **na** **chu** le shubao.
      John BA one CLF book take exit PFV bag.

(13) John cong shubaoli **na** **chu** le yi ben shu.
      John from bag-inside take exit PFV one CLF book.

However, the word order in (11) is still acceptable, or at least better than (9) where no locative occurs after V_{gen}.

Schema 3 DSVCs (V_m V_{gen} V_{deic}) allow three positions for the theme argument: after V_{deic}, after V_m, or after V_{gen}, as shown in (14).

(14) (a) Ta **song jin** **lai** le yi wan tang. (V_m V_{gen} V_{deic} O)
           3SG send enter come PFV one CLF soup
      (b) Ta **song** le yi wan tang **jin** **lai**. (V_m O V_{gen} V_{deic})
           3SG send PFV one CLF soup enter come
      (c) Ta **song jin** le yi wan tang **lai**. (V_m V_{gen} O V_{deic})
           3SG send enter PFV one CLF soup come
           'S/He brought in one bowl of soup.'

The possible word orders due to the alternated positions of the theme argument in Mandarin DSVCs are summarised in Table 2.

We observe that the word order variants can be divided into two major types:

1. VOV type (underlined in Table 2): all directional verb(s) follow the theme argument.
2. VVO type: at least one directional verb precedes the theme argument.

2.3. *Semantic difference between the word order variants*

We have seen that Schema 1 and 3 DSVCs allow the theme argument to appear in different positions, resulting in two sets of word order alternations. Then is there any

703

Schema	Word order variants	Example
1. V_m V_{deic}	VVO	**song lai** shu
	VOV	**song** shu **lai**
2. V_m V_{gen}	VVO	**song jin** shu
	*VOV	***song** shu **jin**
3. V_m V_{gen} V_{deic}	VVVO	**song jin lai** shu
	VOVV	**song** shu **jin lai**
	VVOV	**song jin** shu **lai**

Table 2
Word order alternation.

semantic difference among the variants in each set? In this section, I will show that the answer is yes.

2.3.1. *Previous studies*

In some of the previous studies mentioning the word order alternation in DSVCs (e.g. Chao 1968, Li & Thompson 1981, Zou 1994, and Paul 2005), the variants of each set are assumed to be synonymous. However, some of the descriptive literature or Chinese grammar handbooks point out that the word order variants do not seem to be interchangeable in all situations. For example, in Liu (1998: 40–43), Lu (2002: 10, 13), Liu et al. (2019: 590–592), it is suggested that when describing situations that have not happened (e.g. imperative sentences), the VOV order is preferred to the VVO order. Also, Kimura (1984: 279, 289) claims that the VOV order 'asserts motion', while the VVO order asserts 'state of affairs as a result of a motion'. He also uses the vague terms 'motion aspect' and 'resultative aspect' to describe the two word order type respectively, which seems to suggest a situation aspect difference among these variants.

Situation aspects (also known as lexical aspects or Aktionsart) represent temporal properties of events (e.g. whether they indicate change, duration, and an endpoint) and are conveyed abstractly by the verb constellation. The most well-known early classification of Aktionsart is Vendler (1967)'s four situation types (states, activities, accomplishments, and achievements), which are classified based on three pairs of features: ±dynamic, ±durative, and ±telic. From there, many linguists have developed and refined the classification by introducing new features or new situation types (among others, Verkuyl 1972, Comrie 1976, Smith 1997, Verkuyl 1999, Xiao & McEnery 2004, Rothstein 2008a,b, Peck et al. 2013).

The hypothesis that the word order variants correspond to a different situation aspect is explicitly discussed in Yang (2009), with the three variants for the Schema 3 DSVCs being tested. She uses the imperative test and the 'almost' adverbial test and concluded that the VVVO order is achievement, while the VOVV and VVOV orders are accomplishments. However, her tests are problematic. First, her imperative test is based on her claim that 'achievements cannot be used in imperative

704

sentences; however, accomplishments can'. Nevertheless, this claim is not true. Achievements can be compatible with imperatives, both in English (e.g. *Break the vase!*) and Chinese (*zhao dao ta!* 'find him'). Therefore, whether a word order can appear in the imperative sentence does not entail its situation type. Second, although according to Dowty (1979), English accomplishments yield ambiguous readings when modified by 'almost', while achievements do not, it is unclear whether this test works equally in Mandarin. Furthermore, the judgement of the Mandarin examples provided in Yang (2009) vary substantially across native speakers. Even the same speaker would have different judgement at different times. Therefore, the 'almost'-adverbial does not constitute a very reliable test to distinguish Mandarin situation types.

In the rest of this section, I will provide another set of tests to argue that all the VVO-type variants are actually achievements ([+dynamic][-durative][+telic]), while the VOV-type variants are accomplishments ([+dynamic][+durative][+telic]).

2.3.2. *Testing the VVO type and VOV type variants*

The diagnostics I will use here are (1) progressive test, (2) *in-x-time* adverbial test, and (3) *for-x-time* adverbial test.

PROGRESSIVE TEST is known to be sensitive to the [dynamic] and [durative] features, which are two of the defining features for situation types. The intuition behind the progressive test is that since a sentence with progressive aspect indicates that an event is in progress or going on, then an event which is not dynamic, or an instantaneous event, would not be compatible with the meaning of progressive (Rothstein 2008a: 11). In other words, states and achievements generally do not occur with progressive, while activities and accomplishments do, as in (15).[3]

(15) (a)   *Sam is believing me. (state)
      (b)   *Mary is recognizing me. (achievement)
      (c)   Mary is running. (activity)
      (d)   John is reading a book. (accomplishment)

This is also the case in Mandarin. Examples (16)–(19) illustrate the compatibility between a progressive construction, which is composed of a preverbal adverb *zhengzai* and an optional sentence final particle *ne*, and each situation type in Mandarin (but cf. Basciano (2019)'s view on progressive[4]).

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[3] At least in English, where these tests were first established (Dowty 1979), it is possible to coerce achievements into being good in the progressive by coercing a preliminary activity (Moens & Steedman 1987). For example, 'Mary is winning the race' is no problem.

[4] Basciano (2019: 178), following Xiao & McEnery (2004), states that the progressive marker in Mandarin is incompatible with endpoints, i.e. telic events. However, Xiao & McEnery (2004: 211–213) are actually not coherent about this claim. For example, they first claim that incompatibility between progressive and an accomplishment VP (Example 44b, p.211) is due to 'the imposed endpoint' and because 'real world knowledge tells us that it is virtually impossible for

(16) *Ta   zhengzai   zhidao   zhe   ge   ren   ne.   (states)
     3SG   PROG   know   this CLF people   SFP
     (Intended) 'S/he is knowing this people.'

(17) *Ta   zhengzai   si   ne.   (achievement)
     3SG   PROG   die   SFP
     (Intended) 'S/he is in the process of dying.'

(18) Ta   zhengzai   manpao   ne.   (activity)
     3SG   PROG   jog   SFP
     'S/he is jogging.'

(19) Ta   zhengzai   chi   na   ge   pingguo   ne.   (accomplishment)
     3SG   PROG   eat   that   CLF apple   SFP
     'S/he is eating that apple.'

Now I apply the progressive test to the VVO-type and VOV-type variants. Examples (20)–(21) test the two variants from the schema 1 DSVCs. The (a) examples illustrate the VVO variant, while the (b) examples illustrate the VOV variant. Similar to the author's own judgement, of seven other native speakers consulted, five reported higher acceptability with the (b) examples, in which the progressive marker *zhengzai…ne* occurs with the VOV variant, than the (a) examples, where progressive occurs with the VVO variant.

(20) (a) ?Ta   zhengzai   song   lai   yi   wan   tang   ne.
         he   PROG   send   come   one   CLF   soup   SFP
     (b) Ta   zhengzai   song   yi   wan   tang   lai   ne.
         he   PROG   send   come   one   CLF   soup   SFP

(21) (a) ?Ta   zhengzai   ban   lai   yi   ge   xiangzi   ne.
         he   PROG   push   come   one   CLF   box   SFP
     (b) Ta   zhengzai   ban   yi   ge   xiangzi   lai   ne.
         he   PROG   push   one   CLF   box   come   SFP

(22) (a) ??Ta zhengzai   ji   lai   yi   feng   xin   ne.
         he   PROG   post   come   one   CLF   letter SFP
     (b) ?Ta   zhengzai   ji   yi   feng   xin   lai   ne.
         he   PROG   post   one   CLF   letter come   SFP

(23) (a) *Ta   zhengzai   reng   lai   yi   kuai   shitou   ne.
         he   PROG   throw   come   one   CLF   stone   SFP
     (b) ?Ta   zhengzai   reng   yi   kuai shitou lai   ne.
         he   PROG   throw   one   CLF   stone   come   SFP

one to do certain things simultaneously'. However, they soon mention that when there is no conflict with common sense knowledge, progressive can occur with accomplishments (Example 45). They also admit that certain achievements can tolerate progressive (p.213). Moreover, Peck et al. (2013: 689–690) also argue for a group of telic predicates that allow progressive (i.e. multipoint closed scalar verbs in their terms). In a nutshell, I do not agree that incompatibility with progressive indicates a lack of endpoint. In my opinion, the progressive test distinguishes the ±durative feature instead of the ±telic feature.

706

Notably, the acceptability degrades (for both types of variants) when the V_m denotes instantaneous events such as *ji* 'post' and *reng* 'throw', i.e. (22) and (23). However, as is shown in (24) and (25), the VOV variant in the Schema 3 DSVCs is widely accepted with progressive (the (b) examples), in contrast to the VVO-type variants (the (a) and (c) examples).

(24) (a) ?Ta zhengzai tui jin lai yi ge xiangzi ne.
        he PROG push enter come one CLF box SFP
    (b) Ta zhengzai tui yi ge xiangzi jin lai ne.
        he PROG push one CLF box enter come SFP
    (c) ?Ta zhengzai tui jin yi ge xiangzi lai ne.
        he PROG push enter one CLF box come SFP

(25) (a) ?Ta zhengzai reng chu lai yi ge qiu ne.
        he PROG throw exit come one CLF ball SFP
    (b) Ta zhengzai reng yi ge qiu chu lai ne
        he PROG throw one CLF ball exit come SFP
    (c) ?Ta zhengzai reng chu yi ge qiu lai ne
        he PROG throw exit one CLF ball come SFP

The pattern we can generalise from the data in (20)–(25) is that the VOV type of variants has a high compatibility with the progressive marker, especially when the direct object is followed by two directional verbs ($V_{gen} + V_{deic}$). Given that progressive is sensitive to both the [+dynamic] and the [+durative] feature, we can hypothesise that the VOV type of variants denotes events with both the [+dynamic] and the [+durative] features; that is, they could be activities or accomplishments. However, the observation that the VVO-type variants have a weak compatibility with the progressive suggests they have a [-dynamic] or a [-durative] feature.[5] In other words, the situation type of VVO-type variants is narrowed down to either state ([-dynamic] [+durative] [-telic]) or achievement ([+dynamic] [-durative] [+telic]). Next I show additional tests to pin down the situation type for each type of variant.

   I start with the VOV type, which is hypothesised as activity or accomplishment. The crucial feature to distinguish these two situation types is the [+/- telic] feature. A standard test for picking out telic situation types is the IN-X-TIME ADVERBIAL TEST. For example, in Mandarin, telic situations involving a simple achievement verb (26) or a resultative predicate (27) are compatible with an *in-x-time* adverbial.

(26) Ta yi-xiaoshi-nei dao le jiudian.
     3SG one-hour-within arrive PFV hotel
     'S/He arrived at the hotel in one hour.'

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[5] The combination of [-dynamic] and [-durative] is a theoretically predicted but unattested situation type: a state that is punctual seems to be impossible in the real world (Peck et al., 2013: 665).

707

(27)   Ta   yi-xiaoshi-nei   chi   wan   le   na   ge pingguo.
      3SG   one-hour-within   eat   finish PFV that CLF apple
      'S/He ate up that apple in one hour.'

However, an activity verb such as *manpao* or *huahua* is not compatible with an *in-x-time* adverbial.

(28)   *Ta   yi-xiaoshi-nei   manpao/huahua   le.
      3SG   one-hour-within   jog/painting   PFV
      Intended: 'S/He jogged/painted in one hour.'

Now apply the *in-x-time* adverbial test to the VOV type of variant.

(29)   (a)   Ta   yi-xiaoshi-nei   ban   le   yi   ge   xiangzi lai.
            3SG   one-hour-within   move PFV one CLF box   come
      (b)   Ta   yi-xiaoshi-nei   ban   le   yi   ge   xiangzi jin   lai.
            3SG   one-hour-within   move PFV one CLF box   enter come
            'S/He moved (in) here one box within one hour.'

Example (29) shows that the VOV-type variants can occur with an *in-x-time* adverbial, which suggests that VOV variants are [+telic] situation types. Combined with the result of the progressive test, I suggest that VOV variants are accomplishments ([+dynamic][+durative][+telic]).

    Next, I move to the VVO type of variants, whose possible situation type has been narrowed down to achievements and states using the progressive test. Intuitively, the VVO variants in (20)–(25) cannot be states because, semantically, they are all describing some sort of action. This can be further confirmed by the *in-x-time* adverbial test:

(30)   (a)   Ta   yi-xiaoshi-nei   ban   lai   le   yi   ge   xiangzi.
            3SG   one-hour-within   move come PFV   one CLF box
      (b)   Ta   yi-xiaoshi-nei   ban   jin   lai   le   yi   ge   xiangzi.
            3SG   one-hour-within   move enter come PFV one CLF   box
            'S/He moved (in) here one box within one hour.'

Example (30) shows that the VVO type of variants survives the telicity test as well, which suggests that the VVO variants are achievements rather than states because states are defined with the [-telic] feature.

    The achievement status of the VVO variants and the accomplishment status of the VOV variants can be further confirmed by a third test, the FOR-X-TIME ADVERBIAL TEST.

    In English, *for-x-time* adverbials are generally bad with +telic situation types, including accomplishments and achievements, except when there is a plural argument which allows an iterative reading (Rothstein 2008a: 25). However, as is pointed out by Peck et al. (2013: 681–682), in Mandarin, *for-x-time* adverbials occur comfortably with telic situation types. It is the semantic interpretation that

distinguishes these situation types. In particular, with achievements, the adverbial indicates how long the resultant state lasts, as in (31).

(31)   Ta   siwang   wu   ge   xiaoshi   le.
       she   die   five   CLF   hour   SFP
       'It has been five hours since she died.'

Note that (31) does not allow a process reading, which is evidenced by (32), where a continuation indicating that the subject is not dead leads to contradiction.

(32)   Ta   siwang   wu   ge   xiaoshi   le,   #keshi   hai   zai   chuanqi.
       she   die   five   CLF   hour   SFP,   but   still   PROG   pant
       Intended: 'she has been dying for five hours, but she is still panting.'

With accomplishments, however, the adverbial is ambiguous between a process reading and a result reading, as in (33).[6]

(33)   Ta   xie   yi   feng   xin   liang   xiaoshi   le.
       3SG   write   one   CLF   letter   two   hour   SFP
       result reading: 'It has been 2 hours since s/he finished writing a letter.'
       process reading 'S/he has been writing a letter for two hours (and s/he is still writing).'

Now I apply the *for*-adverbial test to the VVO type of variants. Example (34) shows that the *for*-adverbial in the VVO variant in type 1 DSVC is interpreted as the period after the result of the event (arrival of the soup) was achieved.

(34)   Ta   song   lai   yi   wan   tang   san   xiaoshi   le.
       3SG   send   come   one   CLF   soup   three   hour   SFP
       'It has been three hours since he brought a soup.'

Example (34) does not allow a process reading which indicates that the soup is not here yet. If it does, it should be able to take a continuation which asserts the soup's nonarrival. However, this is not true, as shown in (35).

(35)   Ta   song   lai   yi   wan   tang   san   xiaoshi   le,   #keshi   tang   hai
       3SG   send   come   one   CLF   soup   three   hour   SFP,   but   soup   still
       zai   lushang.
       at   road
       Intended: 'She has been bringing a soup towards here for three hours, but the soup is still on the way.'

---

[6] The way I show here creates a minimal pair comparing the achievement and accomplishment examples. Another way to add a *for-x-time* adverbial, as a reviewer pointed out, is to duplicate the verb: *Ta xie yi feng xin **xie** le liangxiaoshi.* However, verb duplication is ungrammatical in (31). Hence, it cannot create a minimal pair for comparison. Also, this approach is not compatible with complex predicates, including the main data in this paper. Either duplicating one of the verbs or the whole V-V cluster leads to ungrammaticality. Therefore, I do not construct the *for*-adverbial test using verb duplication.

Similarly, (36) shows that the two VVO types of variants in type 3 DSVC also disallow the continuation, hence rejecting the process reading.

(36) (a) ta   **tui**   **chu**   **lai**   na   ge   xiangzi wu   fenzhong
           3SG   push   exit   come   that   CLF   box   five minute
           le,   #keshi xiangzi hai   zai   limian.
           SFP, but   box   still at   inside
      (b) ta   **reng**   **chu**   na   ge   xiangzi **lai**   wu   fenzhong
           he   push   exit   that   CLF   box   come   five minute
           le,   #keshi xiangzi hai   zai   limian
           SFP, but   box   still at   inside
           Intended: 'She has been pushing out a box towards here for five minutes, but the box is still inside.'

Moreover, (37) shows that the type 2 DSVC, which only allows the VVO order, behaves the same as the VVO variants in type 1 and 3 DSVCs.

(37) Ta   **na**   **chu**   na   ben   shu   wu   fenzhong le,   #keshi shu
      3SG take   exit   that CLF   book five minute   SFP, but   book
      hai zai   baoli.
      still at   bag-inside
      'It has been five minutes since he took out the book, #but the book is still in the bag.'

In short, the *for*-adverbial test suggests that the VVO-type variants are achievements instead of accomplishments.

However, if the VOV-type variants are accomplishments, then ambiguity between the process and result reading is expected when a *for*-adverbial occurs. Indeed, this is the case:

(38) Ta   song   yi   wan   tang   lai   san   xiaoshi le
      he   send   come one   CLF   soup   three hour   SFP
      result reading: 'It has been three hours since he brought a soup. (The soup already arrived)'
      process reading: 'She has been bringing a soup towards here for three hours. (still in the process of soup sending)'

(39) Ta   tui   na   ge   xiangzi chu   lai   shifenzhong le.
      he   push that CLF box   exit come ten.minute   SFP
      result reading: 'It has been 10 minutes since he pushed out that box. (The box is already outside)'
      process reading: 'She has been pushing the box out for 10 minutes. (still in the process of pushing, the box is not outside the room yet)'

710

As the translation shows, apart from the result reading, (38) and (39) also allow a process reading. This reading is attested by inserting the same continuation used in (35) and (36).

(40) Ta   song   yi   wan   tang   lai   san   xiaoshi   le,   keshi   tang   hai
      he   send   come one   CLF   soup three hour   SFP, but   soup   still
      zai lushang.
      at   road

(41) Ta   tui   na   ge   xiangzi   chu   lai   shifenzhong   le,   keshi
      he   push   that CLF   box   exit come   ten.minute   SFP, but
      xiangzi   hai   zai   limian
      box   still   at   inside

The continuations do not cause contradiction, in contrast to the VVO variants in (35) and (36). This test confirms that the VOV variants are accomplishments.

In summary, all three tests (progressive, *in-x-time* adverbial, and *for-x-time* adverbial) together suggest that the VOV-type variants are accomplishments, while the VVO-type variants are achievements. In other words, when the theme object directly follows the manner verb (V_m O …), the DSVCs are accomplishments. Otherwise, they are achievements. The findings are summarised in Table 3.

In the rest of this paper, I aim to answer the following question:

How are the different positions of the theme object derived, leading to the different word order variants and situation types?

3. DECOMPOSING EVENTS: FIRST-PHASE SYNTAX

3.1. *Previous analysis on word order alternation*

Previously, both Zou (1994) and Paul (2008) have proposed analyses for the alternated word orders illustrated in Section 2. What their analyses share in common is that each verb in a DSVC projects its own VP, forming a VP hierarchy. They both assumed the VOV order to be the default order and the VVO order to be derived from it by head movement. For example, Paul's analysis is shown in (42) and (43).

Schema	Word order variants	Example	Situation type
V_m V_{deic}	VVO	song lai shu	achievements
	VOV	song shu lai	accomplishments
V_m V_{gen}	VVO	song jin shu	achievements
	*VOV	*song shu jin	–
V_m V_{gen} V_{deic}	VVVO	song jin lai shu	achievements
	VOVV	song shu jin lai	accomplishments
	VVOV	song jin shu lai	achievements

Table 3
Word order alternation and situation type.

711

(42) Paul's analysis for the VOV order

```
              vP
         ┌─────┴──────┐
       send         V₁P
               ┌─────┴──────┐
            soupᵢ          V₁′
                      ┌─────┴──────┐
                     V1          V₂P
                      │        ┌───┴───┐
                   t_send    PROᵢ    V₂
                                      │
                                    come
```

(43) Paul's analysis for the VVO order

```
                vP
          ┌──────┴──────┐
      send-come        V₁P
                  ┌──────┴──────┐
               soupᵢ           V₁′
                         ┌──────┴──────┐
                        V1           V₂P
                         │         ┌───┴───┐
                      t_send     PROᵢ    V₂
                                          │
                                       t_come
```
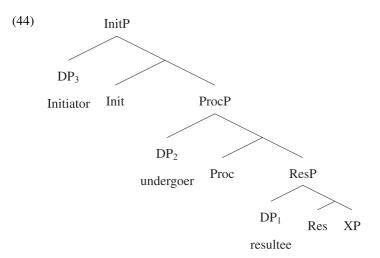
This sort of analysis captures the word orders. However, the analyses did not provide explanation for the subtle semantic (situation type) difference between a VVO and a VOV variant, which is identified in Section 2.3.

3.2. *First-phase syntax – a neo-constructionist model*

In order to both derive the word order alternation and account for the situation type shift, I introduce the neo-constructionist model proposed by Ramchand (2008) in this section, which will be adapted to analyse the Mandarin DSVCs in Section 4.

712

Ramchand's model is essentially event decomposition and verb decomposition. She proposes that a traditional categorised verb is represented by several projections in syntax, which are correlated with the semantics of event structures. As is shown in (44), there are, at most, three sub-eventive components into which an English verb can be decomposed: a causing sub-event (InitP), a process-denoting sub-event (ProcP), and a sub-event corresponding to result state (ResP). Each of these sub-events is represented as its own projection, ordered in the hierarchical embedding relation: InitP > ProcP > ResP.

(44)

InitP

DP$_3$

Initiator   Init   ProcP

DP$_2$

undergoer   Proc   ResP

DP$_1$

Res   XP

resultee

In this model, ProcP is the heart of the dynamic predicate and is present in every dynamic verb (i.e. states do not have ProcP). The InitP exists when the verb expresses a causational or initiational state that leads to the process. The ResP only exists when there is a result state explicitly expressed by the lexical predicate. The event-building portion of a proposition is assumed to be prior to case marking/checking, agreement, tense, and modification in general (Ramchand 2008: 16). This event-building phase of the syntax is called the 'first-phase' syntax.

Ramchand also proposes three primitive semantic role types, *initiator*, *undergoer* and *resultee*, which are established as participants of the sub-events. *Initiator* is 'an entity whose properties/behaviour are responsible for the eventuality coming into existence'; *undergoer* is an 'argument that is interpreted as undergoing the change asserted by a dynamic verb'; *resultee* is the 'direct argument related to a result state'. *Initiator*, *undergoer*, and *resultee* are merged as the specifier of InitP, ProcP, and ResP, respectively.

In addition, *rheme*s and *path*s are proposed to occur in the complement position of a sub-event head (e.g. the XP in (44)), providing content for that event. Specifically, *rheme*s are assumed to be objects of stative verbs, further describing the state of affairs. For example, in '*Katherine fears nightmares.*', '*nightmares*' is a

713

*rheme. Rheme*s can be PPs, APs, or DPs. *Path*s, on the other hand, are basically a dynamic version of *rheme*s. They are objects of the class of verbs where the verbal change is directly mapped onto the material extent of the object. For example, the objects of creation/consumption verbs, such as *the apple* in (45), or DPs that serve as the internal arguments of verbs of motion, such as *the West Highland Way* in (46), are considered *path*s.
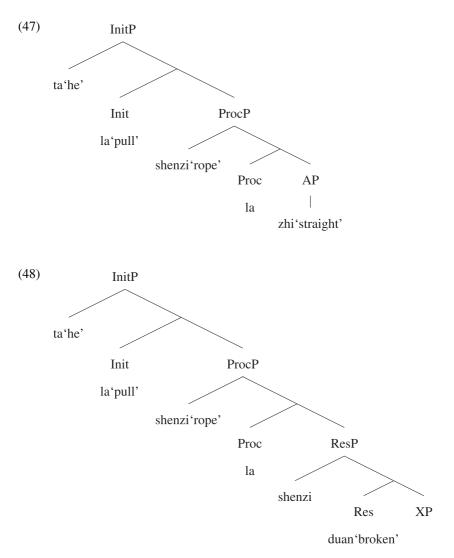
(45)   John ate **the apple**.

(46)   We walked **the West Highland Way**.

Unlike the extreme neo-constructionist approaches, which assert that the lexical entry of lexical items are just a bundle of cognitive-encyclopedic information without any syntactically relevant information and that extralinguistic factors such as convention, habits of speech, and real-world knowledge mediates whether a lexical item may be inserted in a syntactic terminal, Ramchand's approach assumes that apart from encyclopedic information, lexical items are also tagged with certain syntactic features that constrain their insertion in the syntactic structure (Ramchand 2008: 57–60). For example, an activity verb such as *push* is specified with 'category tags' [init, proc], while an achievement verb *break* is listed with tags [init, proc, res]. These features allow a particular first-phase configuration to be built. Since a syntactic item carries more than one category tag, it can be inserted in more than one position by Merge and Remerge. For example, in '*Katherine broke the stick.*', *break* is inserted under both Init, Proc, and Res. The arguments can also remerge in more than one specifier position, thus interpreted as more than one role type, e.g. *the stick* is both resultee and undergoer. The Merge and Remerge approach gives rise to the question of the linearization of the items that are in multiple positions. To address this issue, Ramchand assumes that the spell out of an item corresponds to its highest position in the syntactic representation at this level of the clause (Ramchand 2008: 59).

3.3. *Application in Mandarin*

Ramchand's approach has been applied to the Mandarin resultative verb compounds (RVC) and causative compounds by Basciano (2013, 2019).

In particular, in Basciano (2019), she points out that Mandarin RVCs can be divided into complex change RVCs and simple change RVCs. Complex change RVCs usually involve a degree adjective and allow progressive, e.g. *la-zhi* 'pull straight'. They are analysed as having the V1 as an item with the category tags [init, proc], and the result element acts as a path in the complement position of procP. Simple change RVCs involve a result element expressing instantaneous change and normally do not allow progressive, e.g. *la-duan* 'pull broken'. They are assumed to lexicalise the resP layer. Trees (47) and (48) illustrate the structures of the two types of RVCs.

(47)

```
                    InitP
               ┌──────┴──────┐
            ta'he'           │
                     ┌───────┴────────┐
                    Init            ProcP
                  la'pull'      ┌─────┴──────┐
                           shenzi'rope'      │
                                      ┌───────┴──────┐
                                    Proc           AP
                                     la             │
                                              zhi'straight'
```

(48)

```
                    InitP
               ┌──────┴──────┐
            ta'he'           │
                     ┌───────┴────────┐
                    Init            ProcP
                  la'pull'      ┌─────┴──────┐
                           shenzi'rope'      │
                                      ┌───────┴──────┐
                                    Proc           ResP
                                     la        ┌─────┴──────┐
                                             shenzi         │
                                                     ┌───────┴──────┐
                                                    Res            XP
                                                         duan'broken'
```
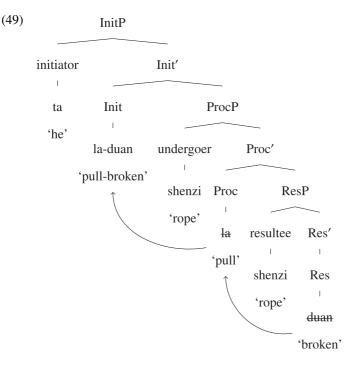
The different behaviours of the two types of RVCs (whether they are compatible with progressive) are attributed to whether there is a result layer in the first-phase syntax.

I agree with the idea that different result elements may lexicalise different heads. However, Basciano's analysis as shown above does not predict the surface word order. In Mandarin, the result denoting morpheme must follow the manner verb and precede the direct object (compulsory VVO order). If we simply adopt Ramchand's
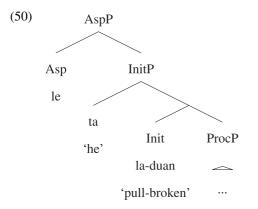
715

spell out rule, which states that an item in multiple positions is only pronounced in its highest position, then the wrong word order *la shanzi duan/zhi* 'pull rope broken/ straight' would be predicted.

To capture the Mandarin word order, head movement is required. Specifically, I propose that, in Mandarin, Res must move to Proc and then the Proc-Res head cluster moves further to Init. The updated configuration with movement is illustrated in (49).

(49)

The two *la* 'pull' in (49) will be pronounced only once. In other words, only when the *la* under Proc joins the *la* under Init do we obtain the verb *la* in the traditional sense, which is similar to the English case where all the sub-eventive pieces together correspond to a traditional verb. In terms of the duplicated arguments, I still follow Ramchand's spell-out rule, i.e pronounce the highest position of a remerged item. Therefore, the theme *shenzi* is pronounced in its highest position, i.e. [Spec, ProcP].

Regarding the linearization of the heads after movement, I assume that the heads within the first phase line up in regular word order rather than the reverse order under the standard Mirror Principle (Baker, 1985). However, I do not intend to claim that Mirror Principle does not apply in Mandarin at all. This is related to the position of the aspect marker *le*, which always follows the resultative predicate. I assume that *le* heads a AspP above the first phase, as shown in (50).

(50)

```
                    AspP
                   /    \
              Asp         InitP
               le        /     \
                   ta         /    \
                  'he'     Init      ProcP
                        la-duan      ___
                     'pull-broken'    ...
```

After a RVC is built up in the first phase, the head cluster moves to Asp and *le* attaches to the end of the head cluster, following the Mirror Principle.

In other words, I assume that the Mirror Principle applies outside the first phase but not within the phase. This claim is admittedly quite stipulative and requires additional evidence. Alternative solutions, which are worth exploring in the future, may involve reconsidering the hierarchy of the sub-eventive projections or considering more radical approaches to word order.

In summary, Ramchand's theory can be understood as dividing one syntactic item, which may be a verb in the traditional sense, or a complex predicate into up to three fragments. The Mandarin resultative compounds suggest that head movement takes place within the first phase.

4. ANALYSIS

In this section, I adopt Ramchand's event decomposition approach, with modifications, to account for the word order alternation as well as the aspectual properties the variants demonstrate.

We have seen in Section 2 that the word order variants have been divided into two major types, which are VVO-type (at least one directional verb precedes the theme) and VOV-type (no directional verb precedes the theme). I also argued that the VVO-type variants are achievements, while the VOV-type variants are accomplishments. The findings are repeated in Table 4.

I follow Ramchand in claiming that the sub-eventive heads Init, Proc, and Res are universal building blocks and that each lexical item is listed with a feature bundle that restricts the possibility of their insertion into these syntactic terminals. In particular, I propose that when the sentence contains a simple traditionally

717

Schema	Word order variants	Example	Situation type
$V_m\ V_{deic}$	$V_m\ V_{deic}\ O$	song lai shu	achievements
	$V_m\ O\ V_{deic}$	song shu lai	accomplishments
$V_m\ V_{gen}$	$V_m\ V_{gen}\ O$	song jin shu	achievements
	* $V_m\ O\ V_{gen}$	*song shu chu	–
$V_m\ V_{gen}\ V_{deic}$	$V_m\ V_{gen}\ V_{deic}\ O$	song jin lai shu	achievements
	$V_m\ O\ V_{gen}\ V_{deic}$	song shu jin lai	accomplishments
	$V_m\ V_{gen}\ O\ V_{deic}$	song jin shu lai	achievements

Gloss: *song* 'send'; *lai* 'come'; *jin* 'enter'; *shu* 'book'

Table 4
Word order alternation and situation type (VOV type variants in bold).
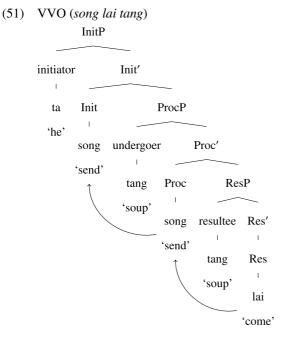
recognised manner verb or directional verb, the verb is decomposed into some or all of these sub-eventive heads (as in English). For example, a simple directional verb *jin* 'enter' is decomposed into all the three sub-eventive heads. When the sentence contains a DSVC, each component in the DSVC is inserted under one or more of these syntactic terminals. The word order alternation and situation type difference is a result of different structures underlying the variants in the first phase.
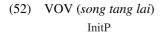
The rest of this section is organised as follows. Section 4.1 accounts for the word order alternation observed with the Schema 1 ($V_m\ V_{deic}$) and Schema 2 ($V_m\ V_{gen}$) DSVCs. Section 4.2 extends the analysis to Schema 3 ($V_m\ V_{gen}\ V_{deic}$) DSVCs. Section 4.3 is an interim summary of the proposed analysis. Section 4.4 briefly compares the analysis with another constructionist approach by Hu (2020).
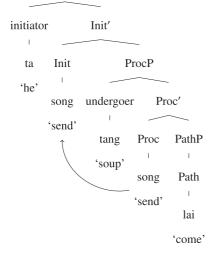
4.1. *Schema 1 and 2 DSVCs*

Starting from a Schema 1 DSVC ($V_m\ V_{deic}$), I propose that the VVO variant has all the three sub-eventive projections in the first phase and V_{deic} is inserted under Res. In comparison, the VOV variant only has InitP and ProcP in the first phase. The Proc head is complemented by a PathP, and V_{deic} is inserted under Path.

Take *song lai* as an example. In both variants, the manner verb *song* is merged and remerged in Init and Proc. The V_{deic} *lai* in the VVO variant is inserted under Res, and the theme argument *tang* is both the undergoer and resultee. In contrast, *lai* in the VOV variant is under Path and the theme object is only the undergoer. The tree diagrams for the VVO and VOV variants of this Schema 1 DSVCs are illustrated in (51) and (52), respectively.

718

(51) VVO (*song lai tang*)

InitP

initiator — Init′

ta
'he'

Init
song
'send'

ProcP

undergoer — Proc′

tang
'soup'

Proc
song
'send'

ResP

resultee — Res′

tang
'soup'

Res
lai
'come'

(52) VOV (*song tang lai*)

InitP

initiator — Init′

ta
'he'

Init
song
'send'

ProcP

undergoer — Proc′

tang
'soup'

Proc
song
'send'

PathP

Path
lai
'come'

719

The arrows in the trees show the head movement in the two structures. As is discussed in Section 3.3, Res moves to Proc, deriving the VVO word order. For the VOV variants, I assume that Path does not move to Proc. In both cases, there is Proc to Init movement, after which the two fragments of *song* compose the complete verb *song*. For each duplicated argument, only the highest one is pronounced.

This proposal also predicts the position of *le* in the two variants. In the VVO variants, *le* is between the directional verb and the theme (*song lai le tang*), while in the VOV variants, *le* follows the manner verb (*song le tang lai*). Recall that in Section 3.3, aspect maker *le* is proposed to be merged as an Asp head after the first phase is constructed (see (50)). Also, I have assumed that although the heads line up in the regular order in the first phase, the Mirror Principle applies beyond the first phase. Consequently, in (51), Res moves to Proc and Init successively, forming a head cluster Init-Proc-Res, which then moves further to the aspectual head *le*, deriving the V_m - V_{deic} -*le*-O order. In (52), since there is no Res and Path does not move to Proc, only the two sub-eventive heads Init and Proc form the manner verb, which then moves to *le*, deriving the V_m-*le*-O- V_{deic} order.
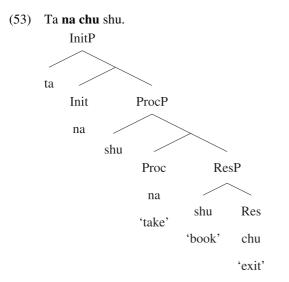
This proposal is in line with Ramchand's arguments on the structural distinction between accomplishments and achievements. Specifically, she proposed that when a single tense-carrying verb identifies both an initiational state and the result state, the event expressed is punctual. This is because 'when a single tense-carry verb identifies both an initiational state and the result state, all three sub-events must be interpreted as overlapping. This means in turn that the process portion is reduced to a single instantaneous change.' (Ramchand 2008: 77). Therefore, achievement verbs (e.g. *break*), according to her, contain all the three sub-eventive projections, whereas durative dynamic predicates, including activities and accomplishments, do not involve a ResP. In my proposal, the occurrence of the ResP in the VVO variants is the reason behind their low compatibility with the progressive marker, a typical achievement property. However, the absence of the ResP in the VOV variant explains its higher compatibility with the progressive, an accomplishment property.

A crucial claim in my proposal is that the deictic verb *lai* can be inserted in different positions in the phase. Then what is the feature that enables it to do so? I will argue for both the Res position in the VVO variants and the Path position in the VOV variants in the following sections.

4.1.1. *Directional verb in Res*

For the Res position, we can propose that *lai* is listed with the [res] tag, which allows it to lexicalise the Res head. When *lai* is inserted under Res, which is also the position for other resultative predicates, a result state reading arises, i.e. *lai* in this position is essentially interpreted as 'arrive in the speaker's location'.

Similarly, V_{gen}s in the Schema 2 DSVCs (V_m V_{gen} O) can also be assumed to have the [res] tag and therefore can lexicalise Res head as well, as is shown in (53).

(53)   Ta **na chu** shu.

```
              InitP
             /    \
           ta      \
               Init   ProcP
                na    /    \
                   shu      \
                       Proc    ResP
                        na    /    \
                    'take'  shu     Res
                          'book'    chu
                                   'exit'
```

The proposal that V_{gen}s in the Schema 2 DSVCs is under Res can be evidenced by the observation that when following nonmotion verbs, V_{gen}s tend to lose their directional meaning and are interpreted idiomatically/aspectually as a result state or completion of action (also see Liu (1998) and Xiao & McEnery (2004: 165)). For example,
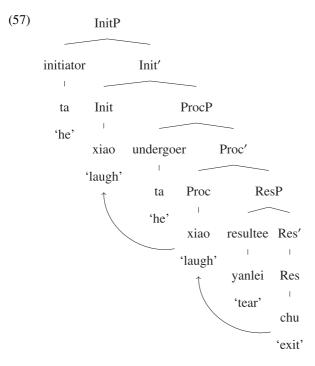
(54)   John   ai   shang   le   na   guniang.
       John   love   ascend   PFV   CLF   girl
       'John fell in love with that girl.'

(55)   John   ding   xia   le   lvguan.
       John   book   descend PFV   hotel
       'John booked the hotel.'

In (54), the directional meaning of *shang* 'ascend' is significantly bleached. By adding *shang* here, the sentence indicates that John underwent a transition from not being in love to being in love with the girl. In other words, *shang* basically derives a state (*ai* 'love') to an achievement. Likewise, in (55), *xia* indicates that the booking of the hotel is completed, while the original directional meaning is barely presented. In my opinion, the idiomatic/aspectual reading of directional verbs preceding the object is essentially due to their insertion position in the first phase, i.e. the Res head, which can coerce an idiomatic result state reading when a literal spatial result reading is infelicitous due to real-world knowledge.

Sometimes, a Schema 2 DSVC contains a theme that is only thematically related to the directional verb, but not to the manner verb. For example,

721

(56) Ta   xiao   chu   le   yanlei.
      3SG   laugh   exit   PFV   tear
      'S/He laughed so much that tears came out.'

In (56), *yanlei* is an argument of *chu*, but not of *xiao*, in contrast to the object sharing in (53). This can be directly explained by the position of the argument in the first phase. Specifically, *yanlei* in (56) is merged in [Spec, ResP] only, shown in (57), whereas in (53), the direct object *shu* is merged in both [Spec, ResP] and [Spec, ProcP]. In other words, the position of these arguments determines the interpretation of their thematic roles.

(57)

So far, I have argued that V_{deic} and V_{gen}s possess a [res] tag, which enables them to be inserted under Res. Note that this does not mean an item with the [res] feature must be inserted under Res. According to Ramchand's proposal, a categorial feature such as [res] does not always have to identify that head in the phase. An item can UNDERASSOCIATE its category feature(s) when something else identifies that category within the same phase. In other words, to Ramchand, the category feature on a lexical item must be satisfied, but it can be satisfied in two ways: 'by actually

722

associating to a node of that category in the structure; or by not associating but agreeing with that feature locally' (Ramchand 2008: 136). For example, in a verb-particle construction *break off the handle*, *break* has a [res] feature. However, *break* does not identify the Res head; instead, the particle *off* does. Then the [res] feature on *break* is not satisfied by directly merging as Res, but satisfied by agreeing with the [res] feature on the particle.

However, if my analysis of the DSVCs is on the right track, the underassociation principle described above is too strong. It will rule out the VOV variants, which is proposed to have no ResP projected (structure in (52)). If the directional verbs possess the [res] feature, then in a structure without ResP, the feature is neither directly associated with a Res head nor agrees with Res lexicalised by another item, violating the underassociation principle. To address this issue, I propose that constraints on the underassociation of a category feature is subject to parametric variation. Specifically, in Mandarin Chinese, directional verbs allow [res] to be an optional feature, which means this feature can be underassociated freely without subjecting to the underassociation principle. One piece of evidence that the Res feature may be underassociated freely is that when V_{deic} *lai* is used as a simple predicate, it allows a 'move towards the speaker' reading or an 'arriving' reading, as is shown in (58).

(58) (a) Xiaoming hai mei lai   ma?
            Xiaoming still not come SFP
            'Hasn't Xiaoming come?'

      (b) Ta zao lai le, keshi xianzai du   zai lushang ne.
            3SG early come PFV, but   now   block at road   SFP
            'He has set out to come here long ago, but he is trapped in a traffic jam now.'

      (c) Ta zao lai le, jiu zai ni shenhou   ne.
            3SG early come PFV, just at you body-behind SFP
            'He already arrived here long ago, (he is now) right behind you.'

The *lai* in (a) is ambiguous between the two readings, whereas the *lai*s in (b) and (c) are disambiguated by the linguistic context. The *lai* in (b) can only be interpreted as 'move towards the speaker', while (c) only gives rise to the arriving reading (also see examples in Shen (1995)). If [res] is a feature that must be satisfied, then in (b), *lai* must head a ResP because there is no secondary element that can head ResP in this case. However, if a ResP exists in the phase, the non-resultative interpretation of (b) is puzzling. Nevertheless, if we assume the [res] feature is optional, then the different interpretation of a simple *lai* can be explained by assuming that in (c) *lai* identifies both Proc and Res in the phase, while in (b), *lai* underassociates the optional [res] feature and identifies Proc only.

723

4.1.2. *Directional verb in Path*

I have argued for an optional feature [res] that licenses directional verbs in the Res head in the VVO structure. Then what kind of feature/factor enables them to be inserted in Path in the VOV structure?

Unlike ResP, PathP is not one of the eventive projections, but a complement that co-describes the eventuality identified by the head. The PathP label corresponds to all the XPs that complement the Proc head, including the direct object (DP) of an incremental/consumption verb, a gradable adjective (AP), or a PP with a motion verb. The crucial idea about *path* XPs is that they contribute a measuring scale homomorphic with the event (Ramchand 2008: 30). For example, a PP following a motion verb directly creates a physical path that the undergoer traverses (e.g. *push the cart **to the garden***). A gradable adjective (e.g. *wipe the table **clean***) provides a property scale onto which the degree of verbal change is mapped and the affected theme argument changes by degrees along this scale. A DP object of an incremental/consumption verb itself defines that path of change, i.e. the change relates directly to the material extent of the object. Similarly, I propose that the deictic verb *lai* can serve as PathP because semantically, *lai* also provides a measuring scale homomorphic with the event. The scale is a physical trajectory path from an unspecified source location to the speaker's location. The theme argument changes its location along this scale. In other words, what I suggest here is that it is not the syntactic features (such as [res]) that license or rule out an item in Path. Instead, the cognitive-encyclopedic information carried by a lexical item, the semantic composition within PathP, and real-world knowledge are in play here. If the interaction among these factors allows a measuring scale to be conceptually built, then PathP is interpretable. Conversely, if the items in PathP are not sufficient to be construed as a measuring scale homomorphic with the event, the acceptability of the sentence will be affected. One piece of evidence comes from the Schema 2 DSVCs (V_m V_{gen}), where V_{gen}s cannot follow the theme object if no locative object is added (i.e. * V_m O V_{gen}; see Table 4). I suggest that this is exactly because a single V_{gen} is not sufficient to be construed as a scale. For example, when hearing *chu* 'exit' without a source location or *jin* 'enter' without a goal location, one cannot conceptually build up a clear trajectory in mind. In comparison, even without a locative object, the encyclopedic information of the deictic verb *lai* still entails a default goal (the speaker's location), which explains why *lai* can head PathP without a locative object. Interestingly, the other deictic verb *qu* 'go' has been reported to be less acceptable than *lai* in the VOV order. I speculate this is also because the encyclopedic information of *qu* does not entail a default goal, which renders the PathP to be uninterpretable.

Before moving to the Schema 3 DSVCs, I would like to echo Ramchand's account on telicity calculation with this model. According to Ramchand, telicity can arise from a number of interacting factors, including the occurrence of ResP,

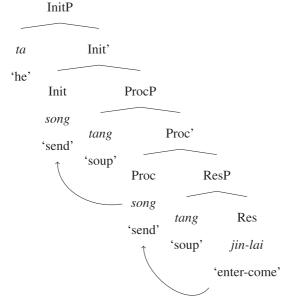|	*shang* 'ascend'	*xia* 'descend'	*jin* 'enter'	*chu* 'exit'	*hui* 'return'	*guo* 'cross'	*qi* 'rise'	*kai* 'open'
lai	*shanglai*	*xialai*	*jinlai*	*chulai*	*huilai*	*guolai*	*qilai*	*kailai*
qu	*shangqu*	*xiaqu*	*jinqu*	*chuqu*	*huiqu*	*guoqu*	*ʔqiqu*	*ʔkaiqu*

Table 5
Directional verbs and verb clusters.

bounded paths in the complement position of the Proc head, or even real-world knowledge (Ramchand 2008: 40, 77). We've seen in Section 2.3.2 that both the VVO (achievements) and VOV variants (accomplishments) are telic because they survive the *in*-adverbial test in Section 2.3.2. However, it should be noted that the telicity of these two cases arises from different structural sources. In the VVO structure (51), ResP gives rise to telicicty. In the VOV structure (52), although there is no ResP, the PathP headed by a directional verb is always a bounded PathP which also gives rise to telicity. These PathPs are bounded either because the encyclopedic content of the directional verb entails a default location (e.g. V_{deic} *lai*) or an overt locative object contributes to the boundedness (e.g. V_{gen}), as argued above.
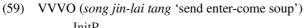
4.2. *Schema 3 DSVCs*

Now moving to the three word order variants of Schema 3 DSVCs summarised in Table 4, we can see that in the VVVO and VOVV variants, the two directional morphemes (V_{gen} and V_{deic}) form a cluster, whereas in the VVOV variant, the two directional verbs are separated by the theme object. I propose that these $V_{gen} - V_{deic}$ clusters are compounds, which are stored together with single V_{gen}s and V_{deic}s in the lexicon. This assumption is feasible given that the number of possible $V_{gen} - V_{deic}$ clusters is limited. As is shown in Table 5, there are only 2 V_{deic}s (shown in the left-most column) and 8 V_{gen}s (shown in the first row). Since V_{gen} always precedes V_{deic}, there are, at most, only 16 possible combinations.[7] With such a limited number, it is reasonable to assume that these $V_{gen} - V_{deic}$ clusters are stored as compounds in the lexicon rather than built up in the syntax.

If these $V_{gen} - V_{deic}$ clusters are compounds, then the VVVO and VOVV variants' underlying structures are equivalent to the VVO and VOV structures illustrated in (51) and (52), with the only difference being that the item inserted under Res/Path is a $V_{gen} - V_{deic}$ compound. The rough structures are illustrated in (59) and (60), respectively.

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[7] The combinations *qi qu* and *kai qu* are not used (or very rarely used) in modern Mandarin, so they are marked with '?'.

725

(59) VVVO (*song jin-lai tang* 'send enter-come soup')

```
              InitP
           ┌────┴────┐
      ta          Init'
     'he'      ┌────┴────┐
            Init         ProcP
           song      ┌────┴────┐
          'send'  tang        Proc'
                 'soup'    ┌────┴────┐
                        Proc        ResP
                        song     ┌───┴───┐
                       'send'  tang      Res
                              'soup'    jin-lai
                                      'enter-come'
```

(60) VOVV (*song tang jin-lai* 'send soup enter-come')

```
              InitP
           ┌────┴────┐
      ta          Init'
     'he'      ┌────┴────┐
            Init         ProcP
           song      ┌────┴────┐
          'send'  tang        Proc'
                 'soup'    ┌────┴────┐
                        Proc        PathP
                        song     ┌───┴───┐
                       'send'  tang      Path
                              'soup'    jin-lai
                                      'enter-come'
```

726

I assume these compounds also bear the category tag [res], which allows them to lexicalise Res in (59). However, in (60), these compounds can head PathP and be construed as a measuring scale because their encyclopedic content entails a default location. The evidence is that when these compounds are used as simple predicates, they do not take a locative object.

(61) Ni   kuai   jin-lai/shang-qu/chu-lai   (*/?fangjian)   ba.
     you   quickly   enter-come/ascend-go/exit-come   (room)   SFP.
     'Come into / go up to / come out of (the room) quickly.'

In the traditional view, they are considered as intransitive verbs. In this model, the intransitiveness is due to the entailed location in their encyclopedic content.

So far, I have argued that $V_{gen} - V_{deic}$ compounds can be inserted in Res or Path, just as simple directional verbs do. There is additional evidence for this claim. It is observed that an intransitive manner verb followed by $V_{gen} - V_{deic}$ compounds allows the aspect marker *le* to follow the manner verb or follow the whole directional compound, as is shown in (62).

(62) (a) Ta   zou   le   jin-lai.
         3sg   walk   PFV   enter-come
     (b) Ta   zou   jin-lai   le.
         3sg   walk   enter-come   PFV

More importantly, these two word orders tend to co-occur with different types of adverbials and yield different readings. According to Liu (1998: 46–47), when there are adverbs emphasizing a certain result is achieved, such as *yijing* 'already', *zaojiu* 'long ago', and *zhongyu* 'finally', the word order in (62-b) is preferred. In comparison, the order in (62-a) is often accompanied by manner adverbials (e.-g. *manmande* 'slowly', *xiang feng yiyang* 'like wind') and tends to describe an ongoing process instead of emphasizing a result has been achieved. To me, this intuitive description can be explained by the proposed analysis. Specifically, when the compound *jin-lai* is in Res, (62-b) is derived, giving rise to a result reading. However, when *jin-lai* is in Path, (62-a) is derived, giving rise to a reading that the subject changes by degree along the scale created by the compound, which leads to the intuition that the sentence is describing a process instead of a result.

Having addressed the two variants in the Schema 3 DSVCs, let's move to the third variant, $V_m\ V_{gen}\ O\ V_{deic}$. This variant has the theme object splitting V_{gen} and V_{deic}. Therefore, there is no compound directional verb involved, as we assumed for the first two variants of Schema 3 DSVCs. I will call this variant the split variant below for convenience. The split variant basically looks like a Schema 2 DSVC followed by a V_{deic}. Also, it also behaves like achievements as the VVO type of
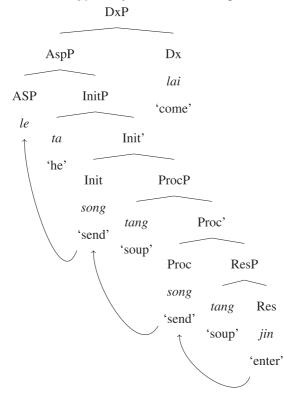
727

variants rather than VOV type of variants. Therefore, I propose that the first phase of the split variant is the same as a VVO variant; namely, all the three sub-eventive projections are presented. V_{gen} is under the Res head, just as the analysis for the Schema 2 DSVCs.

The position of the post-theme V_{deic} is more puzzling. Under the current approach, we do not want to say the deictic verb is in the complement position of Res. According to Ramchand (2008: 113), Res allows a PlaceP in its complement position, giving rise to a 'goal' interpretation of that location. For example, the PP in *jump in the water* is a PlaceP complementing Res. Hence, the VP allows a goal of motion reading. However, the V_{deic} in Mandarin cannot be interpreted as a location. Moreover, there is evidence that a V_{gen} in Res can be followed by a locative object and a V_{deic} at the same time, as in (63).

(63) John   zou   jin   le   fangjian   lai.
       John   walk   enter   PFV   room   come
       'John walked into the room (the speaker is in the room).'

In (63), a locative object occurs between a V_{gen} and a V_{deic}, similar to the split variant example above. Following my proposal so far, the *jin* in (63) has to be in Res because it precedes the aspect marker. Then the locative object must be in the complement position of Res, giving rise to the reading that the result of motion is in the room. The sentence final *lai*, therefore, cannot be in the same position as the locative object.

In my opinion, there are two possible solutions for the deictic verb in a split variant. One possibility is that the V_{deic} is a right-adjoined adjunct within the first phase. As an adjunct, the V_{deic} is purely optional. When this adjunct is not attached, a Schema 2 DSVC (V_m V_{gen}) is derived. If this hypothesis is adopted, more evidence of adjunction within the first phase is needed. The other possibility, which I favour, is that the V_{deic} in a split variant is a functional head above the first phase, sharing the spirit of den Dikken's DxPspace, which is basically a projection for deixis above PP, distinguishing between 'here' and 'there' in the locative domain and, for directionals, between orientation 'toward the speaker' and 'away from the speaker' (Den Dikken 2010: 101). Integrating this idea into our model here, we can assume that this functional projection is above the first phase and, in Mandarin, it is head final. The actual position of this DxP is beyond the scope of this paper, given that the focus is on the first phase. As a rough solution, I assume DxP is above AspP. The structure of the split variant is shown in (64).
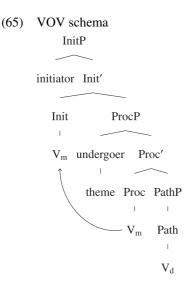
728

(64) VVOV (*song jin tang lai* 'send enter soup come')

4.3. *Interim summary*

So far, I have proposed two first-phase syntactic structures underlying the two major types of DSVC word order.

The VOV-type variants are assigned a PATH STRUCTURE, in which PathP, headed by the post-theme directional verb, complements Proc. The manner verb (V_m) is inserted in Init and Proc, while the directional verb (V_d) is inserted in Path. The theme object is merged in [spec, ProcP] and is therefore interpreted as undergoer only. The configuration of a Path structure is shown in (65).

729

(65)   VOV schema

          InitP

      ⌢

  initiator   Init′

          ⌢

    Init   ProcP

      | ⌢

    V$_m$ undergoer   Proc′

              | ⌢

          theme Proc PathP

                  | |

              V$_m$ Path

                          |

                        V$_d$

The VVO type variants, however, are analysed as a RESULTATIVE STRUCTURE, in which ResP, headed by the pre-theme directional morpheme, complements Proc. The theme object is split into [spec, ProcP] and [spec, ResP] and is therefore interpreted as both undergoer and resultee. Moreover, I proposed that Res in Mandarin moves to Proc. The configuration of a resultative structure is illustrated in (66).
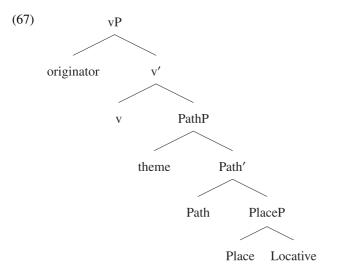
(66)   VVO schema

          InitP

      ⌢

  initiator   Init′

          ⌢

    Init   ProcP

      | ⌢

    V$_m$ undergoer   Proc′

              | ⌢

          theme Proc   ResP

                  | ⌢

              V$_m$ resultee   Res′

                          | |

                      theme   Res

                                  |

                                V$_d$

The absence of ResP in the Path structure and the occurance of ResP in the Result structure leads to the situation type (accomplishment/achievement) distinction. The absence of ResP in the Path structure underlying the VOV variants determines that the structure denotes durative events. The bound Path is the source of telicity. Therefore, VOV variants are accomplishments. On the contrary, the ResP in the result structure underlying VVO variants not only contributes to the +telic feature of the event, but also determines that the structure denotes instantaneous change, which explains why VVO variants are achievements.
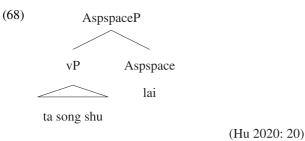
4.4. *Comparison with an alternative analysis*

Here I briefly compare my analysis presented so far with another constructionist model proposed by Hu Hu (2020). In his model, the syntactic structure (67) is taken to be universal:

(67)

```
              vP
             /  \
      originator  v′
                 /  \
                v   PathP
                    /   \
                theme   Path′
                        /   \
                     Path   PlaceP
                            /    \
                        Place  Locative
```

Like constructionist approaches, our analyses share the assumption that theta roles are not assigned by predicates, but are derived from the positions in the syntactic structure. Also, we both entertain the view that a syntactic item can potentially be inserted under different heads. For Hu, a VVO type of variant, e.g. *song lai shu*, has the V$_{\text{m}}$ *song* head vP and the directional item *lai* head PathP. The Path head then moves to adjoin v, therefore deriving the surface VVO order. In my model, *song* heads InitP and ProcP, and *lai* heads ResP. Res moves up, picking up the heads above successively. So basically, Hu's Path position roughly corresponds to the Res position in my analysis.

731

I mainly disagree with Hu on the analysis of the VOV variants. According to Hu, the directional morphemes following the theme are proposed to head a spatial aspectual phrase, which is head final, above vP, shown in (68).

(68)

        AspspaceP

    vP   Aspspace

              lai

   ta song shu

                        (Hu 2020: 20)

This analysis also takes insight from Den Dikken (2010), similar to my suggested solution (DxP above the first phase) for the deictic verb in the split variant of the Schema 3 DSVC. However, Hu actually failed to distinguish two constructions. He claims that the *lai* below are both in this spatial aspect position.

(69)   ta   song   shu   lai   le.
      3SG   send   book   come   SFP
      Directional reading: 'S/he sent the book here.'
      Purposive reading: 'S/he came to send the book.'

(70)   ta da   lanqiu   lai   le.
      3SG play basketball come SFP
      'S/he came to play basketball.'

Nevertheless, in these two sentences, the semantic contribution of *lai* is different. Example (69) is a VOV type of variant that we have been discussing. Actually, VOV variants can be ambiguous. The meaning we have been discussing is a directional meaning, in which the directional morpheme *lai* indicates the moving direction of the theme object. The other reading, however, interprets *song shu* as the purpose of the action *lai* (i.e. 'come to send the book'). In this reading, the theme argument is not shared by the deictic verb *lai* anymore. Example (70), however, is not ambiguous. The *lai* in (70) cannot be interpreted as indicating the moving direction of the theme *lanqiu* because the manner verb *da* 'play (a ball game)' here is not a movement/displacement verb. The only interpretation is that *da lanqiu* is the purpose of the action *lai*. In other words, the theme argument in (70) is not a shared argument. If the *lai* in (69) and the one in (70) are in the same position, how can we explain that (69) allows the directional reading, while (70) only has the purpose reading? Hu seems to attribute the interpretation difference to the restriction of real-world knowledge (Hu 2020: 20-21); however, the mechanism is not explained in his paper.

732

My analysis, on the contrary, does not assume that the direction-reading *lai* and purpose *lai* share the same position. The purposive-reading V_{deic} does not fit in any position discussed in this paper because none of the V_{deic}s in the previous chapters are interpreted as the purposive reading, and none of the positions (Res, Path, Dx) I have proposed for V_{deic} allow its complement position to be interpreted as a purpose of the motion. Instead, I believe that (70) involves a completely different construction from the DSVCs discussed in this paper and therefore requires a completely different analysis. Apart from the semantic interpretation mentioned above, there is also syntactic evidence supporting my claim. The VOV string in (70) does not allow the aspect marker *le* to occur after the manner verb, whereas the VOV variants of DSVCs do, as we have seen throughout this paper. It would be more appropriate to pair the study of (70) with a serial verb string with V_{deic} preceding the V_m (e.g *lai da langqiu* 'come play basketball'), which has exactly the same purposive reading. This probably requires investigation in the higher clausal domains, which are beyond the scope of this paper.

In sum, I agree with Hu that the V_{deic} in a VVO variant and the one in a VOV variant occupy different positions in syntax (although we adopt different syntactic models). However, when addressing the VOV variant, I must point out that it is important to distinguish the real directional reading and the purposive reading, which correspond to different constructions, and, therefore, different analysis.

5. Conclusion

In this paper, I have investigated the word order alternation phenomenon in the Mandarin directional serial verb construction. Three generalisations can be summarised from the data.

Generalisation 1: The order of the verbal elements is consistent, with the manner verb first, the general directional element second, and the deictic element last.

Generalisation 2: Mandarin DSVCs allow different placement of the direct object, leading to two major word order types. Essentially, the direct object can either directly follow the manner verb (i.e. VOV type) or follow a manner-directional verb cluster (i.e. VVO type). There is a condition on the VOV type of order: the directional element must be a V_{deic} or a V_{gen} - V_{deic} compound. V_{gen}s are only allowed if an explicit locative object occurs.

Generalisation 3: There are interpretational differences that go along with the two word order types. The VOV type is accomplishment, while the VVO type is achievement.

These generalizations are not trivial to capture. A theory that attempts to account for the word order patterns should also take the aspectual interpretation shift into consideration. I adapt a neo-constructionist model, the first-phase syntax theory put forth by Ramchand (2008), and provide a syntactic account for these generalisations. My analysis embraces Ramchand's idea that the sub-eventive heads and their hierarchy (InitP > ProcP > ResP) are universal. Two kinds of structures are proposed: VOV variants have PathP complementing Proc, whereas VVO variants

have ResP complementing Proc. A traditionally recognised 'directional verb' is allowed to be inserted in different heads, leading to the word order and aspectual variation. The application of Ramchand's model on the Mandarin DSVCs shows the explanatory potential of this theory on complex predicates and verb serialization.

The attempt also shows that adopting a traditional head movement approach within this kind of model has its limitations in explaining the complex word order patterns. On the one hand, the proposal of head movement and linearization in this paper is still stipulative. More cross-linguistic evidence is needed for a constraint theory. On the other hand, not all the complex predicate data can be accounted for with the head movement rules proposed. For example, if we believe complex change APs are also a kind of PathP (i.e. Basciano's analysis for complex change RVCs, see (47)), then having Path stay in situ will result in the wrong word order. Therefore, more radical approaches for word orders are worth exploring in the future.

COMPETING INTERESTS

The author has no competing interests to declare.

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735

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