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The Head-Quarters of Mandarin Arguments

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THE HEAD-QUARTERS OF MANDARIN ARGUMENTS

A Dissertation Presented

by

HSIN-LUN HUANG

Submitted to the Graduate School of the
University of Massachusetts Amherst in partial fulfillment
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DOCTOR OF PHILOSOPHY

September 2018

Department of Linguistics

THE HEAD-QUARTERS OF MANDARIN ARGUMENTS

A Dissertation Presented

by

HSIN-LUN HUANG

Approved as to style and content by:

_____

Kyle Johnson, Chair

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Rajesh Bhatt, Member

_____

Seth Cable, Member

_____

Brendan O'Connor, Member

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Lyn Frazier, Graduate Program Director
Department of Linguistics

DEDICATION

To my loving parents

Chi-Chung Huang and Li-Chuan Hsieh

ACKNOWLEDGEMENTS

I still remember the day when I set out for UMass, all anxious and nervous, thinking about all the challenges that were lying ahead of me. Yet, it turned out to be one of the best, most rewarding steps I've ever taken in my life, a decision I've never regretted making. Now I'm here, writing the Acknowledgements of my dissertation, thinking back the journey I've gone through. It makes me sad to see that this journey is coming to an end, but I also feel extremely grateful, to everybody I've met along the way.

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He even went beyond his call of duty many times just to make sure things were going well for me. We went through many times together the content of my research, my research abstracts

for conferences, several versions of my dissertation, and several rehearsals of my dissertation defense, even on his free time. Writing a dissertation is a really hard and draining process. His care and encouragement throughout the process was something that kept me going, something I'll never forget.

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ABSTRACT

THE HEAD-QUARTERS OF MANDARIN ARGUMENTS

SEPTEMBER, 2018

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This dissertation looks at the syntactic distributions of various Mandarin arguments and develops an argument structure that takes into account the arguments' semantic types. Theories of argument realization mostly build on a one-to-one correspondence between the syntactic positions of arguments and the thematic relations they bear to the verb in the underlying structure. And this correspondence is rooted in the assumption that the argument positions in the verb's projection must be saturated before other semantic compositions can take place. This dissertation argues that the saturation requirement can be alleviated, depending on whether languages make a morphological distinction in their syntax. Making the distinction would then lead to the non-existence of the correspondence, resulting in arguments with a particular theta-role being able to base-generate in different positions inside the verb's projection.

Three general patterns of argument distribution are investigated, all in the presence of a post-verbal temporal adverbial modifying the verb's duration/frequency. The first pattern, Pattern I, describes the positions of internal arguments relative to that of the post-verbal adverbial, regulated by the arguments' semantic types. I argue that Pattern I is part of a widely known phenomenon, Pseudo-(Noun)-Incorporation (Massam, 2001), where the arguments in the form of bare NPs occur in the lowest syntactic position adjacent to the verb. I propose a separate syntactic head that encodes the internal theta-roles of the verb, mediating the realizations of arguments by their types. It is argued that once a language incorporates this head, whose scope is hypothesized to be a morphological domain, the language is pseudo-incorporating and is able to have non-argument-saturated VPs. Many pseudo-incorporating properties are consequently derivable.

The second pattern, Pattern II, describes the preverbal displacement of internal arguments, accompanied by a bare copy of the verb or not. Further categorized as Type I and Type II, where the former lacks and the latter involves the bare verb copy, Pattern II is argued to be cases of sentence-internal topicalization. Arguing against many previous analyses, I show that Type I is not focalization but topicalization, siding with Paul (2002, 2005) and Badan (2008). And by comparing Type II to the VP-copying construction in Hebrew (Landau, 2006, 2007), I argue that Type II should also operate under the rules of topicalization. That is, a unified account of topicalization can be achieved for both Type I and II. The post-verbal temporal adverbial is shown to enable Pattern II in a way that it should be treated as a pragmatic trigger for the topicalization.

Finally, the third pattern, Pattern III, describes an inversion between the internal and external argument in the obligatory presence of the post-verbal temporal adverbial. It is argued to involve causativization of the eventualities denoted by the verb. More specifically put, it is argued to be a causativization strategy Mandarin employs for the relation between the occurrence and the duration/frequency of the eventualities by means of a causative head in syntax. In other words, the inversion of the arguments is the manifestation of causativization, and is connected to the obligatory post-verbal temporal adverbial that is the resulting end of this causal relation.

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ABBREVIATIONS USED IN GLOSSES

ABS	absolutive
ACC	accusative
ADE	adessive
ADV	adverbial
APPL	applicative
arabic numeral prefix	Bantu noun class markers
ASP	aspect
BA	'ba' morpheme
CAUSE	causative
CL	classifier
COMPL	completive
COMTV	comitative
COP	copula
DAT	dative
DE	'de' morpheme
EMPH	emphatic
ERG	ergative
EXP	experiential
FEM	feminine
FOC	focus
FUT	future
FV	final vowel
GEI	'gei' morpheme
GEN	genitive
GUO	'guo' morpheme
IMP	imperfective
INSTR	instrument
MASC	masculine

NEG	negative
NOM	nominative
-PART	partitive
PART	particle
PASS	passive
PFV	perfective
PL	plural
PLAIN	plain (level of formality in the Korean honorific system)
PROG	progressive
PRS	present
PST	past
Q	question particle
SFP	sentence final particle
SG	singular
SHI	'shi' morpheme
SP	subject prefix
SUB	subordinator

CHAPTER 1

MANDARIN ARGUMENT STRUCTURE

1.1 Introduction
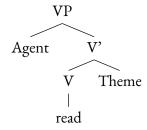
How different languages realize thematic arguments syntactically has been one of the central themes in the development of syntactic theories. I hope in this dissertation to unveil more about syntactic argument realization and its relation to semantic compositionality by investigating Mandarin sentences with peculiar word orders, and make a contribution to the theory of argument structure in terms of how we can categorize cross-linguistic argument realization patterns under a universal syntactic framework.

Generally, there is a correspondence between **how arguments are projected in syntax** and **the verb's semantics**. To illustrate this correspondence, we will look at the syntactic structure and the semantic denotation of a transitive verb like *read*. On a standard Neo-Davidsonian view, the canonical semantics of *read* would be the following:

(1) $[\![\text{read}]\!] = \lambda x \lambda y \lambda e \,.\, read(e) \wedge \textsc{Theme}(x, e) \wedge \textsc{Agent}(y, e)$

This semantic denotation determines how the arguments of *read* should compose in syntax, i.e. the first argument *read* composes with is the theme, and the second, the agent. If we turn that into a phrase structure, it should look like the following, where the respective arguments would have their designated positions. We will call this the argument structure of *read*:

(2) The argument structure of *read*:

```
              VP
             /  \
         Agent    V'
                 /  \
               V     Theme
               |
             read
```

To get this argument structure, there should be a locality condition that restricts the syntax-semantics mapping between the denotation of *read* and the order in which the arguments come in in syntax. That is, we need to make sure that the arguments are the first things the verb composes with.

One way of carrying out this locality condition is by having a requirement on semantic composition, something like Saturate First[1]:

(3) Saturate First:
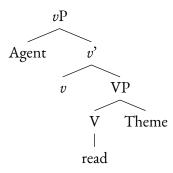
An entity-type argument must be saturated in the verb's denotation via Function Application (Heim and Kratzer, 1998) before other semantic compositions.

This condition ensures that the theme and agent of *read* compose as the complement and specifier respectively in *read*'s projection, leading us to (2).

The contemporary view on argument structure has progressed from (2) to a place where the external argument of any verb is uniformly introduced in syntax by a *light verb*, under many observations on the asymmetry between the external and internal arguments in their thematic relationships with the verb. That is, the thematic relation between the internal argument and the verb varies with respect to the semantic attributes of the internal argument, and is less predictable than that between the external argument and the verb, which does not vary with regards to what the external argument it is (Kratzer, 1996; a.o.). With the light verb notated as *v*, the structure below reflects the contemporary view on argument structure:

---

[1]Note that Saturate First is not a piece of terminology that I adopted from some work. It is simply spelling out the generally held assumption underlying the syntax-semantics mapping.

(4) Light verb syntax:

```
                    vP
                  /    \
            Agent       v'
                      /    \
                     v      VP
                          /    \
                         V      Theme
                         |
                       read
```

The external argument, under this view, is severed from the denotations of verbs like *read* and is encoded in the denotation of *v*. In this dissertation, I will adopt the contemporary view, i.e. Kratzer (1996), when looking into the argument structure of verbs in Mandarin and other languages besides English.

Now, the lexical content of verbs that used to encode both the internal and external arguments with corresponding positions in the verb's projection as in (2) is syntactically split into two parts. Verbs still encode the internal argument in their denotations:

(5) $[\![\text{read}]\!] = \lambda x \lambda e \,.\, read(e) \wedge \text{THEME}(x, e)$

But the external argument is now encoded in *v*:

(6) $[\![v]\!] = \lambda y \lambda e \,.\, \text{AGENT}(y, e)$

Consequently, the thematic roles (θ-roles) of the verb are separated in two distinct syntactic projections, i.e. Theme in the VP and Agent in the *v*P.
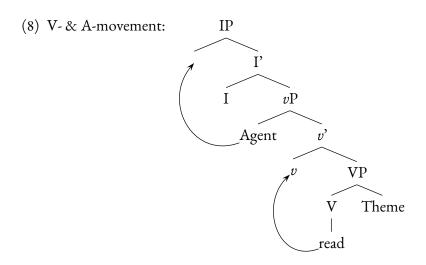
We still need the locality condition to hold on argument composition. However, after adopting the view of θ-role separation, SATURATE FIRST is not going to work because the open argument position of *v* cannot be saturated first without incurring a clash in the semantic composition of the *v*P. Put differently, the saturation of the entity argument in *v*'s denotation must be postponed until after *v*'s composition with the VP. I will address this problem of SATURATE FIRST via Morphology, hypothesizing the following: Now that the verb's lexical make-up is *v* + V, we can in a way see locality as Morphology depicting certain syntactic structure, which leads to

certain necessary modes of semantic composition. That is, Morphology can lift the saturation requirement between *v* and the VP (since *v* is part of the verb's morphological make-up) and allow other modes of composition. In this case, that mode of composition is Kratzer's (1996) Event Identification[2]. This hypothesis of Morphology overriding Saturation is the central theme the dissertation revolves around:

(7) Morphology Obviation:

Morphology can make reference to certain modes of semantic composition that are otherwise blocked by the requirement of Saturate First.

Compared to (2), the arguments of a verb now have new dedicated positions of syntactic realization: The internal argument composes as the complement to V whereas the external argument composes as the specifier of *v*. After V(erb)-movement (V-to-*v*) and A(rgument)-movement, the external argument surfaces as the subject, and the internal argument, the post-verbal object:

(8) V- & A-movement:

This syntax-semantics correspondence of a verb's argument structure we have been sketching so far (plus movement) determines the word order of a language. So overall, there are four regulating conditions on the word order of a given language: (i) The verb's denotation, (ii) the phrase structure, (iii) the requirement on the mode of semantic composition (e.g. Saturate

---

[2]Event Identification (Kratzer, 1996):

$$\begin{array}{cccc} f & g & \to & h \\ \langle e, \langle s, t \rangle \rangle & \langle s, t \rangle & & \langle e, \langle s, t \rangle \rangle \end{array} \qquad \lambda x_e \lambda e_s [f(x)(e) \,\&\, g(e)]$$

FIRST), and (iv) movement. Therefore, for a transitive sentence in English, (9a) is a grammatical word order while (9b) is not:

(9) a. John read a book.   b. *A book read John.

And (9) is the result of conditions (i)-(iv).

The current dissertation investigates how arguments are syntactically realized in Mandarin that makes it similar to or different from languages like English. Specifically, it investigates several peculiar word orders that tie into the question of how the correspondence between a verb's semantics and syntax can be established. The peculiar word orders are categorized into three general argument realization patterns. As will be seen, one thing that these patterns have in common is that they all involve the presence of a temporal duration/frequency adverbial (the duration adverbial is notated as DrP, frequency adverbial, as FP, and they together, as DFP). The three argument realization patterns will receive more detailed discussions in the later sections of this chapter. But just to give an illustration of the syntactic distribution of DFPs in Mandarin, which will play a crucial role in our eventual analysis of Mandarin argument structure, consider the following sentences:

(10) a. Zhangsan (*[$_{DrP}$ san tian]) shui-le   ([$_{DrP}$ san tian])
     Zhangsan   three day   sleep-ASP   three day
     'Zhangsan slept for three days.'

b. Zhangsan (*[$_{FP}$ san ci]) ku-le   ([$_{FP}$ san ci])
     Zhangsan   three time   cry-ASP   three time
     'Zhangsan cried three times.'

Most clearly, the above sentences show that DFPs occur post-verbally in Mandarin. As a brief preview, the peculiarity of the to-be-seen argument realization patterns comes from the interaction between DFPs and (mostly) internal arguments[3], the latter of which are canonically syntactically realized as post-verbal objects in Mandarin.

---

[3]The third pattern involves the interaction between DFPs and both the external and internal arguments.

Before going into the peculiar patterns of interest, we will first look at run-of-the-mill transitive sentences in Mandarin and see to what extent their behavior of argument realization reflects the syntax-semantics interface that has been shown to derive the word order in regular English transitive sentences.

1.1.1 Simple sentences

In Mandarin, transitive sentences, under 'normal' circumstances, pattern the same as their English counterparts in terms of syntactically realizing the arguments:

(11) a. **Zhangsan**$_{agent}$ qie-le   **pingguo**$_{patient}$ b. *__Pingguo__$_{patient}$ qie-le   **Zhangsan**$_{agent}$

        Zhangsan   cut-ASP apple   apple   cut-ASP Zhangsan

        'Zhangsan sliced (some) apples.'   'Zhangsan sliced (some) apples.'

(12) a. **Zhangsan**$_{agent}$ ji-le   **xin**$_{theme}$ b. *__Xin__$_{theme}$ ji-le   **Zhangsan**$_{agent}$

        Zhangsan   mail-ASP letter   letter   mail-ASP Zhangsan

        'Zhangsan mailed (some) letters.'   'Zhangsan mailed (some) letters.'

For an analytic language like Mandarin that lacks Case-marking, syntactic positions are crucial in determining the θ-roles of arguments in eventualities. And for regular transitive verbs like *qie* ('cut') and *ji* ('mail') that take two arguments, it is required that the one having the AGENT role be the grammatical subject whereas the other with the PATIENT/THEME role should be the grammatical object. In other words, it is not without restrictions that Mandarin places its arguments in different syntactic positions. And these restrictions can be derived from the argument structure of the verb (i.e. the syntax-semantics correspondence aforementioned) along with other syntactic operations (e.g. movement). However, there are cases in Mandarin where such restrictions seem to be lifted, leading to non-canonical argument realization patterns that do not have a one-to-one mapping between grammatical positions and θ-roles. One such case is resultative compounds:

(13) a. Taotao zhui-lei-le   Youyou   (adapted from Li (1995))

        Taotao chase-tired-ASP Youyou

            (i)   'Taotao chased Youyou and as a result Youyou got tired.'

            (ii)   'Taotao chased Youyou and as a result Taotao got tired.'

            (iii)   'Youyou chased Taotao and as a result Youyou got tired.'

            (iv)   *'Youyou chased Taotao and as a result Taotao got tired.'

     b. Yifu   xi-lei-le   jiejie   (adapted from Williams (2005))

        clothes wash-tired-ASP elder.sister

        'The clothes made big sister tired by [her] washing [them].'

One way Mandarin forms resultatives is through V_1-V_2 compounds, where a causal relationship is encoded between the two verbal predicates: The event denoted by V_1 causes the event denoted by V_2. Abstracting away from how the individual readings can be derived by the syntactic structure of Mandarin resultatives, we can at least see from (13) that verbs in Mandarin do not necessarily require their arguments with particular θ-roles to be only realized in certain syntactic positions, making Mandarin very different from English in this case:

(14)   *The clothes washed big sister tired.   (cf. (13b)

       (*Intended*: 'Big sister washed the clothes and got tired as a result.')

        Another case of non-canonical argument realization involves DFPs:

(15)   **Zhe-pian lunwen**$_{theme}$ xie-le   **Zhangsan**$_{agent}$ *(**san   nian** / **san   ci**)

      this-CL   dissertation   write-ASP Zhangsan   three year   three time

      'Zhangsan wrote this dissertation for three years/three times.'

The realization pattern in (15) presents a sharp contrast with that in (11) and (12). And the presence of the DFP *san nian/san ci* ('for three years/three times') makes all the difference.

       Given the above examples, the distinction between canonical and non-canonical syntactic placement of arguments seems to depend on factors other than the verbs themselves. And this

can be roughly described as the distinction between 'normal' and 'non-normal' circumstances. In other words, we need to define what 'normal' and 'non-normal' circumstances are that trigger the (un)availability of non-canonical realization patterns.

Simply put, a 'normal' circumstance where arguments show canonical realization patterns is a case of simple sentences, i.e. sentences with one simple verb with none other than aspectual marking. (11) and (12) are evident examples of simple sentences. Once a simple transitive verb is compounded into a resultative with another verb, rendering the sentence a 'non-normal' circumstance, the restrictions on the positioning of arguments seem to be relaxed, allowing more flexibility in where the arguments can go in the sentence. Although resultatives are not the main focus of this dissertation in terms of argument realization, they nevertheless will provide grounds for proposing an analysis of Mandarin verbs that makes them different from English ones. More details of this will be discussed in §4.

What is really of interest here is the other 'non-normal' circumstance in (15). Although this particular case also involves only one simple verb in a sentence, it has an extra component, i.e. the DFP. And the DFP enables the once unavailable pattern where the arguments of a transitive verb are inverted in terms of their grammatical positions. One thing to note is that the inverted realization pattern is not necessary in the presence of a DFP. The canonical pattern is also viable:

(16) **Zhangsan**$_{\text{agent}}$ xie-le   **zhe-pian lunwen**$_{\text{theme}}$ (*san nian*) / (*san ci*)

Zhangsan   write-ASP this-CL   dissertation three year   three time

'Zhangsan wrote this dissertation (for three years/three times).'

So the take-home message here is that the presence of a DFP interacts with the syntactic realization of arguments in Mandarin. This naturally leads to the following question: What other interactions do we find between DFPs and the argument structure of Mandarin verbs?

1.2 The 3 patterns

This section explores the interactions between Mandarin arguments and DFPs. They can be roughly categorized into three major realization patterns, with specific properties and interesting puzzles that are germane to the presence of DFPs. We will start with the interactions between DFPs and post-verbal arguments that play the role of PATIENT/THEME. It will be shown that the positions of these post-verbal arguments in relation to that of the DFP depend on the form and meaning of the arguments, constituting the first pattern, Pattern I. The attempt to understand the source of this form/meaning-related positional difference of the arguments will lay the groundwork for our analysis of Mandarin argument introduction. We will then build on top of it the analyses for the subsequent patterns, Pattern II and III, the former of which involves pre-verbal movement of the internal argument and verb-doubling, and the latter, inversion of internal and external arguments, i.e. (15). Ultimately, the fundamental argument structure to be proposed in this dissertation will help us relate Mandarin to a family of languages that exhibit Pseudo-Incorporation (Massam, 2001), and provide a window for looking into and capturing the typological differences in realizing arguments between languages like Mandarin and those like English.

In presenting Pattern I, a distinction will be drawn between two types of nominal phrases, on their syntactic form. This distinction will depend on whether they involve any (overt or covert) functional projections, and their semantic interpretation, which correlates with whether they are said to be non-referential or not. Nominal phrases with functional projections and/or not non-referential will be categorized as **DPs**, and those that are *bare*, i.e. with no functional projections, and are non-referential will be categorized as **NPs**. We will see a correlation between non-referentiality and the lack of functional projections that differentiates the syntactic positions of NP and DP arguments. In other words, Pattern I is an argument pattern that dwells on the NP-DP distinction between arguments. And the indicator of the NP-DP distinction is claimed in the literature (Huang, Li, and Li, 2009; a.o.) to be non-referentiality that can generally be seen in the

absence of nominal functional projections, such as a classifier, a numeral, or a demonstrative[4]. Of course, the term *non-referentiality* has to be precisely defined since it is key to the distribution of arguments. We will address the issue of non-referentiality in the next section after looking at some concrete examples and getting a feel of what meanings *non-referential* NP arguments have. As a caveat, also an issue that will receive more discussion later, *bare* Mandarin nominals (i.e. without overt functional projections) can also have a *definite* interpretation (Cheng and Sybesma, 1999). Nominals of this kind will be categorized as DPs that underlyingly involve a *covert* functional head similar to the type-shifter ι (Partee, 1987), providing the definiteness. Given this, only *non-referential* bare nominals are true NPs and will be labeled as such. *Definite* bare nominals, on the other hand, will be labeled as DPs.

1.2.1   Pattern I: DFPs and post-verbal arguments

As previously mentioned, DFPs occur post-verbally in Mandarin. When a DFP is present, different kinds of objects are restricted to particular positions with respect to the DFP:

(17) Pattern I: Both the internal argument and the DFP occur post-verbally.

Transitive verbs:

a. Sub-Pattern I: When the direct object is an NP,

(i) Zhangsan xie-le   [$_{DFP}$ san nian / san ci] [$_{NP}$ **lunwen**   ][5]

Zhangsan write-ASP   three year three time   dissertation

'Zhangsan wrote (one or more) dissertations for three years/three times.'

$\rightarrow$ DFP > PATIENT (non-referential)

---

[4]The extended functional sequence on top of a Mandarin bare nominal can be schematized as follows: [$_{DP}$ DEM(ONSTRATIVE)-NUM(ERAL)-CL(ASSIFIER) Noun (NP)]. A *full* DP assumed to have all of the functional elements in this sequence, and a *semi*-full DP involves any possible combinations of the functional sequence (e.g. [NUM-CL NP], [DEM-CL NP]... etc.).

[5]As mentioned in the last section and also will be shown in more detail later, Mandarin bare nominals (i.e those without overt functional projections) are ambiguous between a non-referential and definite interpretation:

(i) Zhangsan nian-le **shu**
Zhangsan read-ASP book
'Zhangsan read (one or more) books/the book(s).'

(ii) *Zhangsan xie-le   [NP **lunwen**   ] [DFP san   nian / san   ci   ]

Zhangsan write-ASP   dissertation   three year   three time

'Zhangsan wrote (one or more) dissertations for three years/three times.'

→ *PATIENT (non-referential) > DFP

b. Sub-Pattern II: When the direct object is a DP,

(i) *Zhangsan xie-le   [DFP san   nian / san   ci   ] [DP **zhe-pian lunwen**   ]^6

Zhangsan write-ASP   three year   three time   this-CL   dissertation

'Zhangsan wrote this dissertation for three years./three times'

→ *DFP > PATIENT (referential)

(ii) Zhangsan xie-le   [DP **zhe-pian lunwen**   ] [DFP san   nian / san   ci   ]

Zhangsan write-ASP   this-CL   dissertation   three year   three time

'Zhangsan wrote this dissertation for three years/three times.'

→ PATIENT (referential) > DFP

As can be seen above, the realization of an internal argument as the direct object has a positional correlation with the form and meaning of the argument: If the direct object is a bare NP with a non-referential interpretation, it must occur *after* the DFP, as opposed to DPs, which must

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Non-referentiality in the literature often refers to the 'one or more' interpretation of bare nominals and is contrasted with DPs that are often referred to as *referential* (Huang, Li, and Li, 2009). Only bare nominals with this particular 'one or more' interpretation will be labelled as NPs in this dissertation. Therefore, in the following demonstrations of argument distribution in this section, the arguments, when mentioned as NPs, have unambiguously the 'one or more' interpretation, excluding the possibility of the bare nominals being *definite* and having a covert functional projection as will be eventually analyzed along the lines of Cheng and Sybesma (1999).

^{6}According to Huang, Li, and Li (2009), people's judgements vary with respect to DPs with a demonstrative coming last in the sentence when the temporal adverbial is a frequency phrase (FP). In my own judgement, I reject it. And I think it is generally bad for DPs to come last when the adverbial is a DrP. Given the fact that the extended functional projections of Mandarin DPs can be of any combinations of the functional sequence [Dem(onstrative)-Num(eral)-Cl(assifier)], it is glaringly bad to me when the last DP is one without a demonstrative but only a numeral plus a classifier:

(i) a. *Zhangsan xie-le   [DFP san   nian / san   ci   ] [DP **yi-pian lunwen**   ]
    Zhangsan write-ASP   three year   three time   one-CL dissertation
    'Zhangsan wrote a dissertation for three years/three times.'

   b. Zhangsan xie-le   [DP **yi-pian lunwen**   ] [DFP san   nian / san   ci   ]
    Zhangsan write-ASP   one-CL dissertation   three year   three time
    'Zhangsan wrote a dissertation for three years/three times.'

occur *before* the DFP[7]. This is a rather clear-cut contrast and it seems that NP and DP objects have their dedicated syntactic positions. And undoubtedly, non-referentiality, which is closely reflected on the bare form of NPs, plays an influential role in determining the position of the object. The term (non-)referentiality is inherited form the literature (Huang, Li, and Li, 2009), whose formal definition is not clearly specified. However, it is referred to as the regulating factor on the positional distinction between the internal arguments mentioned above: *Non-referential* arguments show up on the right of the DFP whereas *referential* arguments show up on the left. If we take the property of being non-referential to be not *referring* to an individual/entity, we see some problematic aspects of attributing the positional distinction to (non-)referentiality.

First, quantifiers (QP) are *non-referential* (they do not refer to specific individuals but are relations between individuals and properties). Yet, they pattern the same as *referential* DPs with respect to the positional distinction:

(18) a. Zhangsan nian-le [$_{QP}$ **mei-yi-ben shu**] san tian

     Zhangsan read-ASP every-one-CL book three day

     'Zhangsan read every book for three days.'

   b. *Zhangsan nian-le san tian [$_{QP}$ **mei-yi-ben shu**]

     Zhangsan read-ASP three day every-one-CL book

     'Zhangsan read every book for three days.'

Moreover, the positional distinction cannot be reduced to the contrast between *definite* and *indefinite* arguments either, as one might have suspected from the interpretations of the objects in (17), because of examples like those in footnote (fn.) 6, where an indefinite object in the form of a DP must occur in the pre-DFP position.

Lastly, Mandarin bare nominals can be *definite*. And they pattern the same as DPs (and QPs) in relation to the DFPs:

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[7] That only bare non-referential NP objects are allowed in the post-DFP position is a fact also noted by Huang, Li, and Li (2009).

(19) a. Zhangsan wei-le   san ci **gou**

Zhangsan feed-ASP three time dog

'Zhangsan fed dogs (one or more)/*the dog(s) three times.'

b. Zhangsan wei-le   **gou** san   ci

Zhangsan feed-ASP dog three time

'Zhangsan fed *dogs (one or more)/the dog(s) three times.'
(presupposed, contextually salient dog(s))

According to Cheng and Sybesma (1999, 2005) and Cheng, Doetjes, Sybesma, and Zamparelli (2012) a.o., bare nominals in Mandarin can be ambiguous with three interpretations— indefinite, definite, and generic (the examples in (20) are from Cheng and Sybesma (1999) with the bare noimnals boldfaced by myself):

(20) a. INDEFINITE: b. DEFINITE:

Hufei mai **shu**   qu le   Hufei he-wan-le   **tang**

Hufei buy book go ASP   Hufei drink-finish-ASP soup

'Hufei went to buy a book/books.'   'Hufei finished the soup.'

c. GENERIC:

Wo xihuan **gou**

I   like   dog

'I like dogs.'

Putting the generic reading aside, post-verbal bare nominals at least have the possibilities of being indefinite or definite[8]. Both of the examples in (19) involve a bare nominal object, but there is a position-regulated meaning difference between them. When the bare nominal object occurs in the post-DFP position, it is necessarily interpreted as non-referential, where (possibly) different

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[8]There is a subject-object asymmetry in this meaning ambiguity: The indefinite interpretation is unavailable to bare nominals occurring in the subject position (Cheng and Sybesma, 1999):

groups of dogs are fed by Zhangsan each time[9]. On the other hand, when the bare nominal refers to the same unique dog or unique group of dogs fed three times by Zhangsan, the nominal must occur before the DFP[10].

Cheng and Sybesma (1999) analyze definite bare nominals in Mandarin as an underlying DP with a covert ι-operator rendering it definite (Partee, 1987)[11]. If we take their view on definite bare nominals, then we can reach the conclusion that the positional distinction we categorize as Pattern I is more like a question of *semantic type*. It is entity/quantifier arguments on the one hand, versus predicative arguments on the other. This conclusion is based on the post-verbal distributions of DPs, QPs, and NPs above: Bare nominals of two different semantic types (entity vs. predicate) show different distributions (before vs. after the DFP, respectively), and non-predicate-type arguments show the same distribution (before the DFP). In other words, we are defining what has been called *non-referential* NPs in the literature as being of predicate/property type. A more formal definition of the type of predicate/property NPs will be given in the analysis for Pattern I in §4.

Pattern I will not be complete before we consider the distributions of internal arguments under ditransitive verbs. The canonical ditransitive pattern in Mandarin is where the indirect

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(i) a. *Indefinite:
    Gou yao guo malu
    dog want cross road
    'The dog wants to cross the road.'/
    Not: 'A dog wants to cross the road.'

b. Definite:
    Gou jintian tebie tinghua
    dog today very obedient
    'The dog/dogs was/were very
    obedient today.'

c. Generic:
    Gou ai   chi rou
    dog love eat meat
    'Dogs love to eat meat.'

This asymmetry seems to suggest a close relationship between indefiniteness/non-referentiality and internal arguments in the form of bare nominals (which would be true NPs under our classification). So far, indefiniteness and non-referentiality are used interchangeably, whose distinction is not clearly made. However, as it will turn out in later chapters, non-referentiality, from which indefiniteness is derived, refers to NPs being of property-type, and is associated with a particular position in the argument structure to be proposed, i.e. the post-DFP position, as partially revealed by (19). In other words, the post-DFP position is strictly dedicated to internal NP arguments, and those bare NP arguments can be nothing but non-referential.

[9] This interpretation permits the possibility of the same dog or group of dogs being fed by Zhangsan each time.

[10] One might wonder whether the interpretational difference between (19a) and (19b) is actually related to the bare nominal taking scope below and above the DFP; in either case the bare nominal remains a non-referential/indefinite NP. However, I think there is indeed a *definite* vs. *indefinite* distinction between the pre-DFP and the post-DFP bare nominal (i.e. *gou* ('dog') in (19a) vs. in (19b)) in that the latter is only felicitous in a context where the bare nominal is a salient topic under discussion; whereas the former is context-neutral.

[11] This covert ι-operator is deemed by Cheng and Sybesma (1999) to be contributed by a null Cl(assifier) head that falls under the functional sequence of Mandarin nominals: $[_{DP} \varnothing_{CL} + NP]$

object comes before the direct object in the post-verbal field, as in English:

(21) Zhangsan gei-le   Lisi yi-ke   pingguo

Zhangsan give-ASP Lisi one-CL apple

'Zhangsan gave Lisi an apple.'

In the presence of a DFP, we get the following patterns, depending on the DP/NP status of the direct object:

(22) Pattern I: Both the internal arguments and the DFP occur post-verbally.

Ditransitive verbs:

a. Sub-Pattern I: When the direct object is a non-referential NP and the indirect object is either a DP or a non-referential NP,

(i) Zhangsan song-guo[12] [$_{DP}$ **Lisi**]/[$_{NP}$ **pengyou**] [$_{FP}$ liang ci   ] [$_{NP}$ **shuiguo**]

Zhangsan give-EXP   Lisi   friend   two time   fruit

'Zhangsan gave Lisi/friends fruits twice.'   → $DP^{IO}/NP^{IO} > DFP > NP^{DO}$[13]

(ii) *Zhangsan song-guo [$_{DP}$ **Lisi**]/[$_{NP}$ **pengyou**] [$_{NP}$ **shuiguo**] [$_{FP}$ liang ci   ]

Zhangsan give-EXP   Lisi   friend   fruit   two time

'Zhangsan gave Lisi/friends fruits twice.'   → *$DP^{IO}/NP^{IO} > NP^{DO} > DFP$

(iii) *Zhangsan song-guo [$_{FP}$ liang ci   ] [$_{DP}$ **Lisi**]/[$_{NP}$ **pengyou**] [$_{NP}$ **shuiguo**]

Zhangsan give-EXP   two time   Lisi   friend   fruit

'Zhangsan gave Lisi/friends fruits twice.'   → *$DFP > DP^{IO}/NP^{IO} > NP^{DO}$

b. Sub-Pattern II: When the direct object is a DP and the indirect object is either a DP or a non-referential NP,

(i) Zhangsan fa-gei-le   [$_{DP}$ **Lisi**]/[$_{NP}$ **kehu**   ] [$_{DP}$ **zhe-feng youjian**] [$_{FP}$ liang ci   ]

Zhangsan send-give-ASP   Lisi   customer   this-CL email   two time

'Zhangsan sent this email to Lisi/customers twice.'   → $DP^{IO}/NP^{IO} > DP^{DO} > DFP$

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[12] EXP = experiential aspect. *Guo* is an experiential aspect marker in Mandarin denoting that the event marked was experienced by the subject some time (usually remote) in the past.

[13] The superscripts IO and DO stand for *indirect object* and *direct object*, respectively.

(ii) *Zhangsan fa-gei-le   [_DP_ **Lisi**]/[_NP_ **kehu**   ] [_FP_ liang ci   ] [_DP_ **zhe-feng youjian**]

    Zhangsan send-give-ASP   Lisi   customer   two time   this-CL email

    'Zhangsan sent this email to Lisi/customers twice.'   → *DP^IO^/NP^IO^ > DFP > DP^DO^

(iii) *Zhangsan fa-gei-le   [_FP_ liang ci   ] [_DP_ **Lisi**]/[_NP_ **kehu**   ] [_DP_ **zhe-feng youjian**]

    Zhangsan send-give-ASP   two time   Lisi   customer   this-CL email

    'Zhangsan sent this email to Lisi/customers twice.'   → *DFP > DP^IO^/NP^IO^ > DP^DO^

Several observations can be made about the interactions between the internal arguments and the DFP under ditransitive verbs. First, the argument realized as the direct object, if it is a non-referential NP, has to appear to the *right* of the DFP, regardless of the types of the argument realized as the indirect object. That is, the indirect object can be either an NP or a DP (in this case, a proper name or one with functional projections) but does not affect the positional restriction on the NP direct object, as in (22ai). Second, if the direct object is a DP, it is restricted to be to the *left* of the DFP, also regardless of the type of the indirect object, as in (22bi). Third, the indirect object always occurs to the *left* of the DFP, regardless of its type, (22aiii) and (22biii). From a hierarchical point of view, we can simply summarize the observations in the following terms: The direct object, if a non-referential NP, has to be in a position lower than the DFP, but has to be in a position higher if it is a DP; the indirect object, be it an NP or a DP, is always higher than the DFP and the direct object.

      Clearly, if we hold the position of the indirect object constant since it always occurs in the highest position regardless of its form and meaning, we can say that what makes a difference in the relative positioning between the DFP and the objects is the non-referentiality (hence the NP/DP distinction) of the direct object: The DFP intervenes between the objects when the direct object is an NP, but comes last when it is a DP. For convenience, the argument realizations of transitive and ditransitive verbs under Pattern I are tabulated as follows:

	Transitive verbs	Di-transitive verbs
Pattern I	$\left\{\begin{array}{l} \text{DFP} > \text{NP} \\ \text{DP} > \text{DFP} \end{array}\right\}$	$\left\{\begin{array}{l} \text{DP}^{\text{IO}} > \text{DFP} > \text{NP}^{\text{DO}} \\ \text{NP}^{\text{IO}} > \text{DFP} > \text{NP}^{\text{DO}} \\ \text{DP}^{\text{IO}} > \text{DP}^{\text{DO}} > \text{DFP} \\ \text{NP}^{\text{IO}} > \text{DP}^{\text{DO}} > \text{DFP} \end{array}\right\}$

Table 1.1: Pattern I word orders of (di)transitive verbs

Having considered the case of ditransitive verbs, we can now conclude that Pattern I is sensitive to the *semantic type* of the *direct* object. Recall the earlier four conditions governing word orders of languages that make reference to the syntax-semantics correspondence, i.e. (i) the verb's denotation, (ii) the phrase structure, (iii) the requirement on the mode of semantic composition (e.g. SATURATE FIRST), and (iv) movement. It is not clear how this type-sensitive distribution of internal arguments can fall out of these conditions since none of them are conditioned to the variation of the semantic types of arguments, specifically ones that get syntactically realized as direct objects. Part of the goal of this dissertation is to factor in this type-sensitive nature of argument realization as one of the governing conditions on word order. The repertoire of realization patterns summarized as Pattern I in (23) will serve as the baseline for our proposal of Mandarin argument structure in later chapters.

1.2.2 Pattern II: Pre-verbal objects and the Verb-Doubling Construction

The second general argument realization pattern with DFPs involves the direct object being in the preverbal position, which is usually not a grammatical position for objects. This position has nonetheless been claimed to be licensed under a contrastive focus reading (Ernst and Wang, 1995):

(24) a. Zhangsan chi(-guang)-le **dianxin**

Zhangsan eat(-empty)-ASP dessert

'Zhangsan ate (all of) the dessert.'

b. *Zhangsan **dianxin** chi(-guang)-le

    Zhangsan   dessert   eat(-empty)-ASP

    'Zhangsan ate (all of) the dessert.'

(25) Zhangsan **dianxin** chi(-guang)-le,   danshi **yinliao** hai mei he

       Zhangsan dessert   eat(-empty)-ASP but   beverage yet NEG drink

       'Zhangsan ate (all of) the dessert, but didn't drink the beverage yet.'

Given the contrastive nature of the preverbal position, it has been proposed in the literature that this is a focus position (a FocusP), and the element that is contrastive-focus-marked undergoes movement to this position (Spec.FocusP) (Shyu, 1995). However, we will argue that the preposing of objects to the immediately preverbal position, what we will call Pattern II, is not focalization but sentence-internal topicalization, when we look further into the patterns described below and propose an account in §5.1. For now, it is sufficient to note that the preverbal position is readily available to the direct object when a DFP is present.

In Pattern II, there are two sub-types. We will start by first describing the type that involves *bare* preposing of the object; that is, the object occurring in the preverbal position by itself with no other accompanying morphemes:

(26) Pattern II: The direct object occurs preverbally.

    Transitive verbs: Both NP and DP objects can occur preverbally.

    a. Zhangsan [DP **(zhe-ben) xiaoshuo**] <u>xie-le</u>   [DrP san   nian]

       Zhangsan   this-CL   novel   write-ASP   three year

       'Zhangsan wrote this novel/the novel(s) for three years.'

    b. Zhangsan [NP **xiaoshuo**] <u>xie-le</u>   [DrP san   nian]

       Zhangsan   novel   write-ASP   three year

       'Zhangsan wrote novels for three years.'

As can be seen, the preposing of the object makes no distinction in terms of what type of object it is. Either an NP or a DP can be preposed to the position immediately preceding the main verb. Moreover, the preverbal object in the form of a bare nominal can be ambiguous between an indefinite/non-referential and a definite/referential interpretation. And the bare *definite* preverbal object is grouped with those involving functional projections as DPs in (26a).

   In sum, under Pattern II, no type-related distributional restrictions are found: Objects of all types can occur in the preverbal position in the presence of a DFP. That said, Pattern II comes with its own restrictions, which become clear in the case of ditransitive verbs. Given a ditransitive verb, we have two potential candidates for preposing, the direct and the indirect object. The direct object, like those in (26), can occur in the preverbal position regardless of their type, stranding the indirect object post-verbally with the DFP:

(27) Pattern II: The direct object occurs preverbally.

Ditransitive verbs: The direct object, an NP or a DP, can occur preverbally.

Lisi [$_{\text{DP/NP}}$ **(na-fen) liwu**]$^{\text{DO}}$ song-le [$_{\text{DP/NP}}$ Mali/pengyou]$^{\text{IO}}$ [$_{\text{FP}}$ liang ci   ]
Lisi   that-CL present   give-ASP   Mary/friend   two time
'Lisi gave that present/ (the) presents to Mary/friends twice.'

The indirect object, on the other hand, is forbidden from the preverbal position, also irrespective of their type:

(28) a. *Lisi [$_{\text{DP/NP}}$ **Mali/pengyou**]$^{\text{IO}}$ song-le [$_{\text{FP}}$ liang ci   ] [$_{\text{NP}}$ liwu   ]$^{\text{DO}}$
Lisi   Mary/friend   give-ASP   two time   present
'Lisi gave presents to Mary/friends twice.'

   b. *Lisi [$_{\text{DP/NP}}$ **Mali/pengyou**]$^{\text{IO}}$ song-le [$_{\text{DP}}$ na-fen liwu   ]$^{\text{DO}}$ [$_{\text{FP}}$ liang ci   ]
Lisi   Mary/friend   give-ASP   that-CL present   two time
'Lisi gave that present to Mary/friends twice.'

The pair in (28) shows that the ungrammaticality solely comes from preposing the indirect object since the direct object in either member of the pair still conforms to the NP-DP distinction in its relative position to the DFP. In addition to (28), preposing *both* of the objects also leads to ungrammaticality, regardless of the objects' types and the word order they are in:

(29) a. *Lisi [$_{DP/NP}$ **Mali/pengyou**]^{IO} [$_{DP/NP}$ **(na-fen) liwu**]^{DO} song-le [$_{FP}$ liang ci   ]

   Lisi   Mary/friend   that-CL present   give-ASP   two time

   'Lisi gave that present/(the) presents to Mary/friends twice.'

   b. *Lisi [$_{DP/NP}$ **(na-fen) liwu**]^{DO} [$_{DP/NP}$ **Mali/pengyou**]^{IO} song-le [$_{FP}$ liang ci   ]

   Lisi   that-CL present   Mary/friend   give-ASP   two time

   'Lisi gave that present/(the) presents to Mary/friends twice.'

Given these observations, we can briefly conclude that in the presence of a DFP, there seems to be one, and only one, preverbal position available exclusively to the direct object. And it does not care about what type of object it is[14].

There is a second type of object-preposing that we categorize under Pattern II that involves a verb copy in front of the preverbal object. It is also prompted by the presence of the DFP[15]. Put more precisely, the DFP cannot be omitted under this type:

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[14]This conclusion does not take into consideration the preverbal movement of objects under the licensing of contrastive focus. As mentioned in the beginning of this section, contrastive-focus-marked items can move into the preverbal position, and they include the indirect object:

(i) Zhangsan [$_{IO}$ **Lisi/pengyou**] song-le *liang ci*   liwu, [$_{IO}$ **jiaren**] song-le *san   ci*   (liwu)
   Zhangsan   Lisi/friend   give-ASP two time present   family   give-ASP three time present
   'Zhangsan gave Lisi/friends presents twice, and gave his family presents three times.

Only the preverbal movement prompted by the mere presence of a DFP is restricted to the direct object. Leaving open the issue of whether the preverbal positions in these two conditions are the same position, I will show in more detail in §5.1 that the preverbal movements of objects in these conditions are at least driven by different forces that result in their different properties.

[15]This is part of a phenomenon well-known as the verb-doubling construction in Mandarin that distributes across various other constructions including those with post-verbal adverbial and resultative phrases (Huang, 1982; Cheng, 2007; Gouguet, 2006; Tieu, 2008; a.o.). A more in-depth comparison between verb-doubling in the case of DFPs and that in the other constructions will be provided in §5.1 when we give an account for Pattern II.

(30) Pattern II: The direct object occurs preverbally *plus* verb-doubling

Transitive verbs: Both NP and DP objects can occur preverbally.

Zhangsan <u>xie</u>   [$_{DP/NP}$ **(zhe-ben) xiaoshuo**] <u>xie-le</u>   *([$_{DrP}$ san   nian])

Zhangsan write   this-CL   novel   write-ASP   three year

'Zhangsan wrote this novel/(the) novels for three years.'

Since now two verbs are involved, between which the object intervenes, we need to define exactly what the 'preverbal' position is. We will refer to it as the position immediately preceding the *verb with aspectual marking*, which we will take to be the main verb in this particular construction. And only the second verb can have aspectual marking (Li and Thompson, 1981; Paris, 1988):

(31) a. *Zhangsan <u>xie-le</u>   (zhe-ben) xiaoshuo <u>xie</u>   san   nian

Zhangsan write-ASP this-CL   novel   write three year

'Zhangsan wrote this novel/(the) novels for three years.'

b. *Zhangsan <u>xie-le</u>   (zhe-ben) xiaoshuo <u>xie-le</u>   san   nian

Zhangsan write-ASP this-CL   novel   write-ASP three year

'Zhangsan wrote this novel/(the) novels for three years.

c. *Zhangsan <u>xie</u>   (zhe-ben) xiaoshuo <u>xie</u>   san   nian

Zhangsan write this-CL   novel   write three year

'Zhangsan wrote this novel/(the) novels for three years.'

If we assume a functional ASPECT head (Asp°) in the Mandarin syntactic structure, to which the main verb undergoes movement, the preverbal position would be a position preceding the Asp°. And the main verb can be reduplicated in the company of the preverbal object[16]. As in the first

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[16]This is also saying that the verb cannot be reduplicated *without* the preverbal object. That is, a sentence like the following is ungrammatical, where the verb is reduplicated and the object stays post-verbal:

(i) a. *Lisi <u>xie</u>   <u>xie-le</u>   zhe-ben xiaoshuo san   nian   b. *Lisi <u>xie</u>   <u>xie-le</u>   san   nian xiaoshuo
     Lisi write write-ASP this-CL novel   three year   Lisi write write-ASP three year novel
     'Lisi wrote this novel for three years.'   'Lisi wrote novels for three years.'

sub-type of Pattern II, the preverbal position under the first verb (which we will refer to as the verb copy since it cannot be aspectually marked) makes no distinction in what kind of object can be in it. Both types of objects, NPs and DPs, can occur, (30).

   In fact, all of the good patterns that we observe in the first sub-type find their counterparts in the second sub-type. In the ditransitive case, the direct object can also be preposed, now *plus* the verb copy:

(32) Lisi <u>song</u> [$_{DP/NP}$ **(na-fen) liwu**]^{DO} <u>song-le</u> [$_{DP/NP}$ Mali/pengyou]^{IO} [$_{FP}$ liang ci]
   Lisi give   that-CL present   give-ASP   Mary/friend   two time
   'Lisi gave that present/ (the) presents to Mary/friends twice.'

On the surface, it looks like somehow the preverbal accommodation of the object is enabled by the verb copy. One may envision a scenario where both the objects of a ditransitive verb get accommodated preverbally by two verb copies; however, this does not happen. No more than one instance of verb-copying is allowed:

(33) a. *Lisi <u>song</u> [$_{DP/NP}$ **Mali/pengyou**]^{IO} <u>song</u> [$_{DP/NP}$ **(zhe-fen) liwu**]^{DO}
   Lisi give   Mary/friend   give   this-CL present

                                          <u>song-le</u> liang ci
                                          give-ASP two time

   'Lisi gave that present/(the) presents to Mary/friends twice.'

   b. *Lisi <u>song</u> [$_{DP/NP}$ **(zhe-fen) liwu**]^{DO} <u>song</u> [$_{DP/NP}$ **Mali/pengyou**]^{IO}
   Lisi give   this-CL present   give   Mary/friend

                                          <u>song-le</u> liang ci
                                          give-ASP two time

   'Lisi gave that present/(the) presents to Mary/friends twice.'

This means that we also have only one preverbal position to deal with in the verb-doubling construction. And that position likewise forbids the indirect object:

(34) a. *Lisi song [DP/NP **Mali/pengyou**]IO song-le [DP na-fen liwu]DO liang ci

Lisi give Mary/friend give-ASP that-CL present two time

'Zhangsan already gave that present to Lisi/friends twice.'

b. *Lisi song [DP/NP **Mali/pengyou**]IO song-le liang ci [NP liwu]DO

Lisi give Mary/friend give-ASP two time present

'Lisi gave presents to Mary/friends twice.'

The sentences in (34) show that the indirect object alone cannot be preposed under the verb copy, stranding the direct object behind. However, the verb-doubling construction differs with bare object-preposing in that both the objects of a ditransitive verb can be preposed under the verb copy. But when that happens, the preposed objects must assume the same word order as when they are post-verbal, i.e. the canonical ditransitive word order (IO > DO). Again, being an NP or a DP does not matter:

(35) a. Lisi song [DP/NP **Mali/pengyou**]IO [DP/NP **(na-fen) liwu**]DO song-le liang ci

Lisi give Mary/friend that-CL present give-ASP two time

'Lisi gave that present/(the) presents to Mary/friends twice.'

b. *Lisi song [DP/NP **(na-fen) liwu**]DO [DP/NP **Mali/pengyou**]IO song-le liang ci

Lisi give that-CL present Mary/friend give-ASP two time

'Lisi gave that present/(the) presents to Mary/friends twice.'

The required word order in the preverbal position strongly suggests that what is being preposed is a verbal constituent since it resembles the ditransitive VP one would find without verb-doubling. And if we assume that the ditransitive word order derives from the order in which the direct object merges with the main verb before the indirect object, followed by verb movement to some higher functional head (say Asp°), we can see that in the verb-doubling case where only the direct object is preposed under the verb copy, what is preverbal is also a verbal constituent (i.e. [V + DO]). Whereas the ungrammatical sole-IO-preposing case, (34), is ungrammatical due to

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the non-constituency of the string, V + IO. This line of thought will be the backbone of our proposal for verb-doubling in the DFP-context. Moreover, since both verb-doubling and bare object-preposing point to there being only one preverbal position, it is worth exploring whether this is a mere coincidence or whether a unified analysis can be achieved that centers on the preverbal position being the same in both types of constructions. It will be demonstrated in §5.1 that the latter route is a better option once we scrutinize the properties of the preverbal position and its relation to the sentence-initial functional position generally deemed as a Topic position in Mandarin.

To sum up the observations about Pattern II, (i) there are two sub-types under this pattern, one involving preposing merely the object to the position immediately preceding the main verb, i.e. bare object-preposing, and the other involving preposing the object *plus* a verb copy to the same position, i.e. verb-doubling. (ii) There is no distinction in terms of what type of object can be preposed: Both NPs and DPs are found in both of the sub-types. (iii) There is only *one* preverbal position that is exclusively compatible with the direct object in the case of bare object-preposing. (iv) In the case of verb-doubling, either the direct object or both the direct and indirect object can be in the preverbal position, with the canonical ditransitive word order mandated on the latter. (v) A sole preverbal indirect object is generally prohibited, with or without a verb copy.

1.2.3 Pattern III: Inverted arguments

Last but not least, the final argument realization pattern, Pattern III, is the inverted pattern that spawned this dissertation on Mandarin argument structure, e.g. (15). It is intuitively the most special case since it reverses the positions of the external and internal arguments, and is only made available by the presence of a DFP if the verb is a simple verb[17]:

---

[17] As we will see very soon, the verb in this pattern cannot be ditransitive.

(36) <u>Pattern III: The positions of the external and internal arguments are inverted.</u>

a. [$_{DP}$ **(Zhe-pian) lunwen**]^{18} xie-le   [$_{DP}$ **Lisi**]/*[$_{NP}$ **xuesheng**] [$_{DrP}$ san   nian]

    this-CL   dissertation   write-ASP   Lisi   student   three year

  'This/The dissertation(s) took Lisi/*(the) student(s) three years to write.'

b. [$_{DP}$ **(Zhe-feng) xin**] ji-le   [$_{DP}$ **Lisi**]/*[$_{NP}$ **mishu**] [$_{FP}$ liang ci   ]

    this-CL   letter mail-ASP   Lisi   secretary   two time

  'This/The letter(s) took Lisi/*(the) secretary(secretaries) twice to mail.'

Given the well-known fact that Mandarin does not allow indefinite subjects (Cheng, 1991, 1994; Cheng and Sybesma, 1999, 2005; a.o.), the bare nominal subjects in this pattern can only be interpreted as definite, making them DPs under our assumption regardless of what θ-roles they bear. The interesting part lies in the occurrence of the argument in the post-verbal position (seemingly the object position), playing the AGENT role. This argument also cannot be interpreted as indefinite/non-referential.

Recall from Pattern I that non-referential NP objects are necessarily post-DFP. If we try to put the bare AGENT objects in the above examples after the DFP, we end up getting ungrammaticality:

(37) a. *[$_{DP}$ **(Zhe-pian) lunwen**]$_{patient}$ xie-le   [$_{DrP}$ san   nian] [$_{NP}$ **xuesheng**]$_{agent}$

      this-CL   dissertation   write-ASP   three year   student

    'This/The dissertation(s) took students three years to write.'

b. $^{\#}$[$_{DP}$ **(Zhe-pian) lunwen**]$_{agent}$ xie-le   [$_{DrP}$ san   nian] [$_{NP}$ **xuesheng**]$_{patient}$

      this-CL   dissertation   write-ASP   three year   student

    $^{\#}$'This/The dissertation(s) wrote students for three years.'

---

[18]As previously mentioned, Mandarin disallows indefinite subjects. A bare nominal can appear in the subject position, but it necessarily has the definite interpretation. Therefore, the subject here, with or without the demonstrative plus classifier, is glossed as a DP. And the definite interpretation the subject in the bare form has is also indicated in the English translation.

(38) a. *[DP **(Zhe-feng) xin**]theme ji-le   [FP liang ci   ] [NP **mishu**]agent

         this-CL   letter   mail-ASP   two time   secretary

       'This/The letter(s) took secretaries twice to mail.'

      b. #[DP **(Zhe-feng) xin**]agent ji-le   [FP liang ci   ] [NP **mishu**]theme

         this-CL   letter   mail-ASP   two time   secretary

       #'This/The letter(s) mailed secretaries twice.'

The ungrammaticality comes from the necessary PATIENT/THEME interpretation of the argument occurring in the post-DFP position. The once available AGENT interpretation of the post-verbal argument is lost there, suggesting an exclusive relationship between that position and the internal θ-roles. This leaves no options for the subject argument but to be interpreted with an external θ-role. Hence, we get a semantic anomaly, where incompatible θ-roles are forced upon the arguments (i.e. the dissertations being the *writer* and students, the *writee* in (37b); the letters being the *sender*, and secretaries, the *sendee* in (38b)). This finding reveals more about the post-DFP position, in addition to it only hosting non-referential bare NPs: It dictates the internal θ-roles for the argument occupying it.

    As for ditransitive verbs, they do not survive under this inverted pattern at all. Neither of the internal arguments are able to be realized in the subject position when the other co-occurs with the AGENT argument post-verbally:

(39) Pattern III: Inverted external and internal arguments

      Ditransitive verbs:

   a. *[DP **(Zhe-fen) liwu**   ] song-le [DP **Zhangsan**] [DP/NP **Lisi/pengyou**] [FP liang ci   ]

        this-CL   present give-ASP   Zhangsan   Lisi/firend   two time

      'This/The present(s) took Zhangsan twice to give to Lisi/friends.'

   b. *[DP **Lisi/pengyou**] song-le [DP **Zhangsan**] [FP liang ci   ] [NP **liwu**   ][19]

        Lisi/friend   give-ASP   Zhangsan   two time   present

      'Lisi/The friends took Zhangsan twice to give presents to.'

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c. *[DP **Lisi/pengyou**] song-le   [DP **Zhangsan**] [DP **zhe-fen liwu**   ] [FP liang ci]

   Lisi/friend   give-ASP   Zhangsan   this-CL present

'Lisi/The friends took Zhangsan twice to give this present to.'

It seems that under Pattern III, there is only one position available after the verb. The external argument and one of the internal arguments cannot both appear post-verbally. Only in cases of ditransitives that have droppable indirect objects can the direct object (i.e. the PATIENT/THEME argument) be realized in the subject position. In other words, ditransitive verbs that can alternate with transitive verbs by dropping their indirect objects happily live in Pattern III:

(40) a. Zhangsan song-le   Lisi (zhe-xie) shuiguo

        Zhangsan give-ASP Lisi this-CL   fruit

        'Zhangsan gave Lisi (these) fruits.'

     b. Zhangsan song-le (zhe-xie) shuiguo

        Zhangsan give-CL fruit

        'Zhangsan gave (these) fruits (as a gift).'

     c. **(Zhe-xie) shuiguo** song-le   **Zhangsan** liang ci

        this-CL   fruit   give-ASP Zhangsan two time

        'These/The fruits took Zhangsan twice to give (as a gift).'

For most ditransitive verbs, the direct object is not droppable. And no grammatical counterparts of the ungrammatically derived transitives can be found in Pattern III:

(41) a. Zhangsan song-le   Lisi/pengyou (zhe-xie) shuiguo

        Zhangsan give-ASP Lisi/friend   this-CL   fruit

        'Zhangsan gave Lisi/friends (these) fruits.'

---

[19]Please note that (39b) and (39c) are grammatical under the reading where *Lisi/pengyou* are interpreted as the AGENT and *Zhangsan*, the GOAL, of the giving event; that is, the canonical ditransitive pattern.

b. *Zhangsan song-le   Lisi/pengyou

   Zhangsan give-ASP Lisi/friend

   Intended: 'Zhangsan gave Lisi/friends (something).'

c. ***Lisi/Pengyou** song-le   **Zhangsan** liang ci

   Lisi/friend   give-ASP Zhangsan two time

   Intended: 'Lisi/The friends took Zhangsan twice to give (something) to.'

Consequently, for ditransitves none of whose internal arguments are droppable, there is simply no room for them in Pattern III:

(42) a. Zhangsan **gei-le**   Lisi/pengyou (zhe-xie) shuiguo

      Zhangsan give-ASP Lisi/friend   this-CL   fruit

      'Zhangsan gave Lisi/friends (these) fruits.'

   b. *Zhangsan gei-le   (zhe-xie) shuiguo

      Zhangsan give-ASP this-CL   fruit

      'Zhangsan gave (these) fruits (to someone).'

   c. *Zhangsan gei-le   Lisi/pengyou

      Zhangsan give-ASP Lisi/friend

      'Zhangsan gave Lisi/friends (something).'

   d. ***(Zhe-xie) shuiguo** gei-le   **Zhangsan** liang ci

      this-CL   fruit   give-ASP Zhangsan two time

      'These/The fruits took Zhangsan twice to give (to someone).'

   e. ***Lisi/pengyou** gei-le   **Zhangsan** liang ci

      Lisi/friend   give-ASP Zhangsan two time

      'Lisi/The friends took Zhangsan twice to give (something) to.'

Gei ('give'), though similar in meaning to *song* ('give as a gift'), demands the presence of both of its internal arguments[20]. Leaving out either of the internal arguments would lead to ungrammaticality, as in (42b) and (42c). Therefore, given our observation that there is a ban on the post-verbal co-occurrence of the external argument and either one of the internal arguments under Pattern III, *gei* is doomed for ungrammaticality due to the conflict between the number of arguments that can be in this pattern and the number of arguments that *gei* requires realizations of, as in (42d) and (42e).

So the conclusion is, Pattern III only has a transitive paradigm. And the post-verbal argument has to precede the DFP for it to obtain the thematic interpretation that a canonical external argument would obtain. Since the subject position and the post-verbal pre-DFP position both forbid non-referential NPs, we get a fairly straightforward word order below[21]:

---

[20]It is at the moment a puzzle as to why near synonyms like *gei* and *song* would differ in their ability of dropping the indirect object. An explanation for it will be attempted when I propose an analysis in §4 for the ditransitive patterns previously discussed.

[21]One might wonder what would happen if we move the post-verbal argument in this case to the preverbal position, as in Pattern II. The resulting sentence would be as follows:

(i) **(Zhe-pian) lunwen**$_{\text{patient}}$ **Zhangsan**$_{\text{agent}}$ xie-le   san nian
   this-CL   dissertation Zhangsan   write-ASP three year
   'This/The dissertation(s) took Zhangsan three years to write.'

At first glance, it seems fine. But given that Mandarin also has topicalization that moves things to the sentence-initial position, it is hard to tell which of the following analyses is the right one for (i):

(ii) a. (Zhe-pian) lunwen$_{\text{patient}}$ **Zhangsan**$_i^{\text{agent}}$ xie-le   **t**$_i$ san nian
     this-CL   dissertation Zhangsan   write-ASP   three year
     'This/The dissertation(s) took Zhangsan three years to write.'

    b. **(Zhe-pian) lunwen**$_i^{\text{patient}}$ Zhangsan$_{\text{agent}}$ xie-le   **t**$_i$ san nian
     this-CL   dissertation Zhangsan   write-ASP   three year
     'Zhangsan wrote this/the dissertation(s) for three years.'

I know of no way of teasing these two apart for this word order under Pattern III. And moving the post-verbal AGENT to the preverbal position goes against the generalization we drew from Pattern II, where only the PATIENT/THEME object can move into it.

Moreover, if we try to reduplicate the verb in this case, the argument preceding the main verb now has to be interpreted as the PATIENT/THEME, giving rise to ungrammaticality:

(iii) a. *(**Zhe-pian) lunwen**$_{\text{patient}}$ *xie* **Zhangsan**$_{\text{agent}}$ *xie-le*   san nian
      this-CL   dissertation write Zhangsan   write-ASP three year
      'This/The dissertation(s) took Zhangsan three years to write.'

    b. #**(Zhe-pian) lunwen**$_{\text{agent}}$ *xie* **Zhangsan**$_{\text{patient}}$ *xie-le*   san nian
      this-CL   dissertation write Zhangsan   write-ASP three year
      #'This/The dissertation(s) wrote Zhangsan for three years.'

(43)

	Transitive
Pattern III	$DP_{patient/theme} > V > DP_{agent} > DFP$

Table 1.2: Pattern III word order
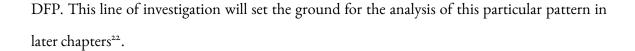
Before we leave the discussion about Pattern III, we should note one key observation that sets this pattern apart from the other two patterns: Pattern III seems to convey some kind of 'causative' meaning that the other two do not. For instance, sentences like (44a) seem to denote that the inverted internal argument (i.e. the surface subject) is in a way responsible for the time span/frequency imposed upon the action predicated of the post-verbal agent:

(44) a. **Zhe-ben shu** nian-le **Zhangsan** san tian / san ci

this-CL book read-ASP Zhangsan three day three time

'This book took John three days/three times to read.'

b. **Zhangsan** nian-le **zhe-ben shu** san tian / san ci

Zhangsan read-ASP this-CL book three day three time

'Zhangsan read this book for three days/three times.'

It is most natural to utter the sentence in (44a), for instance, in a scenario where the book is really difficult and results in Zhangsan spending three days/taking three tries on reading it. Or the interpretation could go the other way, where the book is really easy and results in Zhangsan spending a relatively small amount of time, namely, three days, reading. The canonical realization pattern (44b), on the other hand, does not have this particular reading and is contextually neutral, as shown by the contrast between their English translations. As aforementioned, Pattern III is only available in the presence of the DFP. And given this specific reading in this pattern, it is not arbitrary that we connect the 'causative' reading with the presence of the DFP. Of course, we need to flesh out more precisely what the 'causative' reading is, and how it is connected to the

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Different from the main verb, the first verb dictates the PATIENT/THEME status of the argument following it (explanation for which will be provided in §5). Pattern III is thus incompatible with verb-doubling.

Given these considerations, I have decided to drop this word order— "$DP_{patient/theme} > DP_{agent} > V > DFP$".

DFP. This line of investigation will set the ground for the analysis of this particular pattern in later chapters[22].

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[22] It is also mentioned previously that Pattern II requires the presence of the DFP. Yet, it is claimed to not have this 'causative' reading here. In fact, as opposed to Pattern III, Pattern II can come about not only in the presence of DFPs but other kinds of adverbials as well, making a difference in the roles DFPs play in these two patterns. Therefore, the preverbal displacement of the direct object and verb-doubling in Pattern II will be shown in §5 to be driven by a difference force that is also connected to the presence of the DFP, as well as other adverbials, where the word order is derived by our to-be-proposed Mandarin argument structure.

CHAPTER 2

DFPS AS SYNTACTIC DISAMBIGUATORS AND BARE NON-REFERNTIAL NPS
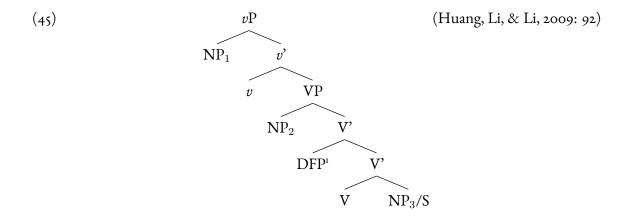
The goal of this chapter is to establish the direction of investigation on how we can have a better account for Mandarin's syntactic arrangement of arguments by starting with the first pattern, Pattern I, where the positions of NP and DP arguments are regulated by the presence of a DFP. We will briefly review some alternative analyses on the positional NP-DP distinction and argument-NP composition, and work towards proposing a general argument structure for Mandarin from which the positional distinction follows. Since the distinction is germane to where non-referential NPs go in the syntactic structure, and it is a cross-linguistic fact that non-referential NPs, which have a property-like nature, have peculiar characteristics that are correlated with their syntactic positions, as in the case of Pseudo-(Noun-)Incorporation (Massam, 2001; Dayal, 2011, 2015; a.o.). We will argue that Mandarin bare non-referential NPs constitute a case of Pseudo-Incorporation, i.e. the focus of §3, and we will promote a neo-Davidsonian (1967) structure that deploys theta-roles as syntactic functional heads based on the observation made in Lin (2001) and Williams (2005, 2008) that Mandarin verbs only spell out particular events without accompanying theta-roles, i.e. the focus of §4. This neo-Davidsonian structure will regulate where arguments of certain semantic types can go in terms of syntactic positions and derive the position-correlated peculiarities of non-referential NP arguments. Typological variations in how non-referential NPs can be implemented as a viable syntactic category for arguments will be argued to rest upon how

the theta-role-introducing heads are realized syntactically in a given language.

2.1 DFPs and the internal arguments

How Mandarin verbs syntactically realize their arguments is a subject that has received extensive investigation. It is virtually impossible that we review every proposal and achieve an account that outranks everything else. But since we are interested in the correlation between the *kind* of arguments, i.e. NPs or DPs, and where they, as arguments, can be in syntax, we can start our discussion with a recent proposal that is directly relevant to our research interest. We will point out the insufficiencies of the proposal that call for a reexamination of the observed facts about Mandarin NP arguments in order to reach an analysis faring better with the facts.

Huang, Li, and Li (2009) propose an argument structure as follows for Mandarin verbs:

(45) vP   (Huang, Li, & Li, 2009: 92)

$$
\begin{array}{c}
v\text{P} \\
\diagup\quad\diagdown \\
\text{NP}_1\qquad v' \\
\diagup\quad\diagdown \\
v\qquad\text{VP} \\
\diagup\quad\diagdown \\
\text{NP}_2\qquad\text{V}' \\
\diagup\quad\diagdown \\
\text{DFP}^{1}\qquad\text{V}' \\
\diagup\quad\diagdown \\
\text{V}\qquad\text{NP}_3/\text{S}
\end{array}
$$

This verbal structure, according to them, contains all of the available positions for arguments. What should be of our primary concern here is the positions for the internal arguments: Spec.VP for the indirect object (NP$_2$) and the complement to V for the direct object (NP$_3$/S). The main verb V undergoes movement to v to derive the surface word order, where the internal arguments occur post-verbally. Given that there are only two available positions for the internal arguments, this analysis makes an immediate prediction that a verb in Mandarin can at most take two objects in the post-verbal field. They provide the following examples, where a contrast is shown between

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[1]This structure is minimally adopted from Huang, Li, and Li (2009) by including the duration phrase (DrP) as an adjunct to V', which only originally contained a frequency phrase (FP).

a verb taking two objects and one taking three, to prove their analysis right:

(46) a. Ta gaosu-le renmen zhege xiaoxi   (Adapted from Huang, Li, & Li (2009: 92)

       he tell-ASP people this news

       'He told people this news.'

    b. *Ta gaosu-de² renmen zhege xiaoxi jiayuhuxiao

       he tell-ASP   people this   news be.known.by.everyone

       Intended: 'He told people this news so often that it was known by everyone.'

It is perfectly grammatical for a ditransitive verb like *gaosu* ('tell') to take two internal arguments. However, when a resultative phrase is added in as the third argument, the sentence crashes. It is thus concluded by Huang, Li, and Li that the ungrammaticality comes from the lack of a third argument position in the structure of VP.

     Nevertheless, DFPs are able to appear post-verbally in the case of ditransitive verbs, as have been seen in many of the previous examples and also suggested by Huang, Li, and Li:

(47) a. Wo shang-guo   ta   (liang ci   ) jinyinzhubao

       I   award-GUO³ him   two   time   money.jewelry

       'I awarded him money and jewelry (twice).'

    b. Ta gaosu-guo wo (haoji   ci   ) tamen bu gai   jin   cheng

       he tell-GUO   me   several time   they   not should enter city

       'He told me (several times) that they shouldn't go into the city.'

---

²This functional morpheme *de* that attaches to the main verb is responsible for introducing the resultative phrase, *jiayuhuxiao* ('be known by everyone'), after the second internal argument (Huang, 1988; Huang et al., 2009; a.o.). The resultative *de* will receive a thorough discussion when we get to the second argument pattern, Pattern II, in §5 since, as will be shown, it plays a crucial role in prompting the verb-copying construction in Mandarin under the interaction with the phrase structural properties of Mandarin. In the current discussion, *de* is irrelevant to the post-verbal distribution of Mandarin nominal arguments; therefore, we will not go into further details of *de*, and will approximate the derivation process of (46b) as follows: The verb *gaosu* ('tell') introduces three arguments, *renmen* ('people'), *zhege xiaoxi* ('this news'), and a resultative *de*-phrase [*de* [s PRO *jiayuhuxiao* ('be.know.by.everyone')]]. The PRO is controlled by the direct object *zhege xiaoxi*, and *de* attaches to the verb, which moves (as a V-*de* complex) to *v*, resulting in the surface word order in (46b).

³GUO = EXP in our orthography.

As a result, they concluded that DFPs are adjuncts that do not compete with the arguments for the positions inside the VP, hence their adjunction to V' in (45).
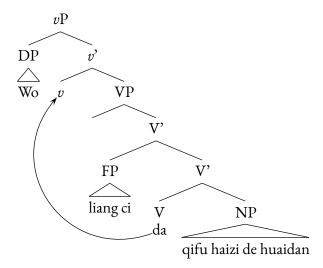
Given Huang, Li, and Li's (2009) verbal structure, the big question now is, can this structure derive the specific orders between the DFP and the internal arguments under Pattern I? For the most part, it can. Since there are two internal argument positions before and after the DFP, in the case of transitive verbs we can simply have the direct object realized in either position[4]:

(48) a. The direct object in the complement of V:

      Wo da-guo   liang ci   **qifu haizi de[5] huaidan**   (Huang, Li, & Li (2009))

      I   beat-GUO two time bully child DE bad.guy

      'I twice beat bad guys who bullied children.'

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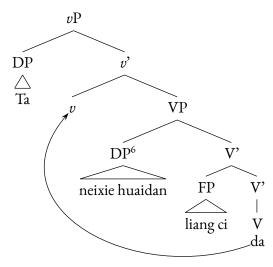
[5]The *de* here is different from the resultative *de*. It is the relativizer *de*. So the internal structure of the object NP would be: [NP [IP e_i qifu haizi] *de* huaidan$_i$]
          bully child   DE bad.guy
      'bad guys who bullied children'

b. The direct object in Spec.VP:

Ta da-guo   **neixie huaidan** liang ci   (Huang, Li, & Li (2009))

he beat-GUO those bad.guy two time

'He beat those bad guys twice.'

And since the indirect object occupies Spec.VP, it will always be higher than the DFP, as all of our previous examples show.

But recall that in Pattern I, there is a specific restriction on what kind of objects can be realized post-DFP: Only non-referential NP objects are allowed in this position whereas objects involving any extended functional projections of DPs (e.g. [DEM + (NUM) + (CL)]) are rejected from it. Having noticed this positional restriction on non-referential NPs, Huang, Li, and Li put forth the following hypothesis that aims to capture the distribution of Mandarin NPs:

(49) Huang, Li, and Li (2009: 95):
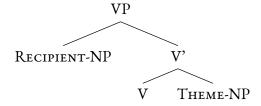
A non-referential constituent which bears a theta-relation with a head H should be combined with H to form the smallest possible constituent.

This hypothesis guarantees realization of the direct object in the complement position (i.e. to the right of the DFP) when it is a non-referential NP, since that is where it can form the smallest constituent with the verb. In cases of ditransitive verbs where the indirect object is non-referential,

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[6]It remains unclear to Huang, Li, and Li whether in (48b) the direct object is base-generated in Spec.VP or gets there by movement from the complement position. Both are permissible possibilities in their analysis.

the hypothesis carries over with the assumption of the differences in hierarchical prominence between theta-roles (Li, 2005):

(50) Ta gei-guo **ren** henduo ci guizhong de liwu   (Huang, Li, & Li, 2009)

he give-GUO person many time expensive DE gift

'He gave people expensive gifts many times.'

```
              VP
             /  \
   RECIPIENT-NP   V'
                 /  \
                V   THEME-NP
```

They assume a syntactic hierarchy that reflects the prominence of the theta-role an argument receives: An argument with a more prominent theta-role goes higher in the syntactic structure. In ditransitive cases, where both the RECIPIENT and THEME arguments are present, the RECIPIENT argument should be syntactically ranked higher as the indirect object. Given this assumption, the THEME argument, i.e. the direct object, will always occur in the complement position (Comp.V), rendering Spec.VP the only position for the indirect object where it forms the smallest constituent with the verb if non-referential, as schematized above. Consequently, the indirect object, be it a DP or an NP, always occur on the left of the DFP, given the adjunct-hood of the DFP that puts it in an intervening position between Spec.VP and Comp.V. In other words, the DFP acts as a syntactic disambiguator for the composition sites of different types of internal arguments, which would otherwise be indistinguishable on the surface after V-movement to *v*, i.e. that they would all appear post-verbal.

2.1.1 Issues with Huang, Li, & Li's (2009) verbal structure

Despite its merits in accounting for the attested word orders of Mandarin post-verbal arguments, it will be shown in this section that there are three major issues with Huang, Li, and Li's (2009) proposal of the Mandarin verbal structure, one concerns the fundamental aspect of the referential-

non-referential asymmetry, and the other two, the overall ordering of all the post-verbal phrases the renders their proposal both *over*-generating and *under*-generating.

Firstly, I think the most fundamental issue with Huang, Li, and Li's constraint on constituency in (49) as an attempt to capture the referential-non-referential asymmetry in the post-verbal positions is that the constraint does not follow from anything, e.g. structural properties of VPs or *v*Ps, in their analysis. It is merely a description of what can or cannot be in certain positions in the structure. It remains mysterious as to why non-referential arguments have to form the smallest constituent with the verb. Is this a Mandarin-specific property or does it hold in other languages as well? If it is a cross-linguistic phenomenon, it is not clear what the driving force is under their account. I will try to argue in later sections that non-referential arguments being low in the structure (in Huang, Li, and Li's terms, forming the smallest constituent with the verb) happens across languages and should be somehow derived from more universal aspects of human language.

Second, Huang, Li, and Li's overall analysis is *over*-generating in that it only covers the *NP* part of the picture in the case of transitive verbs and is too lenient in the syntactic positions of DP objects. The constraint in (49) only limits non-referential internal arguments to the complement of V. It nevertheless stays oblivious about where referential internal arguments should be positioned. In theory, a referential internal argument should be able to appear in Comp.V since nothing prevents it from doing so. This then *over*-generates the pattern where referential objects appear to the right of the DFP, which, as we have seen previously, is ungrammatical:

(51) a. *Zhangsan xie-le   *san   nian* [_{DP} **zhe-pian lunwen**   ]   (=(17bi))
          Zhangsan write-ASP three year   this-CL   disseration
          'Zhangsan wrote this dissertation for three years.'

      b. Zhangsan xie-le   [_{DP} **zhe-pian lunwen**   ] *san   nian*   (=(17bii))
          Zhangsan write-ASP   this-CL   dissertation   three year
          'Zhangsan wrote this dissertation for three years.'

(52) a. *Zhangsan kan-le   *shi ci*   [_{DP} **yi-bu** **dianying**]

   Zhangsan watch-ASP ten time   one-CL movie

   'Zhangsan watched a (particular) movie ten times.'

 b. Zhangsan kan-le   [_{DP} **yi-bu**   **dianying**] *shi ci*

   Zhangsan watch-ASP   one-CL movie   ten time

   'Zhangsan watched a (particular) movie ten times.'

Finally, Huang, Li, and Li's verbal structure is *under*-generating in the ditransitive case because the word orders [DP^{IO}/NP^{IO} > DP^{DO} > DFP] would not be able to be derived from it. In their structure, the DFP adjoins to V' with the two internal argument positions on its opposite sides. And as should be clear by now, referential direct objects are syntactically higher than the DFP. That means we would need a way of putting the DP^{DO}, base-generated in the complement position, on the same side of the DFP as the indirect object, but there is no more available position above the DFP, i.e. the only available position, Spec.VP, is occupied by the indirect object.

Huang, Li, and Li (2009) themselves also noticed this problem. So they argue that these particular word orders where the direct object sits above the DFP actually involve a different structural analysis:

(53) a. Wo shang-gei ta   jinyinzhubao *yijing* **liang ci**   le

   I   award-give him money.jewelry already two   time SFP[7]

   'I already awarded him money and jewelry twice.'

<div align="right">(Huang, Li, & Li, 2009: 93, Ex. (34))</div>

 b. *Wo shang-gei   ta   *yijing* **liang ci**   jinyinzhubao le

   I   award-give him already two   time money.jewelry SFP

   Intended: 'I already awarded him money and jewelry twice.'

<div align="right">(Huang, Li, & Li, 2009: 93, Ex. (35b))</div>

---

[7]SFP = *sentence final particle.*

Example (53) shows a comparison between the DFP being in the sentence-final position and it intervening between the two objects. What matters here is the adverbial *yijing* ('already'), which according to Huang, Li, and Li is only allowed before the sentence-final DFP. Following Li (1987), they argue that (53a) indeed has a clausal subject [$_{XP}$ *Wo shang-gei ta jinyinzhubao*][8] ('I awarded him money and jewelry'), and the FP *liang ci* ('twice') is the main predicate predicated of the clausal subject. *Yijing* is a matrix adverbial that modifies the main predicate. Therefore, if we try to insert *yijing* plus *liang ci* into the clausal subject, ungrammaticality arises given their matrix status, as in (53b). Since the word order [IO > DO > DFP] calls for a different structure, it does not threaten Huang, Li, and Li's proposal of Mandarin verbal structure, as they argue.

Although I agree with them that DFPs do have predicational uses and that (53a) is an instance of the predicational DFP, I do not think that (53) constitutes a legitimate argument for ruling out the word order possibility [IO > DO > DFP] where the sentence-final DFP is **not** the main predicate but an adjunct modifying the ditransitive verb:

(54) Zhangsan jie-le [$_{DP}$ **Lisi**]^{IO} [$_{DP}$ **na-ben shu**]^{DO} *san tian*
  Zhangsan lend-ASP Lisi that-CL book three day
  'Zhangsan lent Lisi this book for three days.'

Jie ('lend') is a ditransitive verb in Mandarin. It is compatible with all of the word orders documented under Pattern I, including [IO > DO > DFP]. Example (54) is an instance of *jie* having a DP direct object and a sentence-final DrP. The fact that *jie* has aspectual marking already suggests its matrix status. We can still try to resort to Huang, Li, and Li's predicational analysis of the sentence-final DFP by inserting *yijing* before it and making it the main predicate:

(55) [$_{XP}$ Zhangsan jie [$_{DP}$ **Lisi**]^{IO} [$_{DP}$ **na-ben shu**]^{DO}] *yijing* ***san tian*** le
   Zhangsan lend Lisi that-CL book already three day SFP
  'It has already been three days since Zhangsan lent Lisi this book.'/
  *'Zhangsan lent Lisi this book, and Lisi had it for three days.'

---

[8]The constituent is labeled 'XP' here because the clausal subject is probably not as big as an IP given some syntactic properties it shows. Therefore, we leave this label unspecified for the moment. We will clarify the constituent when we revisit the predicational use of DFPs and its related properties in §5.2.

However, after adding in *yijing* and assigning the main predicate status to the DFP, the sentence in (55) arrives at a reading where the time period between the occurrence of the *lending* event denoted by the clausal subject and the moment of speech is three days. This is ***not*** the reading (54) conveys. What (54) means is what (55) lacks, as shown in the English translation above, where the duration phrase is modifying how long the event that makes up *lending* lasted (including the time for which *Lisi*, the *lendee*, had the book), but not how much time elapsed since the lending event. A context can be used to distinguish the meaning difference:

(56) Context—

Zhangsan has a book that he treasures a lot and would not normally lend to other people. Last month, Lisi wanted to read the book and asked Zhangsan to lend it to him. Since they are best friends, Zhangsan lent the book to Lisi for three days. This month, Mary finds out about it and tells Sue:

Mary: ✔Zhangsan jie-le   Lisi na-ben shu   san   tian

Zhangsan   lend-ASP Lisi that-CL book three day

'Zhangsan lent Lisi this book for three days.'

vs.

#Zhangsan jie   Lisi na-ben shu   (yijing) san   tian le

Zhangsan lend Lisi that-CL book already three day SFP

'It has (already) been three days since Zhangsan lent Lisi this book.'

Furthermore, under the same reading of (54), if we change the DP direct object of *jie* to a non-referential NP, the sentence becomes ungrammatical, (57a), as opposed to the case of main-predicational DFPs in (55), whose grammaticality remains unchanged, (57b):

(57) a. *Zhangsan jie-le   [_DP **Lisi**]^IO [_NP **shu**]^DO *san   tian*

Zhangsan lend-ASP   Lisi   book   three day

'Zhangsan lent Lisi books for three days.'

b. [$_{XP}$ Zhangsan jie   [$_{DP}$ **Lisi**]^{IO} [$_{NP}$ **shu**   ]^{DO}] *yijing*   ***san***   ***tian*** le

   Zhangsan lend   Lisi   book   already three day   SFP

   'If has already been three days since Zhangsan lent Lisi books.'

The above contrast suggests that we still need a way to incorporate the sentence-final DFP into the argument structure in the ditransitive case so that it can modify the main verb, as well as interact with the two objects, giving rise to the various post-verbal word orders we have seen. In eventually proposing an argument structure for Mandarin verbs, we will inherit the insight from Huang, Li, and Li (2009) that the role DFPs play in the post-verbal field is an adjunctive syntactic disambiguator that tells apart where different types of internal arguments go in the structure. However, we will advance an analysis that departs from the structure in (45), in which the non-referentiality constraint on the complement position in (49) will fall out naturally. In more detail, we will show that Huang, Li, and Li's (2009) non-referentiality constraint describes a cross-linguistic phenomenon of bare non-referential NPs: They occur in the lowest position in syntax, specifically as the complement to the verb. This is also an insight we want to capture with our eventual proposal.

2.2   The distribution of non-referential object NPs
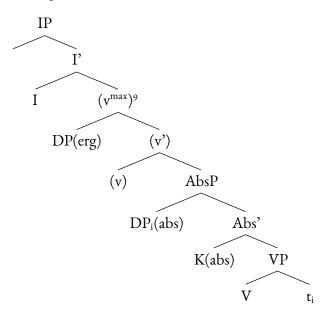
Recall once more that the purpose of Huang, Li, and Li's (2009) non-referentiality constraint is to account for the distribution of Mandarin bare NPs that always show up in the lowest position that is to the right of the DFP. In fact, this particular distribution of bare non-referential NPs extends beyond Mandarin. As a starting point, we will look at some other languages where NPs exhibit similar positional patterns, correlated with what interpretations they get. This structural distribution of NPs is part of a linguistic phenomenon first termed by Massam (2001) as Pseudo-(Noun-)Incorporation, from the observations on NPs in Niuean. We will also briefly show that Turkish non-Case-marked NPs have almost identical patterns to those of their Mandarin coun-

terpart. After having a flavor of what pseudo-incorporated NPs look like, we will in the next chapter attempt to establish a case of Mandarin post-DFP NPs being pseudo-incorporated by comparing them systematically to NPs in Hindi, another language where Pseudo-Incorporation of NPs is argued for (Dayal, 2011, 2015).

2.2.1 Bare NP objects in Niuean

Niuean is a VSOX language with an Ergative Case system (Massam, 2001). According to Massam (2001), the particular word order of Niuean is the result of predicate-fronting to Spec.IP from an underlying structure analogous to that of SVO languages, where the predicate merges low in the structure (as the V in the VP below):

(58) (In)Transitive (Adapted from Massam, 2001: 163, Ex. (8)):

```
                IP
               /  \
                   I'
                  /  \
                 I    (v^max)^9
                     /  \
                DP(erg)  (v')
                        /  \
                     (v)    AbsP
                           /  \
                    DP_i(abs)  Abs'
                              /  \
                         K(abs)   VP
                                 /  \
                                V    t_i
```

Interestingly, this predicate-fronting word order also has an NP-DP distinction in terms of the position of the object. The following are the formation possibilities of Niuean DPs:

---

[9]The projection of v^{max} in syntax that assigns Ergative Case to the subject DP has two requirements: (i) the verb has an agent, and (ii) Absolutive Case has been checked off by the object (Massam, 2001). Only transitive verbs can satisfy both requirements, where the agent of the verb gets assigned Ergative Case by v.

(59) a. Case Art[10] [Noun ModifierP] PossessorP (Massam, 2001: 156, Ex. (3a))

b. Case PossessorP Art [Noun ModifierP] (Massam, 2001: 156, Ex. (3b))

Niuean nominals, when in the form of DPs, involve functional heads realized as Case-markers and articles; however, they can also be in the form of NPs, i.e. the bracketed part in (59), involving simply the noun and (optionally) some noun-modifier. And only in the case of NP objects would the object front with the predicate (i.e. the verb) to the sentence-initial position:

(60) a. Takafaga tūmau nī e ia e tau ika. (Seiter, 1980: 69, Ex. (183a))

hunt always EMPH ERG he ABS PL fish

'He is always fishing.'

b. Takafaga ika tūmau nī a ia. (Seiter, 1980: 69, Ex. (184a))

hunt fish always EMPH ABS he

'He is always fishing.'

The above contrast is clearly dependent on what kind of object it is (an NP or a DP). Suppose what we are looking at is a case of Noun-Incorporation, where the noun head incorporates into the verb to form a head-level verbal complex, this is not a surprising result since DPs do not incorporate under the general assumption on incorporation. However, further Niuean data show that what presumably *incorporates* into the verb is in fact a phrasal element, as modifiers of the noun can front along as well:

(61) a. Ne inu **kofe kono** a Mele. (Massam, 2001: 158, Ex. (6a))

PST drink coffee bitter ABS Mele

'Mary drinks bitter coffee.'

b. Ne holoholo **kapiniu kiva** fakaeneene a Sione. (Massam, 2001: 158, Ex. (6b))

PST wash **dish dirty** carefully ABS Sione

'Sione washed dirty dishes carefully.'

---

[10] Art = Article.

This leads Massam to hypothesize that what is involved in Niuean is really fronting of a predicative *phrase* (e.g. VP-fronting in the above cases[11]) instead of a head-level verbal complex since the nominal in the fronted material, contrary to the common case of Noun-Incorporation, is a *phrase*; hence the name Pseudo-(Noun-) Incorporation. Given the fact that Case-marked objects (= DPs) do not front with the verb, Massam assumes that those objects move out of the VP to a higher functional projection for Case-checking before the VP fronts, as shown in (58). NP objects, which have no need for Case and no reason to move[12], stay low as the verb's complement and consequently front with the verb, giving rise to the word order distinction. In other words, the distinction relies on the different syntactic positions of the NP and DP objects at the time of XP-fronting, and the NP object must be lower than the DP object, between the two of which the domain of the fronting constituent can be drawn.

2.2.2   Bare NP objects in Turkish

We observe a very similar pattern in Turkish as well, one that is almost identical to Pattern I in Mandarin, modulo that verbs are generally assumed to move forward in the latter (Huang, Li, and Li, 2009). Öztürk (2005) provides examples in Turkish, where the positions of certain adverbs make a difference in interpreting the internal argument[13]. Referential objects in Turkish are Accusative-Case-marked while non-referential ones have no morphological marking. And according to Taylan (1984), some modifiers, being morphologically ambiguous between adverbs and adjectives, can be syntactically disambiguated by whether they appear before an Accusative-Case-marked object or a bare one:

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[11]Predicate nominals and prepositional predicates also show up in the first position in Niuean; hence the name XP-fronting.

[12]This difference between the NP and DP object in Case-checking is also reflected on the Case-marking of the subject in the two sentences in (60). Only when Absolutive Case is checked off by the object would the subject be assigned Ergative Case, (60a); otherwise, the subject would be assigned Absolutive Case, (60b) (Massam, 2001).

[13]I thank Deniz Özyıldız for bringing this reference to my attention.

(62) a. Ali *hızlı*   kitab-ı   oku-du.   b. Ali *hızlı*   kitap oku-du.

Ali quickly book-ACC read-PST   Ali quickly book read-PST

'Ali read the (#quick) book (*quickly).'   'Ali read the (#quick) book (quickly).'

(Öztürk, 2005: 219-220)

The modifier *hızlı* ('quick/quickly') can only obtain its status as a manner adverb when immediately preceding the verb. When it precedes the Accusative-Case-marked object, it is necessarily an adjective for the object. Therefore, (62a) faces a dilemma, where *hızlı* cannot be an adverb for the verb, yet it makes an semantically odd adjective for the object. However, in (62b), when preceding an non-Case-marked, non-referential object, *hızlı* is ahppy being a VP-modifying adverb.

Since *hızlı* can still modify the verb in (62b), the non-referential object must be inside some projection of the verb to which the adverb attaches. Given the assumption that manner adverbs are syntactically low, i.e. they attach to the VP, the bare non-referential object should be on the lowest level. And the unavailability of *hızlı* in adverbial modification when the Accusative-Case-marked object intervenes between *hızlı* and the verb suggests that the Case-marked object must be syntactically higher than the bare one. This is exactly the positional distinction between NP and DP objects we have observed and termed Pattern I in Mandarin. The reason why we do not see the bare NP object right next to the verb in Mandarin is due to V-to-*v* movement that disrupts the adjacency[14]. Using the same modifier, Özyıldız (2016) also shows a similar contrast, where non-referential NP object tend to appear to the right of *hızlı*, closest to the verb:

(63) a. Ali bira-yı   hızlı *bira-yı içer.   b. Ali #bira   hızlı bira   içer.

Ali beer-ACC fast beer-ACC drink   Ali beear.∅ fast beer.∅ drink

'Ali drinks the beer fast.'   'Ali drinks beer fast.'

The distribution of the Case-marked object in (63a) is what we have seen in Öztürk's examples,

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[14]Suppose we assume the same kind of verb-movement in Turkish. The surface adjacency between the verb and the bare NP object would not be disrupted given the syntactic headedness in verbal phrases in this language: Both the VP and *v*P are head-final; so when the verb moves up, it will still show up superficially at the end of the sentence, assuming that the adverb left-adjoins to the VP.

under the assumption that Case-marking syntactically distinguishes between DPs and NPs[15]. It is clear from the interpretations of the objects above that in Turkish, Case-marking, or lack thereof, is correlated with non-referentiality. And being Case-marked or not determines the position of the object: Case-marked objects go higher in syntax (at least higher than where the adverb adjoins) and non-Case-marked ones stay low, closest to the verb[16], i.e. something we also observe in Niuean: Only non-Case-marked NPs can stay inside the verb's projection and eventually front with the verb. All of the distributions of the non-Case-marked, non-referential NPs in the languages we have looked at thus far, including the Mandarin ones (despite that Mandarin lacks Case), receive the most straightforward explanation if a connection between non-referentiality and the lowest argument position in syntax (which we will argue to be the complement position to the main verb) can be established. In the next chapter, we will argue that this lowest syntactic position is a position for Pseudo-Incorporation (P-I) in some languages by looking at the specific properties of P-I, and showing that Mandarin bare NPs also exhibit those properties. And by attributing Mandarin non-referential NPs to P-I, and hence connecting them to the P-I position, we will be able to derive their distribution (i.e. part of the NP-DP distinction in Pattern I) that a metalinguistic rule like Huang, Li, and Li's (2009) non-referentiality constraint in (49) is hypothesized for.

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[15]More discussions about Case-marking and its relation to the type and interpretation of the object will be given in the next chapter, when we go over the canonical properties of pseudo-incorporated objects (mainly in Hindi), anticipating our ultimate goal of categorizing Mandarin non-referential bare NPs as also a case of Pseudo-Incorporation.

[16]Özyıldız (2016) notes that although there are mixed judgements about whether the non-Case-marked, non-referential object can precede the manner adverb in (63b), people generally prefer it to follow the adverb.

CHAPTER 3

PSEUDO-INCORPORATION AND MANDARIN NPS

We know from the introduction that Mandarin bare NPs, when occurring after a DFP, are necessarily non-referential, and their non-referentiality can only be obtained in this particular post-DFP position. Not only that, but post-verbal nominal arguments involving any functional projections are forbidden from this position. Some questions to be raised about this observation are obvious: What is so special about this position that only bare NPs can occur in it? Why is it so tightly connected to non-referentiality? And what is non-referentiality exactly that makes post-DFP bare NPs so unique, position-wise and interpretation-wise?

This chapter is dedicated to addressing these questions and eventually shaping the analysis to be proposed in the next chapter. The leading idea is that non-referentiality results from the fact that post-DFP NPs are *pseudo-incorporated*. So the task now is to establish a case of Mandarin post-DFP NPs being pseudo-incorporated by showing that they exhibit Pseudo-Incorporation (P-I) characteristics as those found in other pseudo-incorporating languages. I will first give a brief overview of Pseudo-Incorporation characteristics based on Dayal (2011, 2015), and then use them as a standard to compare Mandarin NPs[1]. We will see that Mandarin NPs resemble to a great extent pseudo-incorporated NPs in Hindi, despite the two languages being linguistically unrelated.

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[1]For the sake of simplicity, whenever the term "NP" is used in this dissertation, it refers to "true NPs", NPs that do not involve any (over or covert) functional projections and are genuinely non-referential.

3.1 Pseudo-Incorporation properties

Noun Incorporation is usually understood as a phenomenon where an internal argument bearing some θ-role in relation to the verb gets treated as a head-level morphological unit with the verb. The incorporated argument shows distinct properties such as obligatory narrow scope (64a) and the inability to antecede a discourse anaphor (64b):

(64) a. John must go apple-picking.

       ⤳ Cannot mean '*There are some apples such that John must go pick them*'.

    b. John went apple-picking. #They were very sour.

       ⤳ '*Apple*' cannot be referred back to by the discourse anaphor '*they*'.

Yet there is another class of what looks like incorporated arguments, given that they show similar properties, but constitutes a separate case since the arguments are not head-level but phrase-level items and thus cannot form a morphological head with the verb. These arguments instantiate a phenomenon termed Pseudo-Noun-Incorporation (Pseudo-Incorporation or P-I for short) by Massam (2001). Pseudo-Incorporation has been noted in many languages, e.g. Niuean (Massam, 2001), Hindi (Mohanan, 1995; Dayal, 2011, 2015), Hungarian (Farkas and de Swart, 2003; Yanovich, 2008), and Danish (Asudeh and Mikkelsen, 2000)... etc.. We will base our discussion of Pseudo-Incorporation on one of them, namely Hindi, and use it as a standard of comparison for Mandarin NP arguments.

In what follows, we will divide our discussion of P-I into two parts. we will first discuss P-I in Hindi based on Dayal (2011), where five hallmark properties of P-I-hood are introduced, i.e. number neutrality, syntactic visibility, obligatory narrow scope, inability of discourse anaphora, and non-compositionality (institutionalized interpretation)[2,3]. In the second part, we will use the

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[2]Dayal (2011) notes the fact that using "all" of the documented properties to test P-I-hood is somewhat controversial because not all of them are found in P-I arguments in other languages. I leave open the issue of which should be counted as the defining property (properties) of P-I, but will show that Mandarin NPs exhibit most of the properties presented here.

[3]All of the examples in the remainder of §3.1 are from Dayal (2011) if the source is not overtly specified.

established P-I properties as diagnostics for Mandarin post-DFP NPs and show that Mandarin NPs pass all of them. In addition to the five P-I properties, the distinction in Case-marking is, according to Dayal (2011), an indicator of whether a nominal has undergone P-I: A *non-Case-marked* NP is pseudo-incorporated. Although Mandarin nominals lack Case-marking, whose P-I-hood is not able to be directly diagnosed by Case, we will still briefly introduce the function of Case-marking in detecting P-I-hood in our discussion of Hindi to help us recognize other P-I properties that are correlated. As a brief sketch, Hindi non-Case-marked NPs will be shown to be number neutral, possess obligatory narrow scope, be unable to antecede a discourse anaphor, and be institutionalized (possess some non-compositional/idiomatic reading). Mandarin post-DFP NPs will be argued to exhibit the same properties as their Hindi counterparts and should be viewed as an instance of P-I.

3.1.1   Number neutrality

Number neutrality plays a decisive role in determining whether something is incorporated: Incorporated nominals are number neutral.

(65) John went apple-picking.

    ⤳ He only picked one apple/He picked many apples.

In the English example above, the incorporated noun *apple*, in its bare form, is open to the number interpretation; hence, the sentence can be continued with a singular or plural reference to the type of entities categorized as *apple*. We find the same number neutrality in Hindi. Consider the following example:

(66) a. purre din kamre meN *cuuhaa* ghustaa   rahaa

       whole day room in   mouse enter-IMP PROG

       'The whole day the mouse/a mouse (the same one) kept entering the room.'

b. anu   purre   din   *cuuhaa* pakaRtii   rahii

  Anu whole day mouse   catch-IMP PROG

  'Anu kept catching mice (different ones) the whole day.'

Hindi is a language that makes a singular/plural distinction in nominals. A singular nominal can only denote singular entities. However, the non-Case-marked bare singular nominal *cuuhaa* ('mouse') is number neutral in the object position. The subject *cuuhaa* is either definite or specific, but is unequivocally singular in both cases, due to its singular nature. Since number neutrality is a hallmark of incorporation and the object position is generally the incorporation target, we can safely conclude that the bare NP object in (66b) is incorporated. Of course, this line of argument does not rule out a true Noun-Incorporation analysis for Hindi bare NP objects, where it is the N° of the NP that incorporates into the verb, forming a morphologically complex V° (N°-V°). However, the following example suggests otherwise:

(67)   a. anu   sirf   *puraanii kitaab* becegii   (Dayal, 2011: 136)

      Anu only old   book   sell-FUT

      'Anu will only sell old books.'

    b. anu   *kutta aur billi* paaltii   hai   (Dayal, 2011: 137)

      Anu dog   and cat   breed-IMP be-PRS

      'Anu breeds cats and dogs.'

Bare nominal objects can be modified or conjoined, which signals their phrasal nature, and yet still retain their incorporation properties[4]. This is a striking point that parallels Hindi bare NP objects with incorporated "NP" objects in Niuean, where the term Pseudo-Noun-Incorporation was first proposed (Massam, 2001):

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[4]In addition to number neutrality presented here, the retained properties include all of those aforementioned that will be the focus of our discussion about P-I-hood, as will be shown later.

(68) a. Ne inu **kofe kono** a Mele (Massam, 2001: 158)

PST drink coffee bitter ABS Mele

'Mary drank bitter coffee.'

b. Ne kai **sipi mo** e **ika mitaki** a Sione (Massam, 2001: 160)

PST eat chip COMTV ABS fish good ABS Sione

'Sione ate good fish and chips.'

In §3.2, Mandarin post-DFP NPs will also be shown to exhibit number neutrality (in addition to other P-I properties) and thus should be analyzed on a par.

Although number neutrality is a steadfast diagnostic for incorporation, in this case P-I, there is one complication in the number neutral interpretations of Hindi P-I NPs, as brought up by Dayal (2011); that is, they are aspect-dependent:

(69) a. anu-ne *tiin ghanTe meN / tiin ghanTe tak* kitaab paRhii

Anu-ERG 3 hours in 3 hours for book read-PFV

'Anu read a book in three hours' = exactly one book [*Accomplishment*]
'Anu read a book for three hours' = one or more books [*Activity*]

b. anu-ne *tiin ghanTe meN / *tiin ghanTe tak* kitaab paRh *Daalii*

Anu-ERG 3 hours in 3 hours for book read COMPL-PFV

'Anu read a book in three hours' = exactly one book [*Accomplishment*]

c. anu-ne tiin ghanTe meN **kitaab* ikaTTaa kar lii/

Anu-ERG 3 hours in book collect do COMPL-PFV

^{OK}*kitaabeN* ikaTThaa kar liiN

books collect do COMPL-PFV

'Anu got done collecting *a book/^{OK}books in three hours.'

The temporal adverbials *tiin ghanTe meN* ('in three hours') and *tiin ghanTe tak* ('for three hours') indicate whether the aspect is telic or not. In (69a), the verb has an Accomplishment

reading when the aspect is telic, and the bare singular NP object loses its number neutrality and is necessarily interpreted as singular. In contrast, the number neutral nature of the bare NP arises in the atelic aspect, when the verb has an Activity reading.

Moreover, in the presence of a completive morpheme *daalii*, (69b), the sentence is unambiguously telic (hence the incompatibility of *tiin ghanTe tak*), and the bare NP object has only a singular interpretation. (69c) further supports the claim about the aspect-dependent nature of the number neutrality of Hindi P-I NPs: Telicity, enforced by the completive morpheme, restricts the number reading of the bare singular NP to singular and thus makes it ungrammatical under a collective predicate like *ikaTTaa* ('collect'). Only when a plural NP is used in this case does the sentence become grammatical, leading to a contrast that confirms the true singular nature of singular NPs.

3.1.2 Syntactic visibility

Given their phrasal nature, P-I NP objects are entities that are visible in syntax, and are therefore expected to be subject to syntactic processes. Dayal (2011) shows that non-Cased NP objects in Hindi can indeed control agreement, further supporting that they are *pseudo*-incorporated. To see this, we will first have to learn how the agreement system in Hindi works.

(70) a. raam   *macchlii* pakaR rahaa   hai

Ram(MASC) fish(FEM) catch   PROG-MASC-SG be-PRS

b. siitaa   *macchlii* pakaR rahii   hai

Sita(FEM) fish(FEM) catch   PROG-FEM-SG be-PRS

'Ram/Sita is catching fish.'

(71) a. raam-ne/ siitaa-ne (ek)   *macchlii* pakaRii

Ram-ERG Sita-ERG (one) fish(FEM) catch-FEM-SG-PFV

'Ram/Sita caught a fish.'

b. raam-ne/ siitaa-ne *macchlii-ko* pakaRaa

Ram-ERG Sita-ERG fish(FEM)-ACC catch-MASC-SG-PFV

'Ram/Sita caught the fish.'

Hindi is a language that shows split ergativity, where the absolutive agreement pattern occurs with imperfective aspect whereas the ergative agreement pattern occurs with perfective aspect (Mohanan, 1995). In the case of imperfective aspect, as in (70), we see the agreement generalization that it is the highest non-Case-marked argument that controls agreement on the verb (Dayal, 2011). Therefore, the verb shows masculine singular agreement in (70a), since the highest non-Case-marked argument is *Ram*, and feminine singular agreement in (70b) with the highest non-Case-marked argument now being *Sita*.

What concerns us is the agreement pattern in (71), where the subject arguments are now marked for ergative Case due to the perfective aspect on the verb. We see that the object argument in (71a), now being the highest non-Case-marked argument, controls agreement, i.e. the verb shows feminine singular agreement regardless of what the subject is. It is only when the object is also marked for accusative Case that the default agreement (masculine singular) kicks in since there is no other non-Case-marked argument in the sentence, (71b).

So far, we have seen that number neutrality arises in the object position under atelic aspect in Hindi. And the number neutral object is non-Case-marked and can control agreement. But in order for *non*-Case-marking to be indicative of P-I, we still need to show that Case-marking on objects eliminates the possibility of P-I-hood. The next section is dedicated to demonstrating this point.

3.1.3 Case-marking

As Dayal (2011) shows, accusative Case-marking on objects is optional in Hindi if the objects are *inanimate*, irrespective of their nominal status, i.e. whether they are bare NPs or DPs with determiners:

(72) a. anu *har kitaab/ har kitaab-ko* paRhegii

       Anu every book   every book-ACC read-FUT

       'Anu will read every book.'

   b. anu *kitaab/ kitaab-ko* paRhgeii

       Anu book   book-ACC read-FUT

       'Anu will read a book/the book.'

Given this fact, as well as that non-Case-marked inanimate objects can sometimes be interpreted as definite[5], a reading that rules out any possibilities of incorporation, inanimate objects probably are not too telling in terms of P-I-hood based on Case-marking.

    Animate objects, on the other hand, tell us more about the role Case-marking plays if we are to pursue a P-I analysis for bare NP objects in Hindi. Consider the following observation made in Dayal (2011). When the animate object has a determiner, it is obligatorily accusative-Case-marked. When it is bare, it can be optionally accusative-Case-marked:

(73) a. anu **har bacca/ har bacce-ko* sambhaaltii   hai

       Anu every child   every child-ACC look-after-IMP be-PRS

       'Anu looks after every child.'

   b. anu *bacca/ bacce-ko* sambhaaltii   hai

       Anu child   child-ACC look-after-IMP be-PRS

       'Anu looks after (one or more) children/the child.'

Under the observation that non-Case-marking is only available when the animate object is an NP (hence the contrast between (73a) and (73b) in the optionality of Case-marking) and the assumption that incorporation cannot involve DPs (Dayal, 2011), we can be somewhat confident that non-Case-marked animate objects are true NP objects and make good candidates for P-I. Note in (73b) that Case-marking on the NP necessarily comes with a definite interpretation, as opposed

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[5]Thanks to Rajesh Bhatt, Sakshi Bhatia, and Jyoti Iyer for pointing out this fact to me.

to the *non*-Case-marked, *number neutral* NP. According to Dayal (2011), Hindi Case-marking targets DPs of type *e* and quantifier-type. If we hypothesize that the definiteness of the Case-marked NP object is contributed by a covert *ι*-operator that shifts its type to type *e* (Partee, 1987), rendering it an underlying DP (as in the case of Mandarin definite bare nominals) and a target for Case-marking, we can readily limit the possibility of being pseudo-incorporated to non-Case-marked objects only. Given their number neutral nature, another hallmark of incorporation, we can now make an exclusive connection between non-Case-marking on objects and P-I.

As a side note, since a non-Case-marked bare nominal in Hindi may or may not be pseudo-incorporated, depending on its definiteness, one way to make sure that the potentially agreement-controlling, non-Case-marked bare objects in (71a), (72b), and (73b) are really pseudo-incorporated is by testing whether those objects are subject to the uniqueness presupposition associated with definite nominals. And as Dayal (2011) shows, bare non-Case-marked objects do not come with a uniqueness presupposition and can range over more than one entity under atelic aspect, i.e. it is number neutral.

3.1.4 Obligatory narrow scope

Another hallmark property of (pseudo-)incorporated arguments is their obligatory narrow scope reading with respect to other scope-bearing clause-mates. Non-Case-marked Hindi objects have been shown to have this property, as opposed to their Case-marked counterparts:

(74) a. anu *bacca* nahiiN sambhaalegii $\qquad\qquad\qquad\qquad$ $\neg > \exists; *\exists > \neg$

   Anu child not   look-after-FUT

   'Anu will not look after children.'

   b. anu *ek bacce-ko* / *bacce-ko* nahiiN sambhaalegii $\qquad$ $\exists > \neg; *\neg > \exists$

   Anu one child-ACC child-ACC not   look-after-FUT

   'Aun will not look after a particular child/the child.'

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As pointed out by Dayal (2011), obligatory narrow scope is a stable property of incorporation across languages. The contrast in the above example strongly suggests that we are dealing with an incorporated argument in (74a). However, there is one confound that might raise one's doubt about the legitimacy of treating these non-Case-marked arguments as being incorporated; that is, bare nominals without overt determiners also have obligatory narrow scope (Carlson, 1977) but are not necessarily incorporated. The following English example illustrates this point:

(75) John didn't pick apples. $\neg > \exists; *\exists > \neg$

⤳ Cannot mean '*There were some apples such that John didn't pick them.*'

English orthography and word order make it clear whether something is incorporated, i.e. the incorporated item either is signaled with a hyphen, as in *apple-picking*, or comes before what it is incorporated into, as in *truck driver*. (75) is an example where the bare NP object is syntactically/morphologically independent of the verb, yet its narrow scope with respect to negation is required.

Since Hindi orthography does not make a distinction between pseudo-incorporated and non-pseudo-incorporated NPs, for all we know, the non-Case-marked object in (74a) could be the bare nominal counterpart of the English object in (75). There is, however, one strong argument for the morphologically singular object in (74a) being a P-I NP, i.e. it is number neutral in addition to its non-Case-marking. On the other hand, the Case-marked singular object in (74b) strictly denotes a singular child. Given the established status of Case-marked nominals being DPs in Hindi and hence prevented from incorporation in general, the non-Case-marked NP status and number neutral interpretation of the object in (74a) that contrast it with the Case-marked object in (74b) are best accounted for under a P-I analysis.

3.1.5 Inability of discourse anaphora

The inability to antecede a discourse anaphor is, as Dayal (2011) notes, a somewhat controversial test for P-I-hood since many languages that are reported to be pseudo-incorporating vary to

a great extent in this respect. But the fact that Hindi bare NP objects show some trace of this inability is at least suggestive of their P-I-hood. A brief summary of discourse anaphora facts found in Hindi bare NP objects: (i) Plural NPs generally support discourse anaphora; (ii) singular pronominal anaphora is available in telic conditions but not in atelic conditions, i.e. like number neutrality, pronominal anaphora is also aspect-sensitive.

(76) Plural NP objects support discourse anaphora in general.

    a. anu apne beTe ke-liye laRkii$_i$ / laRkiyaaN$_i$ dekh   rahii hai

       Anu self's son for girl girls looking at PROG be-PRS

       'Anu is girl-looking/girls-looking for her son.'

    b. vo #us-kaa$_i$ / un-kaa$_i$ swabhaav jaannaa caahtii   hai

       she her   their nature to-know what-IMP be-PRS

       'She wants to know #her/their (the girls') temperament.'

That plural pronominal anaphora is available to P-I arguments seems to be a reliable generalization, which is also reported in Hungarian, another P-I language (Farkas and de Swart, 2003). In the above Hindi example, the P-I object can be either a singular or plural, (76a). Yet, only the plural anaphoric pronoun can be used in the following sentence to refer back to the P-I object, (76b). Note that the sentences in (76) are in atelic aspect, in which number neutrality of singular P-I NPs arises. Therefore, the singular P-I object's co-reference with a plural pronominal anaphor does not lead to any semantic anomaly.

However, it remains a puzzle as to why the singular pronominal anaphor is incompatible with the singular P-I object in (76a) since number neutrality possibly includes a singular interpretation for the P-I object. In fact, as brought up by Dayal (2011), the use of the singular anaphoric pronoun in (76b) is judged by native speakers to describe a scenario where the same entity denoted by the P-I object in (76a) ranges over iterative events denoted by the predicate in (76b), the iterativity being a product of the atelic aspect. And this is the cause of the semantic anomaly: Anu wants to know the *same* girl's temperament repeatedly. In other words, the badness of the singu-

lar anaphoric pronoun is more of a semantic cause than a syntactic one, and should be attributed to aspectual specification.

The availability of singular pronominal anaphora in telic aspect further confirms this point:

(77) Singular pronominal anaphora is available when the P-I object is in telic conditions.

    a. anu-ne   apne beTe ke-liye laRkii_i cun   lii

       Anu-ERG self's son   for   girl   choose COMPL-PFV

       'Anu has girl-chosen for her son.'

    b. us-ne us_i-ko ek sone-kaa cen   diyaa   hai   (Singular anaphor as IO)

       she   her   one gold   necklace give-PFV be-PRS

       'She has given her a gold necklace.'

    b'. vo ab us_i-se   baat kar rahii hai   (Singular anaphor as DO)

       she now her-INSTR talk do PROG be-PRS

       'She is now talking to her.'

Recall that the singular P-I object loses its number neutrality in telic aspect and is strictly singular. Now a singular pronoun can be used to refer back to the P-I object. Given the facts in Hindi that number neutrality and the (in)ability of discourse anaphora, the hallmark properties of P-I, are tightly tied to aspect, it is inevitable that any theory of P-I has to factor in aspectual conditions. In §3.2, Mandarin post-DFP bare NPs will also be shown to be aspect-sensitive in terms of number neutrality and supporting discourse anaphora. Furthermore, the aspect-dependency will be derivable in the analysis for Mandarin post-verbal arguments in the next chapter.

3.1.6 Non-compositionality (Institutionalized readings)

Before we turn to Mandarin bare NPs, there is one more property of P-I that is also described as characteristic of Hindi non-Case-marked objects, but in my opinion, it is more difficult to

formalize. Hence, it can only be seen as a sufficient but not necessary condition for the objects' P-I-hood. The property is non-compositionality (or institutionalized readings):

(78) a. laRkii-dekhnaa, laRkii-DhuunDhnaa, baccaa-khilaanaa,   baccaa-samhaalnaa

 girl/seeing   girl/finding   child-looking-after child-looking-after

   b. *baccaa-maarnaa, *laRkii-sulaanaa,   *aurat-dekhnaa, *laRkii-khilaanaa

 child-beating   girl-putting-to-sleep woman-seeing   girl-looking-after

The above examples from Dayal (2011) all have some level of non-compositionality in them. *LaRkii-dekhnaa* ('girl-seeing'), for instance, has the additional meaning of viewing girls as future brides. As Dayal (2011) notes, non-compositionality is reported to be characteristic of Noun-Incorporation, often accompanied by accidental gaps in the possible combinations of the incorporated verbal complexes [$_V$ N+V]. The nominal-verb combinations in (78) resonates with the noted non-compositionality, (78a), as well as the accidental gaps, (78b). However, we have established that the nominals in the Hindi incorporation case are phrases rather than heads. Therefore, (78) shows that non-compositionality is also a property of P-I. Furthermore, there seems to be some gradience in terms of the semantic opacity the P-I cases in Hindi exhibit, according to Dayal (2011). While some can be completely *transparent*, i.e. they are purely compositional with no idiomatic readings, such as *ghaas-kaaTnaa* ('grass-cut'; or *book-reading* in many of the previous examples), others can be fully *opaque*, such as *makkhii-maarnaa* ('fly-kill' ≈ *time-wasting*), with some *semi-transparent* ones in the middle, such as *LaRkii-dekhnaa*, part of whose meanings can be retrieved from the components in the nominal-verb pairs.

    As a matter of fact, there is a distinction between human and non-human objects in terms of subjectivity to P-I: Non-human objects can generally be pseudo-incorporated, i.e. they are non-Case-marked and when in singular form, are number neutral, whereas human objects can only undergo P-I if they are conventionalized (and in some cases have non-compositional meanings, e.g. *laRkii-dekhnaa* ('girl-seeing')) with the verbs into which they are incorporated. That is, the non-conventionalized human objects have to appear with Case-marking (Differential-Object-

Marking in Hindi), and hence are not subject to P-I. This, however, does not threaten the claim that non-compositionality is suggestive of P-I-hood. It also does not rule out the P-I-hood of the non-Case-marked non-human objects[6].

Given the gradience observation in semantic compositionality in Hindi P-I and what others have observed about non-compositionality in other P-I languages, I side with Dayal (2011) in that it is nearly impossible to develop a theory that can reliably and systematically derive cross-linguistic variation in this category. In this respect, non-compositionality is simply treated as indirect support for P-I-hood, not a requirement.

3.2 Pseudo-Incorporation: Mandarin post-verbal bare NPs

In this section, Mandarin post-verbal NPs will be evaluated against the P-I properties previously mentioned to establish the case that Mandarin NPs, too, are an instance of P-I. The discussion of the relevant P-I properties in Mandarin NPs is arranged in a way that puts the properties on a scale of straightforwardness given the linguistic differences between Hindi and Mandarin in other respects independent of P-I: The properties that more straightforwardly suggest P-I-hood are discussed first whereas those that might be complicated by the linguistic differences between the two languages are discussed towards the end.

3.2.1 Obligatory narrow scope

We are concerned about the bare NPs that occur post-DFP because that is the only position where they can be interpreted indefinitely, bearing in mind that Mandarin bare nominals, like their Hindi counterparts, can also obtain a definite interpretation. Therefore, in all of the following examples, a DFP will be present to make it clear that we are looking at the right NPs.

Like Hindi P-I objects, Mandarin bare NPs also show obligatory narrow scope:

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[6]Thanks to Jyoti Iyer and Sakshi Bhatia (p.c.) for pointing out this human/non-human distinction to me.

(79) a. Zhangsan **haoxiang** mai-le [$_{DrP}$ san nian] [$_{NP}$ **che**] ($\Diamond > \exists$; *$\exists > \Diamond$)

Zhangsan seem sell-ASP three year car

✔'Zhangsan seems to have sold cars for three years.'
*'There are some cars such that Zhangsan seems to have sold them for three years.'

b. Zhangsan **bixu/meiyou** mai [$_{DrP}$ san nian] [$_{NP}$ **che**] ($\Box/\neg > \exists$; *$\exists > \Box/\neg$)

Zhangsan must/not sell three year car

✔'Zhangsan must/did not sell cars for three years.'
*'There are some cars such that Zhangsan must/did not sell them for three years.'

Two notes are worthy here. First, the claim that the post-DFP bare nominal here is an incorpo-rated NP instead of an N° is based on two observations— (i) as in Hindi and Niuean, the bare nominal can be modified, and (ii) the true N°-incorporation position in Mandarin is *before* the verb rather than after (Lin, 2001; Paul and Whitman, 2010):

(80) a. Zhangsan chi-le san tian **exin-de laoshu**

Zhangsan eat-ASP three day gross mouse

'Zhangsan ate gross mice for three days.'

b. Zhangsan chi-le san tian **she he laoshu**

Zhangsan eat-ASP three day snake and mouse

'Zhangsan ate snakes and mice for three days.'

(81) a. Zhangsan **bang-da**-le Lisi (Inc. INSTR) b. Zhangsan **hai-zang**-le Lisi (Inc. LOC)

Zhangsan bat-hit-ASP Lisi Zhangsan sea-bury-ASP Lisi

'Zhangsan hit Lisi with a bat.' 'Zhangsan buried Lisi in the sea.'

c. Zhangsan-de xiaohai-men **gua-fen**-le Zhangsan-de qian (Inc. PAT)

Zhangsan-GEN child-PL mellon-split-ASP Zhangsan-GEN money

'Zhangsan's children split Zhangsan's money (like splitting a mellon).'

The examples in (80) require no further explanation since they present a parallelism with P-I NPs in Hindi and Niuean. (81) shows instances of morphologically complex verbs where incorporation involving various thematic items has taken place: An instrumental and a locative adjunct have incorporated in (81a) and (81b), respectively; a patient argument has incorporated in (81c). These noun-verb combinations are treated as a verbal unit, as indicated by the aspectual-marking. And the N° status of these incorporated items can be supported by their inability to be modified:

(82) a. Zhangsan (***da-**)bang-da-le Lisi   b. Zhangsan (***da-**)hai-zang-le   Lisi

         Zhangsan (big-)bat-hit-ASP Lisi   Zhangsan (big-)sea-bury-ASP Lisi

         'Zhangsan hit Lisi with a big bat.'   'Zhangsan buried Lisi in the big sea.'

     c. Zhangsan-de   xiaohai-men (***da-**)gua-fen-le   Zhangsan-de   qian

         Zhangsan-GEN child-PL   (big-)mellon-split-ASP Zhangsan-GEN money

         'Zhangsan's children split Zhangsan's money (like splitting a big mellon).'

The second note is that one might argue that Mandarin is a well-known scope-rigid language (Huang, 1982), so the narrow scope interpretation of the bare NP could simply result from the fact that the modals and negation are structurally higher than the bare NP, and have nothing to do with P-I. However, as shown in the next section that discusses the syntactic visibility of Mandarin post-DFP bare NPs, the bare NPs can in fact undergo movement to a position higher than the modals and negation, as can Hindi P-I objects be scrambled away under the satisfaction of certain licensing conditions. They are nevertheless still interpreted narrow scope with respect to the modals and negation.

3.2.2   Syntactic visibility

When the syntactic visibility of Hindi P-I NPs was discussed earlier, it was shown that the NPs are subject to syntactic operations, such as controlling agreement, and that they can sometimes

be told apart from their non-P-I counterparts by Case-marking, i.e. non-Case-marked and non-referential objects are P-I objects, and non-Case-marked human objects have necessarily undergone P-I due to Hindi having Differential-Object-Marking (DOM). Unfortunately, Mandarin does not have Case-marking or agreement, so Case and agreement cannot be our tests for the syntactic visibility of post-DFP NPs. We need to look at their syntactic visibility from a different perspective.

Mandarin has movement, which will be the approach we take to the issue of syntactic visibility. We will again start our discussion by looking at Hindi P-I NPs in comparison to Mandarin NPs. As Dayal (2011) notes, Hindi P-I NPs can be scrambled away with the satisfaction of certain licensing conditions, contrary to the views that P-I NPs are strictly adjacent to the verb, as in Niuean (Massam, 2001), and that non-specific NPs cannot be scrambled (Diesing, 1992; de Hoop, 1992):

(83) a. [$_F$ *kitaab*] anu becegii, [$_F$ akhbaar   ] nahiiN

       book   Anu sell-FUT,   newspaper   not

    'Anu will sell books, not newspapers.'

    b. *kitaab* anu bhii becegii   c. *kitaab* anu zaroor   becegii

       book   Anu also sell-FUT   book   Anu definitely sell-FUT

       'Anu will also sell books.'   'Anu will definitely sell books.'

    d. *faislaa*   ham roz   karte   haiN[7]

       decision we   everyday do-IMP be-PRS

       'We make decisions every day.'

The legitimacy of scrambling in Hindi is subject to the fulfillment of certain discourse requirements. Those requirements can usually be fulfilled by definite/specific NPs but non-specific and number neutral NPs (i.e. P-I NPs) can in certain contexts fulfill the requirements and hence undergo scrambling. One context is that of contrastive focus, (83a). When *kitaab* ('book') is being

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[7](83d) is from Gambhir (1981)

contrasted with *akhbaar* ('newspaper'), it can be scrambled to the left-periphery of the sentence. Note that the interpretation of *kitaab* remains non-specific and number neutral.

Another one of the scrambling contexts for Hindi P-I NPs is in the presence of the particle *bhii* ('also'), (83b). According to Dayal, *bhii* introduces a presupposition, where '*someone other than Anu will book-sell*' (Dayal, 2011: 62). *Kitaab* in (83b) has a prior discourse anchor, i.e. the *book* in the presupposition, which licenses its scrambling. In fact, the scrambled NPs in the other sentences can all be treated as having a prior discourse anchor, in turn leading Dayal to generalize the conditions under which P-I NPs can undergo scrambling:

(84) Assumed licensing condition for Pseudo-Incorporated NP scrambling (Dayal, 2011: 62):

'Scrambled nominals must be anchored to an element in prior discourse.'

I argue that Mandarin presents a parallel case of P-I NP displacement as in Hindi, i.e. non-referential NPs can move to a higher position under contrast, or when they are anchored to a prior discourse element[8]:

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[8]The ability to move is another property that sets apart P-I and true Noun-Incorporation because the N° head that has formed a morphological unit with the verb through Noun-Incorporation is invisible in syntax. Moving it out of the complex verbal predicate, either via contrast or a prior discourse anchor, results in ungrammaticality, as shown in the English and Mandarin cases below:

(i) a. *__Apple__$_i$, John went t_i-picking <u>in the summer</u>, and **strawberry**$_j$, he went t_j-picking <u>in the winter</u>.

b. *__Apple__$_i$, John went t_i-picking, <u>too</u>.

(ii) a. *__Bang__$_i$, Zhangsan t_i-da-le <u>Lisi</u> erqie **qiang**$_j$, ta t_j-sha-le <u>Wangwu</u>
bat   Zhangsan ∅-hit-ASP Lisi and gun   he ∅-kill-ASP <u>Wangwu</u>
'Zhangsan hit Lisi with a bat and he killed Wangwu with a gun.'

b. *__Bang__$_i$, Zhangsan <u>ye</u> t_i-da-le Lisi
bat   Zhangsan <u>also</u> ∅-hit-ASP Lisi
'Zhangsan also hit Lisi with a bat.'

(85) CONTRAST[9]—

    a. *Zhangsan **yan** mai[10]

       Zhangsan   cigarette sell

       'Zhangsan sells cigarettes.'

    b. Zhangsan **yan** <u>mai</u>, **jiu** <u>bu mai</u>

       Zhangsan cigarette sell   alcohol NEG sell

       'Zhangsan sells cigarettes but not alcohol.'

    c. Zhangsan **yan** mai-le <u>san nian</u>, **jiu** mai-le <u>wu nian</u>

       Zhangsan cigarette sell-ASP three year alcohol sell-ASP five year

       'Zhangsan sold cigarettes for three years, and alcohol for five years.'

    d. Zhangsan <u>shi</u> **yan** mai-le san nian, <u>bu shi</u> **jiu** (mai-le san nian)

       Zhangsan SHI cigarette sell-ASP three year NEG SHI alcohol sell-ASP three year

       'It is cigarettes that Zhangsan sold for three years, not alcohol.'

According to Ernst and Wang (1995), the preverbal position in Mandarin is a position for contrast. Without contrast on the non-referential object *yan* ('cigarette'), movement into this preverbal position is banned, as in (85a)[11]. Yet as soon as the object is being contrasted with another object, i.e. *jiu* ('alcohol') in (85b) and (85c), the preverbal movements of both of the non-referential objects become accessible. Example (85d) is a cleft-like construction in Mandarin, where the morpheme *shi* is marking a focus position immediately following, in which the non-referential object occurs. Whether *shi* in this construction is a copula or merely a focus operator receives no consensus, but it has been reported that *shi* in this case can mark contrastive focus (Li, 2008). And as in the other cases of contrast, the object is preposed to a higher position, yet still retains its non-referential interpretation.

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[9] The preverbal position for contrast in Mandarin also licenses movement of other types of objects, e.g. definite NPs or DPs. What should be of our primary concern here is the movement of non-referential NPs it induces.

[10] This example of illicit movement of a non-referential NP is shown with the absence of a DFP under the consideration that the mere presence of a DFP also licenses movement of a non-referential NP to the preverbal position, i.e. Pattern II.

[11] In Ernst and Wang's analysis, the preverbal position is a position for contrastive *focus*. However, although the position can be used contrastively, it has been argued by many others that it is not a focus position (Paul, 2002, 2005; Badan, 2008; a.o.). Many examples show that the preverbal position is available under various conditions that do not necessarily involve contrast or focus. We will see those examples in §5.1 when we discuss Pattern II that centers on the preverbal position and its relation with the DFP. We will side with Paul (2002, 2005) and Badan (2008) in treating this position as a sentence-internal topic position, as suggested by the various examples there. For now, it is sufficient to know that the object can move into this position under contrast.

In addition to contrast, a prior discourse anchor also makes available the movement of non-referential objects into a higher position, e.g. the topic position:

(86) Prior Discourse Anchor—

a. **Yan**,   Zhangsan ye   mai
   cigarette Zhangsan also sell
   'Zhangsan also sells cigarettes.'

b. **Yan**,   Zhangsan juedui   hui mai
   cigarette Zhangsan definitely will sell
   'Zhangsan will definitely sell cigarettes.'

c. **Yan**,   Zhangsan meitian   mai
   cigarette Zhangsan everyday sell
   'Zhangsan sells cigarettes everyday.'

These instances of object-topicalization are all parallel to those of P-I NP scrambling in Hindi under the licensing of a prior discourse anchor, with one minor difference. The presuppositions that *ye* ('also') introduces could be either *someone other than Zhangsan sells cigarettes* or *Zhangsan sells something other than cigarettes*. Regardless, there is something that is sold in the common discourse that *yan* ('cigarette') is anchored to.

One piece of evidence that what has moved in all these examples here is a P-I object comes from the fact that the object can resume a narrow scope reading with respect to a scope-bearing element that is structurally lower:

(87) Contrast—

a. Zhangsan **yan**   *yinggai* mai, **jiu**   bu *yinggai*   mai   (✔ □ > ∃)
   Zhangsan cigarette should sell   alcohol NEG should sell
   'Zhangsan should sell cigarettes but not alcohol.'

b. Zhangsan **yan**   *haoxiang* mai-le   san nian, **jiu**   *haoxiang* mai-le   wu nian
   Zhangsan cigarette seem   sell-ASP three year alcohol seem   sell-ASP five year
   'Zhangsan seems to have sold cigarettes for three years, and alcohol for five years.'
   (✔ ◇ > ∃)

c. Zhangsan <u>shi</u> **yan** *meiyou* mai san nian, <u>bu shi</u> **jiu** (*meiyou* mai san nian)

Zhangsan SHI cigarette NEG sell three year NEG SHI alcohol NEG sell three year

'It is cigarettes that Zhangsan didn't sell for three years, not alcohol.' (✔¬ > ∃)

(88) PRIOR DISCOURE ANCHOR—

a. **Yan**, Zhangsan <u>ye</u> *meiyou/yinggai/bixu* mai (✔¬/□ > ∃)

cigarette Zhangsan also NEG/should/must sell

'Zhangsan doesn't sell cigarettes either / Zhangsan should/must also sell cigarettes.'

b. **Yan**, Zhangsan *meiyou/yinggai/bixu/haoxiang* <u>meitian</u> mai (✔¬/□/◇ > ∃)

cigarette Zhangsan NEG/should/must/seem everyday sell

'Zhangsan doesn't/should/must/seems to sell cigarettes everyday.'

Under the assumption that Mandarin is a scope-rigid language, that the preposed object can be interpreted narrow scope with respect to a modal or negation that is syntactically lower would be surprising if the object had not undergone Pseudo-Incorporation, of which obligatory narrow scope is a steadfast cross-linguistic property. Of course, how this property can be derived is pending on the analysis for Pseudo-Incorporation, which will be contingent upon our proposal of Mandarin argument structure for Pattern I in the attempt to account for the positional distinction between non-referential NP objects and objects of other types. But just as a preview of the lines of exploration for this matter, if the existential force of the NPs that determines their scope relative to other scope-bearing elements does not come from the NPs per se but from some null operator that is always syntactically low, then we will able to explain what we see in (87&88).

3.2.3 Non-compositionality

In Mandarin, a bare NP that shows up after a DrP is usually institutionalized with the meaning of the verb to suggest a kind of occupation or activity. Therefore, a sentence like the following readily gets the reading where the subject had performed the type of work 'V-ing NP' in a duration

of time in the past when the NP is a 'prototypical theme' of the verb, borrowing the term from Dayal (2011):

(89) Zhangsan **sha**-guo   san   nian **zhu**

      Zhangsan butcher-EXP three year pig

      'Zhangsan butchered pigs for three years (as his job).'

Since in the Chinese culture, pig-butchering is a very common activity performed at local markets, it is not surprising that the bare NP *zhu* can show up post-DrP and be read non-referential. But when we replace the NP with something that is not common at all, or in fact, not indigenous to the Chinese culture, we get a degradation of the sentence's acceptance:

(90) ?Zhangsan **sha**-guo   san   nian **tuoniao**

      Zhangsan   butcher-EXP three year ostrich

      'Zhangsan butchered ostriches for three years.'

One thing to note here is that it would probably be a little farfetched to call sentences like (90) ungrammatical. In my own judgement, the oddness of (90) comes from the coercion of the NP with the verb into an occupation/activity that you do not normally see everyday. I think, this coerced occupation reading can be made acceptable if the sentence is, for instance, put in a context where ostriches were imported at a market as a healthy replacement for pork, and Zhangsan's job was butchering the imported ostriches. Or the occupation reading can simply be canceled when the sentence is uttered as a pure description of what Zhangsan did in a period of his life where ostriches somehow existed and needed to be butchered (maybe as a pest).

      In this regard, Mandarin bare NPs probably behave differently to their Danish counterparts, which inspired the above examples, if in Danish [*butcher ostrich*] is judged to be ungrammatical as P-I while [*butcher pig*] is not, given that the same prototypicality issue is also present in the Danish culture, as suggested by Dayal's (2011) personal communication with Line Mikkelsen. That is, the non-prototypical object cannot be conventionalized with the verb and is hence not subject to P-I. And the line of conventionality is somewhat arbitrary, where Hindi

exhibits a stricter case as in the contrast shown in (78) between *LaRkii-dekhnaa* ('girl-seeing') and **aurat-dekhnaa* ('woman-seeing') for potential future brides. Only specific terms can be pseudo-incorporated in Hindi; others with very similar semantic attributes would not work.

If we are to treat Mandarin bare NPs as a case of P-I and formulate an account that derives systematically the property of non-compositionality, this cross-linguistic difference would be a big challenge. So again, we are looking at non-compositionality as suggestive of P-I-hood, non-compositionality that may involve gradience of conventionality in different languages. In conclusion, the slight degradation in the judgement between (89) and (90) should at least be a clue that we are dealing with a pseudo-incorporated NP in the post-DFP position.

3.2.4 Number neutrality

We will start our discussion about the potential P-I-induced number neutrality of Mandarin post-DFP NPs by looking at the mouse-catching example parallel to the Hindi one in §3.1.4:

(91) a. **Laoshu** yizhi   pao-jin   fangjian

mouse   continuously run-enter room

'The mouse/mice keep(s) running into the room.'

b. Zhangsan zhua-le   yi   zheng tian **laoshu**

Zhangsan catch-ASP one whole day mouse

'Zhangsan kept catching mice/*the mouse (mice) all day.'

As in the Hindi case, the bare nominal *laoshu* ('mouse') is placed as the subject, (91a), and as the object, (91b)[12]. Yet, we do not see the exact alignment of facts between Hindi and Mandarin bare nominals. First, Mandarin does not allow indefinite subjects (Cheng, 1991, 1994; Cheng and

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[12]In the following, we will use the term *bare nominal* to refer to surface bare nominal phrases that might range over true property NPs (i.e. bare NPs with *no* functional projections) and underlying DPs (bare NPs with *covert* functional projections). This is to avoid confusion about what we intend the term *NP* to represent, i.e. truly syntactically bare nominals that denote properties.

Sybesma, 1999, 2005; a.o.), so the bare nominal subject in (91a) is necessarily definite, hence ι-shfted[13]. Under the assumption that DPs cannot be incorporated, Mandarin subjects, which are necessarily DPs, cannot undergo P-I. However, we still observe number neutrality in the subject in (91a); that is, the subject can be interpreted as denoting a singular (i.e. *the mouse*) or a plural entity (i.e. *the mice*).

This would be unexpected from Hindi's point of view, all due to a major difference between Hindi and Mandarin in the nominal domain: Hindi is a language that makes a singular-plural distinction in nouns whereas Mandarin is a classifier language, where bare common nouns are unspecified for number. One piece of proof is that Mandarin bare nominals are grammatical under collective predicates, where the objects of the predicates require a plural interpretation:

(92) a. Zhangsan **shouji-le youpiao**   b. Zhangsan **bijiao-le   houxuanren**

Zhangsan collect-ASP stamp   Zhangsan compare-ASP candidate

'Zhangsan collected (the) stamps.'   'Zhangsan compared (the) candidates.'

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[13]The bare nominal can indeed obtain an indefinite/non-referential interpretation as an object, as in (91b). This subject-object asymmetry in terms of the bare nominal's definiteness will follow from the analysis to be proposed for Mandarin arguments in §4.

One might wonder, how, then, does Mandarin express indefinite subjects? One common way is to use a construction that resembles English existential sentences:

(i) **You laoshu** yizhi   pao-jin   fangjian
    have mouse continuously run-enter room
    'There is a mouse/There are mice that keep(s) running into the room.'

You can itself be a verb in Mandarin, meaning 'have'. It is not rare cross-linguistically for verbs meaning 'have' to mark the existence of entities. The Mandarin *you* is analyzed by some (Cheng, 1994; a.o.) as an existential operator that binds the open argument position of the bare NP. If we take this binding process to be analogous to that of the ι-operator (Partee, 1987), then this existential operator would have the same ability of rendering a property into an entity, assuming that bare NPs denote properties. This fact, together with the obligatory definite reading of bare nominal subjects (i.e. NPs that are necessarily ι-shifted, i.e. surface NPs but underlying DPs), suggests a generalization that property NPs have to go through some type-shifting process to be subjects in Mandarin.

Another thing about this existential operator is that it cannot show up in the object position with the bare NP:

(ii) Zhangsan zhua-dao-le   (*you) laoshu
     Zhangsan catch-reach-ASP have   mouse
     'Zhangsan caught a mouse/mice.'

This observation indicates that the indefinite reading of NP objects has to come from a different source. An explanation for (ii), as well as the type-shifting generalization above, will be advanced in the proposal of Mandarin argument structure in §4.

Therefore, the subject in (91a), though not subject to incorporation, still exhibits number neutrality. This raises a serious question about the solidity of analyzing post-DFP NPs on a par with Hindi P-I NPs based on their number neutral reading. I will argue that post-DFP NPs still constitute a case of Pseudo-Incorporation for two reasons: (i) Bare nominals cannot be read definite in the post-DFP position, (91b), and (ii) we can still get a number neutral interpretation out of the post-DFP NPs once we control for the number-unspecified nature of Mandarin bare nominals.

Before discussing (i) and (ii), we need to make a little detour and elucidate the terminology we will be using when talking about number neutrality since we have now introduced a different layer of nominal number and that it can be unspecified, as in (91). Given that Mandarin and Hindi differ in the nominal domain in how they encode number in bare nominals, i.e. whether there is a morphological distinction in the number interpretations of the nominals (morphologically singular vs. morphologically plural), we need to be careful in our discussion of number neutrality about what kind of number neutral interpretation we are referring to. We need to be careful about the source of number neutrality and differentiate between what comes from P-I strictly, as in Hindi, where morphologically singular NPs can be interpreted plural when pseudo-incorporated, and what comes from the nominals per se, as in Mandarin, where number is not morphologically specified in bare nominals and the nominals are compatible with both the singular and plural interpretations. We will refer to the number neutrality of the latter kind as the NPs having GENERAL NUMBER, following Rullmann and You (2006), who adopted the term from Corbett (2000)[14]. In the case of the former kind, we will follow the convention in the literature of (Pseudo-)Incorporation, as Dayal (2011, 2015), and persist with the term NUMBER NEUTRALITY, keeping in mind that it is regulated by aspect in Hindi.

Back to the discussion of (i) and (ii). Given appropriate contexts, Mandarin bare nominals can in general obtain definiteness, regardless of their grammatical positions. Therefore, a definite bare nominal can be either the subject or object of the sentence (Cheng and Sybesma, 1999). However, complications arise in the presence of a DFP. If the bare nominal occurs post-

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[14]In Rullmann and You (2006), the denotation of a bare nominal with GENERAL NUMBER is defined over sets that contain atomic entities and all pluralities formed out of the atomic entities:

DFP, definiteness is forbidden and the nominal is left with being non-referential, as in (91b) (See also example (19) on the position-regulated definiteness of Mandarin bare nominals and the discussion that follows). If an exclusive connection between the post-DFP position and P-I can be established, the requirement of post-DFP non-referentiality, i.e. the post-DFP bare nominal necessarily being an NP, receives a straightforward explanation.

For our second argument that the number neutral reading of the post-DFP NPs can still surface after controlling for the complication of General Number that is characteristic of Mandarin bare nominals, we will look at one particular example in the following:

(93) Zhangsan qu-le   san   nian **laopo**

Zhangsan marry-ASP three year wife

'Zhangsan married (different) wives (repeatedly) for three years.'
#'Zhangsan married a wife (the same one) for three years.'

This example involves an event of wife-marrying. Under most social norms, including those in Mandarin-speaking countries, a wife-marrying event is restricted to having only one wife in that

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(i) Suppose a domain of books B containing three individuals, a, b, and c:

B = {a, b, c}
  ◆ Denotation of a noun with general number (e.g. Mandarin Chinese)

Hence, a nominal with General Number like *shu* ('book') has an interpretation of '*one or more* books', and is compatible with both singularity and plurality. This is in contrast with languages that make a morphological distinction in the nominal number, where morphologically singular nominals denote only sets of atomic entities and morphologically plural nominals, sets of pluralities:

(ii) Suppose the same domain B:
  ◆ Denotation of singular and plural nouns in English

Hindi nominals fall under the category of (ii) under Rullmann and You's (2006) account.

event. Thus the GENERAL NUMBER of the bare nominal in this case is pragmatically confined to denoting only sets of atomic entities so that the interpretation of more than one wife in the marrying event is ruled out[15]. Yet, the post-DFP NP still obtains a reading where during the three years' time, Zhangsan married wives (different ones) on different occasions.

All of these properties of Mandarin bare nominals in the post-DFP position point to the direction that they might be pseudo-incorporated like Hindi non-Case-marked bare NPs. But as we saw earlier, the number neutral interpretations of Hindi P-I NPs are aspect-sensitive: Number neutrality of singular P-I NPs only shows up in atelic aspect. One might wonder whether Mandarin post-DFP NPs exhibit the same aspect sensitivity in terms of number neutrality. If we do find the same sensitivity in the case of Mandarin NPs, then we can be fairly certain that we are really dealing with P-I NPs here. However, there is some difficulty in detecting this sensitivity in Mandarin due to two complications, first of which is what we saw is different between Hindi and Mandarin bare nominals, i.e. Hindi bare singular nominals denote singular entities whereas Mandarin bare nominals have no singular-plural distinction and is number-unspecified. Suppose Mandarin non-referential NPs are indeed P-I NPs. This would mean that if the P-I induced number neutrality of Hindi non-Case-marked singular bare NPs is somehow cancelled by telicity or that P-I just somehow does not happen in telic aspect, then we would expect a contrast in the number interpretation of Mandarin bare nominals in telic aspect, i.e. they can still be number-neutral due to their GENERAL NUMBER. And this is what we find, obscuring the possible aspect-sensitivity of P-I in Mandarin:

(94) Zhangsan *zai san   tian nei* mai-*chu*-le   **che**

Zhangsan at   three day in   sell-out-ASP car

'Zhangsan sold [??](the) car(s) in three days.'

---

[15]Given that there are simply no syntactic ways of identifying the number interpretation of *number- and classifier-less* nominals in Mandarin, this pragmatic method of number restriction is the best way I can think of to permit exclusively the singular reading. This is also saying that in contexts where the number of wives in a marriage is not limited to one, the nominal in (93) still has the possibility of allowing for a plural interpretation. Then, it would be virtually impossible to tell whether number neutrality really comes from P-I in that case should the post-DFP NP involve P-I. The take-home message here is that the post-DFP NP has NUMBER NEUTRALITY even in contexts where the plural interpretation of GENERAL NUMBER is not available.

The second complication can also be seen in (94). But before we can see the complication, we have to know a little bit about how (a)telicity is indicated in Mandarin. One way is through the use of temporal adverbials, similar to how telicity is indicated by a temporal *in-* or *for*-phrase in English. The temporal adverbial that is analogous to the English *in*-phrase (e.g. *in three days*) that signals telicity involves two additional morphemes *zai... nei* ('at... in') and is necessarily preverbal. Telicity can also be indicated by the verbal predicate, i.e. whether the predicate has a particle that tells the culmination of the event denoted by the predicate. In (94), telicity is indicated by the particle *chu* ('out') in the verbal complex, i.e. the selling event has been culminated by the car(s) being sold *out* (to someone). In terms of the Mandarin temporal *in*-phrase, the first morpheme *zai* ('at') is commonly used to mark locations and the second morpheme usually tells the precise position of the object at the marked locations, e.g. ***zai*** *zhuozi* ***zhang*** ('at desk up' = on the desk), ***zai*** *zhuozi* ***xia*** ('at desk down' = under the desk)... etc. In other words, the telicity-signaling *in*-phrase has the syntax of a location PP (which also occurs preverbally), unlike the temporal adverbials that we have been calling the duration phrase (DrP) that signals atelicity (analogous to the English *for*-phrase) and always occurs post-verbally with no additional functional morphemes. We can tell that the post-verbal DrP in Mandarin is like the English *for*-phrase indicating atelicity given the following example, where a conflict in aspect is found between the complex verbal predicate and the DrP:

(95) *Zhangsan mai-**chu**-le **san tian** che

Zhangsan sell-out-ASP three day car

*'Zhangsan sold out the car(s) for three days.'

Back to the complication, it seems that the bare nominal in the telic case, (94), somehow requires a definite interpretation. Given our previous generalization about the form and meaning of post-verbal arguments, the bare nominal object in (94) would be categorized as one of the definite bare nominals (i.e. underlying DPs) that occur to the left of a DFP. And its DP status would render it not an instance of P-I[16]. Even if we allow the possibility of the nominal in (94) having

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[16]Why telicity is forcing a definite interpretation on the bare NP is also a mystery at the moment. I will leave this

a non-referential interpretation, we would not be able to tell whether the nominal is pseudo-incorporated. If in Mandarin only non-referential bare nominals can occur in the post-DFP position and only non-referential bare nominals are true NPs that are subject to P-I, then it follows that the post-DFP position is where P-I takes place. This position nonetheless can only be distinguished when a DFP is around. But since the *in*-phrase occurs preverbally in Mandarin, we cannot distinguish the composing position of the bare nominal object in (94), whether it composes in the pre-DFP or post-DFP position. Therefore, we cannot say for sure whether bare nominal objects in the telic condition have undergone P-I or not. Based on these considerations, we will only stick to cases in Mandarin where the positions of the post-verbal arguments can be distinguished by DFPs and remain agnostic about whether number neutrality in the case of Mandarin non-referential NPs is aspect-sensitive as in Hindi.

3.2.5 Inability of discourse anaphora

Recall that in addition to number neutrality, the inability of Hindi P-I NPs to antecede a discourse anaphor is also aspect-dependent and has a singular-plural distinction: In atelic aspect, singular pronominal anaphora is unavailable to singular P-I NPs while plural pronominal anaphora is available to both singular and plural P-I NPs[17]. Despite the uncertainty of the status of Mandarin bare nominals in the telic case, we can at least observe the same anaphora pattern from bare non-referential NPs in the atelic condition:

(96) a. Zhangsan mainshi-le san tian **yingzhengzhe**$_i$

      Zhangsan interview-ASP three day applicant

      'Zhangsan interviewed applicants for three days.'

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issue open for future agenda.

   [17] The same kind of aspect-number-conditioned discourse anaphora is also reported for Hungarian (Yanovich, 2008) and Danish (Asudeh and Mikkelsen, 2000) P-I NPs.

b. Ta wen-le #**ta**ᵢ/✔**tamen**ᵢ   henduo wenti

    he ask-ASP him (her)/them many   question

    'He asked #him (her)/✔them many questions.'

Atelicity in (96a) is enforced by the DrP *san tian* ('for three days'). And as can be seen, the post-DrP bare NP *yingzhengzhe* ('applicant') cannot be referred back to by a singular pronoun in the following sentence. Only a plural discourse anaphor is felicitous in this case[18]. If the aspect-sensitivity of discourse anaphora is indeed a common property for P-I NPs, as reported in Hindi (Dayal, 2011, 2015), Hungarian (Yanovich, 2008), and Danish (Asudeh and Mikkelsen, 2000), then Mandarin adds to it another case of aspect-conditioned discourse anaphora, further confirming the P-I status of Mandarin post-DFP NPs. Otherwise, it would be quite surprising that the post-DFP NPs are unavailable to singular discourse anaphors despite the NPs having GENERAL NUMBER. The question, then, is, how does this aspect-conditioned singular-plural distinction in discourse anaphora come about? §4 will strive to answer this question.

3.3   Summary

It has been shown in this chapter that the post-DFP NPs in Mandarin exhibit almost all of the properties that have been observed from P-I NPs in Hindi despite the difference between the two languages in the number-specification of bare nouns. And it is clear that in Mandarin these properties are tied to the post-DFP position, giving rise to the word order distinction between the NPs and DPs that we set out to account for in §1. In the next chapter, we will advance an analysis for Mandarin post-verbal arguments that captures the word order distinction as well as derives the P-I properties of the post-DFP NPs. In other words, the to-be-proposed analysis is aimed to be a general analysis that extends to other P-I languages. There will also be parametric accounts for the typological variations in terms of P-I, i.e. accounts for why some languages, such as English, do

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[18]That felicity instead of grammaticality is used to define the goodness/badness of these anaphora facts will become clear once we try to derive this P-I property with the argument structure to be proposed in §4 for Mandarin post-verbal arguments.

not allow P-I while others, such as Hindi and Mandarin, do. Moreover, the argument structure to be proposed for Mandarin post-verbal arguments will serve as the foundation for the analyses of Pattern II and III that follow in §5.

CHAPTER 4

TOWARDS A GENERAL ARGUMENT STRUCTURE
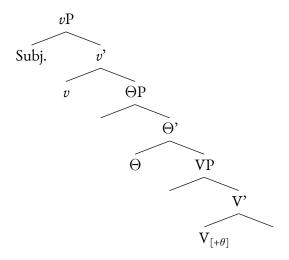
In the previous chapter, we have established that there is a distinction between NP and DP objects in Mandarin in terms of their positions with respect to that of a post-verbal duration/frequency phrase. We have also established that true NP objects, NP objects that are post-DFP and non-referential, exhibit properties characteristic of NPs that are pseudo-incorporated in other languages, mainly in Hindi. In this chapter, we are going to develop an argument structure for Mandarin post-verbal arguments that will allow us to capture the positional distinction as well as derive the P-I properties.

In terms of the lay-out of this chapter, we will start by first presenting the overall argument structure in the next section, i.e. the details of its components and the underlying mechanism of realizing arguments in syntactic positions. We will then try to motivate the components in the subsequent sections. The overall argument structure will eventually be used to derive the word orders of Pattern I that we aim to account for. An account that explains typological variations in terms of allowing for true NP arguments will be given as part of the word-order derivation process. Finally, it will be shown that the NP-related P-I properties can likewise be derived from the proposed structure, giving the structure a general flavor in being a possible analysis for other P-I languages.

4.1   A syntax-semantics interface for Mandarin arguments

The primary research goal of the current project is to propose a unifying analysis for Mandarin post-DFP NPs and P-I NPs in general that derives the word orders of Pattern I. The unifying analysis will resort to the argument structure as follows:

(97) General argument structure in Mandarin:

```
                    vP
                  /    \
              Subj.     v'
                      /    \
                     v      ΘP
                           /  \
                          Θ'
                        /    \
                       Θ      VP
                            /    \
                           V'
                         /    \
                   V_{[+θ]}
```

This is the structure for Mandarin transitive verbs that includes multiple composition sites for the internal argument. Let us unpack this structure from the bottom up and explain the mechanism underlying argument composition. Following Lin (2001) and Williams (2005, 2008), I assume that verbs in Mandarin only denote properties of eventualities. Therefore, for a transitive verb like *xie* ('write'), the denotation would be: $[\![xie]\!] = \lambda e \, . \, write(e)$. This is a fundamental difference between Mandarin and English verbs. Internal θ-roles are encoded in the denotations of English verbs; thus, the verbs themselves specify the roles their internal arguments play in their denoted eventualities. On the contrary, Mandarin verbs per se impose no thematic relations on their internal arguments. The specific thematic relations between the verbs and their internal arguments come from the functional head notated as Θ°, where various internal θ-roles are collectively encoded: $[\![\Theta]\!] = \lambda x \lambda e \, . \, \theta(x, e)$ (θ being a variable for the internal thematic relations).

The proposal of Θ° is analogous to v in the sense of Kratzer (1996), where the external θ-roles are severed from the denotations of English verbs. Since Θ° is the collective head of vari-

ous internal thematic relations, we need a way to get the correct mappings between the thematic roles and the verbs in question. Put in more concrete terms, not every verb has an internal θ-role and what internal θ-role it has depends on what verb it is. A mechanism that ensures the correct dependency between Θ° and V needs to be established. Moreover, the internal θ-roles need to be restricted to the object positions (i.e. the post-verbal positions) because as shown in §1, in simple sentences Mandarin verbs behave similarly to their English counterparts. This, in other words, means that Θ° must stay close to V so that other possible argument-introducing elements cannot intervene. All of these restrictions on the proposed structure will be carried out by the implementation of an agreement relationship between Θ° and V: If V requires a particular internal θ-role, then V is hypothesized to carry a $[+\theta]$ feature for which Θ° probes[1]. Θ° then introduces the specified θ-role by agreement[2]:

(98) AGREEMENT BETWEEN Θ° AND V:

   ①   V has a $[+\theta]$ feature if it requires a θ-role other than those played by an external argument[3], i.e. an internal θ-role.

   ② Θ° probes down the structure and agrees with verbs with the $[+\theta]$ feature.

   ③   The denotation of Θ° is: $[\![\Theta]\!] = \lambda x \lambda e \, . \, \theta(x, e)$

       'θ' in ① and ③ is a variable for whichever internal θ-role V requires.

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[1] Given this hypothesis, if the verb is one that has no internal arguments, hence, no internal θ-roles, it would have $[-\theta]$. And consequently, there would be no Θ° in the overall argument structure.
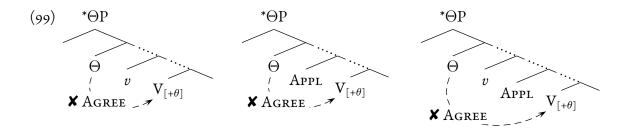
[2] One might have doubts about treating θ-roles as features on the verb since unlike other more canonical agreement features, such as ϕ-features (person, gender, number... etc.), no morphophological spell-outs of verbs exhibit a θ-role distinction. The current framework completely acknowledges this view and does not intend to argue for the legitimacy of θ-roles being included as agreement features. The agreement mechanism is simply adopted as a means to establish the tight connection between Θ° and V since we know from the facts that what internal arguments there can be is dictated by the verbal eventualities.

This may also be a way to capture the subject-object asymmetry that has led to Kratzer's (1996) proposal of severing the external θ-roles from the denotations of verbs, where thematic relations might vary with regards to various verb-IA pairs (IA = internal argument) given a specific verb like *throw*, e.g. *throw a ball* vs. *throw a party*, whereas the thematic relations in different EA-verb pairs (EA = external argument) remains constant regardless of what entities the EA denotes. In the case of Θ° under discussion, although in Mandarin internal θ-roles are severed from verbs and put in a functional head syntactically, they are not *really* severed from verbs because the verbs still have a say of what the internal θ-roles can be.

Thanks to Rajesh Bhatt for bringing the concern of θ-roles being agreement features to my attention.

[3] 'External argument' here refers to the argument introduced by v in the sense of Kratzer (1996). It canonically plays either the role of AGENT or EXPERIENCER. In other words, a verb would have the $[+\theta]$ feature if it requires a role that is neither AGENT nor EXPERIENCER.

This agreement relationship also ensures strict proximity between Θ° and V and puts all internal arguments in the post-verbal field under the assumption of V-to-v movement in Mandarin, as in Huang, Li, and Li (2009). To spell it out more clearly, the agreement relationship is subject to locality and prevents the following configurations where some other argument-introducing head intervenes between Θ° and V, such as v, or a secondary-internal-argument-introducing head (which we will call the applicative head Appl$^\circ$)[4], or both:

(99)
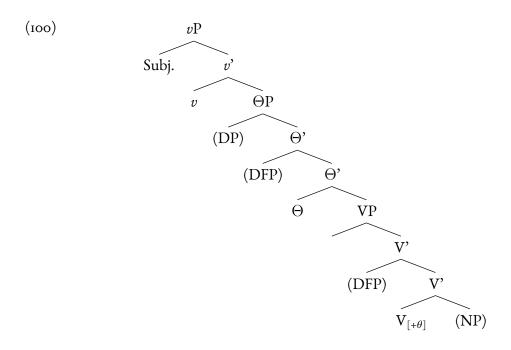
Therefore, we would not get ungrammatical word orders in regular sentences, where the internal argument shows up preverbally due to its being introduced by the now syntactically highest Θ°, after V-to-v movement[5].

As for the mechanism of argument-composition, it has a type-driven nature. The current framework assumes the widely acknowledged modes of semantic composition (e.g. Event Identification (Kratzer, 1996), Predicate Modification, Function Application (Heim and Kratzer, 1998), etc.), and the semantic types of the arguments determine their composition sites, given the availability of the modes of semantic composition in the different argument positions in (97). Put more concretely, there are several positions an internal argument can compose under ΘP in (97). And the position in which it composes depends on whether the internal argument is an NP or a DP: An NP composes in the complement of V (Comp.V) while a DP composes in the specifier of ΘP (Spec.ΘP). The DFP is treated as an adjunct inside the ΘP that syntactically disambiguates

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[4]The syntax of this applicative head will be scrutinized in §4.4. And it will be argued that instead of being in the clausal spine, Appl$^\circ$ is best analyzed as the head of an adjunctive phrase. But for now, it is hypothesized to be in the clausal spine, following a more common view on the syntax of Appl$^\circ$ (Pylkkänen, 2002, 2008; Paul and Whitman, 2010; a.o.), to get the point about the Θ-V agreement across.

[5]The second configuration in (99) would not lead to the mentioned ungrammatical word order after V-to-v movement if we assume that v is higher than Θ° in that case. However, it would lead to an ungrammatical ditransitive word order, where post-verbally, the direct object introduced by Θ° precedes the indirect object introduced by Appl$^\circ$.

the composition sites of the NP and DP internal arguments, resulting in the word orders observed for Pattern I:

(100)

```
                        vP
                   ┌────┴────┐
                Subj.        v'
                        ┌────┴────┐
                        v        ΘP
                            ┌────┴────┐
                          (DP)       Θ'
                               ┌─────┴────┐
                             (DFP)        Θ'
                                    ┌─────┴────┐
                                    Θ         VP
                                          ┌───┴───┐
                                                 V'
                                            ┌────┴────┐
                                          (DFP)       V'
                                                 ┌────┴────┐
                                               V_{[+θ]}   (NP)
```

The exact details of the semantic compositions will be demonstrated with concrete examples of Pattern I in §4.1.2.

4.1.1   No Argument Theory (Williams, 2005, 2008)

The current analysis that dwells upon the separation of internal θ-roles is inspired by Williams' (2005) No Argument Theory (NAT), which states that in some languages, such as Mandarin and Igbo[6], verbs do not come with any arguments written in their lexical denotations. They simply denote properties of eventualities of type $\langle s, t \rangle$, unlike English verbs, whose lexical denotations encode the internal argument and its corresponding θ-role (Williams, 2005: 81, Ex. (204)):

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[6]“*Igbo* ([iɓo]) *is a Benue-Congo (or Eastern Kwa) language, and is among the national languages of Nigeria*” (Williams, 2005: 2, fn. 2).

(101) a. Mandarin 'cut': $[\![qi\bar{e}]\!] = \lambda e \,.\, cut(e)$

   b. Igbo 'cut': $[\![bu]\!] = \lambda e \,.\, cut(e)$

   c. English 'cut': $\lambda x \,...\, \lambda e \,.\, [cut(e) \wedge \text{PAT}(e) = x \,...]$

What led Williams to this conclusion is basically the fact that in English, the PATIENT/THEME interpretation is required of the direct object when an obligatorily transitive verb like *cut* enters into a resultative construction. So if the direct object is not something that can be interpreted as such, the sentence crashes. On the other hand, no such requirement is found in the resultative constructions in Mandarin and Igbo[7]:

(102) a. Al cut *(the frozen meat).   b. *Al cut the knife dull.

                                                    (Williams, 2005: 56)

(103) a. *Lǎo Wèi qiē-le.   (Williams, 2005: 60)

   L. W.   cut-PFV[8]

   Intended: 'There was an event of cutting with Lao Wei its agent.'

   b. *tā qiē-le   nǐde càidāo.   (Williams, 2005: 61)

   3s   cut-PFV your food.knife

   Intended: 'S/he cut [stuff] with your cleaver.'

   c. Lǎo Wèi qiē zhúzǔn,   qiē dùn[9]-le   càidāo.   (Williams, 2005: 61)

   L. W.   cut bamboo.shoots cut dull-PFV food.knife

   'Cutting bamboo shoots, Lao Wei made the cleaver dull by cutting.'

Since the English *cut* strictly imposes a PATIENT relation on its object, the sentence in (102b) is meant to be ungrammatical due to the incompatibility between the thematic interpretation and what the object is (i.e. *knife* cannot be the patient of the cutting event), despite it being

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[7]Igbo exhibits the same pattern as Mandarin in realizing arguments in the resultative construction. Please see Williams (2005: 62-65).

[8]PFV stands for the perfective aspect in Williams (2005).

[9]*Qie dun* ('cut dull') in this example is a resultative compound, a common form of resultatives in Mandarin, where the first predicate indicates the means by which the resultant state indicated by the second predicate comes about. It amounts to saying that an event of cutting *causes* a state of dullness, which is why Williams terms these as 'complex causatives'.

an appropriate argument for the second predicate *dull*[10]. However, since Mandarin resultatives show no such restriction, Williams proposes that the lexical entries of Mandarin predicates do not encode any thematic relations so that when they are compounded into a resultative, no thematic relations are imposed on the direct object by either of the predicates.

But then how are the arguments in the Mandarin resultatives introduced, if not by the predicates inside the compounds? In Williams' account, they are introduced syntactically, i.e. the external argument (Subject) via *v* and the internal argument (Object) as the specifier of the resultative compound:

(104)

$$v' \quad \lambda x . \exists e \left[[\![VP]\!] \wedge [\![v]\!](x)(e) \right]$$

$$\lambda y \lambda e_1 . \text{AG}(e_1) = y \quad v_{\text{AG}} \qquad VP \quad \lambda e . \left[[\![V]\!](e) \wedge \text{PAT}(e) = [\![DP]\!] \right]$$

$$DP \qquad V^{\text{II}} \quad \lambda e \exists e_1 \exists e_2 . \left[\text{CAUSE}(e, e_1, e_2) \wedge [\![M]\!](e_1) \wedge [\![R]\!](e_2) \right]$$

$$M \quad \text{CAUSE} \quad R$$

As shown in the structure above, the arguments are only interpreted thematically with the resultative compound, i.e. that they are arguments of the causative event. Their relations with respect to the predicates inside the compound are pragmatically inferred, giving rise to semantic ambiguity when both of the arguments are eligible for being the arguments of the predicates (Recall the famous ambiguous resultative example in §1):

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[10] According to Williams, this strictly imposed thematic interpretation is only viable with verbs that obligatorily realize their internal arguments in syntax, which he terms the *uniform projection property* (UPP). For verbs that can alternate between a transitive and intransitive paradigm, i.e. verbs that can take implicit arguments not overtly realized in syntax, the observed ungrammaticality in (102b) does not hold:

(i) a. Al yelled (slogans).   (adapted from Williams, 2005, p. 55, Ex. (108) & (109); p. 56, Ex. (116))

  b. Al yelled his throat hoarse.

Throat is not the internal argument of *yell*, yet it is comfortable in the resultative construction. Notice that in the Mandarin resultative construction, this restriction on what can be the direct object does not depend on whether the means verb (i.e. the first predicate in the resultative compound) obligatorily projects its internal argument in syntax in simple sentences, (103a), and is generally absent, (103c).

[11] In the resultative compound, M represents the sub-predicate that signals the means by which the result, represented by the sub-predicate R, takes place.

(105) Taotao zhui-lei-le   Youyou   (Li, 1995)

Taotao chase-tired-ASP Youyou

(i) 'Taotao chased Youyou and as a result Youyou got tired.'

(ii) 'Taotao chased Youyou and as a result Taotao got tired.'

(iii) 'Youyou chased Taotao and as a result Youyou got tired.'

(iv) *'Youyou chased Taotao and as a result Taotao got tired.'

If Mandarin verbs only denote properties of eventualities across the board, then we surely need some device in syntax for introducing the internal argument in the case of simple sentences as well. That is what prompted the proposal of the collective internal θ-role-introducing head Θ°.

4.1.2 Syntactic introductions of Mandarin arguments

How, then, does the role of Θ° tie into the NP-DP distinction in argument realization that we attempt to capture? As mentioned previously, NP and DP objects would be treated as different semantic types and the functional head Θ° mediates their semantic composition. This section will focus on the actual process of semantic composition given the underlying mechanism laid out in §4.1.

Taking the insight from Dayal (2011) that P-I NPs in Hindi are of property-type, Mandarin non-referential NPs are also hypothesized to be of property-type given the similarities to P-I NPs they exhibit. If the NPs are of property-type, the following question is how do they compose with verbs in syntax? We will have a brief look at how Dayal's system handles P-I NPs. Under the general assumption about the lexical entries of verbs, they denote relations between individuals and eventualities; therefore, a regular transitive verb like *catch* would have a denotation that takes an entity as its argument and specifies the relation of that entity with the eventuality of *catching*: $[\![\text{catch}]\!] = \lambda x_e \lambda y_e \lambda e \,.\, catch(e) \wedge \text{AGENT}(y, e) \wedge \text{THEME}(x, e)$. This limits their ability to compose with things not of entity-type, e.g. property NPs of type $\langle e, t \rangle$. As a result, Dayal (2011) proposes two lexical entries for verbs like *catch*, one regular and the other P-I version, the latter

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of which is able to compose with a property NP, where the incorporated NP *specifies* what kind of *catching* event it is by packing in a presupposition that asserts the existence of an entity the NP holds true of and the thematic relation between the entity and the event (Dayal 2011: 146):

(106) a. $\text{catch}_{\text{TV}} = \lambda x \lambda y \lambda e \; [\text{catch}(e) \; \& \; \text{Agent}(e) = y \; \& \; \text{Theme}(e) = x]$

      b. $\text{catch}_{\text{INC-V}} = \lambda P \lambda y \lambda e \; [\text{P-catch}(e) \; \& \; \text{Agent}(e) = y],$

                    where $\exists e \; [\text{P-catch}(e)] = 1$ iff $\exists e' \; [\text{catch}(e') \; \& \; \exists x \; [P(x) \; \& \; \text{Theme}(e') = x]]$

Using the *mouse-catching* example in §3 for demonstration, the resulting denotation of the VP would be as follows:

(107) anu purre din *cuuhaa* pakaRtii rahii   (=(66b))

      Anu whole day mouse catch-IMP PROG

      'Anu kept catching mice (different ones) the whole day.'
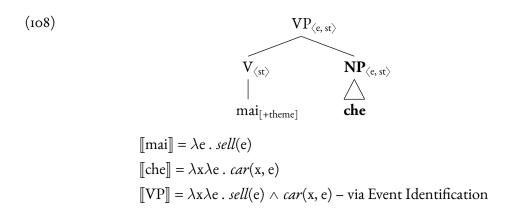
      $[\![\textit{cuuhaa pakaRtii}]\!] = \lambda y \lambda e \; [\text{mouse-catch}(e) \; \& \; \text{Agent}(e) = y],$

      where $\exists e \; [\text{mouse-catch}(e)] = 1$ iff $\exists e' \; [\text{catch}(e') \; \& \; \exists x \; [\text{mouse}(x) \; \& \; \text{Theme}(e') = x]]$

Since in our current framework, verbs are deprived of their θ-roles, we need a way for property NP composition as well. However, proposing multiple lexical entries for Mandarin verbs loses the insight from the comparison between Mandarin and English resultatives that verbs in these two languages are fundamentally different in whether they spell out thematic relations in their denotations. Also, it would not advance our approach to P-I from proposals like Dayal's. Therefore, I am proposing a semantic composition mechanism that holds the denotations of verbs constant with a slight shift of the property type of non-referential NPs, allowing them to compose directly with the main verb in the structure in (97).

Mandarin non-referential post-DFP NPs are defined as being an '*eventized*' property-type $\langle e, \langle s, t \rangle \rangle$, where the NP is relating an entity with a property in an event. For instance, a non-referential NP *che* ('car') in Mandarin would denote: $[\![che]\!] = \lambda x \lambda e \;.\; car(x, e)$. This can be read as the property of being a car *in some event*. Hence, generally speaking, this definition puts all

relations between individuals and properties into events, making them semantically accessible to verbal predicates in Mandarin that add to the information of what events the properties are in[12]. With this slight adjustment in the property-type of Mandarin non-referential NPs, we can now directly compose the NPs with verbs of type $\langle s, t \rangle$ via Event Identification[13] (Kratzer, 1996), where the NPs introduce arguments that will be later thematically specified by $\Theta°$ and the NP properties constitute part of the properties of the eventualities (Take *mai che* ('sell car') for example):

(108)

$$\text{VP}_{\langle e, st \rangle}$$

$$\text{V}_{\langle st \rangle} \qquad \textbf{NP}_{\langle e, st \rangle}$$

$$\text{mai}_{[+theme]} \qquad \textbf{che}$$

$$\llbracket \text{mai} \rrbracket = \lambda e \,.\, sell(e)$$
$$\llbracket \text{che} \rrbracket = \lambda x \lambda e \,.\, car(x, e)$$
$$\llbracket \text{VP} \rrbracket = \lambda x \lambda e \,.\, sell(e) \wedge car(x, e) - \text{via Event Identification}$$
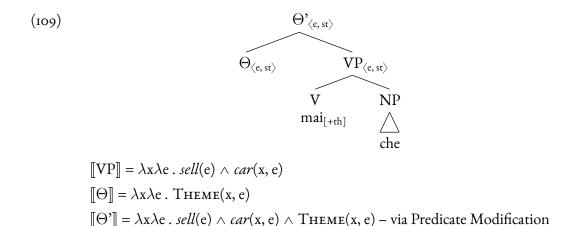
$\Theta°$ comes in at the next level to mark the thematic relation between the introduced argument and the event. The mode of semantic composition at work is Predicate Modification (Heim and Kratzer, 1998), but of a slightly modified version that contains event variables[14]. The function still remains the same, i.e. to conjoin two denotations of the same type:

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[12] Under the general interpretations of relations between individuals and eventualities, usually the thematic ones, the relations are considered to contribute to what being eventualities means. Therefore, for a θ-role-denoting head like v ($\llbracket v \rrbracket = \lambda x \lambda e \,.\, \text{AGENT}(x, e)$), the incorporation of this thematic relation into some eventualities amounts to saying that what makes those events events is by virtue of having an agent in them. However, in the current case of non-referential NPs, I am holding a more relaxed view on what meaning contributions these NPs have to the eventualities they are incorporated into. I am leaving open the issue whether in Mandarin what makes events events is through having a property relation in them (It is very likely not the case since we can have many different kinds of NP objects for a particular verb, and we do not necessarily want to say that the event denoted by the verb needs all those NPs to be an event.). What I intend is that an event must have *something* in it (i.e. participants), and that something can obtain its property information by the direct introduction of a property into the event. Thanks to Ethan Poole for raising this concern at the Syntax Workshop at UMass Amherst, Spring 2017.

[13] Event Identification (Kratzer, 1996) (repeated from §1, fn. 2):

f	g	→	h	$\lambda x_e \lambda e_s [f(x)(e) \,\&\, g(e)]$
$\langle e, \langle s, t \rangle \rangle$	$\langle s, t \rangle$		$\langle e, \langle s, t \rangle \rangle$	

[14] Predicate Modification (modified):

α	β	→	γ	$\lambda x_e \lambda e_s [\alpha(x)(e) \,\&\, \beta(x)(e)]$
$\langle e, \langle s, t \rangle \rangle$	$\langle e, \langle s, t \rangle \rangle$		$\langle e, \langle s, t \rangle \rangle$	

(109)

$$\Theta'_{\langle e, st\rangle}$$

$$\Theta_{\langle e, st\rangle} \quad VP_{\langle e, st\rangle}$$

$$V \quad NP$$

$$mai_{[+th]} \quad che$$

$\llbracket VP \rrbracket = \lambda x \lambda e \,.\, sell(e) \wedge car(x, e)$

$\llbracket \Theta \rrbracket = \lambda x \lambda e \,.\, \textsc{Theme}(x, e)$

$\llbracket \Theta' \rrbracket = \lambda x \lambda e \,.\, sell(e) \wedge car(x, e) \wedge \textsc{Theme}(x, e)$ – via Predicate Modification

Despite being incorporated properties, non-referential NPs in Mandarin syntactically saturate the post-verbal argument position, i.e. no more arguments can compose after NP-incorporation:
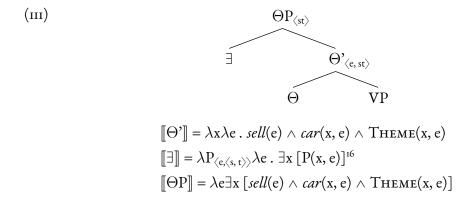
(110)   *Zhangsan mai-le   **che** *baoshijie* / *baoshijie* **che**

Zhangsan sell-ASP car Porsche   Porsche car

'Zhangsan car-sold a Porsche.'

Given this consideration, the open argument position in the denotation of Θ' is instantly existentially closed (Diesing, 1990, 1992) to prevent further compositions of other nominals[15]:

---

[15]Whether P-I NPs syntactically saturate argument positions seems to be language-dependent. In Hindi and Mandarin, the property NPs are treated as real syntactic arguments and are subject to various syntactic operations, such as agreement and movement. However, in some other languages that also seem to have P-I, such as Chamorro (Chung and Ladusaw, 2004), the P-I nominals do not seem to syntactically saturate the argument position but allow for the composition of another object-like nominal:

(i) a. Gäi-[ga']   yu' **kätu**, lao matai.   (Chung & Ladusaw, 2004: 104)
       agr.have-pet I   cat   but agr.die
       'I had a pet cat, but it died.'

   b. Hayi gäi-[patgun]   **hao**?
       who? WH[nom].agr.have-child you
       'Whose child are you (lit. Who has a child, namely, you)?'

   (✳ The incorporated NP is bracketed and the second object is boldfaced.)

According to Chung and Ladusaw (2004), this 'extra' non-incorporated nominal is in fact a syntactic adjunct, for which several pieces of independent evidence can be found (There are four tests for the adjunct-hood of the extra nominal that involve agreement, inaccesibility to movement, island effects, and the lack of combinatorial possibilities of a complement. For the details of the tests, I refer the readers to Chung & Ladusaw (2004: 121-125).). So the case of Chamorro does not pose issues to our treatment of saturating the open argument position of Θ' by Existential Closure. But suppose there are other P-I languages that allow for a second non-incorporated object, but unlike in Chamorro, the second object is a true syntactic object of the verb. The structure that we are currently building would at least permit the possibility of composing a second argument inside ΘP by suspending Existential Closure after NP-incorporation. The issue of what regulates the composition of a second argument is however left open here.

(111)

$$\Theta P_{\langle st \rangle}$$

```
                    ΘP⟨st⟩
                   /      \
                  ∃       Θ'⟨e, st⟩
                         /      \
                        Θ        VP
```

⟦Θ'⟧ = λxλe . *sell*(e) ∧ *car*(x, e) ∧ Theme(x, e)

⟦∃⟧ = λP$_{\langle e,\langle s, t\rangle\rangle}$λe . ∃x [P(x, e)][16]

⟦ΘP⟧ = λe∃x [*sell*(e) ∧ *car*(x, e) ∧ Theme(x, e)]

The resulting ΘP then composes with *v* via Event Identification. The external argument is thus introduced and we get a complete transitive paradigm:

(112)

```
                    vP⟨st⟩
                   /      \
                DPe        v'⟨e, st⟩
                /\        /      \
          Zhangsan   v⟨e, st⟩   ΘP⟨st⟩
```

⟦ΘP⟧ = λe∃x [*sell*(e) ∧ *car*(x, e) ∧ Theme(x, e)]

⟦*v*⟧ = λyλe . Agent(y, e)

⟦*v'*⟧ = λyλe∃x [*sell*(e) ∧ *car*(x, e) ∧ Theme(x, e) ∧ Agent(y, e)]

        – via Event Identification

⟦Zhangsan⟧ = *Zhangsan*

⟦*v*P⟧ = λe∃x [*sell*(e) ∧ *car*(x, e) ∧ Theme(x, e) ∧ Agent(*Zhangsan*, e)]

The mechanism we have built thus far allows us to incorporate non-referential NPs without altering the denotations of verbs. As it will turn out in §4.2, the type-sensitive nature of the mechanism produces the word orders in Pattern I once we adjoin DFPs to the proposed structure,

---

[16] The following example of English implicit objects suggests that some existential force is sometimes needed for the interpretation of the object, depending on what kind of object it is (whether the object is null, just like in our case of NPs, where ∃ depends on whether the object is an NP), and hence supports our implementation of ∃ in the object position:

(i) John ate ∅. ≈ John ate *something*.

        ≠ John ate *it* (*it* being contextually salient).

Whatever the null object is, it is not a null anaphor, given the incompatible interpretation *John ate it*. On the other hand, the approximate interpretation of (i), *John ate something*, can likewise be straightforwardly analyzed as ∃ closing off the internal argument position of the English VP, as we did for Mandarin in (111).

syntactically disambiguating the composition sites of entity-/quantifier-type and property-type internal arguments.

4.1.3   Defining non-referentiality: Property NPs as of type $\langle e, \langle s, t \rangle \rangle$

Before turning to deriving Pattern I with our structure, there are a few more words to say about the proposal of Mandarin non-referential NPs being of type $\langle e, \langle s, t \rangle \rangle$. One crucial aspect of shifting the type of property NPs is that we can compose NPs with Mandarin verbs directly without stipulating any ad hoc rules of semantic composition. If the denotation of a property NP says that the property has to hold true of an entity that is an argument in an event, then we make no distinction between NPs denoting permanent and temporary properties on the event level. That is, the properties, even the temporary ones, have to hold true throughout the entire event when the NPs denoting such properties are incorporated. This prediction can be tested to see whether our proposal of the *eventized* property-type is on the right track. The test item to be used is '*fugitives*'.

Fugitives denotes a temporary property of fleeing criminals that no longer holds as soon as the criminals are caught. In English, this characteristic reflects on the verbs that go with *fugitives*:

(113)   a.   John is a police officer. He chases criminals/suspects/fugitives.

   b.   John is a judge. He tries criminals/suspects/$^{??}$fugitives.

Fugitives is compared to *criminals* and *suspects* for contrast here. Given the *chasing* event in (113a), all of the properties denoted by the NPs hold true since *chasing* does not entail *catching*; hence, the fugitives in the chasing event remain fugitives as the criminals and suspects remain criminals and suspects. On the other hand, the sentence in (113b) presupposes that the fugitives have been caught before they can be sent to trial. Their property of being fugitives no longer holds in the trial, contrary to that of the criminals and suspects, which hold of an individual at any time after

the commitment of the crime. Consequently, *fugitives* is semantically anomalous in (113b)[17,18].

We can do the same test with the Mandarin fugitive, *taofan*. And in the Mandarin case, a duration phrase is inserted to make sure that we are looking at the right NP since our prediction is true only of arguments in the lower, pseudo-incorporated position.

(114) Zhangsan shi   yi-ming faguan. [#]Ta shenpan-le san-ge   yue   **taofan**[19]

      Zhangsan COP one-CL judge   he try-ASP   three-CL month fugitive

      'Zhangsan is a judge. [#]He tried fugitives for three months.'

---

[17] This argument about the temporary nature of *fugitives* is not countered by examples like *John catches fugitives*, where one might think the property of being fugitives should in theory not hold in the catching event, yet the sentence is acceptable. Unlike in the case of trialling, the fugitives enter the catching event as *fugitives*, i.e. they have to be fugitives (that is, uncaught) to be caught. In English, for part of the catching event at least (i.e. the beginning), the evaluation of the fugitive properties is true of the object, and that is sufficient for the sentence to be semantically congruent. Moreover, the grammatical sentence *John caught the fugitives* suggests that the evaluation of the fugitive properties of the definite object can have some other temporal anchor not necessarily within the event of catching, because in evaluating the truthfulness of the sentence, the fugitives should have been caught and lost their fugitive properties. In terms of the semantics of the definite description, if the NP part in it does have an event variable, by the time the NP is ι-shifted, the event variable should have been closed off (perhaps by $\exists$) (cf. fn. 21). This would allow the definite description to be evaluated with respect to some other event than the catching event, permitting a congruent interpretation of *John caught the fugitives*. Since in our account the event variable of NPs would only converge with that of the verb under Pseudo-Incorporation, the prediction about property evaluation anchored to the verb's event variable would only apply to non-referential NPs.

[18] The fundamental distinction between Mandarin and English that the current analysis will make later in this chapter is that English, unlike Mandarin, does not have Pseudo-Incorporation. If we maintain the assumptions that Pseudo-Incorporation is the sole means of property-NP-composition and that NPs are of type $\langle e, \langle s, t \rangle \rangle$ across the board, then English bare nominals as in (113b) would have to be type-shifted and have their open event variable closed off before they can compose with verbs in syntax. This in turn would mean that the property of being *fugitives* in the English case is predicted to be able to be evaluated with respect to an event different from that denoted by the verb, permitting the possibility of *fugitives* as a semantically compatible object of *tries*, i.e. no semantic contradiction between the properties of *fugitives* and the presupposition of *tries*. However, *fugitives* is still marked as more questionable than *criminals/suspects* in (113b) based on permitting the possibility of coinciding the event variable of *tries* and that of the NP. That is, people might tend to evaluate the truthfulness of the sentence and the properties of the NP with respect to the same event, which would lead to the semantic contradiction mentioned above in the case of *fugitives*, but not in the case of *criminals/suspects* in (113b).

On the other hand, Mandarin NP arguments, hypothesized to be necessarily pseudo-incorporated, cannot escape the semantic contradiction in the case of *trying fugitives* due to the consequence of event variable convergence from Pseudo-Incorporation.

[19] Things are a little different between the English and Mandarin case of *catching*. It is fine to have the property NP *taofan* in a catching event in Mandarin:

(i) Zhangsan shi   yi-ming jingcha. [✔]He zhua-le   san-ge   yue   **taofan**
   Zhangsan COP one-CL police   he catch-ASP three-CL month fugitive
   'Zhangsan is a police officer. [#]He caught fugitives for three months.'

Given the property NP, if the fugitive properties have to hold true throughout the catching event, then the sentence should be predicted to be bad, as opposed to its English counterpart, where partial truthfulness of the fugitive properties to the catching event is sufficient. However, I take the goodness of (i) to be coming from the open-endedness in the lexical entry of Mandarin *catch*. Mandarin *zhua* ('catch') does not entail an endpoint of the object being

The property of being fugitives cannot hold in the trial; therefore, the sentence is semantically anomalous. Replacing *taofan* with another NP whose property does hold in the trialling event further confirms this point:

(115) Zhangsan shi yi-ming faguan. ✔Ta shenpan-le san-ge   yue   **zuifan**

Zhangsan COP one-CL judge   he trial-ASP   three-CL month criminal

'Zhangsan is a judge. He tried criminals for three months.'
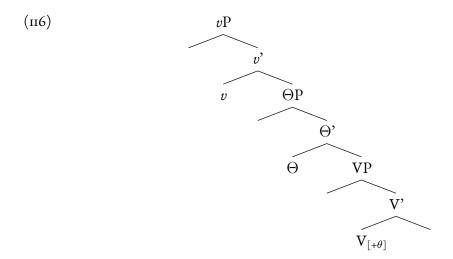
Since we anchor the properties denoted by NPs to events in which the NPs occur, the properties have to hold during the time of the events. The contrast between (114) and (115) bears out this prediction, which at least provides some ground for our idea about the type of property NPs .

4.2   Deriving Pattern I and Pseudo-Incorporation properties

Having laid out the foundation of our argument structure and composition mechanism, we can now derive Pattern I and the Pseudo-Incorporation properties discussed earlier. The following is a brief recapitulation of the argument structure and agreement/composition mechanism between Θ°:

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caught like English *catch* does. Therefore, (i) is only describing a scenario where Zhangsan made the attempts to catch fugitives, but the catchings were open-ended (i.e. we do not know whether the fugitives were caught), permitting the possibility of the *fugitive* properties holding true in the catching events. If we enforce an endpoint on *zhua* by turning it into a verbal compound where the second predicate indicates the object being successfully caught, the non-referential reading of *taofan* then disappears and *taofan* can only be interpreted definitely, making them able to be evaluated with respect to a different event anchor, analogous to *the fugitives* in the English case:

(ii) Zhangsan zhua-*dao*-le   **taofan**.
   Zhangsan catch-reach-ASP fugitive
   'Zhangsan caught the fugitives/#fugitives.'

(116)

```
              vP
             /  \
                 v'
                /  \
               v    ΘP
                   /  \
                       Θ'
                      /  \
                     Θ    VP
                         /  \
                             V'
                            /  \
                         V_{[+θ]}
```
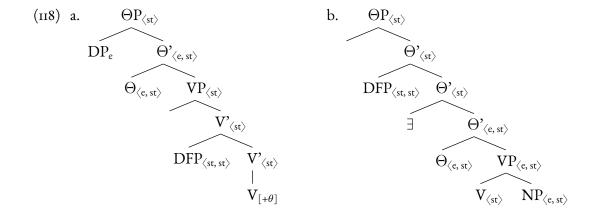
✳ AGREEMENT BETWEEN Θ° AND V:

(i)   Θ° is a collective functional head that denotes various internal thematic relations: $[\![\Theta]\!] = \lambda x \lambda e \,.\, \theta(x, e)$.

(ii)   It agrees with Vs that carry a $[+\theta]$ feature if the Vs require an internal θ-role.

(iii)   The required θ-role, i.e. the $[+\theta]$ feature, specifies the thematic relation in the denotation of Θ°.

Arguments can compose in various positions inside the ΘP as long as their types allow them, given the available modes of semantic composition (Available modes of semantic composition: Event Identification, Predicate Modification, & Function Application). DFPs are treated as adjuncts that also enjoy the composition freedom allowed by their semantic types. We will follow Huang, Li, and Li (2009) by restricting the adjunction of DFPs to intermediate projections. The denotations of DFPs like *san nian* ('three years') and *san ci* ('three times') are given as follows:

(117) a. *san nian* ('three years') → $[\![\text{san nian}]\!] = \lambda Q_{\langle s, t \rangle} \lambda e \,.\, Q(e) \wedge \tau(e) = 3\text{-}years$

      b. *san ci* ('three times') → $[\![\text{san ci}]\!] = \lambda Q_{\langle s, t \rangle} \lambda e \,.\, Q(e) \wedge \text{Card}(e) = 3$

The above assumptions about DFPs mean that there are two possible adjunction sites inside the ΘP, i.e. Θ' and V'. Which of the two sites DFPs adjoin to is dependent on the overall composition process determined by the type of the internal argument: (More details will be provided in §4.2.1.)

(118) a.

```
              ΘP⟨st⟩
            /        \
         DP_e       Θ'⟨e, st⟩
                   /        \
               Θ⟨e, st⟩    VP⟨st⟩
                             |
                            V'⟨st⟩
                           /      \
                      DFP⟨st, st⟩  V'⟨st⟩
                                    |
                                   V[+θ]
```

b.

```
          ΘP⟨st⟩
         /      \
               Θ'⟨st⟩
              /      \
        DFP⟨st, st⟩   Θ'⟨st⟩
          |          /      \
          ∃        Θ'⟨e, st⟩
                  /        \
             Θ⟨e, st⟩     VP⟨e, st⟩
                         /        \
                    V⟨st⟩       NP⟨e, st⟩
```
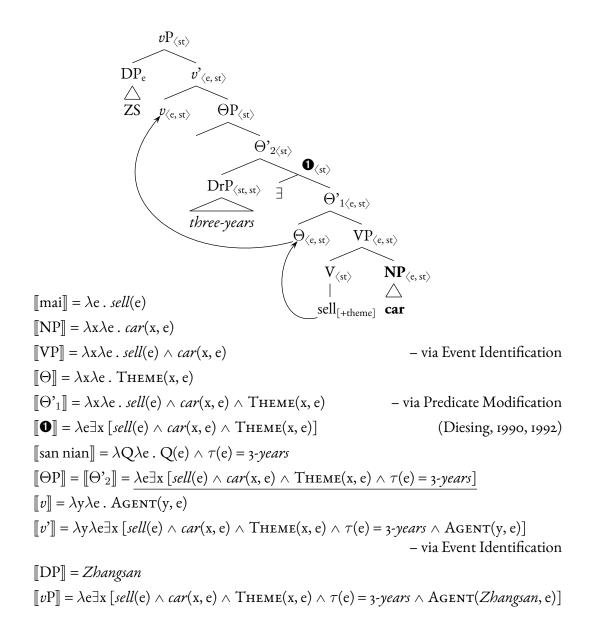
4.2.1 Different composition sites of NP and DP objects

Recall the word orders in Pattern I: Subj. V DP/*NP DFP and Subj. V DFP *DP/NP[20]. Again, we will address the goodness and badness of these word orders in the bottom-up fashion by first looking at the lowest position in the structure, i.e. the post-DFP position (Comp.V). The composition of property NPs in this position has been justified earlier in our demonstration of the composition mechanism under the proposed structure. We will skim through the NP-composition with a concrete example that includes the adjunction of a DFP:

(119) Zhangsan mai-le   san   nian **che**

Zhangsan sell-ASP three year car

'Zhangsan sold cars for three years.'

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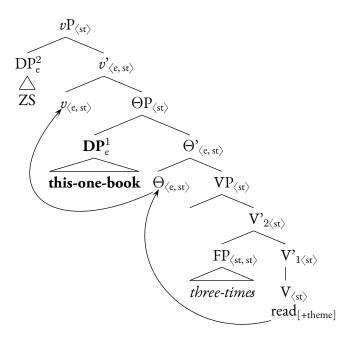
[20]At this point, we are not able to derive the ditransitive orders under Pattern I. We will be able to after we develop the structure for Mandarin ditransitive verbs in §4.3.

$[\![mai]\!] = \lambda e \,.\, sell(e)$

$[\![NP]\!] = \lambda x \lambda e \,.\, car(x, e)$

$[\![VP]\!] = \lambda x \lambda e \,.\, sell(e) \wedge car(x, e)$ – via Event Identification

$[\![\Theta]\!] = \lambda x \lambda e \,.\, \textsc{Theme}(x, e)$

$[\![\Theta'_1]\!] = \lambda x \lambda e \,.\, sell(e) \wedge car(x, e) \wedge \textsc{Theme}(x, e)$ – via Predicate Modification

$[\![❶]\!] = \lambda e \exists x \,[sell(e) \wedge car(x, e) \wedge \textsc{Theme}(x, e)]$ (Diesing, 1990, 1992)

$[\![san\ nian]\!] = \lambda Q \lambda e \,.\, Q(e) \wedge \tau(e) = 3\text{-}years$

$[\![\Theta P]\!] = [\![\Theta'_2]\!] = \underline{\lambda e \exists x \,[sell(e) \wedge car(x, e) \wedge \textsc{Theme}(x, e) \wedge \tau(e) = 3\text{-}years]}$

$[\![v]\!] = \lambda y \lambda e \,.\, \textsc{Agent}(y, e)$

$[\![v']\!] = \lambda y \lambda e \exists x \,[sell(e) \wedge car(x, e) \wedge \textsc{Theme}(x, e) \wedge \tau(e) = 3\text{-}years \wedge \textsc{Agent}(y, e)]$
                                                        – via Event Identification

$[\![DP]\!] = Zhangsan$

$[\![vP]\!] = \lambda e \exists x \,[sell(e) \wedge car(x, e) \wedge \textsc{Theme}(x, e) \wedge \tau(e) = 3\text{-}years \wedge \textsc{Agent}(Zhangsan, e)]$

The NP composes directly with the verb as the complement; hence, we get the word order where the NP follows the adjunct DFP, Subj. V DFP NP.

As for DP objects of type *e* or quantifier objects of a higher type, composing in the complement position to the verb is out of the question due to type mismatch, and the unavailability of the word order *Subj. V DFP DP is thus accounted for. The position where DP objects can compose would be after the functional head Θ° has introduced an argument position for entity-type items, which puts the DP objects in the specifier of the ΘP and leads to the word order Subj. V DP DFP. The composition process is shown as follows:

(120) Zhangsan nian-le **zhe-yi-ben shu** san ci

Zhangsan read-ASP this-one-CL book three time

'Zhangsan read this book three times.'

Since the DP object cannot compose directly with the verb but has to wait until $\Theta°$ comes into the structure, the only available adjunction site for the DFP would be to V' given its type being $\langle\langle s, t\rangle, \langle s, t\rangle\rangle$. That the DFP cannot adjoin to Θ' in the case of DP objects is also due to type mismatch, as a result of the lack of Existential Closure to make the type of Θ' available, unlike in the case of NP objects. And the DFP cannot attach higher than ΘP because the next available adjunction site given the types would be possibly higher than $v P$ after the composition of the subject (maybe at Asp'). But this is not a good outcome because Mandarin DFP are strictly post-verbal. This limits the only available adjunction site of the DFP to V'. In this step of the composition, what the FP in (120) does is simply take a property of an eventuality and return the cardinality of the eventuality:

(121) $[\![V]\!] = [\![V'_1]\!] = \lambda e \,.\, read(e)$

$[\![san\ ci]\!] = \lambda Q_{\langle s, t\rangle}\lambda e \,.\, Q(e) \wedge Card(e) = 3$

$[\![V'_2]\!] = \lambda e \,.\, read(e) \wedge Card(e) = 3$

Since the DP cannot compose in the specifier of VP, the denotation of the structure after DFP-adjunction passes up to VP to further compose with $\Theta°$:

(122) $[\![VP]\!] = [\![V'_2]\!] = \lambda e \,.\, read(e) \wedge Card(e) = 3$

$[\![\Theta]\!] = \lambda x \lambda e \,.\, \textsc{Theme}(x, e)$

$[\![\Theta']\!] = \lambda x \lambda e \,.\, read(e) \wedge Card(e) = 3 \wedge \textsc{Theme}(x, e)$ – via Event Identification

Now the DP can compose in Spec.ΘP and the word order where DP objects come before DFPs is derived:

(123) $[\![DP_1]\!] = $ *this book*[21]

$[\![\Theta P]\!] = \lambda e \,.\, read(e) \wedge Card(e) = 3 \wedge \textsc{Theme}(\textit{this book}, e)$

$[\![v]\!] = \lambda y \lambda e \,.\, \textsc{Agent}(y, e)$

$[\![v']\!] = \lambda y \lambda e \,.\, read(e) \wedge Card(e) = 3 \wedge \textsc{Theme}(\textit{this book}, e) \wedge \textsc{Agent}(y, e)$
     – via Event Identification

$[\![DP_2]\!] = \textit{Zhangsan}$

$[\![vP]\!] = \lambda e \,.\, read(e) \wedge Card(e) = 3 \wedge \textsc{Theme}(\textit{this book}, e) \wedge \textsc{Agent}(\textit{ZS}, e)$

One thing to note here is that quantifier objects pattern with DP objects in terms of their positions with respect to that of the DFP:

(124) a. Zhangsan nian-le   **mei-ben shu**   san   ci.

Zhangsan read-asp every-cl book three time

'Zhangsan read every book three times.'

    b. *Zhangsan nian-le   san   ci   **mei-ben shu**

Zhangsan read-asp three time every-cl book

'Zhangsan read every book three times.'

---

[21] Without a precise semantics for the demonstrative and classifier, the denotation of the DP *zhe-yi-ben-shu* ('this-one-cl-book') is abbreviated as *this book*. But under our proposal of NPs containing an event variable and the assumptions that the demonstrative denotes something similar to the ι-operator (i.e. some definiteness) and the numeral plus classifier denote cardinality, we can imagine a more precise denotation for the DP being something like $[\![\text{zhe-yi-ben shu}]\!] = \iota x \exists e \,[book(x, e) \wedge Card(x) = 1]$.

This would mean that if we want to compose quantifier objects in Spec.ΘP, for type reasons we either have to do Quantifier-Raising (QR) of the object out of the ΘP or we need to give it a higher type so that it can compose in-situ. Since Mandarin is scope-rigid, the object is obligatorily interpreted in-situ, as suggested by the following example:

(125) Zhangsan *meiyou* nian **mei-ben shu**

Zhangsna NEG   read every-CL book
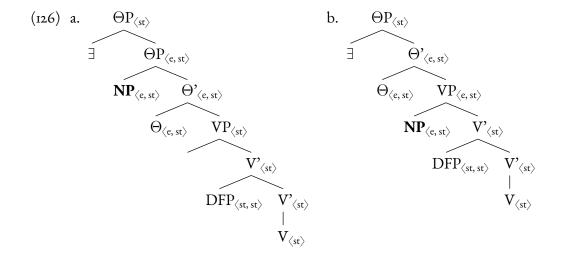
'Zhangsan didn't read every book.
(Some of the books he read, and some he didn't.)'   ¬ > ∀

*'Zhangsan didn't read every book. (He read none of the books.)'   *∀ > ¬

We are then left with the other option of proposing a higher type for the object. And as in the case of property NPs, the type of quantifiers is *eventized* so that the semantic composition can proceed successfully; that is, instead of being of type $\langle\langle e, t\rangle, t\rangle$, they are now of type $\langle\langle e, \langle s, t\rangle\rangle, \langle s, t\rangle\rangle$.
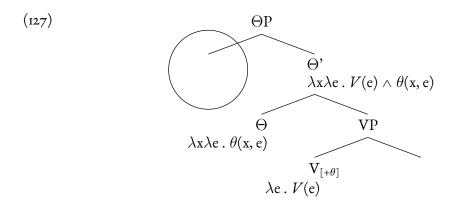
    The last thing about Pattern I to account for is the unavailability of the word order *Subj. V NP DFP, where the non-referential NP precedes the DFP. Given the adjunction sites of the DFP, there are two pre-DFP positions in our structure for the potential composition of non-referential NPs of type $\langle e, \langle s, t\rangle\rangle$, i.e. Spec.ΘP and Spec.VP, if the DFP adjoins to V':

(126) a.   ΘP$_{\langle st\rangle}$ b.   ΘP$_{\langle st\rangle}$

∃   ΘP$_{\langle e, st\rangle}$ ∃   Θ'$_{\langle e, st\rangle}$

NP$_{\langle e, st\rangle}$ Θ'$_{\langle e, st\rangle}$ Θ$_{\langle e, st\rangle}$ VP$_{\langle e, st\rangle}$

Θ$_{\langle e, st\rangle}$ VP$_{\langle st\rangle}$ **NP**$_{\langle e, st\rangle}$ V'$_{\langle st\rangle}$

V'$_{\langle st\rangle}$ DFP$_{\langle st, st\rangle}$ V'$_{\langle st\rangle}$

DFP$_{\langle st, st\rangle}$ V'$_{\langle st\rangle}$ V$_{\langle st\rangle}$

V$_{\langle st\rangle}$

The current set-up of the composition mechanism allows for property NPs composing in these

two positions since there are modes of semantic computation available: A property NP can compose in Spec.ΘP via Predicate Modification (126a) and in Spec.VP via Event Identification (126b) given its type and the types of its respective sisters. But these instances of NP-composition lead to the ungrammatical word order; in other words, our system is too powerful in that it overgenerates, and we need some way to restrict it so that cases like (126) can be blocked.

We will start our discussion about the pre-DFP NP-composition with (126a). The position to be focused on is indicated by the solid circle below.

(127)

One might argue that Spec.ΘP should not be a worry for pre-DFP NP-composition if we adopt Chomsky's (1986a) Projection Principle, which states that the internal argument of a head projects as its syntactic complement. If the NP is an internal argument of the verb in Mandarin, it would necessarily compose in Comp.V. However, Projection Principle, in a way, is establishing a one-to-one correspondence between the complement position and internal θ-marking. Under the framework we are formulating, there is no longer a one-to-one correspondence between certain syntactic positions and internal θ-roles. The separation of such θ-roles from verbs' denotations makes various positions possible for argument-composition, modulo the argument's semantic type. DP arguments give a nice example. Their semantic type makes it impossible for them to compose anywhere in the projection of V (including Comp.V), composing in Spec.ΘP is their only option. This means that Projection Principle is not a good route out of the dilemma of NP-composition in Spec.ΘP. NP-composition in Spec.ΘP is a true concern that we cannot avoid.

Also, this concern goes deeper on typological grounds. Recall that we have made a distinction in terms of whether in a given language, verbs denote only properties of eventualities or properties of eventualities *plus* thematic relations. In languages whose verbs necessarily encode thematic relations, English being one representative, what comes out as a lexical verb would be more than a V root in our system; it would be a part of the above structure that includes both the V root and the internal-θ-role-denoting $\Theta°$, i.e. Θ' (See its denotation). If the lexical verb head in those languages is Θ', then property NPs should be able to compose in Spec.ΘP as the complement to the verb in those languages as a case of Pseudo-Incorporation. Yet, English is not pseudo-incorporating: NPs cannot compose directly with English verbs as internal arguments via Predicate Modification. In other words, we still need a way to prevent NPs from composing in Spec.ΘP if we intend our proposed argument structure to be more universal, where we are connecting the unavailability of pre-DFP NPs in Mandarin to the unavailability of NP arguments in non-pseudo-incorporating languages.

The approach taken here involves the insights from Hale and Keyser (1991, 1993) and Lin (2001) respectively, about languages distinguishing between different levels of syntax and spelling out different corresponding structures as lexical verbs. In (127) is the verbal skeleton proposed for the syntactic realization of Mandarin post-verbal arguments. It has been hypothesized that Mandarin verbs only denote properties of eventualities, which corresponds to only the verb root ($V_{[+\theta]}$) in this structure. Although there is a tight connection between the internal θ-role-introducing $\Theta°$ and $V_{[+\theta]}$, they are separate syntactic categories, and this allows us to regulate the composition of NPs via ways that cannot be done in non-pseudo-incorporating languages, like English. But the question is why can't this be done in non-pseudo-incorporating languages like English? We might be able to find an explanation if we resort to the fundamental difference in what verbs denote between English and Mandarin, the latter of which I hope to have convincingly shown belongs to the family of pseudo-incorporating languages.

Unlike their Mandarin counterparts, English verbs are generally assumed to denote properties of eventualities *plus* their respective internal θ-roles. So for a transitive verb like *catch*, the

denotation would include the thematic relation of being a Theme predicated of *catch*'s first argument: $[\![\text{catch}]\!] = \lambda x \lambda e \,.\, \textit{catch}(e) \wedge \text{THEME}(x, e)$. And this denotation corresponds to that of a particular node in our structure in (127), namely Θ'. If we take this structure to be general across languages and hypothesize that languages differ in what part of this structure they lexicalize as verbs, then we might get the merits of capturing the typological variation in allowing bare NP arguments and of explaining the unavailability of Spec.ΘP to NP arguments:

(128) TYPOLOGICAL VARIATION[22]:

Languages differ in what part of (127) they lexicalize as verbs.

- ◆ P-I languages like Mandarin → Lexicalization of the V root only
- ◆ Non-P-I languages like English → Lexicalization of Θ' (Θ° + VP)

The view over-arching this proposal is in a sense similar to that of Distributed Morphology (Halle and Marantz, 1993) in that word-formation processes happen in syntax. In our case of argument realization and its relation with P-I, the relevant word-formation process is the lexicalization of verbs: Verbs form from different pieces of syntactic structure via familiar mechanisms of semantic composition[23]. Therefore, for languages like English, where verbs encode thematic relations, the corresponding syntactic structure to verb lexicalization would be from the bottom up to Θ'. If the lexical spell-out of individual English verbs is at Θ', it would then mean the structure below Θ' is shielded by this '*morphological cover*' coming from verb lexicalization, creating a kind of opacity to which English has no syntactic access (because the structure in English now is a *word*). On the other hand, languages like Mandarin that lexically spell out only the V root are not subject

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[22]This is a fairly strong claim to make about P-I and non-P-I languages. It assumes a general argument structure across all languages and correlates the ability of P-I with the separation of θ-roles from verbs, leading to verb-root lexicalization being a necessary condition for P-I-hood. There is independent evidence in Mandarin for verb-root lexicalization (e.g. in resulatives), but it is less certain whether it holds in other P-I languages as well. One possible place to look at would be the comparison between certain constructions in P-I and non-P-I languages to see whether they show differences in argument realization analogous to those between English and Mandarin resultatives since that is how we tell apart the denotational differences between English and Mandarin verbs. Validating/Falsifying this typological claim will be left for future study, but one thing worth noting is that the proposed structure does establish some correlations between the form, meaning, and syntactic position of P-I objects that will be shown to be borne out in the remainder of this chapter.
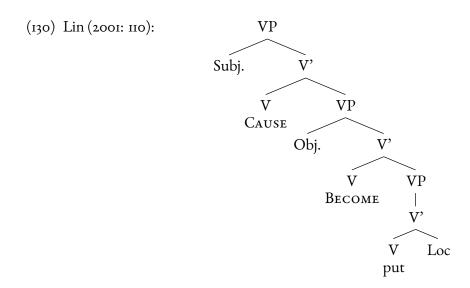
[23]This proposal differs from Distributed Morphology in that it only makes reference to the lexicalization of *verbs* through syntactic structures. The view of the other word categories being built in syntax remains open here.

to this issue of *morphological cover* and enjoy transparency to the entire structure over which various syntactic processes operate (hence, NP arguments introduced in the VP remain subject to movement, as shown in §3.2.2.). This parametric view on structural lexicalization of verbs is partially inherited from Lin's (2001) *Lexicalization Parameter*:

(129) The Lexicalization Parameter (Lin, 2001: 110):
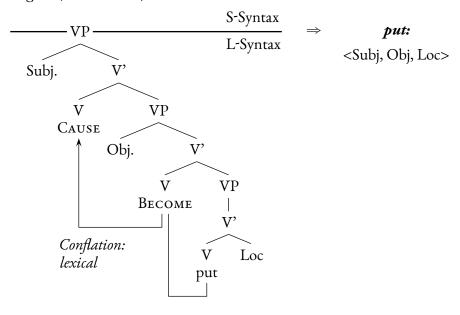
Languages may vary on the phrase-structural heights in the light verb structure which L-Syntax reaches.

In Lin's (2001) system, arguments are generally introduced via a light verb structure, where the light verbs are phonologically null but semantically contentful categories like CAUSE, BECOME... etc., and are universally available. Languages vary in what part of the light verb structure gets spelled out as a lexical verb that may or may not contain the arguments. That is, languages vary in whether arguments get spelled out as part of the verb's denotation. And he adopts Hale and Keyser's (1991, 1993) notions of L- and S-Syntax, the former of which refers to the word formation component and the latter, the syntax proper (treated as genuine syntax across the board by languages), and connects the lexicalization variation to the variation languages make in recognizing the L/S-Syntactic distinction in the light verb structure. To illustrate, a verb like *put* would have the following light verb syntax:

(130) Lin (2001: 110):

```
                    VP
                   ╱  ╲
                Subj.   V'
                      ╱  ╲
                     V    VP
                   CAUSE ╱  ╲
                       Obj.  V'
                           ╱  ╲
                          V    VP
                       BECOME  │
                               V'
                              ╱ ╲
                             V   Loc
                            put
```

In English, *put* requires three arguments, an agent, a theme, and a location. Under Lin's Lexicalization Parameter, what gets spelled out as the English *put* would be the entire structure where the three arguments correspond respectively to Subj., Obj., and Loc., and the distinction between L- and S-Syntax is made at the highest VP:
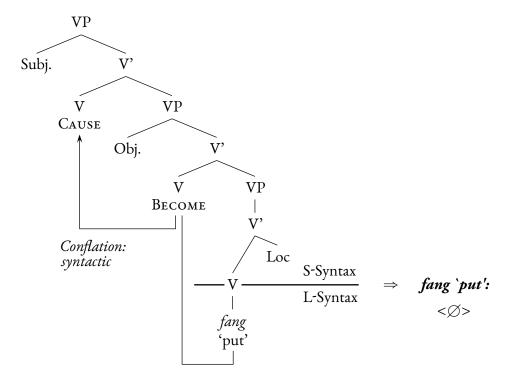
(131) *English* (Lin, 2001: 111):

The main V *put* undergoes lexical conflation with Become and Cause and surfaces a lexical unit with the meanings of these light verbs plus the light-verb-introduced arguments. In other words, the entire domain of this structure is treated as word-level in English and categorized as L-Syntax.

However, in Mandarin, only the main V gets spelled out as the lexical verb *put*, at which the L/S-Syntactic distinction is drawn:

(132) *Mandarin Chinese* (Lin, 2001: 113):

VP
  Subj.   V'
      V   VP
    Cause
         Obj.   V'
              V   VP
           Become |
                        V'
                   Loc
              ——— V ——— S-Syntax   ⇒ *fang `put':*
                   | L-Syntax   <∅>
                fang
                 'put'

Conflation:
syntactic

The arguments are all syntactically introduced, i.e. they come about depending on whether the

light verbs are present in the syntax proper in Mandarin, which is now the level above the main

V[24]. And the Mandarin *put* merely denotes properties that can be conceptualized as actions of

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[24]This account leads to various possibilities of the presence of the light verbs in syntax; that is, we may have different structures where all or some of the light verbs are present, in turn leading to the presence of all or some of the arguments of *put*. It captures sentences like the following in Mandarin:

(i) a. Laozhang fang-le   yi-ben shu   zai zhuo-shang.   b. Na-ben shu   fang zai zhuo-shang.
      Laozhang put-ASP one-CL book at table-on   that-CL book put at table-on
      'Laozhang put a book on the table.'   'That book put on the table.'
                                                          (Adapted from Lin (2001: 105, Ex. (104)))

Note that *fang* ('put') in (ib) is not passive. The passive construction in Mandarin involves the morpheme *bei* (c.f. Huang (1999)), which indicates the presence of an external argument, though the external argument need not be syntactically realized:

(ii) Na-ben shu   *bei*   (suibian-de) fang zai zhuo-shang.
     that-CL book PASS careless-ADV put at table-on
     'That book was carelessly put on the table.'
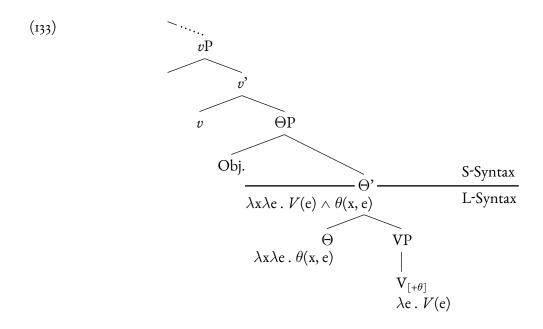
The availability of agent-oriented modification above illustrates this point. However, the argument structure of (ib) does not involve an external argument, as illustrated by the *un*-availability of agent-oriented modification:

(iii) Na-ben shu   (*suibian-de) fang zai zhuo-shang.
      that-CL book careless-ADV put at table-on
      'That book (*carelessly) put on the table.'

putting. Put concisely, Lin's Lexicalization Parameter is a parameter on what part of the syntactic structure languages see as a word, and what part as genuine syntax.

If we try to apply the concepts of word-level syntax and syntax proper to our own structure as an attempt to capture the typological variation in argument realization, it would mean that in the case of English, Θ' should be marked as the cut-off point of the two distinctive levels, below which is a *word*, and above, *syntax*:

(133)

This is different from Lin's structure in that the lexicalization of English verbs does not involve phrases that are arguments per se but only functional heads that introduce thematic relations, namely Θ°. The arguments are all introduced in the syntax proper. On the other hand, in the case of Mandarin, if what gets spelled out as lexical verbs is only the main V that denotes properties of eventualities, it would mean that the L/S-Syntax distinction should be drawn at the main V in Lin's terms. However, in this regard, we depart from Lin (2001) by fixing the distinction at Θ' *across languages*. Our overall account thus is that Mandarin spells out only the main V as lexical verbs but the domain that it regards as word-level still falls at Θ', which is nonetheless still part of syntax[25]. We make this departure because below Θ' is where Pseudo-Incorporation can happen in

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[25]In other words, our notion of L-Syntax (word-level syntax) is different from Lin's (or Hale and Keyser's) in that it does not strictly refer to the syntactically impenetrable lexicalization domain, but an area syntactically accessible to some languages, namely those with Pseudo-Incorporation.

our account. And despite some of the phrasal properties P-I objects show, they also have some lexical properties that are found in true morphological incorporation (Noun-Incorporation). Fixing the lexico-syntactic domain at Θ' would give us some advantage at explaining the semi-syntactic, semi-lexical nature of pseudo-incorporated NPs in Mandarin (and other languages), as well as the lack of P-I in languages like English, i.e. they have no syntactic access below Θ' because everything is conflated into a word.
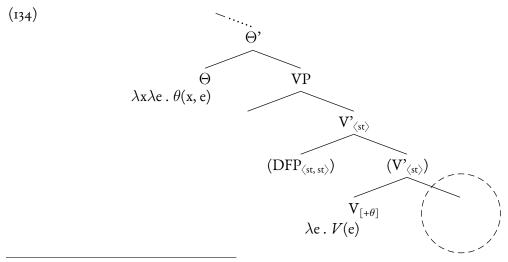
But to really account for the lack of P-I in languages like English, we still need to say something about why P-I supposedly cannot happen in the syntax proper in (133). Recall our earlier discussion, there is a composition possibility in Spec.ΘP for property NPs. If NPs could compose there, we would have pre-DFP NPs in Mandarin and P-I in English, contrary to fact. We will resolve this issue by hypothesizing a dependency between L/S-Syntax and the available modes of semantic composition. In our distinction of L/S-Syntax, there are some fundamental differences in the availability of the modes of semantic composition between these two levels of syntax. In word-level syntax (i.e. below Θ'), composition modes that conjoin different relations, or relations and eventualities (e.g. Event Identification, Predicate Modification, etc.), are viable since this is how the denotations of English verbs come about under our assumption, i.e. that they form out of syntactic pieces which compose via Event Identification. Whereas in the syntax proper (above Θ'), the composition mode that puts together entities/generalized quantifiers and relations (i.e. Function Application) is assumed to be required in argument positions, given the observation that all English arguments (which compose above Θ' given the syntactic opacity below that level) are of entity- or quantifier-type (Carlson, 1977)[26]. And given our general argument structure in (116), argument positions in the syntax proper would amount to specifier positions. In other words, this hypothesized availability of modes of semantic composition, dependent on the syntactic levels, might reflect a generalization on the relation between syntactic positions and semantic composition; that is, specifiers compose via Function Application while complements compose via Event Identification[27].

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[26] This assumption leaves open the issue of whether English mass nouns should also be analyzed as of entity-type.

[27] This generalization is true of English, except for the complement position to V (This would be the verb that

Typological variation in P-I thus results from this language-dependent syntactic opacity with the restricted modes of semantic composition on the distinctive syntactic levels: Not being able to see below Θ' syntactically means for some languages that they can only introduce arguments type-compatible with Function Application, excluding the possibility of property NP arguments. And for some languages, the syntactic transparency below Θ' opens up the possibilities of both NP and DP arguments, yet the possibilities are regulated in the separate syntactic domains by the domain-associated composition modes. We then rule out Spec.ΘP being a possible composition site for property NPs since Spec.ΘP is in the domain that has no compatible mode of semantic composition for such NPs. This structural division of composition modes gives rise to the positional NP-DP distinction we see in Mandarin argument realization. But to completely rule out the word order *Subj. V NP DFP, we still need to consider (126b), where the NP composes in Spec.VP.

Given type compatibility, NPs in theory can compose in any position (complement or specifier) inside the VP. Referring again to the structure in (127) (partially repeated here as (134)), we see that whether the verbal event is modified by a DFP or not (i.e. whether a DFP adjoins to V' or not), NP arguments' type allows them to be pseudo-incorporated inside the VP with no positional restrictions:

(134)

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encodes internal-θ-roles): v composes with the VP via Event Identification while the external argument composes with v' via Function Application. If the complement position to V in English is in fact a specifier position (Spec.ΘP), as in our structure, then the exception no longer exists. Of course, future cross-linguistic investigations are necessary to test the legitimacy of this generalization.

NPs can compose in the complement or specifier position because it is within the domain of L-Syntax and in either position, the type of their sister node would be $\langle s, t \rangle$, regardless of DFP-adjunction. We need to restrict the composition of NPs to the complement position (the dashed circle above); otherwise, we risk overgenerating the ungrammatical word order of the NPs preceding the DFP should the DFP adjoin inside the VP.

We might be able to do the restriction by resorting to the mechanism of the language-dependent structural lexicalization hypothesized in (128). When we first introduced the idea of the typological variation on P-I being correlated with how the above structure gets lexicalized as verbs by different languages, we were not very specific about how the lexicalization process goes, especially in the case of languages that lexicalize more than just a verb head, i.e. languages that lexicalize Θ' as verbs, like English. We will formulate the lexicalization process of such languages by means of Fusion:

(135) a. Θ'-Lexicalization:

Languages lexicalize Θ' as verbs by fusing $\Theta°$ and V.

b. Fusion:

$\Theta°$ and V can be fused iff they are linearly adjacent.

Since under our typological hypothesis languages that lack P-I always lexicalize Θ', we can take this to mean that $\Theta°$ and V are always adjacent to each other. And since we mean for the argument structure to be universal across languages, we can strengthen this linear relation between $\Theta°$ and V and have it apply in the case of pseudo-incorporating languages as well, i.e. languages that lexicalize only the V head, like Mandarin. That is, we will say that $\Theta°$ and V **must** be linearly adjacent with no intervening phrases in the argument structure across the board (across pseudo-incorporating and non-pseudo-incorporating languages), even under the hypotheses that pseudo-incorporating languages only lexicalize V as verbs and that V undergoes movement to $\Theta°$ in those languages. By enforcing the linear adjacency between $\Theta°$ and V, we remove the possibil-

ity of Spec.VP being a composition site for NPs, since it is an intervening position that disrupts the adjacency.

One apparent problem to this claim of Θ°-V adjacency is the V'-adjoining DFP. However, as a brief preview (more details will be provided in §5.1), DFPs are generally late-merged in Mandarin. They are merged after all the syntactic operations have taken place, including V-movement. In other words, in the original argument structure proposed here, where either Θ° and V undergo Fusion in non-pseudo-incorporating languages or V undergoes movement to Θ° in pseudo-incorporating languages, there would be no intervening DFPs. Therefore, it is not really a problem to our claim of Θ°-V adjacency.

Before we leave this section, it is worth mentioning that two other things about P-I and Mandarin subjects also follow from the current account of typological variation. First, the complement position to the main V inside the VP is now the only available position for property-NP-composition. It explains why P-I NPs are cross-linguistically objects only. Second, if we recall the generalization about Mandarin subjects in §3.2.3, fn. 13, that is, bare nominal subjects are necessarily definite or need something that is like an existential operator to bind it, we can attribute this generalization to the inability of property NPs to compose above Θ'. They need some type-shifting process to be eligible for semantic composition in the subject position. The ι-shifter or existential operator is their way out of Θ'.

4.2.2   Obligatory narrow scope
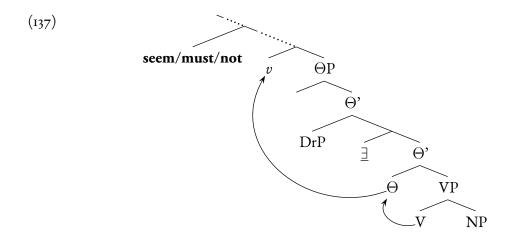
Building on the current analysis, we can derive three of the aforementioned P-I properties that Mandarin post-DFP NPs are shown to exhibit, i.e. obligatory narrow scope, number neutrality, and the inability of discourse anaphora. The derivations of these properties in theory extend to other P-I languages as well. The remaining properties, i.e. non-compositionality and syntactic visibility, are not discussed here for the following reasons. Non-compositionality (Institutional-ized readings), according to Dayal (2011), is a less cross-linguistically stable property of P-I and is

notoriously difficult to derive with pure syntactic terms. Hence, it is only used as a means to detect potential P-I-hood for Mandarin. As for syntactic visibility, it has been established in §4.2.1 that property NPs compose on a certain level of syntax and are indeed syntactic items. It thus follows that they are subject to further syntactic operations such as controlling agreement, as in Hindi, or movement, as in both Hindi and Mandarin.

Deriving the obligatory narrow scope of the post-DFP NPs is fairly straightforward. We will demonstrate with a concrete example from §3.2.1:

(136) a. Zhangsan **haoxiang** mai-le [$_{\text{DrP}}$ san nian] [$_{\text{NP}}$ **che**]   ($\Diamond > \exists$; *$\exists > \Diamond$)

   Zhangsan seem   sell-ASP   three year   car

   ✔'Zhangsan seems to have sold cars for three years.'
   *'There are some cars such that Zhangsan seems to have sold them for three years.'

   b. Zhangsan **bixu/meiyou** mai [$_{\text{DrP}}$ san nian] [$_{\text{NP}}$ **che**]   ($\Box/\neg > \exists$; *$\exists > \Box/\neg$)

   Zhangsan must/NEG   sell   three year   car

   ✔'Zhangsan must/didn't sell cars for three years.'
   *'There are some cars such that Zhangsan must/didn't sell them for three years.'

These examples all involve a modal with respect to which the non-referential NP objects cannot take wide scope. Put under the proposed argument structure, the NPs would be existentially closed immediately after the composition of $\Theta°$, ensuring their narrow scope with respect to any operator that is higher than ΘP (e.g. the modals above):

(137)

Abstracting away from where the modals exactly are in the structure, we can at least tell that they are higher than *v* (or higher than Asp° if we assume the aspectual marking on the verb results from the verb eventually moving into Asp°) since they all show up preverbally. Then it is not surprising that they obligatorily scope over the NPs.
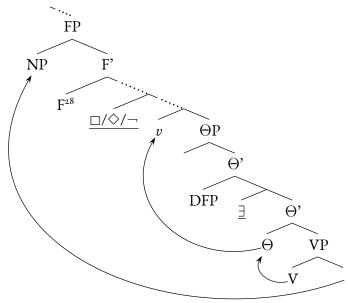
As for cases where the NPs have undergone movement to a position higher than the modals, as in the following examples repeated from §3.2.2, since the scopal interpretation of the NPs depends on Existential Closure, which falls below the modals, moving the NPs alone to a higher position would not render any scope changes:

(138) Contrast—

a. Zhangsan **yan**   *yinggai* mai, **jiu**   bu *yinggai*   mai   (✔□ > ∃)

   Zhangsan cigarette should sell   alcohol NEG should sell

   'Zhangsan should sell cigarettes but not alcohol.'

b. Zhangsan **yan**   *haoxiang* mai-le   san nian, **jiu**   *haoxiang* mai-le   wu nian

   Zhangsan cigarette seem   sell-ASP three year alcohol seem   sell-ASP five year

   'Zhangsan seems to have sold cigarettes for three years, and alcohol for five years.'

   (✔◇ > ∃)

c. Zhangsan shi **yan**   *meiyou* mai san   nian, bu shi   **jiu**   (*meiyou* mai san   nian)

   Zhangsan SHI cigarette NEG   sell three year   NEG SHI alcohol NEG   sell three year

   'It is cigarettes that Zhangsan didn't sell for three years, not alcohol.'   (✔¬ > ∃)

FP
NP F'
F²⁸
□/◇/¬ v ΘP
Θ'
DFP ∃ Θ'
Θ VP
V

(139) Prior Discourse Anchor—

a. **Yan**, Zhangsan ye *meiyou/yinggai/bixu* mai   (✔¬/□ > ∃)

cigarette Zhangsan also NEG/should/must sell

'Zhangsan doesn't sell cigarettes either / Zhangsan should/must also sell cigarettes.'

b. **Yan**, Zhangsan *meiyou/yinggai/bixu/haoxiang* meitian mai   (✔¬/□/◇ > ∃)

cigarette Zhangsan NEG/should/must/seem   everyday sell

'Zhangsan doesn't/should/must/seems to sell cigarettes everyday.'

CP
NP C'
C
□/◇/¬ v ΘP
Θ'
DFP ∃ Θ'
Θ VP
V

²⁸This is simply a place holder for a functional head in the middle field of Mandarin syntax. What it really is will be addressed in §5.1.

4.2.3 Number neutrality

Recall that in Hindi, number neutrality of P-I objects is aspect-dependent: For *singular* non-Case-marked NPs, the number neutral interpretation only surfaces in atelic aspect:

(140) anu-ne   *tiin ghanTe meN / tiin ghanTe tak* kitaab paRhii   (=(69))

      Anu-ERG 3   hours   in   3   hours   for book   read-PFV

      'Anu read a book in three hours' = exactly one book   [*Accomplishment*]
      'Anu read a book for three hours' = one or more books   [*Activity*]

Under the assumption that Hindi singular nouns denote in the atomic domain, i.e. they are strictly singular, having a singular NP object necessarily leads to a singular entity being the internal argument of the verbal event, i.e. the *exactly one* reading. In order to get number neutrality out of singular P-I NP objects in atelic aspect, Dayal (2011) resorts to event *iterativity* under atelicity. Implementing the pluractional operator (OP_{PA}) proposed by Lasersohn (1995) in her structure, Dayal manages to generate the iterative interpretation of the verbal event in the denoted time period by the DrP. The pluractional operator pluralizes the verbal event into several sub-events in which a singular entity denoted by the NP object is found. Although the entity is strictly singular in each sub-event, there is a plurality of such entities given the plurality of the verbal events generated by OP_{PA}. And the distribution of the singular entity across the sub-events permits both possibilities of the entity being the same or different. Therefore, in the book-reading example above, Anu could have read either *one* or *more than one* book iteratively in the three hours' time. Telicity, defined over atomic events, resists iterativity (i.e. is incompatible with OP_{PA}); hence, there is only one single event with one single object, giving rise to the telic-atelic contrast in number neutrality. One thing to note here is that in examples like the mouse-catching one, where the number neutrality of the singular *mouse* is likewise generated by OP_{PA}, only the *more than one* reading is viable:

(141) anu purre din *cuuhaa* pakaRtii rahii (=(66b))

   Anu whole day mouse catch-IMP PROG
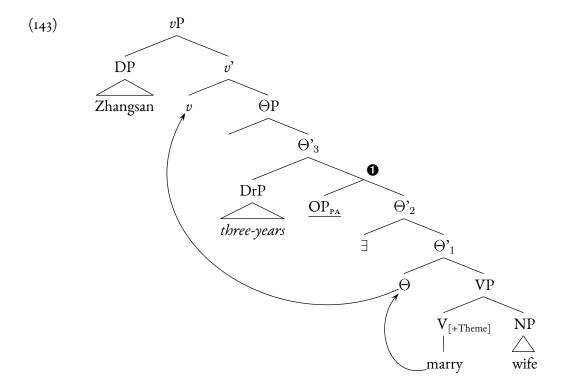
   'Anu kept catching mice (different ones) the whole day.'

This is so because of pragmatic concerns, since it is relatively implausible to have a situation where Anu kept catching the same entity that is a mouse in the pluralized sub-events should we allow for the same entity to distribute across all of the sub-events. That is to say, the syntax for P-I indiscriminately provides both options of the object being held constant or varying across the sub-events, but the final interpretation is pragmatically conditioned.

   We can apply the same method as Dayal (2011) to our argument structure for the Mandarin case, where the number neutral interpretation of the post-DFP NP object also surfaces under atelicity[29]:

(142) Zhangsan qu-le   san   nian **laopo** (=(93))

   Zhangsan marry-ASP three year wife

   'Zhangsan married (different) wives (repeatedly) for three years.'
   #'Zhangsan married a wife (the same one) for three years.'

Example (142) is where we have pragmatically restricted the GENERAL NUMBER (Rullmann and You, 2006) of the post-DFP NP to a singular interpretation in the verbal event and yet we still get a plural interpretation out of the NP. Since the sentence is in atelic aspect, a pluractional operator can be implemented in our argument structure to generate event iterativity:

---

[29]Recall that number neutrality of the Mandarin NP here is not the same as GENERAL NUMBER that all Mandarin bare NPs have (i.e. that they denote both atomic entities and the sets of all their possible sums, which makes them compatible with both a singular and plural interpretation (Rullmann and You, 2006).), since the latter is pragmatically restricted in this case.

(143)

vP

DP   v'

Zhangsan

v   ΘP

Θ'$_3$

❶

DrP   OP$_{\text{PA}}$ Θ'$_2$

three-years

∃   Θ'$_1$

Θ   VP

V$_{[+\text{Theme}]}$ NP

marry   wife

The composition process up to Θ'$_2$ is the same as before:

(144) $\llbracket \text{NP} \rrbracket = \lambda x \lambda e \, . \, wife(x, e)$

$\llbracket \text{qu} \rrbracket = \lambda e \, . \, marry(e)$

$\llbracket \text{VP} \rrbracket = \lambda x \lambda e \, . \, marry(e) \wedge wife(x, e)$ – via Event Identification

$\llbracket \Theta \rrbracket = \lambda x \lambda e \, . \, \textsc{Theme}(x, e)$

$\llbracket \Theta'_1 \rrbracket = \lambda x \lambda e \, . \, marry(e) \wedge wife(x, e) \wedge \textsc{Theme}(x, e)$ – via Predicate Modification

$\llbracket \Theta'_2 \rrbracket = \lambda e \exists x \, [marry(e) \wedge wife(x, e) \wedge \textsc{Theme}(x, e)]$

And the pluractional operator (OP$_{\text{PA}}$) is redefined as follows to fit the current framework[30]:

(145) $\llbracket \text{OP}_{\text{PA}} \rrbracket = \lambda P_{\langle st \rangle} \lambda E \, [\text{Card}(E) \geqslant 2 \wedge$ *Plurality*

     $\forall e \forall e' \in E \, [P(e) \wedge$ *Event type*

     $\neg \tau(e) \circ \tau(e') \wedge$ *Non overlap*

     $\exists t \, [between(t, \tau(e), \tau(e')) \wedge \neg \exists e'' \, [P(e'') \wedge t = \tau(e'')]]]]]$ *Hiatus*

---

[30]The original definition of OP$_{\text{PA}}$ in Dayal (2011) is:

(i) $\llbracket \text{OP}_{\text{PA(pluractional)}} \rrbracket = \lambda V \lambda P \lambda y \lambda E \, [\text{Card}(E) \geqslant 2$ *Plurality*

     $\& \, \forall e \forall e' \in E \, [V(e)(y)(P)$ *Event type*

     $\& \, \neg \tau(e) \circ \tau(e')$ *Non overlap*

Let us unpack the denotation of the pluractional operator. It takes as its argument a property of eventualities and returns a plurality of events (*Plurality*), where the property holds true of all of the sub-events in the plurality (*Event Type*), none of the sub-events overlap with one another (*Non overlap*), and there are time gaps between the sub-events (*Hiatus*)[31]. This denotation puts the operator on top of Θ'$_2$, which denotes a property of eventuality, for composition:

(146) $[\![\mathbf{❶}]\!] = [\![OP_{PA}]\!]([\![\Theta\text{'}_2]\!])$

$\qquad = \lambda E\,[\mathrm{Card}(E) \geqslant 2 \wedge$ $\hfill$ *Plurality*

$\qquad\quad \forall e \forall e' \in E\,[\exists x\,[marry(e) \wedge wife(x, e) \wedge \textsc{Theme}(x, e)] \wedge$ $\hfill$ *Event Type*

$\qquad\quad \neg\tau(e) \circ \tau(e') \wedge$ $\hfill$ *Non overlap*

$\qquad\quad \exists t\,[between(t, \tau(e), \tau(e')) \wedge$

$\qquad\quad \neg\exists e''\,[\exists x\,[marry(e'') \wedge wife(x, e'') \wedge \textsc{Theme}(x, e'')] \wedge t = \tau(e'')]]]]]$ $\hfill$ *Hiatus*

The DrP then composes to delimit the temporal boundaries over which the eventuality iterates:

(147) $[\![\mathrm{DrP}]\!] = \lambda Q_{\langle s, t \rangle} \lambda e\,.\,Q(e) \wedge \tau(e) = 3\text{-}years$

$\qquad [\![\Theta P]\!] = [\![\Theta\text{'}_3]\!] = \lambda E\,[\mathrm{Card}(E) \geqslant 2 \wedge \forall e \forall e' \in E\,[\exists x\,[marry(e) \wedge wife(x, e) \wedge \textsc{Theme}(x, e)]$

$\qquad\qquad \wedge \neg\tau(e) \circ \tau(e') \,...]]]] \wedge \tau(E) = 3\text{-}years$[32]

$\qquad\qquad \& \exists t\,[between(t, \tau(e), \tau(e')) \& \neg\exists e''\,[V(e'')(y)(P) \& t = \tau(e'')]]]]]$ $\hfill$ *Hiatus*

In Dayal's system, verbs encode θ-roles in their denotations. And the pluractional operator takes scope immediately above the verb. So the first argument, V, in (i) represents the verb's denotation. And there are two types of verbs she hypothesizes, pseudo-incorporating and non-pseudo-incorporating, the former of which takes property NPs as the internal argument. If the pluractional operator takes a pseudo-incorporating verb as its first argument, the second argument it takes would be a property NP that is the internal argument of the verb, i.e. P in the above denotation. And the Agent is represented by y. Since in our system, verbs are deprived of θ-roles, we redefine the pluractional operator by taking out the arguments V and y in the denotation, and making P the first argument of the operator that is a predicate resultant of Pseudo-Incorporation (after V-NP composition). Everything else is kept the same.

[31]One might wonder if *Hiatus* is necessary for an iterative eventuality. Here is what Dayal (2011, fn. 36) notes about *Hiatus*:

> "Two temporally discrete sub-events that extend say from t to t' and from t' to t" can be one continuous event from t to t". The hiatus between sub-events is crucial to separate these cases from those involving genuine iteration. See Lasersohn (1995) for a fuller discussion of this as well as for the role of pluractionality within the context of event semantics."

[32]Given the denotation of the DrP, the resulting denotation of the ΘP should be $\lambda e\,[\mathrm{Card}(e) \geqslant 2 \wedge ...] \wedge \tau(e) = 3\text{-}years$, where 'e' is a plurality of events that contain iterative sub-events that are *wife-marrying*. Just to avoid confusion on the event variables, the plurality of events in the ΘP's denotation is still written as 'E' that 3-*years* is measuring.

We have derived the desired denotation for example (142) via $\mathrm{OP_{PA}}$, where in all of the sub-events that are marrying events and range over three years, there exists an entity with the property of being a wife that is the Theme of the sub-events. Likewise, this denotation allows for the possibility of the entity persisting or varying across the sub-events, in theory resulting in semantic ambiguity. However, similar to the *mouse-catching* example, the *exactly one* reading of the NP is ruled out on pragmatic grounds; it would be highly implausible to marry the *same* wife repeatedly over three years. Number neutrality of Hindi P-I can be derived along the same line.

4.2.4   Inability of discourse anaphora

The inability of P-I NPs to antecede a discourse anaphor has also been shown to exhibit aspect-sensitivity in both Hindi and Mandarin. In atelic aspect, where P-I NPs are number neutral, singular pronominal discourse anaphora is unavailable to those NPs, yet plural pronominal discourse anaphora poses no problems. Since the anaphora inability and number neutrality pattern the same under aspect (i.e. the unavailability of singular anaphora and number neutrality are only found in atelic aspect, modulo Mandarin bare NPs' GENERAL NUMBER) and number neutrality is derived through the iterativity of the verbal predicate via $\mathrm{OP_{PA}}$, it is natural to associate the anaphora inability with iterativity as well. This is the insight from Dayal's (2011) treatment of Hindi P-I NPs' inability of discourse anaphora, which we will follow in treating the Mandarin case of post-DFP NPs' anaphora inability.

According to Dayal, the anaphora inability does not come from P-I per se; that is, it is not through P-I that the NPs are stripped of their ability to antecede a discourse anaphor. It is rather the pronominal anaphor's inability to be subordinated under temporal adverbials due to their lack of a temporal index that leads to the lack of singular pronominal anaphora in atelic aspect[33].

---

[33]Under this view, the inability of P-I NPs to antecede a discourse anaphor is kind of a misnomer. It is not the case (albeit the general asusmption) that NPs that are pseudo-incorporated somehow lose the ability to introduce a discourse referent like a regular unincorporated object can, which is proven by plural pronominal anaphors being indeed available to P-I NPs in general. The fact that number distinction of the discourse anaphor makes a difference, together with the fact that aspectual distinction is correlated with the number interpretations of P-I NPs, points to the direction that the issues regarding the anaphora facts could be about some incompatibility between

Let us recall the example from §3.2.5 for a concrete demonstration:

(148) a. Zhangsan mianshi-le   san   tian **yingzhengzhe**$_i$ (=(96a))

        Zhangsan interview-ASP three day applicant

        'Zhangsan interviewed applicants for three days.'

    b. Ta wen-le $^{\#}$**ta**$_i$/$^{\checkmark}$**tamen**$_i$ henduo wenti   (=(96b))

        he ask-ASP him(her)/them many   question

        'He asked $^{\#}$him(her)/$^{\checkmark}$them many questions.'

Example (148a) is a canonical case of non-referential NPs under atelic aspect, and we can derive the semantics of the sentence as follows with our structure and OP$_{PA}$:

(149) $[\![(148a)]\!] = \exists E\,[Card(E) \geqslant 2 \wedge \forall e \forall e' \in E\,[\exists x\,[interview(e) \wedge applicant(x, e) \wedge \textsc{Theme}(x,$
$e)] \wedge \neg\tau(e) \circ \tau(e')\,...]]]] \wedge \tau(E) = \textit{3-days} \wedge \textsc{Agent}(\textit{Zhangsan}, E)]$

The anaphoric pronouns in (148b) can be instantiated as a function from events to individuals, where the P-I NP provides the range of the function (Dayal, 2011). Thus, the respective denotations of the pronouns are: $[\![ta]\!] = f_{\textbf{applicant}}(e)$; $[\![tamen]\!] = f_{\textbf{applicants}}(e)$. This is how anaphora is established in this case and the NP *applicant* semantically restricts the range of individuals the pronouns return. Since the question-asking event is part of the interview process under the most natural interpretation of these sentences, the denotation of the sentence in (148b) should be integrated into that of the sentence in (148a) where the event argument of the latter serves as the input to the functions denoted by the pronouns. And since the pronouns lack temporal indices and are not subject to temporal subordination, they are necessarily integrated above the pluractional operator, leading to the following (underscored) denotation:

---

the number interpretation of the NPs and the anaphoric pronouns that refer to them, rather than the NPs' lack of referent-introducing ability. This would be the route taken here in deriving the anaphora property of P-I. As will be shown, the *infelicity* of singular pronominal anaphora is in fact the result of the interaction between the nature of the anaphoric pronouns (i.e. their lack of temporal indices) and event interativity generated under ateclic aspect.

(150) $[\![(148)]\!] = \exists E\,[\mathrm{Card}(E) \geqslant 2 \wedge \forall e \forall e' \in E\,[\exists x\,[interview(e) \wedge applicant(x, e) \wedge \mathrm{T{\scriptsize HEME}}(x, e)]$

$\wedge \neg\tau(e) \circ \tau(e')\,...]]]] \wedge \tau(E) = \textit{3-days} \wedge \mathrm{A{\scriptsize GENT}}(\textit{Zhangsan}, E)]$

$\wedge \exists E'\,[\tau(E') \subseteq \tau(E) \wedge \textit{ask-questions}(E') \wedge \mathrm{A{\scriptsize GENT}}(\textit{Zhangsan}, E') \wedge \mathrm{G{\scriptsize OAL}}(E') =$

$\dfrac{}{{}^{\#}f_{\mathbf{applicant}}(E)/{}^{\checkmark}f_{\mathbf{applicants}}(E)]}$

As shown above, the pronominal functions take a plurality of events (generated by $\mathrm{OP_{PA}}$) and return *one* or *more than one* applicant. In other words, the singular pronominal function distributes one individual who is an applicant across a plurality of *question-asking* events. This is infelicitous under the scenario where the three-day interview process ranges over multiple *different* applicants, which is the most natural reading of (148a). However, if we can set up a context where the interview of one single applicant takes three days to guarantee the *one-theme-across-all-events* reading of (148a), the singular anaphoric pronoun in (148b) indeed becomes felicitous:

(151) Context—

Zhangsan's company was hiring a new salesman. Zhangsan, as the executive manager of the Human Resources department, was responsible for the interview process. There were many applicants for the job opening, but they would be filtered out so that only one applicant would be interviewed in person by Zhangsan. No one other than Zhangsan knew who the applicant was or how long the in-person interview would take, and as it turned out, it took three days. A, as an employee of the company that only knows that there would be only one final applicant and that the interview indeed took three days, says to another employee, B:

a. Zhangsan mianshi-le   san   tian **yingzhengzhe**$_i$

   Zhangsan interview-ASP three day applicant

   'Zhangsan interviewed an applicant for three days

b. Ta wen-le $^{\checkmark}$**ta**$_i$ henduo wenti

   he ask-ASP him(her) many   question

   'He asked him (her) many questions.'

On the other hand, the plural pronominal function does not have this distributivity problem: A plurality of applicants is distributed into a plurality of *question-asking* events so that (at least)

some sub-events would involve *different* applicants[34].
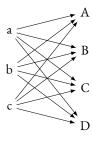
One might wonder, if there is in fact nothing wrong with P-I NPs' anaphora ability and what we have about this particular property is just a mismatch between the number interpretations of the NPs and the anaphoric pronouns, then is all the argument about how the pronouns' lack of temporal indices prevents them from subordination under OP_{PA} necessary? I will argue that it is still necessary if how we derive number neutrality of P-I is via event iterativity. Regardless of what denotations we give to the pronouns, i.e. whether we make them functions that return individuals semantically restricted by the P-I NPs or simply variables that need to be bound by the discourse referents the NPs introduce, if they are able to be subordinated under OP_{PA}, we would be able to generate a plurality of events, such as the *question-asking* ones, where each sub-event inside the plurality has an individual/individuals provided by the singular/plural pronouns. Then, even in the singular case of pronominal anaphora, we would not find a number mismatch since the P-I NP that is number neutral under atelic aspect has an option of anteceding a *number neutral singular* anaphoric pronoun.

This account of anaphora inability makes a prediction that if the distribution of individuals into the sub-events absolutely **cannot** involve the same individual, the sentence should crash with a singular anaphoric pronoun. The following example bears out this prediction:

---

[34]Of course, how this plural distribution in (148b) and the cross-event variation of Theme in (148a) take place is worth considering. Given the set-up of our argument structure, the cross-event variation permits all possibilities of event-Theme combinations:

(i) Suppose the following sets of applicants (A) and interview events (I)—
    A = {a, b, c};   I = {A, B, C, D}
    Theme Variation:

No matter how the plural distribution in (148b) takes place, the distributed individuals into the *question-asking* events have to co-vary with the applicants in the interviews so that we can get the coherent reading where the person interviewed is the person being asked questions. This co-variation requirement is however not obviously ensured by the analysis of pronominal functions. Unfortunately, this issue is outside the scope of the dissertation, so I will leave it open.

(152) a. Zhangsan qiangjue-le   san   nian **sixingfan**_i

Zhangsan execute.with.gun-ASP three year death-row.prisoner

'Zhangsan gun-executed death-row prisoners for three years.'

b. Ta zai qingjue   qian bu hui gen #**ta**_i/✔**tamen**_i jiaotan

he at gun.execution before NEG will with him(her)/them converse

'He wouldn't converse with #him(her)/✔them before the execution.'

Given the nature of the verbal event in (152a), the Theme argument must involve *different* individuals over the iteration of the *execution* event during the three years. As a result, having singular pronominal anaphora in (152b) gives rise to the physiologically impossible interpretation of Zhangsan not engaging in a conversation with the *same* individual that is a death-row prisoner before each execution, an interpretation not rescuable in any way by context.

4.3   Interim summary

In the first half of this chapter, we have developed an argument structure in association with internal θ-role separation that mediates the composition sites of post-verbal arguments based on their semantic types. We are able to capture the (transitive) word orders in Pattern I by distinguishing a particular position on a particular level of syntax in which only property NPs can compose, i.e. Comp.V. This is in theory the Pseudo-Incorporation position from which the cross-linguistically steady P-I properties can be derived if we are convinced of Mandarin post-DFP NPs presenting a case of P-I given their similarities to those of Hindi P-I objects. And Pseudo-Incorporation, under the view of the current analysis, is to some extent a semi-morphological, semi-syntactic process given the word-level nature of the syntactic domain where it happens. This, in a way, explains why it has some commonalities with Noun-Incorporation, which is a true morphological process, yet still has some syntactic subjectivity that Noun-Incorporation lacks. This argument structure we developed will serve as the foundation for our future analyses of Pattern II & III whenever the NP-DP distinction is taken into consideration.

And of course, our story about the 3 patterns will not be complete without considering the case of ditransitives since they constitute part of the word orders we set out to account for. How does the theory about where NPs and DPs compose tie into the structure of ditransitives so that we observe the word orders we observe? The second half of this chapter will aim to answer this question by developing an applicative structure that incorporates NP-composition as the indirect object.
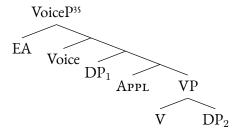
4.4 The ditransitive structure

As of now, we have filled in the transitive paradigm regarding the post-verbal NP-DP distinction under Pattern I with the proposal of the ΘP. It provides us with ways of composing the direct object (DO), but the direct object only. In order to complete all of the word orders under Pattern I, we also need ways of composing the indirect object which can likewise be an NP or a DP. The goal of the remaining sections in this chapter is to develop a ditransitive structure in addition to the ΘP and derive the ditransitive paradigm under Pattern I for completion. We will start by looking at one general analysis of ditransitive verbs (Pylkkänen, 2002, 2008) and then investigate the nature of Mandarin indirect objects (IOs) to motivate the structure for Mandarin ditransitives.

4.4.1 What is the indirect object?
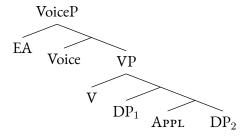
According to Pylkkänen (2000, 2002, 2008), indirect objects in ditransitive constructions are *applied* arguments that are introduced by *applicative* heads in the syntactic structure. There are two kinds of applicative heads, one syntactically high, and the other syntactically low, with different functions (Pylkkänen, 2002: 21-22):

(153) a. HIGH APPLICATIVE: Denotes a thematic relation between the DP it introduces and the event denoted by the verb in its argument VP

VoiceP[35]

EA Voice
        DP₁
            Appl VP
                    V DP₂

High APPL: $\lambda x \lambda e$. Appl(e, x) (collapsing Appl$_{\text{BEN}}$, Appl$_{\text{INSTR}}$, Appl$_{\text{LOC}}$ and so forth)[36]

b. Low Applicative: Denotes a *to-* or *from-*possession relation between two DPs

VoiceP

EA Voice
        VP
            V DP₁
                Appl DP₂

Low-APPL-TO: $\lambda x \lambda y \lambda f_{\langle e, \langle s, t \rangle \rangle} \lambda e$. f(e, x) & theme(e, x) & to-the-possession(x, y)

Low-APPL-FROM: $\lambda x \lambda y \lambda f_{\langle e, \langle s, t \rangle \rangle} \lambda e$. f(e, x) & theme(e, x) & from-the-possesion(x, y)

The high applicative head, **High APPL**, marks various thematic relations (e.g. Benefactive, Instrumental, Locative, etc.) on the argument it introduces and is syntactically higher than the VP. The low applicative head, **Low APPL**, on the other hand, only marks the transference of possession of the DO to/from the IO and is syntactically lower than the main V[37]. Languages that have **High APPL** are able to produce ditransitive constructions where the IO is introduced into

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[35] The VoiceP in Pylkkänen (2002) is analogous to our vP, whose main function is introduce the external argument (EA).

[36] So the denotation of Appl$_{\text{BEN}}$, for instance, would be '$\lambda x \lambda e$. Benefactive(e, x)'.

[37] Pylkkänen's (2002, 2008) applicative typology, where the syntactic heights of the applicative heads correlate with their semantics, appears to be a necessary hypothesis driven by the meaning differences between the two types of applicatives. It is not difficult to postulate a position of an applicative head to be somewhere in the clausal spine higher than the VP if it introduces a relation between an argument and that VP, similar to the case of v (Kratzer, 1996). However, if an applicative head has to mark a possession relation between two arguments and one of them is necessarily interpreted with the internal θ-role of the V (namely, the DO), then there is nowhere but only lower than the V for the applicative head to directly take two nominals as its arguments and have one of them predicated of by the V. As will be shown later in this chapter, Mandarin ditransitive constructions that convey a very similar possession relation between the objects as their English counterparts in fact involve a syntactically higher applicative head, supported by verbal suffixation facts. Given the differences between the syntactic framework in Pylkkänen (2002, 2008) and the one being developed here, a higher *low* applicative head in Mandarin is an inevitable outcome since no non-NPs can compose below the main V in Mandarin in our account. That said, I do not wish to overthrow the syntactic distinction between the two types of applicatives made in Pylkkänen (2002, 2008) and am simply suggesting that maybe in Mandarin the line of what counts as *low* syntactically is not that easily drawn.

an eventuality denoted by a transitive verb as one of the above thematic arguments as long as the applicative thematic relation can be construed out of the eventuality:

(154) a. Chaga: (Pylkännen, 2008: 11, Ex. (2a))

N-á-í-lyì-í-à *m-kà* k-élyá.

FOC-1SG-PRS-eat-APPL-FV 1-*wife* 7-food

'He is eating for his *wife*.'

b. Chicheŵa instrumental: (Baker 1988b: 354)

Mavuto a-na-umb-ir-a mpeni mtsuko.

Mavuto SP-PST-mold-APPL-ASP knife waterpot

'Mavuto molded the waterpot with a knife.'

Applicative structures where the indirect object assumes a thematic relation with the main predicate are found in Bantu languages. Chaga and Chicheŵa in the above examples have ditransitive constructions whose indirect objects are related to the main event either as a beneficiary or an instrument. English lacks such ditransitive constructions and is thus claimed by Pylkkänen (2002) to have only the low applicative head, **Low APPL**, that marks a *possessor* relation on the IO across the board (Pylkkänen, 2008: 13, Ex. (5)):

(155) a. *He ate the wife food.

b. *John held Mary the bag.'

The IO's in the English examples cannot be thematically related to the event as a beneficiary, and in cases where they seem to be able to be beneficiaries, they have to however be the intended recipient of the direct object in the event. The sentence below cannot be interpreted without Mary intending John to have the book[38]:

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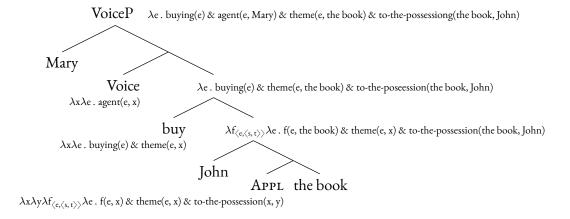
[38]One might argue that it is not clear whether what we have in the structure is a high or low applicative head in (156) since *John* can also be interpreted to be the beneficiary. However, if it was a high applicative head marking a benefactive relation between the IO and DO, then it would be difficult to explain why (155) is ungrammatical, since a

(156) Mary bought John the book.

To build a ditransitive structure with **Low APPL** out of a transitive verb, *buy*, for instance, the syntax in (153b) would be resorted to and the associated semantics goes as follows:

(157) Mary bought John the book. (Pylkkänen, 2008: 18)

VoiceP λe . buying(e) & agent(e, Mary) & theme(e, the book) & to-the-possessiong(the book, John)

Mary

Voice λe . buying(e) & theme(e, the book) & to-the-poseession(the book, John)
$\lambda x\lambda e$. agent(e, x)

buy $\lambda f_{\langle e,\langle s, t\rangle\rangle}\lambda e$. f(e, the book) & theme(e, x) & to-the-possession(the book, John)
$\lambda x\lambda e$. buying(e) & theme(e, x)

John

APPL the book
$\lambda x\lambda y\lambda f_{\langle e,\langle s, t\rangle\rangle}\lambda e$. f(e, x) & theme(e, x) & to-the-possession(x, y)

As can be seen, it is the low applicative head marking the IO as the *goal* of possession transference, i.e. **Low-APPL-TO**, that is implemented in the structure. Therefore, it is *to* John's possession that the book ends up being transferred.

In theory, there are two directions in which the possession transference of the DO can be carried out, *to* the IO's possession and *from* the IO's possession. However, English ditransitive constructions only involve the low applicative head that marks the *to*-directionality given the following example:

(158) *The thief stole Mary a ring.

Mary above cannot be interpreted as the victim from whose possession the ring was stolen. If the sentence means anything at all in English, it would still be describing Mary as the recipient of a stolen ring. This is contrary to some languages that do implement **Low-APPL-FROM** in their ditransitive constructions:

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benefactive relation should be as easily construed between the IO and DO in (155) as in (156). The benefactive reading can however be derived from the possessive relation in (156), i.e. John benefited from receiving the book, whereas the possessive relation is not readily construable in (155), i.e. #He ate the food and his wife benefited from receiving the food. The benefactive reading is consequently not derivable.

(159) Korean:

Totuki-i   Mary-hanthey panci-lul humchi-ess-ta   (Pylkkänen, 2002: 21)

thief-NOM Mary-DAT   ring-ACC steal-PST-PLAIN[39]

'The thief stole a ring from Mary.' (Lit: Thief stole Mary a ring)
Hypothesized meaning: 'The thief stole a ring and it was from Mary's possession.'

If we are to resort to Pylkkänen's (2002; 2008) applicative structure for Mandarin ditransitive constructions, we need to first identify what kind of applicative heads Mandarin has. Similar to English, Mandarin does not have ditransitive constructions that impose thematic relations on the IO with the main predicate:

(160) a. *Zhangsan ti-zhe   *Mali* pibao   (Benefactive IO)

Zhangsan   carry-ASP Mary purse

'Zhangsan is carrying the purse for Mary.'

b. *Zhangsan qie-le   *daozi* cai   (Instrumental IO)

Zhangsan   cut-ASP knife vegetable

'Zhangsan cut the vegetables with a knife.'

The above examples lead to the conclusion that Mandarin ditransitive constructions do not involve the high applicative heads, which leaves us with the other option of the low applicative heads. And it is indeed the case that the IO has to be interpreted as the possessor of some kind:

(161) Zhangsan mai-le   Lisi yi-bu   che

Zhangsan sell-ASP Lisi one-CL car

'Zhangsan sold Lisi a car.'

Therefore, the sentence above would be infelicitous if *Lisi* did not end up receiving the car. This possessor requirement on the IO makes an instant prediction that only things that can *possess* can be the IO in a ditransitive construction in both English and Mandarin. And the following examples attest to this prediction:

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[39]PLAIN = *plain* (level of formality in the Korean honorific system).

(162) a. *John mailed *Paris* a package.

   b. *Zhangsan ji-le   *Bali* yi-fen   baoguo

      Zhangsan   mail-ASP Paris one-CL package

      *'Zhangsan mailed Paris a package.'

If *Paris* is strictly interpreted as a location rather than a group of people in Paris, the sentences are ungrammatical in both languages. Given this parallel patterning, we can be fairly certain that Mandarin ditransitive constructions involve what Pylkkänen hypothesizes to be the low applicative structure. However, Mandarin differs with English in one respect, i.e. Mandarin ditransitive constructions involve both directions of the possession transference:

(163) a. *To* the IO's possession: b. *From* the IO's possession[40]:

   Zhangsan song-le   Lisi yi-zhi   bi   Zhangsan na-le   Lisi yi-zhi   bi

   Zhangsan give-ASP Lisi one-CL pen   Zhangsan take-ASP Lisi one-CL pen

   'Zhangsan gave Lisi a pen.'   'Zhangsan took a pen from Lisi.'

In Pylkkänen's terms, there would be either a **Low-APPL-TO** or **Low-APPL-FROM** in the ditransitive structure of Mandarin.

   But apparently, the syntax of the low applicative heads in (153b) would not work for us since Mandarin verbs are fundamentally different from English ones and disallow any DP composition in their own projections. This raises the need to redefine the applicative structure for the introduction of indirect objects under our framework.

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[40]One thing to note about this interpretation of the IO being the source of possession transference is semantically different from English examples like:

  (i) Mary denied John his salary.
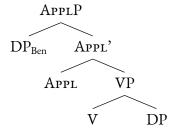
A close translation of the above sentence would be something like '*Mary denied so that John did not have his salary*', which can be seen as a negative variant of the *to*-APPL° (i.e. the salary that is rightfully John's did not go *to* John's possession due to Mary's denying). However, the Mandarin example in (163b) conveys a different reading: The pen Zhangsan took was indeed *from* Lisi's possession, meaning that Lisi *had* owned it before Zhangsan took it away. This entailment does not exist in the English example, making the APPL° involved in (163b) a genuine *from*-APPL°.

4.4.2 Paul & Whitman's (2010) applicative structure

If no DPs are allowed to compose inside the VP, and the VP is the lowest part of our argument structure, then we have no other way but to introduce the IO higher by a higher applicative head. This idea is also supported by the fact that the IO in Mandarin is always higher than the DFP adjuncts (see §1), a word order not derivable by the syntax of Pylkkänen's low applicative heads. Paul and Whitman (2010) in fact propose an applicative structure for Mandarin ditransitive verbs that conforms to this idea. In their proposal, they likewise distinguish between two types of applicative heads as Pylkkänen but apply the syntax of high applicative heads, where APPL° situates immediately above the VP, across the two types[41] (Paul and Whitman, 2010: 263):
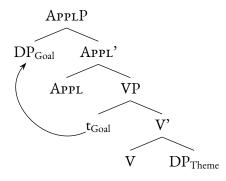
(164) a. Thematic Applicative

[$_{\text{APPLP}}$ DP$_{\text{Benefactive}}$ [$_{\text{APPL'}}$ Appl [$_{\text{VP}}$ V DP]]]

b. Raising Applicative

[$_{\text{APPLP}}$ DP$_{\text{Goal}}$ [$_{\text{APPL'}}$ Appl [$_{\text{VP}}$ i$_{\text{Goal}}$ [$_{\text{V'}}$ V DP$_{\text{Theme}}$]]]]

The first type of applicative structure, (164a), is analogous to the syntax and semantics of the *high*

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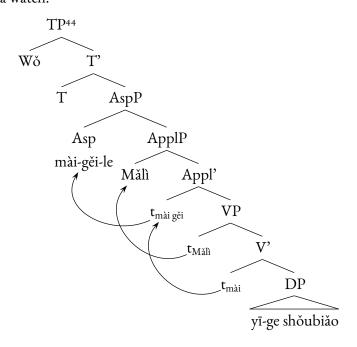
[41]The tree structures in (164a) & (164b) are added by myself.

applicatives in Pylkkänen (2002, 2008). The divergence between their and Pylkkänen's account lies in the second type, (164b). Despite having the same property of marking transference of possession as in the English ditransitive constructions, the Appl° head in the second type is still higher than the VP with one difference that it is a *raising* applicative head that attracts the IO from inside the VP into its specifier. They term this type the Raising Applicative structure and argue that Mandarin ditransitive constructions should be analyzed as such[42]:

(165) Wǒ mài-gěi-le   Mǎlì yī-ge shǒubiǎo[43]   (Paul and Whitman, 2010: 267)

1sg sell-GEI-PFV Mali 1-CL watch

'I sold Mali a watch.'

The syntactic operations involved in (165) proceed as follows. *Mai* ('sell'), the main verb, undergoes cyclic head-movement through Appl° to Asp°. Appl° is hypothesized by Paul and Whitman

[42]Paul and Whitman's (2010) motivation for the Raising Applicative analysis is that there is syntactic evidence that suggests that the IO must be base-generated inside the VP, out of which it later moves to a higher position between the AspP and the VP. Since the possession relation between the IO and DO entails an applicative structure, as they argue that is what Mandarin ditransitive constructions denote, the dislocation of the IO must be driven by the applicative structure per se; hence the attraction of the IO by Appl°. However, I will argue that this Raising Applicative analysis actually has some questionable aspects that lead to unwanted predictions, basing on movement evidence that takes into consideration the NP-DP distinction in the post-verbal arguments.

[43]In §4.4.2, all of the examples with tonal diacritics on them are excerpted the way they are from Paul and Whitman (2010). The ones constructed by myself for contrast do not have any tonal diacritics.

[44]The arrows in the tree are also added by myself.

(2010) to be lexically realized as *gei* ('give'), and the cyclicity of the verb movement is reflected by the suffixation order of *gei* and the perfective aspect morpheme *le*. This suffixation order is proof to Paul & Whitman that the applicative head should be higher than the VP; otherwise, it would be hard to explain why *gei suffixes* to the main verb should it be an Appl° that started out low in the structure and moved upwards, assuming that the moving element *left*-adjoins to the element it moves to in Mandarin. The *raising* Appl°, *gei*, raises the Goal DP (in this case, *Mary*) in Spec.VP to Spec.ApplP by way of Agree (Chomsky, 2000: 122): It is a Case-licensor that agrees with the closest argument (i.e. the IO in Spec.VP), checks off the yet unvalued Case feature of the IO, and moves the IO to its specifier given its EPP feature (Paul and Whitman, 2010: 275-276).

If both Paul & Whitman's proposal of the *raising* ApplP and my proposal of the ΘP are on the right track, one might suppose that we can combine the two theories to derive the NP-DP related orderings between the IO, DO, and DFP. However, I think there are some questionable aspects of Paul & Whitman's proposal that need to be addressed before we can proceed with developing an account for Mandarin ditransitives.

First and foremost, I agree with their idea that Appl° in Mandarin can be spelled out as *gei* and suffix to the main verb under verb movement, but it is not clear what is providing the possession transference relation in the structure. In Pylkkänen's original structure for low applicative heads, the applicative heads specify the possession relation between the IO and the DO by encoding in their denotations the IO being the goal/source of possession transference. However, if the IO that originates in Spec.VP in the Raising Applicative analysis is already marked as the goal, as shown in (164b), one would assume that this possession relation is given by the denotation of the main verb. Then, it would mean that the applicative head has only the function of raising the IO to its specifier, in which case the motivation of realizing the applicative head as *gei* ('give') that surely marks the transference of possession is lost[45]. No denotation of the *raising* Appl° is given

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[45]*Gei* can itself be a ditransitive verb that describes the DO being transferred in possession to the IO:

  (i) Wǒ gěi-le   Mǎlì yī-ge shǒubiǎo   (Paul & Whitman, 2010: 4, fn. 3)
      1sg give-pfv Mali 1-cl watch
      'I gave Mali a watch.'

According to Paul & Whitman (2010), who cite the work by Djamouri & Paul (2009), the applicative *gei* is historically

in Paul & Whitman (2010); hence, we can only conjecture what the authors intend the Appl° to mean. Suppose we adhere to the idea that the possession relation between the IO and DO inside the VP is still given by the Appl°, then it is not clear how this interpretation can be derived compositionally. It would have to involve a mechanism for the **Appl°** to introduce something that is the goal of possession transference into the specifier of the **VP**. I know of no such ways of semantic composition. If one alternatively hypothesizes that the IO's role of possession goal is given by Appl° *after* the IO's being attracted to Spec.ApplP, then it is not clear why the IO would compose in Spec.VP in the first place.
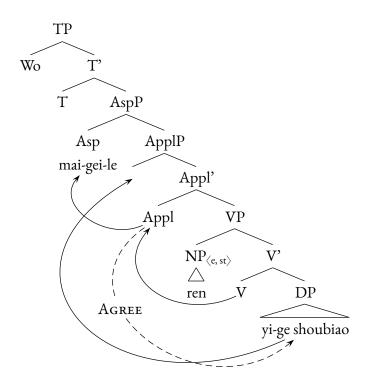
Another questionable aspect concerns the distribution of NP objects under ditransitive constructions. Consider the case in which the IO is a non-referential NP. If, as what I have proposed, a Mandarin non-referential NP is a pseudo-incorporated NP of property type ($\langle e, \langle s, t \rangle \rangle$), and it somehow manages to compose in Spec.VP as in the Raising Applicative analysis, then the NP IO would not enter an agreement relationship with the raising Appl°, assuming that Agree only targets DPs of entity- or quantifier-type[46]. As a result, the raising Appl° probes down further, agrees with the DO, if a DP, and attracts it higher, over the IO. We thus end up with an ungrammatical ditransitive order:

(166) *Wo mai-gei-le   yi-ge shoubiao **ren**

1sg sell-GEI-PFV 1-CL watch   person

'I sold a person/people a watch.'

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derived from the lexical verb *gei*.

[46]One might wonder whether the NP not moving in this case would pose a problem to our general analysis on non-referential NPs since it has been shown earlier that these NPs *do* move under the right licensing conditions. However, I argue that it does not pose a problem due to the differences between the types of movement the NPs *undergo* in the earlier cases and *do not undergo* in the current agreement case. Under Paul and Whitman's (2010) proposal, the IO gets attracted by the raising Appl° via checking off their unvalued Case features. If we hold the assumption that the unvalued Case features are hosted by the functional head in the nominal, e.g. the determiner or Case head (which projects a KP), then it is not surprising that non-referential NPs do not move in the applicative structure since they lack the Case-feature-hosting head. On the other hand, in the cases where they do move, they move via the licensing of contrast or prior discourse anchor, which do not distinguish between nominals with and without functional projections.

TP
Wo   T'
T   AspP
Asp   ApplP
mai-gei-le   Appl'
Appl   VP
NP⟨e, st⟩   V'
ren   V   DP
AGREE   yi-ge shoubiao

Finally, Paul & Whitman's (2010) argument for the IO being extracted out of the VP in the raising applicative structure gives rise to ungrammatical word orders between the DFP and the DO. The evidence for their argument comes from the position of the frequency phrase under ditransitive constructions, which is directly relevant to our discussion about the word orders in Pattern I. Their argument consists of two parts, the first of which shows with the following examples that the frequency adverb attaches at the left-edge of the VP, and the IO has to precede the frequency adverb, proving that the IO is outside of the VP (Paul & Whitman, 2010: 11, Ex. (27)):

(167) a. Wǒ mài-gěi-le [ApplP tāmen [Appl' t_gei [VP [sān cì   ] [VP t_tamen [V' t_V shǒubiǎo]]]]].
           1SG sell-GEI-PFV   3PL   3   time   watch
           'I have sold them three times watches.'

      b. *Wǒ mài-le [VP shǒubiǎo [V' [sān cì   ] [V' t_V [PP gěi tāmen]]].
           1SG sell-PFV   watch   3   time   to them
           'I have sold watches three times to them.'

c. Wǒ mài-le   [$_{VP}$ [sān cì   ] [$_{VP}$ shǒubiǎo t$_V$ [$_{PP}$ gěi tāmen]]] le.

1sg sell-pfv   3   time   watch   to them   part

'I have sold watches three times to them.'

The sentence in (167a) is one of the grammatical ditransitive orders in Pattern I that we attempt to account for. The DO is a non-referential NP in this case and the FP has to intervene between the IO and DO. According to Paul & Whitman, the FP in (167a) must be adjoining to the left-periphery of the VP because of the ungrammaticality of it adjoining to V' in the dative counterpart of the ditransitive construction in (167b)[47]. In the dative alternate in (167b), the *gei*-phrase at the end of the sentence is a PP in their terms and right-adjoins to V'. The FP also adjoining to V' would result in the wrong word order under their assumption that the DO is base-generated in Spec.VP. Only when the FP adjoins higher than the DO, i.e. at the left-edge of the VP since the DO is in Spec.VP, would the word order be grammatical, (167c)[48]. And the IO being even higher than the FP in (167a) shows that the IO is outside of the VP[49].

Suppose we follow their assumption that the DO is base-generated in Spec.VP and the FP is marking the left-periphery of the VP. This assumption alone demands a fixed order between the FP and the DO (i.e. FP > DO) and falls short on capturing the NP-DP distinction in the DO's position in relation to that of the FP. It presents the biggest divergence between what is assumed

[47] From now on, we will call the dative counterparts of ditransitive constructions the *dative alternates*.

[48] Paul & Whitman (2010) assume a Larsonian VP-shell structure, so the FP is attaching to the maximal projection of the verb phrase. And their claim about the DO being base-generated in Spec.VP instead of Comp.V comes from the following example where the DO has to scope over the IO in the *gei*-PP rather than the other way around:

(i) Wǒ mài-le   [$_{VP}$ [ji   ge shǒubiǎo] t$_V$ [$_{PP}$ gěi liǎng ge rén   ]] le.   (Paul & Whitman, 2010: 11, fn. 8)
    1sg sell-pfv   several cl watch   to 2   cl person   part
    'I sold several watches to two people.'

The set of watches that the DO refers to cannot vary with respect to the IO, the two people. Since the *gei*-phrase is an adjunct PP, the DO has to be in Spec.VP to c-command the IO inside the PP for the scope to work, thus preventing the DO from composing in Comp.V that is lower than the PP.

[49] If, as Paul and Whitman propose, the IO indeed moves from Spec.VP into Spec.ApplP, this would be mean that the assumption of the DO being base-generated in Spec.VP cannot be valid to argue for the adjunction site of DFPs being at the left-periphery of the VP since the DO is obviously not in Spec.VP when the IO is present under their analysis. In that case, there is no other place inside the VP for the DO to be but Comp.V, and allowing for the DO being in Comp.V would lead to the same word orders in (167a&c) even if the FP adjoins at V'. With no clarity in what determines when the DO is generated where, it is hard for the DFP-adjunction to be a diagnostic for the position of the IO.

in the current framework (i.e. the attachment of the DFP to the **intermediate projections** inside the ΘP syntactically disambiguates the composition sites of NP and DP DOs) and in Paul & Whitman's proposal (i.e. the DFP is attaching to the **maximal projection** of V, marking the left-periphery of the VP and putting NP and DP DOs on the same side of the DFP)[50]. Given Paul & Whitman's account, we would generate the ungrammatical sentence involving a DP DO in (168a):

(168) a. *Wo mai-gei-le tamen [$_{VP}$ [san ci] [$_{DP}$ **zhe-zhi shoubiao**]]

      1SG sell-GEI-PFV 3PL   three time   this-CL watch

      'I have sold them this watch three times.'

    b. Wo mai-gei-le tamen [$_{VP}$ [$_{DP}$ **zhe-zhi shoubiao**] [$_{V'}$ [san ci]]]

      1SG sell-GEI-PFV 3PL   this-CL watch   three time

      'I have sold them this watch three times.'

Putting the FP at the left-edge of the VP would make it difficult to explain the goodness of (168b), provided that there is no motivation for the DO to move out of the VP as well, and that it would be unclear what position the DO moved into between the IO and the VP if it did move out.

    The second part of Paul & Whitman's proposal of IO-extraction out of the VP is based on the position of distributive adverbial quantifiers in Mandarin, such as *měi-rén* ('everyone') and *yī-rén* ('each') (Paul & Whitman, 2010: 12, Ex. (28)):

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[50] Note that our proposal about the composition sites of NP and DP DOs does not threaten the scopal observation made by Paul & Whitman (2010) in fn. 48. In our structure of ΘP, DP DOs compose in Spec.ΘP, a position higher than the adjunct *gei*-PP. And Paul & Whitman's example does involve a DP DO, i.e. *ji-ge shoubiao* ('several watches'). So the scopal interpretation is predicted. As for NP DOs that compose in Comp.V lower than the *gei*-PP, the IO in the PP *does* scope over the NP DO, as shown by the following example:

(i) Wo mai-le [$_{VP}$ [$_{V'}$ [$_{V}$ t$_V$ [$_{NP}$ **shoubiao**]] [$_{PP}$ gei liang-ge ren]]] le.
   1SG sell-PFV   watch   to 2-CL person PART
   'I sold watches to two people.' (2 > ∃)

This sentence is felicitous in a scenario where the two people were sold different watches. This narrow scope interpretation of the NP DO is not possible under Paul & Whitman's analysis if the DO is always in a position higher than the PP.

(169) a. Wǒ sòng-gěi háizimen [měi-rén   / yī-rén] [yībǎi kuài qián   ]

　　　 1SG give-GEI children   every(one) / each   100 CL money

　　　 'I gave the children each 100 dollars.'

　　 b. Xiàozhǎng fēn-gěi   wǒmen [měi-rén   / yī-rén] [shí-ge dàxuéshēng]

　　　 principal allot-GEI 1PL   every(one) / each   10 CL student

　　　 'The principal allotted us each 10 students.'

This part of their argument is offered to prove that the IO indeed *moves from inside* the VP since the first part only shows that the IO is outside of the VP. Following Fitzpatrick's (2006) account on floating quantifiers, they argue that the Mandarin quantifiers above should be classified under Fitzpatrick's terms as involving an underlying structure where the quantifiers scope over the nominals associated with them (i.e. *háizimen* ('children') in (169a) and *wǒmen* ('us') in (169b)). The word order we see in (169) results from the nominals A-moving over the quantifiers. The quantifiers are also assumed by them to left-adjoin to the VP[51] (Paul & Whitman, 2010: 13, Ex. (29)):

(170) Wǒ sòng-gěi [ApplP háizimen [VP měi-rén   [VP **t**haizimen [yībǎi kuài qián   ]]]]

　　　 1SG give-GEI   children   every(one)   100 CL money

　　　 'I gave the children each 100 dollars.'

According to them, if the IOs in (169) have to move over the quantifiers that attach at the VP under the assumption that the quantifiers must scope over their associated nominals in the underlying structure (Fitzpatrick, 2006), then the IOs would have no other way but to start from inside the VP.

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[51]They do not overtly assume this in their paper. It is deduced by myself from the structure they provide for the attachment of the quantifiers in (170). And this is a reasonable deduction because given the VP-shell structure they adopt, the next attachment site for the quantifiers would be at ApplP, which would lead to an ungrammatical word order, and there would be no way to tell whether the IO did move from inside the VP or not:

(i) *Wo song-gei [ApplP mei-ren   [ApplP haizimen [VP yibai-kuai qian   ]]]
　　 1SG give-GEI   every(one)   children   100-CL   money
　　 'I gave the children each 100 dollars.'

This line of reasoning, however, creates two issues. The first is also a word-order issue: The left-periphery assumption about the FP puts the quantifiers in a wrong order with the FP.

(171) *Wo song-gei haizimen [$_{VP}$ san ci   [$_{VP}$ mei-ren   [$_{VP}$ t$_{haizimen}$ [yibai-kuai qian   ]]]]

1SG give-GEI children   3   time   every(one)   100-CL   money

'I gave the children each 100 dollars three times.'

Our structure of the ΘP, on the other hand, predicts the correct word orders between the FP and quantifiers that still fall under the NP-DP distinction, putting aside for the moment the exact position of the IO[52]:

(172) a. Wo song-gei haizimen *mei-ren*

1SG give-GEI children every(one)

[$_{ΘP}$ [$_{DP}$ **yibai-kuai qian**   ] [$_{Θ'}$ Θ [$_{VP}$ [$_{v'}$ [$_{FP}$ san ci   ] [$_{v'}$ tv]]]]]

100-CL   money   3   time

'I gave the children each 100 dollars three times.'

b. Wo song-gei haizimen *mei-ren*

1SG give-GEI children every(one)

[$_{ΘP}$ ∃ [$_{Θ'}$ [$_{FP}$ san ci   ] [$_{Θ'}$ Θ [$_{VP}$ [$_{v'}$ tv [$_{NP}$ **qian**   ]]]]]]

3   time   money

'I gave the children each money three times.'

The ungrammaticality of (171) is in favor of our treatment for the DFP over Paul & Whitman's since it shows that the DFP cannot be at the left-periphery of, or form its own projection immediately above, the main verbal phrase.

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[52]The structures in (172), however, are in conflict with the generalization that the nominals (i.e. the IOs in this case) associated with the quantifiers have to A-move over the quantifiers into a higher position, since the IOs are not generated inside the VP (or ΘP in our framework). To resolve this conflict calls for a more thorough investigation on the syntactic and semantic behaviors of Mandarin adverbial quantifiers, which I will leave for a future occasion.

The second issue links back to our original concern about the Raising Applicative analysis: If for scope reasons, the IO has to be base-generated in Spec.VP below the quantifier, as Paul & Whitman assume, then it is not clear how the IO could be interpreted as the *applied* argument via Appl° in the underlying structure where the semantic composition takes place. And if the IO somehow gets its *applied* argument interpretation later *after* being extracted to Spec.ApplP, then it is not clear how it would be interpreted when generated in Spec.VP. (Some semantically null extra argument of V?)
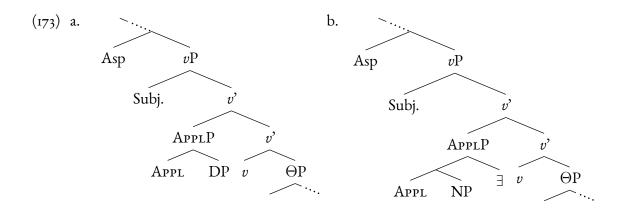
4.4.3   A unified PP analysis for Mandarin ditransitive constructions

It should be obvious by now that if we want to account for Mandarin ditransitive patterns with applicative structures, we need to take all the previous discussions about the applied arguments into consideration. We know that Mandarin ditransitive constructions are similar to their English counterparts in that they convey the possession transference of the DO by introducing the IO specified as either the Source or Goal of the transference. We also know that syntax-wise, the applicative head, if hypothesized to be in the clausal spine, cannot be lower than V, taking the insight from Paul and Whitman (2010) on the suffixation order of the applicative and aspectual heads on the verb. However, we want to avoid the problematic aspects of Paul and Whitman's proposal. In consequence, we will propose a structure for Mandarin ditransitives completely different from those of Pylkkänen's and Paul and Whitman's, or any of their possible derivatives. The to-be-proposed structure will involve a PP analysis on the Mandarin applicative head[53], which will be argued to be a simpler analysis that unifies the ditransitive constructions and their dative alternates. Supporting evidence for the PP analysis on Mandarin ditransitives will also be given as we go along.

The applicative structure we propose for Mandarin ditransitive constructions is as fol-

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[53]Although eventually what is responsible for introducing the IO in Mandarin will be deemed to be something more like a preposition than an argument-introducing head in the syntactic clausal spine, we will follow the tradition and still call the IO-introducing element Appl°. It will be shown that Appl° in this case still has some differences with other prepositions, despite its directly forming a constituent with the IO and adjoining in syntax like a PP.

lows, where the IO-introducing head Appl° forms a constituent with the IO and *left*-adjoins between Asp° and *v*°, be the IO an NP or a DP:

(173) a.

b.

The proposal of such structures is based on three observations. First, in the dative alternates of Mandarin ditransitive constructions, the PP-like phrase headed by the morpheme *gei* that contains the IO can show up sentence-finally *as well as* preverbally:

(174) a. Lisi ji-le   [NP/DP (yi-feng) xin]DO [PP **gei** [Mali]IO]

Lisi mail-ASP   one-CL letter   GIVE Mary

'Lisi mailed a letter to Mary.'

b. Lisi [PP **gei** [Mali]IO] ji-le   [NP/DP (yi-feng) xin]DO

Lisi   GIVE Mary   mail-ASP   one-CL letter

'Lisi mailed a letter to(/for) Mary.'[54]

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[54]As Paul and Whitman (2010) point out, the *gei*-PP, when showing up preverbally, can mark a BENEFACTIVE relation on the nominal inside it:

(i) Tā [PP gěi wǒ] dāng fānyì   (Paul and Whitman, 2010: 4, Ex. (7c))
   3SG   for 1SG act interpreter
   'He serves as an interpreter for me.'

It is not clear to me whether the preverbal *gei*-PP in (174b) is indeed marking a BENEFACTIVE relation since receiving something in most cases entails benefiting from the reception, as in '*Mary baked John a cake*'. And in (174b), the sentence is infelicitous if Mary did not end up receiving the letter, in my judgement; that is, if Lisi simply mailed the letter on Mary's behalf (to someone else). One other thing to note is that the BENEFACTIVE reading is incompatible with the sentence-final *gei*-PP, reasons for which remain to be explicated:

(ii) *Ta dang fanyi   [PP *gei wo*]
    3SG act interpreter   for 1SG
    'He serves as an interpreter for me.'

According to Paul and Whitman (2010), the [*gei* + IO] constituent in the dative alternate is a PP that *right*-adjoins in syntax if showing up sentence-finally. Although *right*-adjunction permits different positional possibilities for the [*gei* + IO] constituent (i.e. it could right-adjoin to the intermediate projections at different levels and still occur sentence-finally on the surface), we know that when occurring sentence-finally, it has to adjoin low since the DO necessarily scopes over the IO inside the constituent in that case (see fn. 48 in §4.4.2). On the other hand, the preverbal [*gei* + IO] constituent in (174b) must *left*-adjoin high (at least higher than Asp°, where the V is assumed to eventually land) given its preverbal nature. The [*gei* + IO] constituent being able to adjoin at these two different positions allows for the potential of it being able to also adjoin somewhere in between; that is, *v'* makes a potential adjunction site for the constituent since nothing precludes that possibility. Of course, if the [*gei* + IO] constituent can indeed adjoin to *v'*, it has to be *left*-adjunction; otherwise, it would look sentence-final on the surface. But in the sentence-final position, it necessarily scopes low, excluding the possibility of *right*-adjunction at *v'*. The preverbal [*gei* + IO] constituent being able to scope over the DO shows that the height of the adjunction site is somehow correlated with the directionality of adjunction in Mandarin[55]:

(175) Lisi [PP **gei** [*mei-ge   ren*   ]IO] song-le [*yi-fen   liwu*   ]DO   ($\forall > \exists$; *$\exists > \forall$)

Lisi   GIVE   every-CL person   give-ASP   one-CL present

'Lisi gave everyone a present.'/*'There is some present such that Lisi gave it to everyone.'

Second, the *gei* morpheme that is heading these phrases in different locations is not a verb per se, as one might wonder whether we are looking at some kind of serial verb construction since *gei* itself can be a ditransitive verb in Mandarin. The evidence for *gei* not being a verb in this case is the fact that *gei* in these phrases cannot be aspectually marked, as argued by Paul and Whitman (2010):

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[55]At this point, we can only hypothesize that when adjoining lower than a certain point in syntax, possibly inside the VP, or the ΘP in our framework, the [*gei* + IO] constituent has to *right*-adjoin. Otherwise, it is always *left*-adjunction. The driving force behind this correlation is unclear and should be investigated further.

(176) a. Lisi ji-le   yi-fen   xin   [$_{PP}$ gei-(***le**)   Mali]

           Lisi mail-ASP one-CL letter   GIVE-ASP Mary

           'Lisi mailed a letter to Mary.'

      b. Lisi [$_{PP}$ gei-(***le**)   Mali] ji-le   yi-fen   xin

          Lisi   GIVE-ASP Mary   mail-ASP one-CL letter

          'Lisi mailed a letter to Mary.'

This fact about the *gei*-phrase corroborates the view that the *gei*-phrase is an adjunct that can show up in different positions in the structure instead of *gei* being a verb and projecting accommodating positions in the clausal spine for the IO.

        And the third observation, which I deem to be the deciding factor for the proposal of the structures in (173), is that in addition to the *gei* morpheme acting like a suffix on the main verb and both *gei* and the verb being aspectually marked like a complex predicate, the *gei* morpheme can actually assume a different word order where it follows the aspectually marked verb and precedes the IO that precedes the DO:

(177) a. Lisi **song-gei-le**   [Mali]^{IO} [henduo   jinyinzhubao]^{DO}

           Lisi give-GIVE-ASP   Mary   very.much money.jewelry

           'Lisi gave Mary very much money and jewelry.'

      b. Lisi **song-le gei**   [Mali]^{IO} [henduo   jinyinzhubao]^{DO}

          Lisi give-ASP GIVE   Mary   very.much money.jewelry

          'Lisi gave Mary very much money and jewelry.'

The word order in (177b) has the most straightforward explanation if the *gei* morpheme forms a constituent with *Mary* and the constituent adjoins between where the aspectually marked verb is and Spec.ΘP, where the DP DO is under our theory. This leaves *v*' the only possible adjunction site for the [*gei* Mary] constituent, leading to the exact structures we have in (173). And aspectual

marking being forbidden on the *gei* in (177b) further confirms its non-verbal status as the *gei* morphemes in the sentence-final and preverbal cases we have discussed:

(178) Lisi **song-le gei-(*le)** [Mali]ᴵᴼ [henduo   jinyinzhubao]ᴰᴼ

Lisi give-ASP GIVE-ASP   Mary   very.much money.jewelry

'Lisi gave Mary very much money and jewelry.'

There is, however, one potential issue with using (177b) as supporting the structures in (173); that is, (177b) could be a case of the dative alternate where the DP DO undergoes some kind of extraposing/right-node raising over the sentence-final *gei*-PP to now being sentence-final on the surface:

(179) Lisi **song-le** tᵢ [ₚₚ **gei**   [Mali]ᴵᴼ] [henduo   jinyinzhubao]ᵢᴰᴼ

Lisi give-ASP   GIVE Mary   very.much money.jewelry

'Lisi gave very much money and jewelry to Mary.'

But it is in fact no problem once we consider the scopal facts about (177b) and (179). In the case of dative alternates, the DO that comes before the sentence-final *gei*-PP necessarily scopes over the IO inside the PP, meaning that the PP is syntactically lower than the DO. Extraposition of the DO should not alter the scope relation between the DO and the IO since the DO would be moving rightward and *up* if (177b) was indeed an instance of it. However, the IO preceding the DO in (177b) in fact scopes over the DO, an unexpected result under the extraposition analysis:

(180) Lisi **song-le** [**gei**   [*mei-ge   ren*   ]ᴵᴼ] [*ji-zhi   shoubiao*]ᴰᴼ

Lisi give-ASP GIVE every-CL person   several-CL watch

'Lisi gave everyone several watches.'

The interpretation of (180) follows from the IO scoping over the DO, where the set of watches can vary with respect to each individual in the set of people under discussion, contrary to that of the dative alternate. This scopal fact shows that the IO should be syntactically higher than the DO, a result straightforwardly given by hypothesizing the [*gei* + IO] constituent adjoining at *v'*.

Suppose our hypothesis of the ditransitive structure is on the right track, i.e. there is in fact no applicative structure in Mandarin similar to what Pylkkänen (2002, 2008) and Paul and Whitman (2010) propose, but simply a PP-like AᴘᴘʟP throughout, adjoining at different positions. Then two questions naturally follow: (i) How does the *gei* morpheme end up being a suffix on the verb in the ditransitive constructions? (ii) How does the IO scope over the DO if it is inside a PP-like constituent? These two questions are in a way related since they both call for an explanation on the c-command relationship between the elements inside the PP and something else in the structure. We will address the second question first. That the nominal inside a PP can c-command out of the PP into the lower domain is not something unheard of:

(181) It seems [ᴘᴘ to everyone$_i$] that he$_i$ should leave[56].

Under the traditional definition of c-command, the structures we propose in (173) would indeed encounter a problem when we try to explain the scope relation between the IO and DO, where the former necessarily scopes over the latter. But as shown above, some PPs that have in them what is considered to be an argument seem to pose no barrier for the c-command ability of the argument into the lower domain. To allow for situations like this, we either have to redefine c-command, i.e. possibly relaxing its definition to include cases like our ditransitive constructions and (181), or say something special about the PPs that contain arguments. Without further investigations on what possible impact a redefinition of c-command would make to syntactic phenomena in general, I think the second route would be the safer one to take for our account of Mandarin ditransitives. The hypothesis is that the proposed AᴘᴘʟP, albeit syntactically like a PP which in most cases would form a c-command barrier for the elements within it[57], in fact allows its contained elements to c-command from where it attaches in syntax. Of course, it remains unexplained what bestows this ability on the AᴘᴘʟP, but it at least provides us with a way to account for the scopal facts

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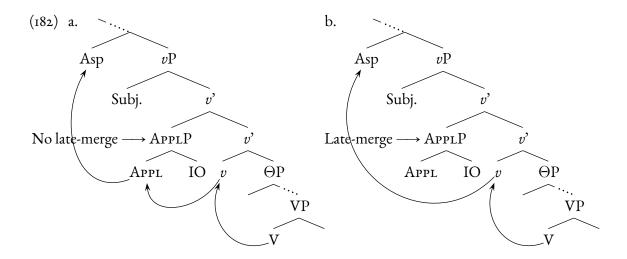
[56]Thanks to Kyle Johnson for providing me with this example.

[57]An example of this would be something like:

(i) It is [ᴘᴘ at everyone$_i$'s house] that he$_{*i/j}$ is throwing a party.

observed in (177b), as well as in (175), where the IO in the preverbal *gei*-PP also scopes over the lower DO.

This hypothesis also provides us with a way of explaining the first question about the suffixation of *gei* on the verb in most ditransitive cases. If the elements inside the APPLP can in fact c-command into the lower structure, that c-command relationship should make them syntactically visible to the lower elements should any syntactic operations rely on the c-command relationship between them. In other words, the head inside the APPLP, i.e. *gei*, should be a potential intermediate landing site for the main V that undergoes cyclic head-movement from below. This makes possible the suffixation of *gei* that is inside the APPLP onto the verb before they both move into Asp° to be aspectually marked. Moreover, there is optionality in letting the verb pick up *gei* on its way to Asp° for we see in (177b) that the verb can move by itself to Asp°, leaving the intermediate *gei* behind in its own phrase. And this optionality of *gei*-transportation, as I will suggest, is tied to the APPLP being able to be optionally late-merged in Mandarin[58]: Merging the APPLP *before* or *after* verb-movement (late-merging being the *after*-case) determines whether APPL° would end up being an intermediate landing site for the main verb:

(182) a.

b.

Unfortunately, given this line of analysis, there is a stipulation on the suffixation option-

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[58]The optional late-merge of the Mandarin APPLP will be shown to parallel the behavior of optional arguments in Hebrew VP-fronting (Landau, 2006, 2007) and will be argued to be the optimal analysis for the verb-doubling word orders in Mandarin when we get to the investigation of Pattern II in §5.1.

ality of *gei* we have to make to prevent overgeneration: In the movement path of the main verb, only the *gei* in the *left*-adjoining *gei*-phrase can be picked up by the verb. Since the verb, in our argument structure, is on the lowest level in syntax, the sentence-final *right*-adjoining *gei*-phrase is structurally higher and should in theory allow for the verb to pick up its head moving up. This, however, does not happen, based on the ungrammaticality of the example below:

(183) *Lisi song-gei$_i$-le   [henduo   jinyinzhubao]$^{\text{DO}}$ [$_{\text{PP}}$ t$_i$ [Mali]$^{\text{IO}}$]

       Lisi give-GIVE-ASP   very.much money.jewelry   Mary

       'Lisi gave Mary very much money and jewelry.'

Above is a word order achieved by letting the *gei* morpheme in the *right*-adjoining *gei*-PP move up with the verb, stranding the IO behind. And as can be seen, the IO cannot come after the DO without immediately following *gei*. The only situation where the IO can be separated from *gei* is when it precedes the DO in the ditransitive constructions with *gei* being part of the verbal complex, a case of our hypothesized *left*-adjoining APPLP. Although this is a necessary stipulation forced by the facts about Mandarin ditransitives, we see another case of syntactic operation correlated with the directionality of the *gei*-phrase adjunction. The earlier correlation we established was between the syntactic height and the directionality of the *gei*-phrases. This suffixation matter could in fact depend on the *height* of the *gei*-phrases, a mystery to be solved.

      One last thing that ties our proposed structure for the ditransitive constructions and the dative alternates together is the fact that the IO following *gei* can be a nominal of any kind, e.g. NP, DP, or QP:

(184) a. Lisi song-*gei*-le   [$_{\text{NP}}$ **ren**   ]/[$_{\text{DP}}$ **Mali**]/[$_{\text{QP}}$ **mei-ge ren**   ] shuiguo

         Lisi give-GIVE-ASP   person   Mary   every-CL person   fruit

         'Lisi gave people/Mary/everyone fruits.'

     b. Lisi song-le shuiguo [$_{\text{PP}}$ *gei* [$_{\text{NP}}$ **ren**   ]/[$_{\text{DP}}$ **Mali**]/[$_{\text{QP}}$ **mei-ge ren**   ]]

         Lisi give-ASP fruit   GIVE   person   Mary   every-CL person

         'Lisi gave fruits to people/Mary/everyone.'

c. Lisi [$_{\text{PP}}$ *gei*   [$_{\text{NP}}$ **ren**   ]/[$_{\text{DP}}$ **Mali**]/[$_{\text{QP}}$ **mei-ge ren**   ]] song-le shuiguo

     Lisi   GIVE   person   Mary   every-CL person   give-ASP fruit

     'Lisi gave fruits to people/Mary/everyone.'

Recall that unlike the DO in the lower ΘP, the IO in the ditransitive constructions under Pattern I shows no positional NP-DP distinction, i.e. they are always higher than the DO *and* the DFP, regardless of their types. We observe from the above examples that in the cases of sentence-final and preverbal *gei*-phrases, there also exist no restrictions on what type of nominals can be marked as the IO by *gei*. Suppose our previous arguments about analyzing the ditransitive constructions on a par with their dative alternates are on the right track, that is, treating the IO as forming a PP-like constituent with *gei*, which we still see as APPL° for the possession relation it introduces. Then this non-differentiation between the types of IO in terms of their syntactic positions is a natural outcome: In our proposed ditransitive structures, the adjunction site of the APPLP necessarily puts the IO higher than everything inside the ΘP. The IO's being able to be of any type is simply a general property of the [*gei* + IO] constituent that we see elsewhere as well, (184b) and (184c).

So far, our discussion has mainly focused on ditransitive constructions that convey the meaning of the IO being the GOAL of possession transference, analogous to that conveyed by English ditransitive constructions. But we have only told half the story since Mandarin differs from English in having also the ditransitive constructions that carry the *from*-the-IO's-possession interpretation. The ditransitive structures in (173) are meant to be general structures for both Mandarin APPL°$_{\text{TO}}$ ('*gei*') and APPL°$_{\text{FROM}}$. We have sided with Paul and Whitman (2010) in hypothesizing that the lexical exponent of APPL°$_{\text{TO}}$ is *gei* and argued that it is the same head that is usually analyzed as heading a PP in the dative alternates. What we will hypothesize for APPL°$_{\text{FROM}}$ is that there is no lexical exponent for it, i.e. APPL°$_{\text{FROM}}$ is always phonologically null in Mandarin. The main reason for this hypothesis comes from the observation about *from*-ditransitives that there is never any suffix between the verb and the aspect marker, unlike in *to*-ditransitives, where

gei can sometimes be seen as an optional suffix on the verb[59]:

(185) a. Lisi qiang-∅-le   Mali yi-zhi   bi   b. Lisi song-**(gei)**-le   Mali yi-zhi   bi

   Lisi rob-FROM-ASP Mary one-CL pen   Lisi give-GIVE-ASP Mary one-CL pen

   'Lisi robbed a pen from Mary.'   'Lisi gave Mary a pen.'

$\text{APPL}^{\circ}_{\text{FROM}}$ lacking a lexical exponent makes a difference in allowing for a dative alternate for *from*-ditransitive constructions, i.e. they do not have dative alternates since the $[\text{APPL}^{\circ}_{\text{FROM}} + \text{IO}]$ constituent cannot be an independent phrase with the head unspoken:

(186) a. *Lisi qiang-le yi-zhi   bi $[_{\text{PP}} \varnothing \, [\, \text{Mali} \,]^{\text{IO}}]$

   Lisi rob-ASP one-CL pen   Mary

   'Lisi robbed a pen from Mary.'

   b. *Lisi $[_{\text{PP}} \varnothing \, [\, \text{Mali} \,]^{\text{IO}}]$ qiang-le yi-zhi   bi

   Lisi   Mary   rob-ASP one-CL pen

   'Lisi robbed a pen from Mary.'

If we analyze the ditransitive constructions on a par with the dative alternates, why is it the case that (185a) is grammatical while (186a) and (186b) are not? I think the difference lies in whether $\text{APPL}^{\circ}_{\text{FROM}}$ has suffixed on the verb. Suffixation on the verb puts $\text{APPL}^{\circ}_{\text{FROM}}$ out of the constituent it forms with the IO; that is, $\text{APPL}^{\circ}_{\text{FROM}}$ no longer forms an independent phrase with the IO, despite it not being discernible on the surface. This is a way around the condition that the head of an independent phrase must be spoken. Since the *v*'-adjoining APPLP is the only case where APPL° can end up suffixing on the verb, ditransitive constructions are the only place where one finds the existence of $\text{APPL}^{\circ}_{\text{FROM}}$[60].

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[59]When some verbs enter the *to*-ditransitive construction, the suffixation of *gei* is obligatory while some verbs do not have this requirement:

(i) Lisi kao-***(gei)**-le   Mali yi-fen   shuiguota
   Lisi bake-GIVE-ASP Mary one-CL fruit.tart
   'Lisi baked Mary a fruit tart.'

This peculiar nature of *gei* suffixation needs some explanation, which will be attempted in the next section.

[60]There is indeed a way of using PPs to convey the *from*-interpretation in Mandarin:

Having laid out the basic syntax of our ditransitive structures, we will now look into their semantics and see how the semantic compositions of the various types of internal arguments take place. The denotation of Appl° is defined as follows: $[\![\text{Appl}]\!] = \lambda x_e \lambda e$. Goal/Source-of-Possession(x, e). What is worth noting here is that although we maintain a resemblance between Mandarin and English ditransitive constructions in terms of the possession relation introduced, the proposed denotation of Appl° here only covers *half* of the possession relationship, as opposed to Pylkkänen's *low* applicatives. It does not introduce two arguments between which the possession relation holds but only specifies the *possessor* and the direction of possession transference. This is a necessary departure because the Appl° in our case is forming a phrase with the IO and adjoining to *v'* that denotes a relation between entities and eventualities. Based on the types of the IO, we have two composition possibilities. The first is the composition of DP IOs:

(i) Lisi [PP *xiang* Mali] mai-le yi-zhi bi
   Lisi   from Mary   buy-ASP one-CL pen
   'Lisi bought a pen from Mary.'

But I argue that this is not the dative alternate of *from*-ditransitives based on the following observations. First, the PP cannot show up sentence-finally like the dative alternates of *to*-ditransitives:

(ii) *Lisi mai-le yi-zhi bi [PP *xiang* Mali]
   Lisi buy-ASP one-CL pen   from Mary
   'Lisi bought a pen from Mary.'

Second, the morpheme that heads the PP cannot suffix onto the verb like *gei* can:

(iii) *Lisi mai-*xiang*-le Mali yi-zhi bi
   Lisi buy-from-ASP Mary one-CL pen
   'Lisi bought a pen from Mary.'

And last, the morpheme that is heading the PP varies with the verb, unlike the PPs in the *to*-datives that are headed by *gei* across the board:

(iv) a. *Lisi [PP *xiang* Mali] qiang-le yi-zhi bi   b. Lisi [PP *cong* Mali na] qiang-le yi-zhi bi
      Lisi   from Mary   rob-ASP one-CL pen   Lisi   from Mary there rob-ASP one-CL pen
      'Lisi robbed a pen from Mary.'   'Lisi robbed a pen from Mary.'

Therefore, although (ivb) and (185a) have very similar, almost identical meanings, they do not represent the same structure as the *to*-ditransitives and their dative alternates do. Otherwise, it would be hard to draw a parallel case and explain why in English, one can say '*John stole a pen from Mary*' but never *'*John stole Mary a pen*'.

(187)

$$\text{Appl}P_{\langle st \rangle}$$

$$\text{Appl}_{\langle e, st \rangle} \quad \text{DP}_e$$

$$[\![\text{DP}]\!] \in D_e$$

$$[\![\text{Appl}]\!] = \lambda x \lambda e \,.\, \textsc{Goal/Source-of-Possession}(x, e)$$

$$[\![\text{Appl}P]\!] = \lambda e \,.\, \textsc{Goal/Source-of-Possession}([\![\text{DP}]\!], e)$$

The composition of DP IOs is straightforward. Appl° and the DP IO compose via Function Application and we have an ApplP denoting a set of eventualities where the IO plays the role of goal or source of possession.

The second possibility is the composition of NP IOs:

(188)

$$\text{Appl}P_{\langle st \rangle}$$

$$①_{\langle e, st \rangle} \qquad \exists$$

$$\text{Appl}_{\langle e, st \rangle} \qquad \text{NP}_{\langle e, st \rangle}$$

$$[\![\text{NP}]\!] = \lambda x \lambda e \,.\, NP(x, e)$$

$$[\![\text{Appl}]\!] = \lambda x \lambda e \,.\, \textsc{Goal/Source-of-Possession}(x, e)$$

$$[\![①]\!] = \lambda x \lambda e \,.\, NP(x, e) \wedge \textsc{Goal/Source-of-Possession}(x, e)$$
$$\qquad\qquad\qquad\qquad\qquad \text{– via Predicate Modification}$$
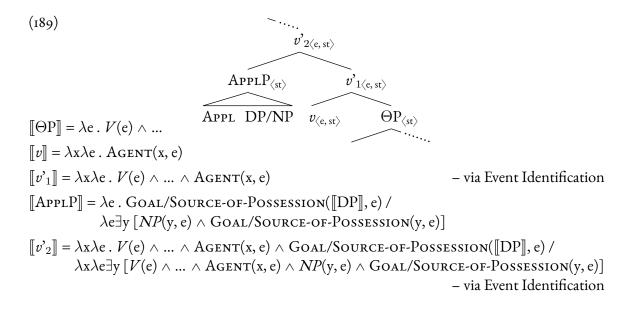
$$[\![\text{Appl}P]\!] = \lambda e \exists x\, [NP(x, e) \wedge \textsc{Goal/Source-of-Possession}(x, e)]$$

The composition of NP IOs in (188) is more complicated. Since NPs are of property-type, the composition mode involved here would be Predicate Modification that conjoins the denotations of Appl° and the NP IO that are of the same type. The last time we saw property-NP-composition was when the property NP composed directly with the main V, which was argued to be a case of P-I. Recall also that we have established the unavailability of P-I above the word-level syntax for typological reasons. Then a question naturally follows: What is this instance of NP-composition that we are looking at here? If we take P-I to be a particular kind of NP-composition, that is, P-I takes place via Event Identification where properties are directly introduced into eventualities, then the composition between Appl° and the NP IO would not count count as P-I since it involves a different composition mode. This conclusion conforms to our assumption that P-I

cannot happen high in the structure. However, (188) is not completely ungrounded as we see the *gei*-PP in the dative alternates allows for NP IOs as its complement. Therefore, we can for the time being see this as a special property of Appl°[61]. We know from before that property NPs syntactically saturate argument positions in Mandarin, so the open argument position in ⟦①⟧ is existentially closed off and we get the ApplP denoting a set of eventualities where the possessor IO has the properties denoted by the NP.

Adjoining at *v'*, the ApplP of type $\langle s, t \rangle$ then composes via Event Identification, given the type of its sister node, the result of *v*-ΘP-composition:

(189)

$\llbracket \Theta P \rrbracket = \lambda e \, . \, V(e) \wedge ...$

$\llbracket v \rrbracket = \lambda x \lambda e \, . \, \text{Agent}(x, e)$

$\llbracket v'_1 \rrbracket = \lambda x \lambda e \, . \, V(e) \wedge ... \wedge \text{Agent}(x, e)$ – via Event Identification

$\llbracket \text{ApplP} \rrbracket = \lambda e \, . \, \text{Goal/Source-of-Possession}(\llbracket DP \rrbracket, e) \, / $
         $\lambda e \exists y \, [NP(y, e) \wedge \text{Goal/Source-of-Possession}(y, e)]$

$\llbracket v'_2 \rrbracket = \lambda x \lambda e \, . \, V(e) \wedge ... \wedge \text{Agent}(x, e) \wedge \text{Goal/Source-of-Possession}(\llbracket DP \rrbracket, e) \, / $
         $\lambda x \lambda e \exists y \, [V(e) \wedge ... \wedge \text{Agent}(x, e) \wedge NP(y, e) \wedge \text{Goal/Source-of-Possession}(y, e)]$
      – via Event Identification
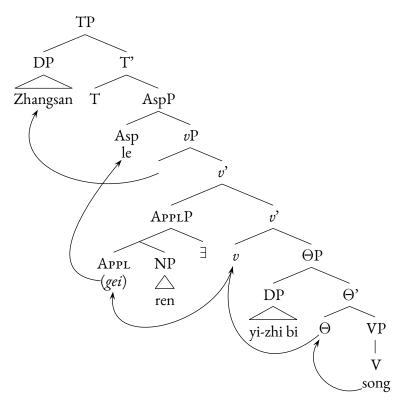
Event Identification converges the event arguments of the main verb inside the ΘP and the ApplP, making the events where the possession transference takes place the same as those denoted by the verb. Given this denotation, the DO and IO would be participants of the same event; therefore, although Appl° does not specify what gets transferred to or from the IO's possession,

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[61]NP-composition in the ApplP in fact needs more work to determine whether it is indeed a case of P-I or not. If we follow our argument about the two levels of syntax, then what we are treating as a simple head Appl° here could potentially involve more structure that also has the distinctive levels of syntax, and property NPs actually compose *deeper* in Appl°. Put differently, there could be a *core* Appl° that denotes some, say, eventuality of possession transition in which property NPs are pseudo-incorporated. To see whether this is the case, we need to check whether the P-I properties discussed in §3 apply to NP IOs as well. Unfortunately, due to the limited space in this dissertation, this will be left for future projects, but one fact suggesting our idea about Appl° involving more structure that contains some eventuality could be on the right track is that the lexical exponent of Appl°$_{\text{to}}$, *gei*, can itself be a ditransitive verb (See fn. 45).

there is only one possible candidate in the event for being the object of transference, i.e. the DO[62].
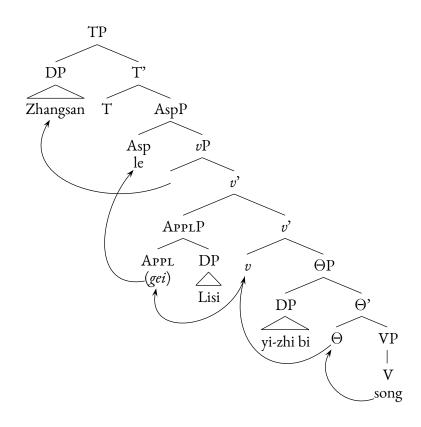
With everything about the proposed ditransitive structure in place, we can now demonstrate concretely the derivation processes of cases involving NP and DP IOs, respectively:

(190) a. Zhangsan song-(*gei*)-le   [NP **ren**   ] yi-zhi   bi

   Zhangsan give-GIVE-ASP   person   one-CL pen

   'Zhangsan gave people a pen.'

   b. Zhangsan song-(*gei*)-le   [DP **Lisi**] yi-zhi   bi

   Zhangsan give-GIVE-ASP   Lisi   one-CL pen

   'Zhangsan gave Lisi a pen.'

---

[62]This reasoning about the possession relation between the IO and DO actually raises a further issue of *direct* possession, which will be addressed in the next section.

TP

DP　　　T'

Zhangsan　T　　AspP

Asp　　　vP
le

v'

AplP　　　v'

Appl　DP　　v　　ΘP
(*gei*)

Lisi　　DP　　Θ'

yi-zhi bi　Θ　VP

V
song

4.4.4　Mandarin ditransitivization

Appl° under our current framework collectively encodes both directions of possession transference (Appl$^{\circ}_{\text{TO}}$ & Appl$^{\circ}_{\text{FROM}}$). And we have hypothesized that Appl$^{\circ}_{\text{TO}}$ has as its lexical exponent *gei* whereas Appl$^{\circ}_{\text{FROM}}$ has no lexical exponent. The selectional restriction of the IO having the capability of being a *possessor* applies to Appl$^{\circ}_{\text{FROM}}$ as well:

(191)　a.　Zhangsan ji-(*gei*)-le　　✔**Lisi**/*****Bali** yi-fen　baoguo

　　　　　Zhangsan mail-GIVE-ASP　Lisi/Paris　one-CL package

　　　　　'Zhangsan mailed ✔Lisi/*Paris a package.'

　　　b.　Zhangsan qiang-∅-le　　✔**Lisi**/*****Bali** yi　qian　　　yuan

　　　　　Zhangsan rob-FROM-ASP　Lisi/Paris　one thousand dollar

　　　　　'Zhangsan robbed ✔Lisi/*Paris a thousand dollars.'

As can be observed from (191a), along with several previous examples, overtly speaking *gei* as a suffix on the verb is optional. Yet this optionality is not available in all *to*-ditransitive construc-

tions; some verbs under *to*-ditransitive constructions *must* have *gei* overtly spoken on them as a suffix[63]:

(192) a. Zhangsan **diu-*(gei)**-le   Lisi yi-ke   qiu

           Zhangsan throw-GIVE-ASP Lisi one-CL ball

           'Zhangsan threw Lisi a ball.'

    b. Niao mama **tu-*(gei)**-le   niao baobao yi-zhi   xiao   chong

           bird   mom spit-GIVE-ASP bird baby   one-CL small worm

           'Mommy bird spat out a small worm to Baby bird.'

    c. Lisi **gai-*(gei)**-le   Mali yi-dong fangzi

           Lisi build-GIVE-ASP Mary one-CL house

           'Lisi built Mary a house.'

Obviously, what regulates this phenomenon begs for an account. Moreover, the generative aspect of our analysis on Mandarin ditransitives assumes that the APPLP that conveys the *to-* or *from-*the-IO's-possession interpretation can in theory adjoin to the argument structure of *any* transitive verb as long as the possessive relation can be plausibly construed between the DO and the IO. If there is *gei*-optionality, that is, some ditransitive verbs can have *gei* unspoken on them, and $\text{APPL}^{\circ}_{\text{FROM}}$ is always unspoken, then we would predict ambiguity when a ditransitive verb is semantically compatible with both $\text{APPL}^{\circ}_{\text{TO}}$ and $\text{APPL}^{\circ}_{\text{FROM}}$ and has no overtly spoken *gei* on it. We do find cases as such:

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[63]All the sentences in (192) are grammatical under the dative alternates, where *gei* heads its own phrase preverbally or sentence-finally:

(i) a. Zhangsan ([PP **gei**   Lisi]) diu-(***gei**)-le   yi-ke   qiu ([PP **gei**   Lisi])
    Zhangsan   GIVE Lisi   throw-GIVE-ASP one-CL ball   GIVE Lisi
    'Zhangsan threw a ball to Lisi.'

  b. Niao mama ([PP **gei**   niao baoabo]) tu-(***gei**)-le   yi-zhi   xiao   chong ([PP **gei**   niao baobao])
     bird mom   GIVE bird baby   spit-GIVE-ASP one-CL small worm   GIVE bird baby
     'Mommy bird spat out a small worm to Baby bird.'

  c. Lisi ([PP **gei**   Mali]) gai-(***gei**)-le   yi-dong fangzi ([PP **gei**   Mali])
    Lisi   GIVE Mary   build-GIVE-ASP one-CL house   GIVE Mary
    'Lisi built a house for Mary.'

(193) a. Lisi **jie**-le   yi-ben shu *gei* Mali   b. Lisi *xiang* Mali **jie**-le   yi-ben shu

      Lisi lend-ASP one-CL book give Mary   Lisi from Mary borrow-ASP one-CL book

      'Lisi lent a book to Mary.'   'Lisi borrowed a book from Mary.'

     c. Lisi **jie-*gei*-le**   Mali yi-ben shu

       Lisi lend-GIVE-ASP Mary one-CL book

       'Lisi lent Mary a book.' / *'Lisi borrowed a book from Mary.'

     d. Lisi **jie**   - **(gei)**/∅   -le   Mali yi-ben shu

       Lisi lend/borrow - GIVE/FROM - ASP Mary one-CL book

       'Lisi lent Mary a book.' / 'Lisi borrowed a book from Mary.'

(194) a. Lisi **zu**-le   yi-dong fangzi *gei*   Mali   b. Lisi *xiang* Mali **zu**-le   yi-dong fangzi

      Lisi rent-ASP one-CL house GIVE Mary   Lisi from Mary rent-ASP one-CL house

      'Lisi rented a house to Mary.'   'Lisi rented a house from Mary.'

     c. Lisi **zu-*gei*-le**   Mali yi-dong fangzi

       Lisi rent-GIVE-ASP Mary one-CL house

       'Lisi rented Mary a house.' / *'Lisi rented a house from Mary.'

     d. Lisi **zu**   - **(gei)**/∅   -le   Mali yi-dong fangzi

       Lisi rent - GIVE/FROM - ASP Mary one-CL house

       'Lisi rented Mary a house' / 'Lisi rented a house from Mary.'

Jie ('borrow/lend') and *zu* ('rent') in Mandarin have in their meanings temporary change of possession of the DO. Unlike in English, where *borrow* and *lend* signal respectively whether the DO is *coming in* or *going out* with respect to the subject in an event of its possession change, the direction of possession change is left open in the case of *jie*. The case of *rent* is somewhat similar in both Mandarin and English, only disambiguated by the PPs in terms of possession-change directionality, (194a) (The PPs also semantically disambiguate the Mandarin *jie*-interpretations, as in

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And as predicted by our analysis on *gei*-suffixation under ditransitive constructions, *gei* cannot show up on the verbs in the above dative alternates since the *v'*-adjoining *gei*-phrase is the only case of APPL° being an intermediate landing site for the main verb.

(193a)). If *gei* is overtly spoken on the verbs, (193c) and (194c), then we know for sure it is $\textsc{Appl}^{\circ}_{\textsc{to}}$ at work and the sentences unsurprisingly only denote the propositions in which the DO is going out *to* someone's possession. *Jie* and *zu* also belong to the group of verbs that allow for spoken optionality of the suffixal *gei*, and as expected, the bare non-suffixed verbs in (193d) and (194d) are ambiguous since they permit the suffixal possibilities of both the unspoken *gei* and the always phonologically null $\textsc{Appl}^{\circ}_{\textsc{from}}$.

However, things do not end here. There are verbs that are compatible with both $\textsc{Appl}^{\circ}_{\textsc{to}}$ and $\textsc{Appl}^{\circ}_{\textsc{from}}$, yet null suffixation of $\textsc{Appl}^{\circ}$ does not lead to ambiguity:

(195) a. Zhangsan na-***gei***-le   Lisi yi qian   yuan

      Zhangsan take-GIVE-ASP Lisi one thousand dollar

      ✔'Zhangsan gave one thousand dollars *to* Lisi.' /
      *'Zhangsan took one thousand dollars *from* Lisi.'

   b. Zhangsan na-∅-le   Lisi yi qian   yuan

      Zhangsan take-FROM-ASP Lisi one thousand dollar

      *'Zhangsan gave one thousand dollars *to* Lisi.' /
      ✔'Zhangsan took one thousand dollars *from* Lisi.'

Na ('take') is as seen above compatible with both types of ditransitive constructions, but when there is no overt marking of *gei* on *na*, only the *from*-interpretation is available[64]. This fact in a way puts *na* in the same category as those verbs that have obligatory *gei*-marking when they enter the ditransitive construction, i.e. *na* **must** have *gei* overtly spoken on it to get the *to*-interpretation

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[64]Although glossed as 'take' here, *na* is in fact more subtle in terms of its meaning that translates between 'hold' and 'take', which is aspect-dependent:

(i) a. Zhangsan na-*zhe*   yi qian   yuan   b. Zhangsan na-*le* yi qian   yuan
    Zhangsan NA-PROG one thousand dollar   Zhangsan NA-ASP one thousand dollar
    'Zhangsan is holding one thousand dollars.'   'Zhangsan took one thousand dollars.'

The aspectual meaning distinction of *na* is at the moment a puzzle whose explanation can probably be pursued by means of the meaning differences between the aspects. Unfortunately, this falls outside the scope of this dissertation. The thing to keep in mind about *na* is that in general, *na* denotes an action that involves the hands physically operating on an object, be it holding or moving the object.

across. Failing to do so leads to the necessary *from*-interpretation because that is the only op-
tion left. Clearly, whether a verb is appropriate under *to-* or *from*-ditransitive constructions de-
pends on the verb's meaning. And it is also clear that the semantic ambiguity under null Appl°-
suffixation is meaning-driven in the same respect, as in the cases of *jie* ('borrow/lend') and *zu*
('rent'). Following this line of thought, we will argue that whether the verb encodes in its mean-
ing the *intention of the DO being received* (by someone) is what regulates the optionality of overt
gei-suffixation and is correlated with the semantic ambiguity (or lack thereof) when *gei* is unspo-
ken. The observation about *na* will receive a straightforward explanation under this argument,
as will be shown later.

To show that the optionality of overt *gei*-suffixation depends on the verb encoding *the
intention of the DO being received*, we need to compare verbs that require *gei* be overtly spoken
on them, as in (192), and those that allow optional *gei*-suffixation, as in the following:

(196) a. Lisi **jiao**-(*gei*)-le   Mali yi-shou ge   c. Lisi **chuan**-(*gei*)-le Mali yi-feng youjian
           Lisi teach-GIVE-ASP Mary one-CL song   Lisi send-GIVE-ASP Mary one-CL email
           'Lisi taught Mary a song.'   'Lisi sent Mary an email.'

       b. Lisi **ji**-(*gei*)-le   Mali yi-ben shu   d. Lisi **song**-(*gei*)-le Mali yi-ke   pingguo
           Lisi mail-GIVE-ASP Mary one-CL book   Lisi give-GIVE-ASP Mary one-CL apple
           'Lisi mailed Mary a book.'   'Lisi gave Mary an apple.'

In theory, there are no syntactic restrictions on the presence of Appl° in the structure. Unlike the
case of Θ°, where an agreement relation is hypothesized between Θ° and V$_{[+\theta]}$ to prevent over-
generation of unwanted verb-argument combinations, any eventuality can become ditransitive
through Appl° as long as the pragmatics allows it. In other words, if in no violation of world
knowledge a possession transference can be construed out of an internal argument of an eventu-
ality, we can introduce the IO as either the source or goal of that transference. Therefore, we find
instances of Mandarin ditransitives involving various types of eventualities. However, if we take

a closer look at the verbs in (192) and (196), we find a difference between them that is taken to present the core of *gei*-suffixation, i.e. all of the verbs in (196) imply a goal of DO displacement even as a simple transitive, (197), whereas those in (192) do not, (198):

(197) a. Lisi **jiao**-le   yi-shou ge

         Lisi teach-ASP one-CL song

         'Lisi taught a song (to someone).'

    b. Lisi **ji**-le   yi-ben shu

         Lisi mail-ASP one-CL book

         'Lisi mailed a book (to someone).'

       c. Lisi **chuan**-le yi-feng youjian

            Lisi send-ASP one-CL email

            'Lisi sent an email (to someone).'

       d. Lisi **song**-le yi-ke   pingguo

            Lisi give-ASP one-CL apple

            'Lisi gave an apple (as a gift) (to someone).'

(198) a. Zhangsan **diu**-le   yi-ke   qiu

         Zhangsan throw-ASP one-CL ball

         'Zhangsan threw a ball.'

       b. Niao mama **tu**-le   yi-zhi   xiao   chong

            bird   mom   spit-ASP one-CL small worm

            'Mommy bird spat out a small worm.'

    c. Lisi **gai**-le   yi-dong fangzi

         Lisi build-ASP one-CL   house

         'Lisi built a house.'

When one says a sentence like '*Lisi taught a song*', the song is meant to be learned by someone, though not overtly specified. The intended learning of the song can in a way be viewed as the song being received by an implicit someone. Since the verb is transitive rather than ditransitive, the intended reception of the song has to be encoded in the verb's meaning per se. This reasoning applies to all of the verbs in (197)[65]. On the other hand, when one says a sentence like '*Zhangsan*

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[65]It is the intended rather than actual reception of the DO that is hypothesized to be encoded in the denotations of these verbs due to the fact that the sentences in (197) can be continued by negating the actual reception of the DO by anyone:

(i) a. Lisi **jiao**-le   yi-shou ge,   danshi meiyou-ren xuehui
     Lisi teach-ASP one-CL song but   no-person   learn
     'Lisi taught a song, but no one learned it.'

   b. Lisi **ji**-le   yi-ben shu, danshi duifang   meiyou shoudao
      Lisi mail-ASP one-CL book but   the.intended.person NEG   receive
      'Lisi mailed a book but the intended person didn't receive it.'

threw a ball', as in (198a), the verb does not convey any intention of the ball being received by someone, but merely describes the manner in which the ball gets displaced. All of the verbs in (198) fall in the category of no intended DO-reception. This contrast between the verbs in (197) and (198) is what leads to the proposal of the intended DO-reception in the verb's meaning being the regulating factor of the optionality of *gei*-suffixation (cf. Larson, 1988):

(199) GEI-suffixation condition:

In the ditransitive construction, the suffixal *gei* can be optionally spoken on the verb if the verb encodes the intention of DO-reception. Otherwise, *gei* is obligatorily present.

The intuition behind the hypothesized condition is clear: If the verb already has in its meaning an intended reception of the DO, it is not necessary (though permissible) to spell out $\text{APPL}^{\circ}_{\text{TO}}$ as part of the verbal complex to introduce the IO since the implied recipient of the DO is readily available from the meaning of the verb. However, verbs that lack this part of the meaning need $\text{APPL}^{\circ}_{\text{TO}}$ to be overtly realized to signal DO-reception by the IO it introduces.

One thing to note here is that this optionality on the spell-out of $\text{APPL}^{\circ}_{\text{TO}}$ only takes place when $\text{APPL}^{\circ}_{\text{TO}}$ is part of the verbal complex. Recall that we proposed a uniform analysis for both the ditransitive and the dative cases, where $\text{APPL}^{\circ}_{\text{TO}}$ heads a phrase with the IO being its complement. In the dative case where $\text{APPL}^{\circ}_{\text{TO}}$ is not picked up by the verb through movement, $\text{APPL}^{\circ}_{\text{TO}}$ is always spoken even if the verb is one of those in (197):

(200) a. Lisi **chuan-(gei)**-le Mali yi-feng youjian

   Lisi send-GIVE-ASP Mary one-CL email

   'Lisi sent Mary an email.'

 b. Lisi ([*(**gei**) Mali]) **chuan**-le yi-feng youjian ([*(**gei**) Mali])

   Lisi   GIVE Mary   send-ASP one-CL email   GIVE Mary

   'Lisi sent an email to Mary.'

In other words, this requirement of spelling out $\text{Appl}^\circ_{\text{TO}}$ is only exempted when $\text{Appl}^\circ_{\text{TO}}$ is integrated into the verb whose meaning already implies the presence of an IO. And it is not difficult to see that $\text{Appl}^\circ_{\text{TO}}$ has to be spoken when it heads its own phrase, as in the case of PPs whose heads are also obligatorily spoken.

With all the needed information laid out, we can now explain why null suffixation of Appl° on certain verbs does not lead to ambiguity even when the verbs are semantically compatible with both $\text{Appl}^\circ_{\text{TO}}$ and $\text{Appl}^\circ_{\text{FROM}}$, as in the case of *na* ('take') in (195):

(201) a. Zhangsan **na**-le   yi qian   yuan *gei*   Lisi

          Zhangsan NA-ASP one thousand dollar GIVE Lisi

          'Zhangsan gave one thousand dollars to Lisi.'

    b. Zhangsan **na-*(gei)**-le   Lisi yi   qian   yuan

          Zhangsan NA-GIVE-ASP Lisi one thousand dollar

          'Zhangsan gave Lisi one thousand dollars.'

Denoting an action of mere manual operation over objects, *na* is like *diu* ('throw') in terms of not encoding an intended reception of its object (by someone). Under the ditransitive construction with a GOAL interpretation on the IO, $\text{Appl}^\circ_{\text{TO}}$ is obligatorily present on *na* according to (199). That is to say, when *na* stands alone in a ditransitive structure, it can only be the always null $\text{Appl}^\circ_{\text{FROM}}$ that is heading the structure, leading to the necessary SOURCE interpretation on the IO in (202a), given the fact that *na* is also compatible with the *from-someone* reading, (202b):

(202) a. Zhangsan **na-$\varnothing$-le**   Lisi yi qian   yuan

          Zhangsan NA-FROM-ASP Lisi one thousand dollar

          'Zhangsan took one thousand dollars from Lisi.'

    b. Zhangsan *cong* Lisi na   **na**-le yi qian   yuan

          Zhangsan from Lisi there NA-ASP one thousand dollar

          'Zhangsan took one thousand dollars from Lisi.'

Further support for the *gei*-suffixation condition can be found in the contrast between ditransitive *mǎi* ('buy') and *mài* ('sell'). Consider the following examples:

(203) Zhangsan **mài-(gei)**-le   Lisi yi-sao   youting

Zhangsan sell-GIVE-ASP Lisi one-CL yacht

✔'Zhangsan sold Lisi a yacht.'
*'Zhangsan sold a yacht from Lisi.'

(204) a. Zhangsan **mǎi-gei**-le   Lisi yi-sao   youting

Zhangsan buy-GIVE-ASP Lisi one-CL yacht

'Zhangsan bought Lisi a yacht.'

b. Zhangsan **mǎi-∅**-le   Lisi yi-sao   youting

Zhangsan buy-FROM/*GIVE-ASP Lisi one-CL yacht

*'Zhangsan bought Lisi a yacht.'
✔'Zhangsan bought a yacht from Lisi.'

Mǎi ('buy') and *mài* ('sell') denote eventualities with opposite orientations in which the object gets transferred in terms of possession. If our proposal of the condition on *gei*-optionality is on the right track, we would expect to find behavior differences between *mǎi* and *mài* since the condition depends on whether the intention of object-reception by a third party is encoded in the verb's denotation, which only *mài* is qualified for. More precisely put, *gei*-optionality is predicted to occur only in the case of *mài* and that is exactly what we find in (203). When one says '*Zhangsan sold a yacht*', the yacht is meant to be received by someone as the result of selling. Whether *gei* is overtly spoken on *mài* becomes optional. Given how our account is set up, *gei*-optionality constitutes the necessary condition for the *to-from* ambiguity in ditransitive constructions: The verb has to allow for $\text{APPL}^\circ_{\text{TO}}$ being phonologically null for the ditransitive constructions headed by $\text{APPL}^\circ_{\text{TO}}$ and $\text{APPL}^\circ_{\text{FROM}}$ to coincide. Yet (203) shows that it is not a sufficient condition since not all verbs are compatible with both $\text{APPL}^\circ_{\text{TO}}$ and $\text{APPL}^\circ_{\text{FROM}}$, *mài* being one that is incompatible with the latter:

(205) *Zhangsan *cong* Lisi na **mài**-le yi-sao youting

   Zhangsan from Lisi there sell-ASP one-CL yacht

   *'Zhangsan sold a yacht from Lisi.'

Therefore, in the case of *mài* where no suffixal *gei* is present, we still do not find ambiguity given that the possibility of the ditransitive structure being headed by Appl°_FROM is ruled out on grounds independent of *gei*-optionality. On the other hand, *mǎi* differs from *mài* in terms of the intention of object-reception: '*Zhangsan bought a yacht*' does not imply a third party to whom the yacht is meant to go. This difference rules out the possibility of *gei*-optionality for *mǎi* and in turn the possibility of *to-from* ambiguity despite the fact that *mǎi* is compatible with both readings:

(206) a. Zhangsan **m**ǎi-le yi-sao youting *gei* Lisi

      Zhangsan buy-ASP one-CL yacht GIVE Lisi

      'Zhangsan bought a yacht and gave it to Lisi.'

   b. Zhangsan *cong* Lisi na **m**ǎi-le yi-sao youting

      Zhangsan from Lisi there buy-ASP one-CL yacht

      'Zhangsan bought a yacht from Lisi.'

Therefore, when *mǎi* occurs by itself in ditransitive constructions (i.e. not forming a verbal complex with *gei*), only the *from*-reading is available, as in (204b), because the ditransitive structure could not have been headed by the null Appl°_TO based on (199)[66].

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[66]Note that there are examples that on the surface seem to counter (199):

(i) a. Zhangsan *da*-(*gei)-le Lisi yi bazhang   c. Zhangsan *ti*-(*gei)-le   Lisi san jiao
      Zhangsan hit-GIVE-ASP Lisi one palm   Zhangsan kick-GIVE-ASP Lisi three foot
      'Zhangsan hit Lisi once with a palm.'   'Zhangsan kicked Lisi three times with a foot.'
      (Lit. 'Zhangsan hit Lisi one palm')   (Lit. 'Zhangsan kicked Lisi three feet.')

   b. Zhangsan *zou*-(*gei)-le   Lisi liang quan   d. Zhangsan *kan*-(*gei)-le Lisi si   dao
      Zhangsan punch-GIVE-ASP Lisi two fist   Zhangsan slash-GIVE-ASP Lisi four knife
      'Zhangsan punched Lisi twice with a fist.'   'Zhangsan slashed Lisi four times with a knife.'
      (Lit. 'Zhangsan punched Lisi two fists.')   (Lit. 'Zhangsan slashed Lisi four knives.')

These apparent ditransitive sentences involve verbs that belong to the same category as verbs that are not subject to *gei*-optionality in ditransitive constructions (e.g. *diu* ('throw')) in terms of the intended object-reception: The suffixal *gei* should be obligatorily present in (i), as with the cases earlier. Yet, here in (i), it cannot be present, contrary to what (199) claims. I argue that these are not really counterexamples and in fact pose a different structure from the

So far, our discussion about Mandarin ditransitives has for the most part revolved around Appl°_{TO} and the correlation between its overtness and meaning ambiguity for some verbs. We will now shift our focus to Appl°_{FROM}. Generally speaking, the generative aspects of the account we are building here allow for various verbs to enter the ditransitive construction as long as the resulting interpretation of possession transference in the various events passes the test of world knowledge (hence, the repeated mentions of *semantic compatibility* between the verbal events

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ditransitive structure we are proposing given the following observations. (Only *ti* ('kick') is used for illustration, but the other verbs show the same patterns too.)

First, the apparent ditransitives do not have a dative alternate as the 'real' ditransitives:

(ii) a. Zhangsan *ti*-le   Lisi san jiao   b. *Zhangsan *ti*-le   san jiao **gei** Lisi
     Zhangsan kick-ASP Lisi three foot   Zhangsan kick-ASP three foot GIVE Lisi
     'Zhangsan kicked Lisi three times with a foot.'   *'Zhangsan kicked three feet to Lisi.'

Second, the θ-roles that the post-verbal DPs play are different from those the DPs' counterparts play in the ditransitives we have looked at so far:

(iii) a. Zhangsan *ti*-le   [Lisi]_{th} [san jiao]_{inst}   b. Zhangsan *song*-le [Lisi]_{goal} [yi-gen xiangjiao]_{th}
     Zhangsan kick-ASP Lisi   three foot   Zhangsan give-ASP Lisi   one-CL banana
     'Zhangsan kicked Lisi three times with a foot.'   'Zhangsan gave Lisi a banana.'

The first and second observations are related in some sense; although what looks like the IO in (i) (i.e. *Lisi*) can in a way be interpreted as receiving what the following DP denotes (e.g. '*three feet*' as in the case of *ti*, or more accurately, '*three blows*' from the foot), the IO-looking DP is actually the DO in terms of its thematic relation with the verb. And the second DP acts like an instrument, as is especially obvious in (id). Therefore, it is not difficult to understand why there are no dative alternates for these apparent ditransitives, because of the mismatch between the roles of the post-verbal DPs in the apparent ditransitives and those in the dative alternates: In (iib), *san jiao* ('three feet') cannot be the theme/patient of *ti* in the dative alternate, and *Lisi* loses the theme/patient role it should have, being in the *gei*-PP, since *gei* in our system only marks the possessor relation.

Third, (some of) the above verbs do have a genuine ditransitive form with a dative alternate; and in that case, *gei* does have to be overtly spoken on them:

(iv) a. Zhangsan *ti*-le   yi-ke   qiu **gei** Lisi   b. Zhangsan *ti*-*(**gei**)-le   Lisi yi-ke   qiu
     Zhangsan kick-ASP one-CL ball GIVE Lisi   Zhangsan kick-GIVE-ASP Lisi one-CL ball
     'Zhangsan kicked a ball to Lisi.'   'Zhangsan kicked Lisi a ball.'

Why some verbs can assume this apparent ditransitive structure is not clear to me at the moment. It is clear that this apparent ditransitive structure is of a limited use:

(v) a. *Lisi *jia*-le   [zhe-dao cai]_{th} [san kuaizi   ]_{inst} b. *Lisi *he*-le   [zhe pin jiu   ]_{th} [yi beizi]_{inst}
    Lisi grab-ASP this-CL dish   three chopstick   Lisi drink-ASP this bottle wine   one cup
    'Lisi grabbed this dish three times with chopsticks.' 'Lisi drank this bottle of wine once with a cup.'

Not all verb-DP-DP combinations that conform to the thematic schema of this apparent ditransitive construction make good sentences, as (v) shows. It seems that the DO (i.e. the first post-verbal DP) in the apparent ditransitves that superficially occupies the same position as the IO in genuine ditransitives can also obtain the recipient interpretation somewhat, as in (i) (e.g. *Lisi* received *three fists* as in *punching* in (ib)). However, this recipient interpretation is not achievable in (v) (i.e. *this dish* cannot receive *three (pairs of) chopsticks* and *this bottle of wine* cannot receive *one cup*); hence, the unavailability of the apparent ditransitive construction. In other words, there still seems to be some connection between the apparent and genuine ditransitive constructions that centers upon the first post-verbal DP being some kind of recipient. The exact structure of the apparent ditransitives, however, will be left for another day.

and Appl° in the previous passages). And we have been using the dative alternates that involve what has been traditionally glossed as the prepositional form of *gei* (i.e. *gei*-PP) as a determiner for a verb's suitability in *to*-ditransitive constructions. In the case of Appl°$_\text{FROM}$, we are going to see that the relationship between the argument introduced by Appl°$_\text{FROM}$ and the verbal event has more interpretation flexibility than what could be achieved by introducing the argument in a PP.

Let us first look at some ditransitive examples that have some kind of *source* interpretation on the IO:

(207) a. Lisi **tou**-le   Mali yi-zhi bi   c. Lisi **guai**-le   Mali yi-zhi bi
     Lisi steal-ASP Mary one-CL pen   Lisi scam-ASP Mary one-CL pen
     'Lisi stole a pen from Mary.'   'Lisi scammed Mary of a pen.'

    b. Lisi **qiang**-le Mali yi-zhi   bi   d. Lisi **pian**-le   Mali yi-zhi   bi
     Lisi rob-ASP   Mary one-CL pen   Lisi scam-ASP Mary one-CL pen
     'Lisi robbed Mary of a pen.'   'Lisi scammed Mary of a pen.'

(208) a. Lisi **shao**-le   Mali yi-ben shu   c. Lisi **chi**-le   Mali yi-kuai dangao
     Lisi burn-ASP Mary one-CL book   Lisi eat-ASP Mary one-CL cake
     'Lisi burned one of Mary's books.'   'Lisi ate one of Mary's cakes.'

    b. Lisi **sha**-le   Mali yi-tou yang   d. Lisi **zhu**-le   Mali yi-zhi ji
     Lisi kill-ASP Mary one-CL goat   Lisi cook-ASP Mary one-CL chicken
     'Lisi killed one of Mary's goats.'   'Lisi cooked one of Mary's chickens.'

For reasons to be clear later, the ditransitive verbs are divided into two groups ((207) vs. (208)); however, both groups of verbs have the same pattern, where the DO can be interpreted in one fashion or another as being taken *from* the IO, *Mary*. If we try to use a prepositional phrase to determine whether we are really looking at some kind of *source* predicated of the IO, we see that the verbs in (207) find grammatical counterparts in the prepositional case:

(209) Lisi *cong* Mali na **tou/qiang/guai/pian**-le yi-zhi bi

Lisi from Mary there steal/rob/scam/scam-ASP one-CL pen

'Lisi stole a pen from Mary.' / 'Lisi robbed/scammed/scammed Mary of a pen.'

Yet, things do not carry over to the verbs in (208)[67]:

(210) a. *Lisi *cong* Mali na **shao**-le yi-ben shu

Lisi from Mary there burn-ASP one-CL book

*'Lisi burned a book from Mary.'

b. *Lisi *cong* Mali na **sha**-le yi-tou yang

Lisi from Mary there kill-ASP one-CL goat

*'Lisi killed a goat from Mary.'

c. *Lisi *cong* Mali na **chi**-le yi-kuai dangao

Lisi from Mary there eat-ASP one-CL cake

*'Lisi ate a cake from Mary.'

d. *Lisi *cong* Mali na **zhu**-le yi-zhi ji

Lisi from Mary there cook-ASP one-CL chicken

*'Lisi cooked a chicken from Mary.'

If the *from*-ditransitives are really the consequence of $\text{APPL}^{\circ}_{\text{FROM}}$ and having a prepositional coun-terpart is an indicator of being a legitimate *from*-ditransitive, then why do we find such a contrast between (209) and (210), provided that they have similar ditransitive interpretations? Recall that what we used to argue for a ditransitive (= applicative) structure headed by $\text{APPL}^{\circ}_{\text{TO}}$ was whether the ditransitive has a dative alternate. Recall also that we argued that the so-called ditransitive and dative alternate are in fact two sides of the same coin (i.e. they involve fundamentally the same structure with the attachments of the APPLP at different sites.), and that the *from*-ditransitives

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[67] The intended ungrammaticality is on the verbal modification reading of the PP, as is the function of the pre-verbal PPs in the Mandarin examples.

lack a dative alternate (fn. 60). If these arguments are on the right track, it means that the *from*-PPs (which are genuine PPs) in (209) are probably not failproof indicators for $\textsc{Appl}^{\circ}_{\textsc{from}}$, which in turn means that the contrast we find between (209) and (210) would not discredit (209) and (210) potentially having the same ditransitive structure. The question then is, why is there such a contrast and how is it related to the ditransitive interpretations of (207) and (208), where the IO is a *source*? We will resort to the denotations of $\textsc{Appl}^{\circ}_{\textsc{from}}$ and the verbs per se, analogous to the reasoning behind our proposal of the overt suffixation condition on *gei*.

Under a closer inspection of the verbs in (207), we see that the verbs denote properties of eventualities where a transaction between two parties is necessarily involved; that is, when one says the following sentence, even without mentioning from whom the DO came, we know that the DO must have come from somewhere/someone as the result of the denoted transaction in the verbal events[68]:

(211) Lisi **tou/qiang/guai/pian**-le yi-zhi bi

Lisi steal/rob/scam/scam-ASP one-CL pen

'Lisi stole a pen (from someone).'/
'Lisi robbed/scammed/scammed (someone) of a pen.'

On the other hand, the verbs in (208) do not involve such a transaction in their meanings. Hence, they are incompatible with *from*-PPs that modify the events they denote in terms of specifying

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[68]Given the verbs in example (211), two of them in fact show a little complication in terms of what can be the DO in the transitive construction, i.e. *qiang* ('rob') and *pian* ('scam'). It is clear that in the cases of *tou* ('steal') and *guai* ('scam'), the DO can only be the object of the transaction:

(i) Lisi **tou**-le ✔yi-zhi bi / *Mali   (ii) Lisi **guai**-le ✔yi-zhi bi / *Mali
   Lisi steal-ASP one-CL pen   Mary   Lisi scam-ASP one-CL pen   Mary
   'Lisi stole a pen/*Mary.'   'Lisi scammed a *pen/Mary.'

Whereas, in the cases of *qiang* and *pian*, both objects in the ditransitive structure suffice as the DO in the transitive structure, contrary to their English counterparts, where the *robbed/scammed* has to be the person, not the object ('*Lisi robbed/scammed Mary*' vs. *'*Lisi robbed/scammed a pen*'):

(iii) Lisi **qiang**-le ✔yi-zhi bi /✔Mali   (iv) Lisi **pian**-le ✔yi-zhi bi /✔Mali
    Lisi rob-ASP one-CL pen   Mary   Lisi scam-ASP one-CL pen   Mary
    'Lisi robbed a *pen/Mary.'   'Lisi scammed a *pen/Mary.'

The contrast in (iii) and (iv) could be due to *qiang* and *pian* having two senses in Mandarin, leading to two different argument structures. If this is indeed the right explanation, and our proposal of APPLP is on the right track, then there would be a derivational relationship between the ditransitive construction and the *transaction-object-oriented* sense of the verbs, i.e. the one where the object of transaction is the DO.

the source of the verbal transaction since there is no transaction to begin with, as in (210). However, both groups of verbs are viable under the ditransitive construction. Given the set-up of our ditransitive account, what Appl° does is introduce an argument into an eventuality, where the argument can assume a possession relationship with the DO as permitted by the pragmatics. The transaction-denoting verbs naturally fall inside the application domain of Appl° since the source/goal of the transaction can be readily regarded as a good candidate that Appl° can introduce as the IO[69]. As for the non-transaction-denoting verbs, the source/goal interpretation given by Appl° is coerced upon the DO and the introduced IO per se since the verbal events themselves cannot pragmatically involve a source or goal. This means that the DO receives a narrower relation of possession transference that should not involve the main verbal event as a means of the transference, analogous to saying that Appl° is only relating the two objects, similar to having the *from*-PPs in the English translations of the following examples predicated of the DO only. And this is all achievable given the *semi*-unspecified nature of the ApplP in our system, i.e. it introduces the IO in any pragmatically viable way and leaves more room for the source/goal interpretation in ditransitives:

(212) a. Lisi **tou**-le   Mali yi-zhi bi   *–transaction-denoting*

        Lisi steal-ASP Mary one-CL pen

        'Lisi got a pen from Mary by means of stealing'

    b. Lisi **shao**-le   Mali yi-ben shu   *–non-transaction-denoting*

        Lisi burn-ASP Mary one-CL book

        'Lisi burned a book, which is from Mary.' ≠
        'Lisi got a book from Mary by means of burning.'

One more thing to address about our applicative structure concerns the issue of *direct*

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[69]Under this view, the intended reception of the DO in our discussion about *gei*-optionality can in a way be viewed as the consequence of this encoded transaction, i.e. all the verbs on which the suffixal *gei* can be optionally spoken encode such a transaction, e.g. *jiao* ('teach'), *ji* ('mail'), *chuan* ('send')... etc.. In other words, we can view the encoded transaction as a general condition that regulates the optionality of *gei*-suffixation in the case of Appl°TO and whether the verbal events can be modified with a PP indicating the source of the transaction, depending on whether the transaction is part of the verb's denotation.

possession. Recall the denotation we defined for Appl°:

(213) ⟦Appl⟧ = λx$_e$λe . Goal/Source-of-Possession(x, e)

Since for structural reasons, we are not able to define for Appl° a possession relation between *two* nominals as Pylkkänen (2002, 2008) does, one might ask whether this would lead to wrong interpretations of Mandarin ditransitives that involve *indirect* possession. For all we know, given the set-up of our current framework, we are simply saying that in an event denoted by a transitive verb V, there is a DO that gets V'ed, and we can introduce an IO that ends up *possessing* or *losing (something)* by putting Appl° in the structure. Since there is no specified link between the DO and the IO, how do we make sure the DO is what is *possessed* in the ditransitive construction?

Moreover, making sure the DO is the possessed is not enough for Mandarin ditransitives because there cannot be intermediate stages of possession transference of the DO, regardless of the direction of the transference. For instance, (194d), repeated here as (214), is not felicitous in a scenario where a third individual (other than *Lisi* and *Mary*) is involved in the house-renting process:
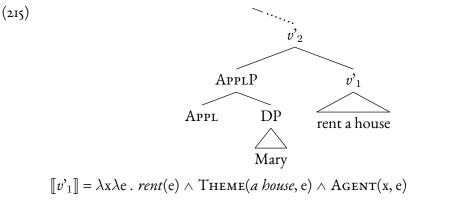
(214) Lisi **zu** - **gei**/∅   - le   Mali yi-dong fangzi
        Lisi rent - give/from - asp Mary one-cl house
        'Lisi rented Mary a house.'/'Lisi rented a house from Mary.'
        #'Lisi rented a house to/from someone, who rented the house to/from Mary.'

However, I believe these are really non-issues given how the mechanism of semantic composition is established in our system. When the ApplP (or the [Appl° NP/DP] constituent) adjoins at *v'*, it semantically composes via Event Identification (see (189)), where its event argument converges with that of the main verb, and they end up denoting part of the same event:

(215)

$\llbracket v'_1 \rrbracket = \lambda x \lambda e \,.\, \textit{rent}(e) \wedge \textsc{Theme}(\textit{a house}, e) \wedge \textsc{Agent}(x, e)$

$\llbracket \textsc{ApplP} \rrbracket = \lambda e \,.\, \textsc{Goal/Source-of-Possession}(\textit{Mary}, e)$

$\llbracket v'_2 \rrbracket = \lambda x \lambda e \,.\, \textit{rent}(e) \wedge \textsc{Theme}(\textit{a house}, e) \wedge \textsc{Agent}(x, e) \wedge$
$\qquad \textsc{Goal/Source-of-Possession}(\textit{Mary}, e)$ – via Event Identification

This means that the IO and the DO have to be participants of the same event in which their relationships with the other participants are exclusively restricted. As a result, the DO would have to be interpreted to be the possessed if the IO, as a possessor, should have an exclusive relationship with the DO, ruling out the possibility of the IO possessing *something else* since in that case that *something else* would not be a participant in the event. This event-convergence also rules out the possibility of *indirect* possession because having an intermediate possessor of the DO would entail the DO and the IO being in different events, something that does not follow from the syntax and semantics of our applicative structure.

This argument about *direct* possession between the IO and the DO prevents a ditransitive sentence from a context where only the *indirect* possession is available, as stated earlier:

(216) Context A—

Zhangsan really likes Mary. He decided one day that he should let Mary know about it, so he wrote a love letter and passed it to her in person.

Context B—

Zhangsan really likes Mary. He decided one day that he should let Mary know about it, so he wrote a love letter. But he was too shy to give it to her in person, so he passed it to Lisi instead and asked Lisi to pass it to her.

Zhangsan di-(gei)-le   Mali yi-feng qingshu

Zhangsan pass-GIVE-ASP Mary one-CL love.letter

'Zhangsan passed Mary a love letter.' ⤳ ✔Ctx. A; #Ctx. B

(217) Context C—

Mary is a farmer famous for growing very delicious apples. Zhangsan is her neighbor who is under the temptation of the delicious apples everyday. One day, Zhangsan finally gave in and stole an apple from her.

Context D—

Mary is a farmer famous for growing very delicious apples. Zhangsan and Lisi are both her neighbors who are under the temptation of the delicious apples every day. One day, Lisi finally gave in and stole an apple from her. Seeing what Lisi did, Zhangsan thought it would be less of a crime and stole from Lisi the apple that Lisi stole from Mary.

Zhangsan tou-le   Mali yi-ke   pingguo

Zhangsan steal-ASP Mary one-CL apple

'Zhangsan stole an apple from Mary.' ⤳ ✔Ctx. C; #Ctx. D

It makes a further prediction that the dative alternates of ditransitive sentences should likewise be infelicitous under such contexts if we are right about ditransitives and their dative counterparts merely reflecting the result of various adjunctions of the APPLP to the same *basic* transitive structure. The following example bears out this prediction:

(218) Zhangsan di-le   yi-feng qingshu *gei*   Mali

Zhangsan pass-ASP one-CL love.letter GIVE Mary

'Zhangsan passed a love letter to Mary.' ⤳ ✔Ctx. A; #Ctx. B
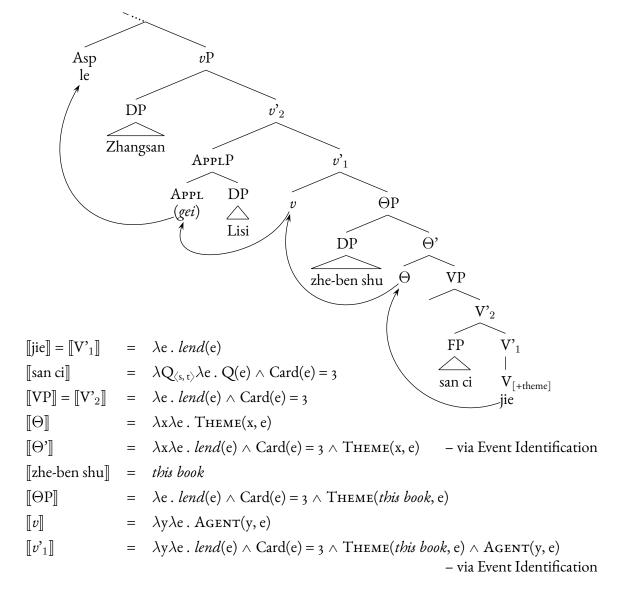
4.4.5   Deriving ditransitive NP-DP word orders in Pattern I

Now that we have established the structure for Mandarin ditransitives, we can derive the remaining word orders in Pattern I that involve NP and DP indirect objects.

(219) Pattern I:

$$\text{DITRANSITIVE ORDERS}—\begin{cases}\blacklozenge\ \text{DP}^{\text{IO}}\begin{cases}\text{DP}^{\text{DO}} & \text{DFP} & — & \mathbf{❶}\\ \text{DFP} & \text{NP}^{\text{DO}} & — & \mathbf{❷}\end{cases}\\ \diamond\ \text{NP}^{\text{IO}}\begin{cases}\text{DP}^{\text{DO}} & \text{DFP} & — & \mathbf{❶}\\ \text{DFP} & \text{NP}^{\text{DO}} & — & \mathbf{❷}\end{cases}\end{cases}$$

(220) DITRANSITIVE ORDER DERIVATIONS—

a. ◆ ❶ ⟶ Zhangsan jie-(*gei*)-le　[DP Lisi]^IO [DP zhe-ben shu　]^DO [FP san　ci　]

Zhangsan lend-GIVE-le　　Lisi　　this-CL　book　　three time

'Zhangsan lent Lisi this book three times.'

$$
\begin{aligned}
[\![\text{jie}]\!] = [\![\text{V'}_1]\!] &= \lambda e\,.\,lend(e)\\
[\![\text{san ci}]\!] &= \lambda Q_{\langle s,t\rangle}\lambda e\,.\,Q(e) \wedge \text{Card}(e) = 3\\
[\![\text{VP}]\!] = [\![\text{V'}_2]\!] &= \lambda e\,.\,lend(e) \wedge \text{Card}(e) = 3\\
[\![\Theta]\!] &= \lambda x\lambda e\,.\,\text{THEME}(x, e)\\
[\![\Theta']\!] &= \lambda x\lambda e\,.\,lend(e) \wedge \text{Card}(e) = 3 \wedge \text{THEME}(x, e) \quad \text{– via Event Identification}\\
[\![\text{zhe-ben shu}]\!] &= \textit{this book}\\
[\![\Theta\text{P}]\!] &= \lambda e\,.\,lend(e) \wedge \text{Card}(e) = 3 \wedge \text{THEME}(\textit{this book}, e)\\
[\![v]\!] &= \lambda y\lambda e\,.\,\text{AGENT}(y, e)\\
[\![v'_1]\!] &= \lambda y\lambda e\,.\,lend(e) \wedge \text{Card}(e) = 3 \wedge \text{THEME}(\textit{this book}, e) \wedge \text{AGENT}(y, e)\\
&\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\quad\text{– via Event Identification}
\end{aligned}
$$

$[\![\text{Appl}]\!]$　　　　$=$　$\lambda z \lambda e . \textsc{Goal-of-Possession}(z, e)$

$[\![\text{Lisi}]\!]$　　　　$=$　*Lisi*

$[\![\text{ApplP}]\!]$　　　$=$　$\lambda e . \textsc{Goal-of-Possession}(\textit{Lisi}, e)$

$[\![v'_2]\!]$　　　　$=$　$\lambda y \lambda e . \textit{lend}(e) \wedge \text{Card}(e) = 3 \wedge \textsc{Theme}(\textit{this book}, e) \wedge \textsc{Agent}(y, e) \wedge \textsc{Goal-of-Possession}(\textit{Lisi}, e)$ 　　　　　　　　　　　　　　　　　– via Event Identification

$[\![\text{Zhangsan}]\!]$　$=$　*Zhangsan*
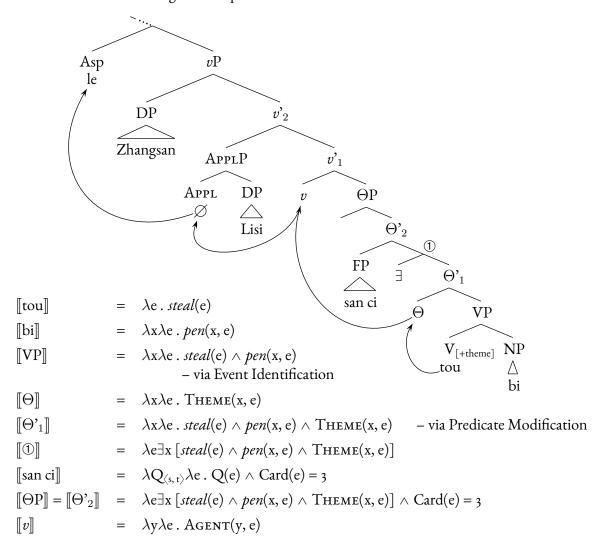
$[\![v\text{P}]\!]$　　　　$=$　$\lambda e . \textit{lend}(e) \wedge \text{Card}(e) = 3 \wedge \textsc{Theme}(\textit{this book}, e) \wedge \textsc{Agent}(\textit{Zhangsan}, e) \wedge \textsc{Goal-of-Possession}(\textit{Lisi}, e)$

. . . .

b. ◆❷ ⟶ Zhangsan tou-∅-le 　　　[$_{\text{DP}}$ Lisi]$^{\text{IO}}$ [$_{\text{FP}}$ san　ci　　] [$_{\text{NP}}$ bi　]$^{\text{DO}}$

Zhangsan steal-from-asp 　　　Lisi 　　　　three time 　　　pen

'Zhangsan stole pens from Lisi three times.'

$[\![\text{tou}]\!]$　　　　　$=$　$\lambda e . \textit{steal}(e)$

$[\![\text{bi}]\!]$　　　　　$=$　$\lambda x \lambda e . \textit{pen}(x, e)$

$[\![\text{VP}]\!]$　　　　$=$　$\lambda x \lambda e . \textit{steal}(e) \wedge \textit{pen}(x, e)$ 　　　　　　　　– via Event Identification

$[\![\Theta]\!]$　　　　　$=$　$\lambda x \lambda e . \textsc{Theme}(x, e)$

$[\![\Theta'_1]\!]$　　　　$=$　$\lambda x \lambda e . \textit{steal}(e) \wedge \textit{pen}(x, e) \wedge \textsc{Theme}(x, e)$ 　　– via Predicate Modification

$[\![①]\!]$　　　　　$=$　$\lambda e \exists x [\textit{steal}(e) \wedge \textit{pen}(x, e) \wedge \textsc{Theme}(x, e)]$

$[\![\text{san ci}]\!]$　　　$=$　$\lambda Q_{\langle s, t \rangle} \lambda e . Q(e) \wedge \text{Card}(e) = 3$

$[\![\Theta\text{P}]\!] = [\![\Theta'_2]\!]$　$=$　$\lambda e \exists x [\textit{steal}(e) \wedge \textit{pen}(x, e) \wedge \textsc{Theme}(x, e)] \wedge \text{Card}(e) = 3$

$[\![v]\!]$　　　　　$=$　$\lambda y \lambda e . \textsc{Agent}(y, e)$

$[\![v'_1]\!]$ $= \lambda y \lambda e \exists x \; [steal(e) \wedge pen(x, e) \wedge \textsc{Theme}(x, e)] \wedge \text{Card}(e) = 3 \wedge \textsc{Agent}(y, e)$
$\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad$ – via Event Identification

$[\![\textsc{Appl}]\!]$ $= \lambda z \lambda e \; . \; \textsc{Source-of-Possession}(z, e)$

$[\![\text{Lisi}]\!]$ $= Lisi$

$[\![\textsc{ApplP}]\!]$ $= \lambda e \; . \; \textsc{Source-of-Possession}(Lisi, e)$

$[\![v'_2]\!]$ $= \lambda y \lambda e \exists x \; [steal(e) \wedge pen(x, e) \wedge \textsc{Theme}(x, e)] \wedge \text{Card}(e) = 3 \wedge \textsc{Agent}(y, e)$
$\qquad \wedge \textsc{Source-of-Possession}(Lisi, e)$ $\qquad\qquad$ – via Event Identification

$[\![\text{Zhangsan}]\!]$ $= Zhangsan$
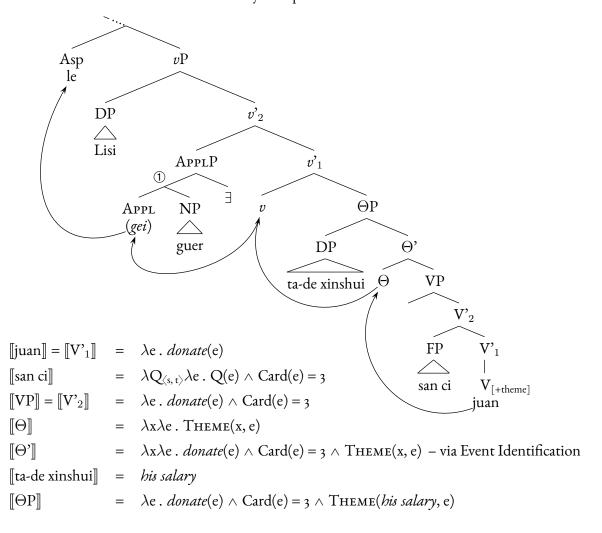
$[\![v\text{P}]\!]$ $= \lambda e \exists x \; [steal(e) \wedge pen(x, e) \wedge \textsc{Theme}(x, e)] \wedge \text{Card}(e) = 3 \wedge \textsc{Agent}($
$Zhangsan, e) \wedge \textsc{Source-of-Possession}(Lisi, e)$

. . . .

c. ◇❶ ⟶ Lisi juan-(*gei*)-le   [NP guer   ]IO [DP ta-de xinshui]DO [FP san   ci   ]

Lisi donate-GIVE-ASP   orphan   his   salary   three time

'Lisi donated his salary to orphans three times.'

$[\![\text{juan}]\!] = [\![\text{V}'_1]\!]$ $= \lambda e \; . \; donate(e)$

$[\![\text{san ci}]\!]$ $= \lambda Q_{\langle s, t \rangle} \lambda e \; . \; Q(e) \wedge \text{Card}(e) = 3$

$[\![\text{VP}]\!] = [\![\text{V}'_2]\!]$ $= \lambda e \; . \; donate(e) \wedge \text{Card}(e) = 3$

$[\![\Theta]\!]$ $= \lambda x \lambda e \; . \; \textsc{Theme}(x, e)$

$[\![\Theta']\!]$ $= \lambda x \lambda e \; . \; donate(e) \wedge \text{Card}(e) = 3 \wedge \textsc{Theme}(x, e)$ – via Event Identification

$[\![\text{ta-de xinshui}]\!]$ $= his \; salary$

$[\![\Theta\text{P}]\!]$ $= \lambda e \; . \; donate(e) \wedge \text{Card}(e) = 3 \wedge \textsc{Theme}(his \; salary, e)$

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$[\![v]\!]$ $=$ $\lambda y \lambda e$. Agent(y, e)

$[\![v'_1]\!]$ $=$ $\lambda y \lambda e$. *donate*(e) $\wedge$ Card(e) = 3 $\wedge$ Theme(*his salary*, e) $\wedge$ Agent(y, e)

– via Event Identification

$[\![\text{Appl}]\!]$ $=$ $\lambda z \lambda e$. Goal-of-Possession(z, e)

$[\![\text{guer}]\!]$ $=$ $\lambda z \lambda e$. *orphan*(z, e)

$[\![①]\!]$ $=$ $\lambda z \lambda e$. Goal-of-Possession(z, e) $\wedge$ *orphan*(z, e)

– via Predicate Modification

$[\![\text{ApplP}]\!]$ $=$ $\lambda e \exists z$ [Goal-of-Possession(z, e) $\wedge$ *orphan*(z, e)]

$[\![v'_2]\!]$ $=$ $\lambda y \lambda e$. *donate*(e) $\wedge$ Card(e) = 3 $\wedge$ Theme(*his salary*, e) $\wedge$ Agent(y, e) $\wedge \exists z$ [Goal-of-Possession(z, e) $\wedge$ *orphan*(z, e)] – via Event Identification
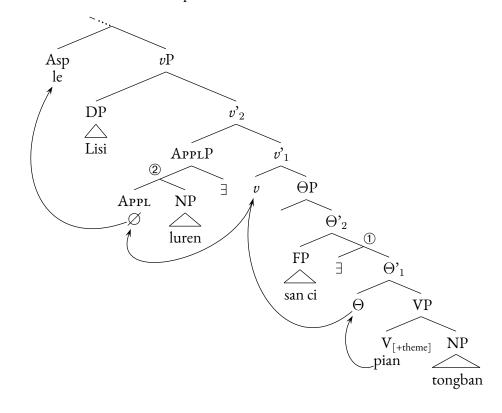
$[\![\text{Lisi}]\!]$ $=$ *Lisi*

$[\![v\text{P}]\!]$ $=$ λe . *donate*(e) $\wedge$ Card(e) = 3 $\wedge$ Theme(*his salary*, e) $\wedge$ Agent(*Lisi*, e) $\wedge \exists z$ [Goal-of-Possession(z, e) $\wedge$ *orphan*(z, e)]

. . . .

d. $\diamond$❷ $\longrightarrow$ Lisi pian-$\varnothing$-le   [NP luren   ]IO [FP san   ci   ] [NP tongban]DO

Lisi scam-from-asp   pedestrian   three time   coin

'Lisi scammed pedestrians of coins three times.'

$$\llbracket \text{pian} \rrbracket \quad = \quad \lambda e \,.\, scam(e)$$

$$\llbracket \text{tongban} \rrbracket \quad = \quad \lambda x \lambda e \,.\, coin(x, e)$$

$$\llbracket \text{VP} \rrbracket \quad = \quad \lambda x \lambda e \,.\, scam(e) \wedge coin(x, e)$$
$$\text{– via Event Identification}$$

$$\llbracket \Theta \rrbracket \quad = \quad \lambda x \lambda e \,.\, \text{THEME}(x.\, e)$$

$$\llbracket \Theta'_1 \rrbracket \quad = \quad \lambda x \lambda e \,.\, scam(e) \wedge coin(x, e) \wedge \text{THEME}(x.\, e) \quad \text{– via Predicate Modification}$$

$$\llbracket \text{①} \rrbracket \quad = \quad \lambda e \exists x \, [scam(e) \wedge coin(x, e) \wedge \text{THEME}(x.\, e)]$$

$$\llbracket \text{san ci} \rrbracket \quad = \quad \lambda Q_{\langle s,\, t \rangle} \lambda e \,.\, Q(e) \wedge \text{Card}(e) = 3$$

$$\llbracket \Theta P \rrbracket = \llbracket \Theta'_2 \rrbracket \quad = \quad \lambda e \exists x \, [scam(e) \wedge coin(x, e) \wedge \text{THEME}(x, e)] \wedge \text{Card}(e) = 3$$

$$\llbracket v \rrbracket \quad = \quad \lambda y \lambda e \,.\, \text{AGENT}(y, e)$$

$$\llbracket v'_1 \rrbracket \quad = \quad \lambda y \lambda e \exists x \, [scam(e) \wedge coin(x, e) \wedge \text{THEME}(x, e)] \wedge \text{Card}(e) = 3 \wedge \text{AGENT}(y, e)$$
$$\text{– via Event Identification}$$

$$\llbracket \text{APPL} \rrbracket \quad = \quad \lambda z \lambda e \,.\, \text{SOURCE-OF-POSSESSION}(z, e)$$

$$\llbracket \text{luren} \rrbracket \quad = \quad \lambda z \lambda e \,.\, pedestrian(z, e)$$

$$\llbracket \text{②} \rrbracket \quad = \quad \lambda z \lambda e \,.\, \text{SOURCE-OF-POSSESSION}(z, e) \wedge pedestrian(z, e)$$
$$\text{– via Predicate Modification}$$

$$\llbracket \text{APPLP} \rrbracket \quad = \quad \lambda e \exists z \, [\text{SOURCE-OF-POSSESSION}(z, e) \wedge pedestrian(z, e)]$$

$$\llbracket v'_2 \rrbracket \quad = \quad \lambda y \lambda e \exists x \, [scam(e) \wedge coin(x, e) \wedge \text{THEME}(x, e)] \wedge \text{Card}(e) = 3 \wedge \text{AGENT}(y, e)$$
$$\wedge \, \exists z \, [\text{SOURCE-OF-POSSESSION}(z, e) \wedge pedestrian(z, e)]$$
$$\text{– via Event Identification}$$

$$\llbracket \text{Lisi} \rrbracket \quad = \quad Lisi$$

$$\llbracket v P \rrbracket \quad = \quad \lambda e \exists x \, [scam(e) \wedge coin(x, e) \wedge \text{THEME}(x, e)] \wedge \text{Card}(e) = 3 \wedge \text{AGENT}(Lisi, e)$$
$$\wedge \, \exists z \, [\text{SOURCE-OF-POSSESSION}(z, e) \wedge pedestrian(z, e)]$$

4.5   Summary

In the second half of this chapter, we have advanced an applicative structure for Mandarin ditransitive constructions that combines the merits of both of Pylkkänen's (2002; 2008) and Paul & Whitman's (2010) accounts. We have seen the ample generative power our ditransitive analysis possesses in terms of capturing what has been observed syntactically and semantically about Mandarin ditransitive verbs, as well as predicting the correct ditransitive patterns and semantic ambiguity (or lack thereof) given the meanings of the main verbs. Most importantly, we are able to derive the NP-DP distinction in the case of indirect objects that none of the previous anal-

yses on ditransitives could. Combined with our proposal of the DO-introducing head $\Theta°$, the account encompasses the entire paradigm documented as Pattern I in this dissertation, and we have reached a bigger picture that covers more languages than just Mandarin with respect to how semantic types of arguments play a role in determining where the arguments go in syntax.

CHAPTER 5

THE REMAINING ARGUMENT REALIZATIONS

So far, we have developed a basic structure for introducing post-verbal arguments in Mandarin and derived from the structure the NP-DP distinction in the arguments' positions with respect to that of the DFP as well as their special properties characteristic of Pseudo-Incorporation. That is one-third of the mission completed for this dissertation, but we still have two outstanding argument realization patterns to deal with: Pattern II and III. What ties Pattern I, II, and III together is the presence of a DFP. However, there is some difference in the roles DFPs play in these patterns.

In our previous analysis of Pattern I, we focused on laying out an argument composition mechanism that is driven by the semantic types of the arguments and as a result were able to account for the composition distinction between NP and DP arguments that is structurally disambiguated by DFPs, as syntactic adjuncts. The presence of DFPs per se does not influence the way post-verbal arguments compose under Pattern I. Pattern II and III, though, are a different story. Pattern II concerns mainly the displacement of the object and reduplication of the [V + Obj.] constituent to a position preceding the aspectually marked main verb. And Pattern III involves the inverted word order where the grammatical positions of the EA (External Argument) and IA (Internal Argument) appear to be switched. Both of these patterns, unlike Pattern I, *require* the presence of the post-verbal DFP, i.e. Object-preposing/Verb-doubling and the inverted argument realization pattern would not be possible without the presence of a DFP[1].

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[1]As will turn out in §5.1.1, this statement is in fact too strong. While it is the case with Pattern III, the DFP

The goal of this chapter is to account for the word orders documented in Pattern II and III and investigate the role of DFPs in licensing these patterns. The accounts to be proposed for the respective patterns will build on the general argument structure that we developed in the previous chapter. It will be shown that Pattern II and III have their own peculiar properties and the presence of a DFP motivates these patterns in different ways. As a brief preview, the account for Pattern II will involve a unified analysis for the plain Object-fronting and the V(erb)-doubling constructions, both of which can be viewed as operating under one rule of thumb: Topicalization. As for Pattern III, we will see that it is a very peculiar pattern, the understanding of which cannot be reached without some speculations. We will, however, explore the route of treating it as a causative construction and suggest the presence of a null causative head CAUSE°, which gives rise to the unique inverted order of arguments we see.

5.1 Pattern II: Object-fronting and V-doubling with DFPs

We will start in this section with the discussion of Pattern II. In reviewing the word orders under Pattern II, we will divide our discussions into two parts, one pertaining to the case of bare object-preposing and the other, V-doubling. For convenience, we will term the former as Type I and the latter as Type II. We will see in the discussions that Type I and II greatly overlap in their distributions across various constructions and hence can be unified under one general analysis that applies the notion of sentence-internal topicalization. We will then propose an account that generates the word orders. In closing, we will briefly discuss the role DFPs play in relation to the word orders we see in Pattern II.

5.1.1 Type I: Bare object-preposing

We saw in §1 that the word orders under Pattern II can be categorized into two types, the first

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requirement only holds in part of Pattern II, i.e. the V-doubling part. More discussions will be devoted to this partial requirement in the outline of Pattern II properties and the corresponding analysis in later sections.

(Type I) is where only the object shows up in the preverbal position, i.e. bare object-preposing[2], and the second (Type II) where an aspect-less verb reduplicant co-occurs with the object that precedes the aspectually marked main verb, i.e. V-doubling. In this section, we will carefully evaluate the properties of Type I and argue that it constitutes a case of sentence-internal topicalization. Let us first start with the word orders of transitive sentences under Type I:

(221) Type-I-Transitive:

Zhangsan [$_{DP/NP}$ **(zhe-ben) xiaoshuo**] <u>xie-le</u>   [$_{DFP}$ san   nian / san   ci   ]

Zhangsan   this-CL   novel   write-ASP   three year   three time

'Zhangsan wrote this novel/novels for three years/three times.'

It is clear to see that the object, regardless of its type (NP or DP, as indicated by the object's interpretation), gets preposed to the position immediately preceding the main verb.

Things get a little more complicated in the case of ditransitive sentences under Type I. Since we have two objects in ditransitive sentences, we will consider the different possibilities of preposing the objects. In cases where we are preposing one of the objects, we see that only the direct object (DO) can be preposed, but not the indirect object (IO):

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[2]The key word of Type I movement is **bare** object-preposing. There are other constructions in Mandarin that likewise put the object in a position preceding the aspectually marked verb and following the subject, but would involve other functional morphemes associated with the preposed object, the *ba*-construction being one famous example, (ia), as well as some focus constructions that will receive further discussion later, e.g. (ib):

(i) a. Lisi *ba* **zhe-ben shu** <u>nian-le</u>   san   ci
     Lisi BA this-CL   book read-ASP three time
     'Lisi read this book three times.'

b. Lisi *lian* **zhe-ben shu** *ye* <u>nian-le</u>   san   ci
     Lisi even this-CL   book also read-ASP three time
     'Lisi even read this book three times.'

Many previous analyses have suggested a syntactic/semantic parallelism between Type I and one of the functional-morpheme-involving object-preposing constructions (Ernst and Wang, 1995; Shyu, 1995; Tsai, 1994; Zhang, 1997; a.o.). However, the goal of the current discussion is to show that a distinction should be drawn and Type I movement (**bare** object-preposing) should not be analyzed on a par with the other non-bare ones. There will nonetheless be some overlap between them in terms of what the intermediate domain looks like (the preverbal area between the subject and the main verb) and how the object can land there, as will be clear in our later discussions.

(222) Type-I-Ditransitive— One preverbal object[3]:

✔Lisi [$_{DP/NP}$ **(na-fen) liwu**]^{DO} <u>song-le</u> [$_{DP/NP}$ Mali/pengyou]^{IO} wu ci

Lisi   that-CL present   give-ASP   Mary/friend   five time

'Lisi gave that present/presents to Mary/friends five times.'

*Lisi [$_{DP/NP}$ **Mali/pengyou**]^{IO} <u>song-le</u> wu ci   [$_{NP}$ liwu   ]^{DO} ; or

Lisi   Mary/friend   give-ASP five time   present

'Lisi gave presents to Mary/friends five times.'

*Lisi [$_{DP/NP}$ **Mali/pengyou**]^{IO} <u>song-le</u> [$_{DP}$ na-fen   liwu   ]^{DO} wu ci

Lisi   Mary/friend   give-ASP   that-CL present   five time

'Lisi gave that present to Mary/friends five times.'

And in cases where we try to prepose both of the objects to between the subject and the main verb, ungrammaticality inevitably ensues, irrespective of the order between the preverbal objects (i.e. whether the IO precedes the DO or vice versa):

(223) Type-I-Ditransitive— Two preverbal objects:

*Lisi [$_{DP/NP}$ **(na-fen) liwu**   ]^{DO} [$_{DP/NP}$ **Mali/pengyou**]^{IO} <u>song-le</u> wu ci   ; or

Lisi   that-CL present   Mary/friend   give-ASP five time

'Lisi gave that present/presents to Mary/friends five times.'

*Lisi [$_{DP/NP}$ **Mali/pengyou**]^{IO} [$_{DP/NP}$ **(na-fen) liwu**   ]^{DO} <u>song-le</u> wu ci

Lisi   Mary/friend   that-CL present   give-ASP five time

'Lisi gave that present/presents to Mary/friends five times.'

So the Type I patterns are clear: (i) Only one object can be preposed, and (ii) it must be the direct object. This fact suggests that if the preposed object indeed undergoes Type I movement, there

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[3]Note that the ungrammaticality of the IO-preposing examples in (222) does not come from any discrepancies between the post-verbal word orders and the NP-DP distinction of the stranded DO as the word orders still conform to what we have observed in Pattern I.

is only one preverbal position as the destination of such movement and somehow only the DO is subject to it. Then the big question is, what is Type I movement?

5.1.1.1 Type I as sentence-internal topicalization

It has been mentioned in passing in the introduction of Pattern II in §1 that the presence of a DFP makes the preverbal position available to the DO (Type I) that generally calls for the licensing of contrastive focus. In fact, this is too strong a statement to make. Although it is true that a contrastive context can facilitate object-preposing, there are nonetheless other cases (besides that of DFPs) where object-preposing can be found, (224) (adapted from Paul (2002)):

(224) a. Ni **zhongyao**   yiqian yong-guo ma?

        you Chinese.medicine before use-ASP   Q

        'Have you ever taken Chinese medicine before?'

    b. Ni **kunqu**   hui-bu-hui?

        you Kunqu.opera know-NEG-know

        'Do you know how to sing the *Kunqu*-opera?'

    c. Women **gugong**   qu-guo le

        we   imperial.palace go-ASP PART

        'We have been to the Imperial Palace before.'

    d. Wo **dianying** bu   kan   le

        I   movie   NEG watch PART

        'I won't go to the movies.'

Above are contexts where the preverbal object is not necessarily interpreted contrastively. But since Mandarin is an SVO language, there must be some other prompt (if not contrastive focus) for this more marked word order. It has been reported in the literature that the preverbal object

in these scenarios assumes a topic interpretation and should not be confused with contrastive focus (Paul, 2002, 2005; Badan, 2008; Hsu, 2008, a.o.). The following example from Hsu (2008) further suggests that object-preposing can also be achieved by putting the object into focus with a wh-question:

(225) A: Ni *sheme* xiewan-le?   (Adapted from Hsu (2008))

      you what write-ASP

      'What have you finished?'

    B: Wo *zuoye*   xiewan-le   (*zuoye* can be stressed)

      I   assignment write-ASP

      'THE ASSIGNMENT, I have finished it.'

These availabilities point to a more pragmatic trigger for Type I , minimizing the syntactic effects of the DFP in object-preposing. Of course, what 'topic' and 'focus' are has to be defined more clearly for us to have some basic ideas about the behavior of Type I. But one thing to note is that Type I is always available in the presence of a DFP:

(226) Type I:

    a. Zhangsan (zhe-ben) shu   nian-le   **(san xiaoshi)**   – Transitive

       Zhangsan this-CL   book read-ASP three hour

       'Zhangsan read this book/books for three hours.'

    b. Lisi [(na-fen) liwu   ]^{DO} song-le   [Mali/pengyou]^{IO} **(wu ci)**   – Ditransitive

       Lisi   that-CL present   give-ASP Mary/friend   five time

       'Lisi gave that present/presents to Mary/friends five times.'

If the trigger is indeed pragmatic, then we can safely conclude that there is some correlation between the DFP and the pragmatic aspect of Type I.

      The question that should concern us the most is what is the preverbal position that the object moves into? It is commonly held that it should be a functional position in the middle field

of Mandarin syntax, which is consistent with our conclusion above that object-preposing is more of a pragmatic cause, but the precise nature of this functional position does not come without much debate. The goal of this section (and the next) is to establish that the preverbal position is a sentence-internal topic position, as opposed to a focus position it has been traditionally analyzed as, based on the differences between the preverbal object and what we know for sure are preverbal focused items.

Traditionally, bare object-preposing in Mandarin has been treated as a case of focalization (Ernst and Wang, 1995; Shyu, 1995; Tsai, 1994; Zhang, 1997; a.o.). As Ernst and Wang (1995) argue, Mandarin objects that are contrastively focus marked can occur in the preverbal position. And this position is generally unavailable without the licensing of contrastive focus:

(227) Wo **zhe-pian lunwen** <u>xihuan</u> *(na-pian lunwen bu xihuan)   (Tsai, 1994)

    I   this-CL   paper   like   that-CL   paper   not like

    'This paper, I like (but that paper, I don't).'

But as shown earlier, there are plenty of other cases where the SOV word order occurs without an obvious contrast. Based on this observation, Paul (2002, 2005) argues against the focalization analysis of bare object-preposing and claims that what the object has undergone is **topicalization** to a position between the subject and main VP. Terming the preverbal bare object the *internal* topic as opposed to the *external* topic in the sentence-initial position, she presents several differences that distinguish the preverbal object as a topic from a preverbal focused item. First, she points out that in claiming that bare object-preposing is focalization, the previous analyses (cf. Shyu, 1995; a.o.) have made an erroneous parallelism between bare object-preposing and a famous preverbal focus construction *lian... dou/ye* in Mandarin (the 'even' construction):

(228) a. Ta *lian* **gourou** *ye/dou* chi   (Adapted from Paul (2002: 698, Ex. (7)-(9)))

      he even dog.meat also/all eat

      'He even eats dog meat.'

b. Ta *lian* **wo**/**Zhangsan** *ye/dou* qing-le

he even I/Zhangsan   also/all invite-ASP

'He invited even me/Zhangsan.'

c. Ta *lian* **xiaohaizi** *ye/dou* bu xihuan

he even child   also/all NEG like

'He doesn't even like children.'

The *lian... dou/ye* construction consists of two parts. One is the morpheme *lian* that roughly translates to 'even' in English and focuses any constituent immediately following it, forming a focused phrase. The other is the morpheme *dou/ye* that roughly translates to 'all/also' and is obligatorily present[4]. The focused phrase is disallowed to occur post-verbally:

(229) *Wo *dou* kanwan *lian* **zhe-ben shu** le   (Adapted from Badan (2008))

I   all read   even this-CL book PART

'I read even this book.'

Despite the resemblance of having a preposed object, bare object preposing and the focus construction actually have different restrictions on *what* can be the preposed object:

(230) a. *Wo **Xiaowang** bu renshi   (Adapted from Paul (2002: 700, Ex. (13)))

I   Xiaowang NEG know

Intended: 'I don't know Xiaowang.'

b. Wo *lian* **Xiaowang** ye/dou bu renshi

I   even Xiaowang also/all NEG know

'I don't even know Xiaowang.'

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[4]*Dou* ('all') and *ye* ('also') are interchangeable in this construction. We will not be too concerned about the analysis of the *lian... dou/ye* construction. The point is simply to show that focus constructions in Mandarin also exhibit the preverbal-Obj. property. For a detailed account of the construction, I refer the reader to Paris (1979, 1998).

(231) a. *Ta **wo** qing-le   b. Ta *lian* **wo** *ye/dou* qing-le

   he I   invite-ASP   he even I   also/all invite-ASP

   Intended: 'He invited me.'   'He even invited me.'

It has been widely noted since Hou (1979) that "personal names and pronouns cannot be pre-posed" (Paul, 2002: 699), as illustrated in (230a) and (231a)[5]. This restriction obviously does not hold in the focus construction ((230b) & (231b)), weakening the argument for the bare preverbal object being a focus.

The second argument against the preverbal object being a focus is based on the semantic differences between topics and foci. The *lian... dou* focus construction has a bipartition where the construction is divided into focus and presupposition (Paris, 1998), the presupposition that there exists another entity of which the main predication also holds. This focus-presupposition bipartition is reflected in the patterns of the *lian... dou* construction under questions: The main VP (the main predication), being presupposed, cannot be questioned (Paul, 2002, 2005):

(232) *Ta *lian* **gourou** *ye/dou* <u>gan-bu-gan</u>   chi?

   he   even dog.meat also/all dare-NEG-dare eat

   'Does he dare to eat even dog meat?'

The above is formed by means of a famous construction called the "A-not-A" question in Mandarin, where the occurrence of the verbal predicate is called into question. This aspect is in clear conflict with the presupposed occurrence of the verbal predicate in the *lian... dou* construction, leading to ungrammaticality. However, no such bipartition exists in topics, allowing them to be fine in A-not-A questions:

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[5]As Paul (2002, 2005) notes, when there are two preverbal [+human] DPs, Mandarin speakers readily adopt the parse where the first DP is the topicalized *object* whereas the second DP is the subject, an observation first made by James C.-T. Huang in his MA thesis. Therefore, the sentences in (230a) and (231a) are grammatical under the interpretations '*Xiaowang doesn't know me*' and '*I invited him*', respectively. In addition, this observation implies that *external* (sentence-initial) topicalization is somehow more *natural/available* with fewer restrictions (the *[+human] restriction obviously does not hold there) in Mandarin than *internal* topicalization, if bare object-preposing is really the latter.

(233) Hua, Zhangsan xi(huan)-bu-xihuan?[6]

flower Zhangsan like-NEG-like

'Does Zhangsan like flowers?'

And bare object-preposing behaves like sentence-initial topics under A-not-A questions, but not like the *lian... dou* construction:

(234) a. Zhangsan **hua** xi(huan)-bu-xihuan?

Zhangsan flower like-NEG-like

'Does Zhangsan like flowers?'

b. Ta **gourou** gan-bu-gan chi?

He dog.meat dare-NEG-dare eat

'Does he dare to eat dog meat?'

<div align="right">(Adapted from Paul (2005: 120, Ex. (31)); see also (224b))</div>

Last but not least, bare object-preposing and the *lian... dou* construction allow different types of phrases in the preverbal position. While clausal objects can be focused and preverbal in the *lian... dou* construction, they are banned from bare object-preposing[7] (Paris, 1994: 250):

(235) a. Ta wang-le   [s ji-dianzhong kai hui   ]

he forget-ASP   what.time   hold meeting

'He forgot at what time the meeting is.'

b. Ta *lian* [s **ji-diangzhong kai hui**   ] *ye* wang-le

he even   what.time   hold meeting   also forget-ASP

'He even forgot at what time the meeting is.'

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[6]There is a famous phonological characteristic of A-not-A question formation: When the predicate undergoing A-not-A formation has more than one syllable, it can optionally retain the first and drop the following syllable(s) in the first A.

[7]As will be shown in the next section, the inability to host a clausal object also presents a contrast between the preverbal position and the sentence-initial topic position (the latter *can* indeed host a clausal object). The cause of this inability is at the moment a mystery. We can only conjecture that it might be due to the nature of the sentence-internal functional domain in Mandarin, i.e. that it is somehow more restricted. More discussions will be contributed to this in the next section when we compare the preverbal and sentence-initial topic position.

c. *Ta [$_S$ **ji-dianzhong kai hui**] wang-le

he what.time hold meeting forget-ASP

'He forgot at what time the meeting is.'

The provided syntactic and semantic evidence above supports the argument that Type I is probably not a case of focalization (or focus movement). However, that only takes care of half the hypothesis that the preverbal position is in fact a sentence-internal topic position. We also need to strengthen the hypothesis by showing that the preverbal position has topic properties. This will mainly be done by comparison with the external (sentence-initial) topic position.

5.1.1.2 The sentence-internal functional domain in Mandarin

We have shown that Type I patterns the same as external topics in A-not-A questions. Paul (2002, 2005) and Badan (2008) also report several similarities Type I and external topics share. To begin with, both Type I and external topics can be derived from movement or base-generation. According to Paul (2002, 2005), it is commonly acknowledged that external topics can be the result of movement or base-generation:

(236) a. Hua, ta zui xihuan chahua (Adapted from Paul (2002: 708, Ex. (31)))

    flower he most like camelia

    'Flowers, he prefers camelia.'

b. [Zhei-zhong cai]$_i$, wo tebie xihuan t$_i$ (Adapted from Paul (2002: 708, Ex. (32)))

    this-kind dish I especially like

    'This kind of dish, I like particularly.'

c. Zhongguo, da chengshi *ne*[8], jiaotong fangbian yi-dian

    China big city PART transportation convenient a-bit

    'In China, in the big cities, public transportation is more convenient.'

                (Adapted from Paul (2005: 116, Ex. (15)))

d. Hua *a,* meiguihua$_i$, wo zui bu ai t$_i$ (Adapted from Tang (1990: 338))

flower PART rose   I most NEG love

'Among flowers, roses, I dislike most.'

All of the examples we have seen so far of Type I can be taken to be from movement, where a post-verbal gap can be found and a dependency established between the gap and the preverbal object. The preverbal object can also be base-generated in Type I ((237) adapted from Paul (2002: 708, Ex. (33))):

(237) a. Ta **nei-jian shi**   hai mei zuo jueding ne   (Originally from Fu (1994, Ex. (29)))

he that-CL matter still NEG make decision PART

'He has not yet come to a decision concerning that matter.'

b. *Ta hai mei zuo jueding **nei-jian shi**   ne

he still NEG make decision that-CL matter PART

'He has not yet come to a decision concerning that matter.'

c. *Ta hai mei zuo **nei-jian shi** (de) jueding ne

he still NEG make that-CL matter SUB[9] decision PART

'He has not yet come to a decision concerning that matter.'

It is clear from the contrast in the above examples that the preverbal DP has to be base-generated there since there is no gap in the post-verbal field from which it could have moved. In this case, it is probably inappropriate to call it an object due to its lack of thematic relation with the verb[10]. Yet,

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[8]As will be shown later, Paul (2002, 2005) assumes a functional projection of TopP in the CP domain. *Ne* in (236c) and *a* in (236d) are taken by Paul (2005) to be the optional realizations of the topic head, Top°.

[9]SUB represents a subordinator in Paul's (2002) glosses.

[10]*Nei-jian shi* ('that matter') can in fact be the object of *zuo*:

(i) Ta hai mei zuo nei-jian shi   ne
    he still NEG make that-CL matter PART
    'He has not yet done that matter.'

However, it cannot be analyzed as the object of *zuo* in (237) in any way because the conveyed meaning of what is undone is not *that matter*, but *the decision* regarding that matter.

it still assumes some relationship with the real object, *the decision*, very likely through pragmatic inferences (i.e. *the decision is with regards to that matter*). This very much shows the topic-like nature of the preverbal DP, and further that Type I is topicalization.

The second similarity Type I shares with external topics is related to a widely observed restriction on Mandarin sentence-initial topicalization: Indefinite DPs cannot be topicalized sentence-initially (but definite and generic DPs can) (Badan, 2008). Type I exhibits the same restriction on the preverbal object[11]:

(238)   a.   Ta baocun-le [yixie jiu xinfeng   ]

            he keep-ASP   some old envelope

            'He kept some old envelopes.'

        b.   *[**Yixie jiu xinfeng**]$_i$, ta baocun-le t$_i$ c.   *Ta [**yixie jiu xinfeng**]$_i$ baocun-le t$_i$

             some old envelope   he keep-ASP   he   some old envelope   keep-ASP

             'He kept some old envelopes.'   'He kept some old envelopes.'

Moreover, the same restriction is not found in the focus construction, again supporting the differentiation of Type I from focus constructions:

(239)   a.   *Ta [**yixie jiu xinfeng**] baocun-le   (Adapted from Zhang (1996, Ex. (15)-(16)))

             he   some old envelope   keep-ASP

             'He kept some old envelopes.'

        b.   Ta *lian* [**yixie jiu xinfeng**] *dou/ye* baocun-le

             he even   some old envelope   all/also keep-ASP

             'He kept even some old envelopes.'

---

[11]Recall from §4 that Mandarin bare NPs can be either definite or *non-referential* (which is structure-dependent), and that non-referential NPs can undergo movement to the preverbal position in limited contexts. This seems to pose a conflict with the *indefinite* restriction here; however, it should be noted that *non-referentiality* is not the same as *indefiniteness*. In our case of non-referential NPs, the NPs would be analogous to *generic* NPs under the current terms. And *generic/non-referential* NPs can indeed move sentence-initially, as well as preverbally:

(i) a. [$_{NP}$ **xiaoshuo**]$_i$, Zhangsan tiantian kan t$_i$ b. Zhangsan [$_{NP}$ **xiaoshuo**]$_i$ tiantian kan t$_i$
        novel   Zhangsan everyday read   Zhangsan   novel   everyday read
     'Zhangsan read novels everyday.'   'Zhangsan read novels everyday.'

Third, both Type I and external topics can be contrastive (Paul, 2002, 2005; Badan, 2008). It has been previously mentioned that Type I is very much felicitous when presented in a contrastive conjunct. This phenomenon carries over to the case of external topics:

(240) a. Wo **cai**   chi-le, **fan** hai mei chi[12]   (Adapted from Zhu & Fan (1999: 113))

I   vegetable eat-ASP rice yet NEG eat

'I have already eaten the vegetables, but not the rice.'

b. **Zhei-ge xuesheng**, wo xihuan, **nei-ge**, wo bu   xihuan

this-CL student   I   like   that-CL I   NEG like

'This student I like, that one I don't.'   (Adapted from Paul (2002: 700, Ex. (15)))

Despite its contrastive nature, the preverbal object in Type I is not to be confused with contrastive *focus* (nor is the sentence-initial object when contrastive), given that we have provided an abundance of evidence that the bare preverbal object is not a focus[13]. Badan (2008) provides a further test for the non-focus-hood of Type I:

(241) Q: Zhangsan mai-le   zhe-zhang chuang ma?   (Adapted from Badan, 2008, Ex. (57))

Zhangsan buy-ASP this-CL   bed   Q

'Zhangsan bought this bed?' (for his new room?)

---

[12] Although non-referential NPs can move preverbally under contrast, the preposed bare objects here, however, only have a definite interpretation. It is so due to the fact that the sentence is in telic aspect, and we know from our earlier discussion of Pseudo-Incorporation that the non-referential interpretation of Mandarin bare nominals only surfaces under atelic aspect.

[13] The indefiniteness constraint that we see in (239) is not ameliorated in a contrastive context either preverbally or sentence-initially, furthering proving the point that the preverbal position should not be regarded as a contrastive *focus* position:

(i) a. *Ta [**yixie jiu xinfeng**] baocun-le, [**yixie jiu youpiao**] que maiyou baocun
       he   some old envelope keep-ASP   some old stamp   but NEG   keep
       'He kept some old envelopes, but didn't keep some old stamps.'

b. *[**Yixie jiu xinfeng**], ta baocun-le, [**yixie jiu youpiao**], ta que meiyou baocun
       some old envelope   he keep-ASP   some old stamp   he but NEG   keep
       'He kept some old envelopes, but didn't keep some old stamps.'

A1: Bu shi, Zhangsan mai-le   ZHE-ZHANG ZHUOZI   (Focus *in-situ*)

NEG be Zhangsan buy-ASP this-CL   table

'No, Zhangsan bought this table.'

A2: *Bu shi, ZHE-ZHANG ZHUOZI Zhangsan mai-le   (*OSV)

NEG be   this-CL   table   Zhangsan buy-ASP

'No, Zhangsan bought this table.'

A3: *Bu shi, Zhangsan ZHE-ZHANG ZHUOZI mai-le   (*SOV)

NEG be Zhangsan this-CL   table   buy-ASP

'No, Zhangsan bought this table.'

When answering a question by making a correction with new information on the object to some-thing in contrast in the question, Type I cannot be used, (241A3); instead, the object with new information, considered the focus, should be focused *in-situ* with a stress, (241A1). The external topic construction in (241A2) cannot be used as the answer either, showing that the sentence-initial DP is a topic, not a focus. This also means that we will have a strict view on what is a *focus* in the preverbal and sentence-initial domains: Only those that appear with *lian... dou/ye* are con-sidered foci; otherwise, they (i.e. the bare nominals discussed here, and preverbal constituents in Type II that will be discussed later) are topics.

Before we introduce the fourth property that external topics and Type I share that sets them apart from focus constructions, we need to first introduce one aspect of the *lian... dou* construction that is part of the property. The focused part in the *lian... dou* construction, i.e. the [*lian* XP] phrase, can also occur in the sentence-initial position:

(242) *Lian* **gourou**, Zhangsan *dou/ye* chi

even dog.meat Zhangsan all/also eat

'Zhangsan even eats dog meat.'

This gives rise to the possibility of having multiple foci in the sentence since there are two available positions; however, multiple foci are not allowed:

(243) *_Lian_ **gourou**, Zhangsan _lian_ **goutou** _dou/ye_ chi

even dog.meat Zhangsan even dog.head all/also eat

'Zhangsan even eats dog meat, even dog heads.'

It is also not possible to have the focused phrases both occur sentence-initially or -internally:

(244) a. *_Lian_ **gourou**, _lian_ **goutou**, Zhangsan _dou/ye_ chi

   even dog.meat even dog.head Zhangsan all/also eat

   'Zhangsan even eats dog meat, even dog heads.'

b. *Zhangsan _lian_ **gourou** _lian_ **goutou** _dou/ye_ chi

   Zhangsan even dog.meat even dog.head all/also eat

   'Zhangsan even eats dog meat, even dog heads.'

Sentence-initial topics and Type I behave differently from the focus construction. First, sentence-initial topics and Type I can co-occur, in contrast to (243):

(245) **Nan-pai**, women **yajun** hai keneng nadao (Adapted from (Fan, 1984))

man-volleyball we second.place still probably obtain

'The men's volleyball, perhaps we can still get the second place.'

Second, either of the sentence-initial topic and Type I can co-occur with the [_lian_ XP] focus phrase, and when they do, they assume the same order relative to the focus phrase, which dictates that they be higher:

(246) a. **Zhe-ge waiguoren**$_i$, _lian_ **gourou** [$_{IP}$ ta$_i$ _ye_ gan chi] (Adapted from Paul (2005))

   this-CL foreigner even dog.meat he also dare eat

   'This foreigner, even dog meat he dares to eat.'

b. *_Lian_ **gourou**, **zhe-ge waiguoren**$_i$ [$_{IP}$ ta$_i$ _ye_ gan chi]

   even dog.meat this-CL foreigner he also dare eat

   'This foreigner, even dog meat he dares to eat.'

(247) a. Qi-mo   kaoshi, Lisi **yingyu** [*lian* **liushi fen**   ] *dou* mei nadao

        term-end exam   Lisi English   even 60   point   all NEG obtain

        'In the final exam, Lisi didn't even obtain 60 points in English.'

  b. *Qi-mo   kaoshi, Lisi [*lian* **liushi fen**   ] **yingyu** *dou* mei nadao

        term-end exam   Lisi   even 60   point   English all NEG obtain

        'In the final exam, Lisi didn't even obtain 60 points in English.'

<div align="right">(Adapted from Lu (2003: 223))</div>

These observations have led Paul (2002, 2005) and Badan (2008) to propose a structural parallelism between the CP and IP domain in Mandarin, following Belletti's (2004) proposal of there being functional projections between the IP and *v*P that are cartographically parallel to the IP-external left periphery in Romance languages. The following is the hierarchy of both the left-periphery and sentence-internal domain in Mandarin (Paul, 2002, 2005):

(248) CP > TopicP > 'even' FocusP > <u>IP > inner TopicP > 'even' FocusP > *v*P</u>[14,15]

<div align="right">(Paul, 2002)</div>

We will adopt this functional hierarchy in our analysis for Pattern II (Type I and II). And given that we have established that Type I is a case of topicalization, the preverbal object will be taken to be in the sentence-internal Spec.TopP, either as the result of movement or base-generation, determined by the existence of an Obj.-gap dependency.

      Since our main interest lies in accounting for the preverbal nature (specifically the area between the subject and the main verb) of Pattern II under the influence of DFPs, we will focus on the sentence-internal functional projections (i.e. the underlined part in (248)). Despite being

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[14] The 'sentence-external' functional projections refer to those above the IP in this functional hierarchy. They, however, are still hypothesized to be within the domain of CP, given the fact that they fall inside the scope of sentence-final particles in Mandarin, e.g. the yes-no question particle *ma*, which are traditionally analyzed as complementizers heading CPs (Paul, 2005).

[15] According to Paul (2002, 2005), this functional hierarchy reflects only partially that proposed by Rizzi (1997, 2004) in the left periphery for Romance languages, where there can be multiple TopPs surrounding the FocusP. As have been seen in Mandarin, no TopPs can can scope below FocusPs, whether in the CP or IP domain.

analyzed on a par with sentence-external TopPs, the preverbal topic position still exhibits some differences (one of which we have already seen, i.e. the *[+human] restriction[16]). We will look at a couple that are of particular interest here because they will play a role in shaping our final analysis. First and foremost, the external TopP is recursive whereas the internal TopP is not (Paul, 2002, 2005; Badan, 2008). This claim is based on the observation that there can be multiple sentence-initial topics (as in many previous examples & (249a)) but only one sentence-internal topic (i.e. the bare preposed object):

(249) a. **Hua**, **meiguihua**, ta zui   xihuan (Adapted from Paul (2002: 710, Ex. (42&24a, b)))

flower rose   he most like

'Flowers, roses he likes them best.'

b. *Ni [**huiyuan dahui**   ] [**mingtian-de   richeng**] anpai-hao-le   meiyou?

you   member meeting   tomorrow-SUB program   plan-finish-ASP NEG

'The general membership meeting, have you fixed tomorrow's program?'

---

[16]One of the questions one might raise is why this restriction? And as Paul (2005) points out, there seems to be counterexamples to this restriction:

(i) Wo **Li laoshi** mei jiandao, **Wang laoshi** dao   shi jiandao-le   (Adapted from Paul (2002: 699, fn. 7),
    I   Li teacher NEG see   Wang teacher actually be see-ASP   example suggested by a reviewer)
    'I did not see teacher Li, (but) teacher Wang I actually did see.'

When used contrastively, the object DP directly preceding the verb *can* be [+human]. However, by using Mandarin wh-questions as a test, Paul (2005) shows that what on the surface looks like Type I involving a [+human] preverbal object is in fact a case of *double topicalization*, where the surface preverbal object is actually topicalized to the sentence-external position, followed by the external topicalization of the subject over the object: [$_{TopP}$ Subj$_2$, [$_{TopP}$ Obj$_1$, [$_{IP}$ t_2 V t_1]]] (For a detailed argument of (i) being double topicalization, please see Paul (2005)). This in turn means that the restriction still (vacuously) holds for the sentence-internal topic position since both DPs are external topics in (i). Yet, the cause of this restriction on internal topics remains a puzzle, which, to the best of my knowledge, has not been formally approached. I have no intention of solving this puzzle on the spot, but I think a possible route to take could be that what is interpreted to be the subject has to be closest to the verb in Mandarin. One possible way of implementing this requirement formally in syntax is that the thematic subject enters into some structural agreement relationship with the verb in the subject position (the verb being in Asp° after head movement under our assumption), and any [+human] objects (which are potential subject targets for the verb), when topicalized between the subject and the verb, intervene and crash the agreement. Of course, this operation has to be IP-bounded since when both DPs are topicalized externally, the intervention no longer holds. This idea about the *[+human] restriction on the internal TopP comes from my personal intuition that when the subject is immediately followed by a [+human] preverbal object (direct or indirect) before the verb, a sense of irresolution of subject-hood arises.

c. [**huiyuan dahui**　], ni　[**mingtian-de　richeng**] anpai-hao-le　　meiyou?

　　member　meeting　you　tomorrow-SUB　program　plan-finish-ASP　NEG

　　'The general membership meeting, have you fixed tomorrow's program?'

The availability of (249c) shows that the ungrammaticality of (249b) is really due to having too many internal topics. This difference, in other words, means that while there can in theory be as many external topics as possible[17], there can at most be two preverbal items between the subject and the verb, i.e. the bare preverbal object and the focused object with focus marking, given the number of available functional projections:

(250)　CP > **TopicP*** > 'even' FocusP > IP > **inner TopicP** > **'even' FocusP**[18] > vP

　　　Another difference between external and internal topics is that whereas the internal TopP cannot host a clausal object, the external TopP can:

(251)　a. *Ta [$_S$ **ji-dianzhong kai　hui**　　] wang-le　　　　　　　　　　　　(=(235c))

　　　　　he　　what.time　　hold meeting　forget-ASP

　　　　　'He forgot at what time the meeting is.'

　　　b. [$_S$ **ji-dianzhong kai　hui**　　], ta　wang-le

　　　　　what.time　　hold meeting　he forget-ASP

　　　　　'At what time the meeting is, he forgot.'

(252)　[$_{TopP}$ [$_S$ **Ruguo ni　yao　mai fangzi**] [$_{Top'}$ [$_{Top^o}$ *dehua*] [$_{IP}$ wo jiu　jiegei ni　qian　　]]]

　　　　　if　　　you want buy house　　　　　PART　　　I　　then lend　you money

　　'If you want to buy a house, I will lend you some money.'

(Adapted from Gasde & Paul (1996))

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[17] Undoubtedly, there has to be an upper bound as to how many external topics one can have in a sentence, and regulating restrictions. However, we will not delve into this question since it is not directly relevant to our patterns of interest.

[18] The Foc(us)P here specifically refers to those phrases circum-marked with *lian* and *dou*. In other words, we are making a distinction that a preverbal focalized item necessarily comes with *lian... dou* and negating the possibility of a *sentence-internal* syntactically bare FocP (see (241)).

The morpheme *dehua* is taken to be another realization of Top°, which goes naturally with conditional clauses[19]. This puts the conditional clause in (252) in Spec.TopP as an external topic, as argued for by Gasde and Paul (1996). The differences so far between external and internal topics suggest that despite the parallelism between the CP- and IP-bounded functional projections, the IP domain seems to impose more structural restrictions on the functional projections (at least on the inner TopP), leading to such contrasts.

Given the similarities between sentence-initial topics and preverbal objects that set them apart from sentence-initial and preverbal foci, we will conclude that Type I movement is sentence-internal topicalization of the object to the inner TopP in (250).

5.1.2   Type II: Verb-doubling

In this section, we turn to the investigation of the V(erb)-doubling construction in Mandarin, which we labeled as Type II. Likewise, we start with looking at the word orders of Type II in transitive and ditransitive sentences.

In transitive sentences, the object plus a preceding verb copy occurs before the main verb:

(253) Zhangsan <u>xie</u>   [$_{DP/NP}$ **(zhe-ben) xiaoshuo**] <u>xie-le</u>   [$_{DFP}$ san   nian / san   ci   ]

Zhangsan write   this-CL   novel   write-ASP   three year   three time

'Zhangsan wrote this novel/novels for three years/three times.'

Several things are to be emphasized about the word orders of Type II. As previously defined, the preverbal position is the position preceding the main verb which has aspectual marking. Under Type II, aspectual marking is mandatory on the second verb (Li and Thompson, 1981; Paris, 1988). Therefore, the object is still taken to be in the preverbal position, despite it intervening between two verbs in this construction, because as we will see later, the first verb copy and the object form

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[19] *Dehua* can also go with DP topics:

(i) **Hua**   *dehua*, Zhangsan zui   xihuan meiguihua
    flower PART   Zhangsan most like   rose
    '(As for) flowers, Zhangsan likes roses best.'

a constituent; it is this verbal constituent that occupies the preverbal position. And as in Type I, NP and DP objects are both allowed under this construction, shown in (253).

More various word orders are possible if we look at the case of ditransitive verbs. Like Type I, it is grammatical to prepose the direct object (DO) with the verb copy and strand the indirect object (IO) behind, (254a). It is likewise *un*grammatical to prepose only the IO with the verb copy and strand the DO behind, (254b):

(254) a. Preverbal DO—

✔Lisi <u>song</u> [DP/NP **(na-fen) liwu**   ]^{DO} <u>song-le</u> [DP/NP Mali/pengyou]^{IO} wu ci

Lisi give   that-CL present   give-ASP   Mary/friend   five time

'Lisi gave that present/presents to Mary/friends five times.'

b. Preverbal IO—

*Lisi song [DP/NP **Mali/pengyou**]^{IO} <u>song-le</u> wu ci   [NP liwu   ]^{DO} ; or

Lisi give   Mary/friend   give-ASP five time   present

'Lisi gave presents to Mary/friends five times.'

*Lisi song [DP/NP **Mali/pengyou**]^{IO} <u>song-le</u> [DP na-fen liwu   ]^{DO} wu ci

Lisi give   Mary/friend   give-ASP   that-CL present   five time

'Lisi gave that present to Mary/friends five times.'

However, one difference between Type II and Type I lies in allowing both objects to be preverbal:

(255) a. ✔Lisi <u>song</u> [DP/NP **Mali/pengyou**]^{IO} [DP/NP **(na-fen) liwu**   ]^{DO} <u>song-le</u> wu ci

Lisi   give   Mary/friend   that-CL   present   give-ASP five time

'Lisi gave that present/presents to Mary/friends five times.'

b. *Lisi <u>song</u> [DP/NP **(na-fen) liwu**   ]^{DO} [DP/NP **Mali/pengyou**]^{IO} <u>song-le</u> wu ci

Lisi give   that-CL present   Mary/friend   give-ASP five time

'Lisi gave that present/presents to Mary/friends five times.'

As can be seen above, both objects being preverbal is acceptable under Type II, contrary to Type I, but they have to follow the canonical ditransitive order where the IO precedes the DO under the first verb. These facts point to the direction that the preverbal positions the objects are in under the two types are very likely different positions given the different restrictions on allowing the preverbal objects. We are probably dealing with movements of two different constituent types. The first (Type I) would be one that moves a nominal constituent (exclusively the DO) to the preverbal position while the second (Type II) would be one where the moving item is a verbal constituent under which one (exclusively the DO) or both objects can be accommodated (but have to follow the canonical ditransitive order).

Another difference between Type II and Type I lies in the obligatory presence of the DFP. Although we have seen cases of Type I where the DFP can be absent (i.e. the main verb being followed by nothing), the absence of the DFP in Type II necessarily leads to ungrammaticality:

(256) a. Zhangsan <u>nian</u> (zhe-ben) shu <u>nian-le</u>   ***(san xiaoshi)**   – Transitive

Zhangsan read this-CL   book read-ASP three hour

'Zhangsan read this book/books for three hours.'

b. Lisi <u>song</u> [(na-fen) liwu   ]^{DO} <u>song-le</u>   [Mali/pengyou]^{IO} ***(wu ci)**   – Ditransitive

Lisi give   that-CL present   give-ASP Mary/friend   five   time

'Lisi gave that present/presents to Mary/friends five times.'

c. Lisi <u>song</u> [Mali/pengyou]^{IO} [(na-fen) liwu   ]^{DO} <u>song-le</u> ***(wu ci)**   – Ditransitive

Lisi give   Mary/friend   that-CL present   give-ASP five   time

'Lisi gave that present/presents to Mary/friends five times.'

Although both Type I and II are good in the presence of a DFP, Type II has a narrower distribution. Whether this difference in the obligatoriness of DFPs is due to Type I and II having different causes or something else is the question. We will argue later that however the DFP is enabling Type I should extend to the case of Type II as well, given that Type I and Type II pat-

tern the same in many different Mandarin constructions besides the DFP-involving ones, which suggests a unified account for them.

Before closing this section, it is worth (re)emphasizing the properties/restrictions specific to Type II[20], which will eventually guide our analysis for this type of movement. First, it is a well-known generalization on Mandarin V-doubling constructions that the multiple verbs must be identical; near-synonyms would not work (Huang, 1982; Zhang, 2015; a.o.):

(257) a. Zhangsan ✔**nian**/***du** (zhe-ben) shu **nian**-le san xiaoshi

　　　 Zhangsan read/read　this-CL　　book read-ASP three hour

　　　 'Zhangsan read this book/books fro three hours.'

　　 b. Lisi ✔**song**/***gei** [(na-fen) liwu 　]^{DO} **song**-le [Mali/pengyou]^{IO} wu ci

　　　 Lisi give/give　　 that-CL present　　give-ASP Mary/friend　　 five time

　　　 'Lisi gave that present/presents to Mary/friends five times.'

　　 c. Lisi ✔**song**/***gei** [Mali/pengyou]^{IO} [(na-fen) liwu 　]^{DO} **song**-le wu ci

　　　 Lisi give/give　　 Mary/friend　　 that-CL present　　give-ASP five time

　　　 'Lisi gave that present/presents to Mary/friends five times.'

This observation suggests a copy-and-movement analysis for Type II.

Second, the first verb must be *bare* (i.e. no aspectual marking), which is why it is considered as a *copy* as opposed to the main verb (i.e. the second verb with obligatory aspectual marking) (Li and Thompson, 1981; Paris, 1988):

(258) a. *Zhangsan <u>xie-le</u>　　 (zhe-ben) xiaoshuo <u>xie</u>　san　nian　　　　　　　　 (=(31))

　　　 Zhangsan　write-ASP this-CL　　novel　　write three year

　　　 'Zhangsan wrote this novel/(the) novels for three years.'

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[20]Some of these properties/restrictions have been mentioned in §1.2.2 when we first introduced the Mandarin V-doubling construction.

b. *Zhangsan <u>xie-le</u>   (zhe-ben) xiaoshuo <u>xie-le</u>   san   nian

   Zhangsan write-ASP this-CL   novel   write-ASP three year

   'Zhangsan wrote this novel/(the) novels for three years.

c. *Zhangsan <u>xie</u>   (zhe-ben) xiaoshuo <u>xie</u>   san   nian

   Zhangsan write this-CL   novel   write three year

   'Zhangsan wrote this novel/(the) novels for three years.'

Since the main verb starts low in our general syntactic structure and later cyclically moves to Asp° (hence the aspectual marking), the copied verb that is forbidden from aspectual marking and necessarily comes before the aspectually marked verb dictates an account where the main verb is reduplicated *before* it lands at Asp° and the clone goes up higher after the cyclic movement of the main verb. Further, the clone is more than just a verb head since it requires the company of (one or both of) the objects:

(259) a. *Zhangsan <u>nian</u> ∅ <u>nian-le</u> **(zhe-ben) shu** san   xiaoshi   (cf. (254&255))

   Zhangsan read   read-ASP this-CL   book three hour

   'Zhangsan read this book/books for three hours.'

   b. *Lisi <u>song</u> ∅ <u>song-le</u> [DP/NP **Mali/pengyou**]IO wu ci   [NP **liwu**   ]DO

   Lisi give   give-ASP   Mary/friend   five time   present

   'Lisi gave presenst to Mary/friends five times.'

   c. *Lisi <u>song</u> ∅ <u>song-le</u> [DP/NP **Mali/pengyou**]IO [DP **na-fen liwu**   ]DO wu ci

   Lisi give   give-ASP   Mary/friend   that-CL present   five time

   'Lisi gave that present to Mary/friends five times.'

Finally, there can be no more than one instance of verb-copying:

(260) a. *Lisi <u>song</u> [DP/NP **(na-fen) liwu**   ]DO <u>song</u> [DP/NP **Mali/pengyou**]IO <u>song-le</u>   wu ci

   Lisi give   that-CL present   give   Mary/friend   give-ASP five time

   'Lisi gave that present/presents to Mary/friends five times.'

b. *Lisi song [$_{DP/NP}$ **Mali/pengyou**]^{IO} song [$_{DP/NP}$ **(na-fen) liwu**]^{DO} song-le wu ci

Lisi give Mary/friend give that-CL present give-ASP five time

'Lisi gave that present/presents to Mary/friends five times.'

Given a ditransitive sentence, we can imagine a situation where both of the objects get preposed, each with its own verb copy, if we copy different [V + Obj] constituents. This is, however, not possible, regardless of the order in which the preverbal [V + Obj] constituents occur, as in (260).

To briefly summarize the observed patterns of Type II, it moves a verbal constituent to the preverbal position. The moved verbal constituent contains the direct object, or both the direct and indirect object if the verb is ditransitive, but never the indirect object alone. There are restrictions that the multiple verbs in Type II be identical copies and that the first verb copy be bare with no aspectual marking. There is also a restriction on how many copied verbal constituents one can have under Type II, i.e. no more than one.

In fact, Type II is not the only case of verb-copying that exhibits these properties and restrictions. The verb-copying construction in Hebrew shows very similar syntactic behaviors that give greatly overlapping word orders with those of Type II (Landau, 2006, 2007). In other words, we could be looking at a general syntactic operation of verb-copying that applies in both Mandarin and Hebrew, possibly in more languages. In our previous discussions about Type I, we concluded that it involves sentence-internal topicalization of the object. We will show that Type I and II have a tremendous overlap in their distributions across various constructions and should be analyzed on a par, i.e. Type II is also a case of sentence-internal topicalization (of the main verbal constituent). Interestingly, this line of analysis converges with Landau's (2006; 2007) analysis of the Hebrew VP-fronting construction, i.e. it being topicalization of the *v*P. We will show in the next section the properties of the Hebrew VP-fronting construction that are similar to those of Type II and present its analysis as topicalization. We will then in what follows compare Type II and Type I in terms of their syntactic distributions and argue independently that Type II is as Type I a case of sentence-internal topicalization. A detailed analysis for Type II will then be proposed that dwells upon Landau's analysis for the Hebrew VP-fronting construction (The

proposed analysis will also cover the case of Type I.). I believe that reaching the same conclusion for the analysis of verb-copying in two languages as different as Mandarin and Hebrew on independent grounds of syntactic investigations lends the strongest support to the analysis being correct and the operation of verb-copying being universal.

5.1.2.1   The Hebrew VP-fronting construction

To see the patterns of the Hebrew VP-fronting construction and compare it to Type II, we will look at some examples in both transitive and ditransitive sentences, starting with the former[21]:

(261) a. liknot et   ha-praxim, hi kanta.   b. liknot, hi kanta et   ha-praxim.
        to-buy ACC the-flowers she bought   to-buy she bought ACC the-flowers
        'Buy the flowers, she did.'   'Buy the flowers, she did.'

Several observations can be made from the transitive case of V(P)-fronting above. First and foremost, the two verbs are in different morphological forms: The fronted first verb is infinitival whereas the second verb is inflected for tense (Landau, 2006). This is analogous to Type II in that only the second verb can be aspectually marked while the first verb must be bare. Second, the fronted portion need not be the VP but can simply be the verb itself, (261b). As we saw in (259), this is not possible in Type II. Moreover, as Landau (2006) concludes for the functions of Hebrew V(P)-fronting, the fronted portion is taken to be the topic that consists of old information, and the new information could be provided by another constituent in the sentence or the *affirmation/negation* of the sentence. (261a), where the [V + Obj] is fronted, is clearly the latter. However, Type II lacks this latter function, which seems to correlate with the obligatory presence of the DFP. Therefore, a Type II sentence like the following is ungrammatical and cannot be taken to denote the affirmation of the proposition denoted by the sentence[22]:

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[21]All of the Hebrew examples in this section are taken from Landau (2006, 2007).

[22]Interestingly, there is indeed a verb-copying mechanism in Mandarin that encodes this function of affirmation/negation. It involves topicalizing a verb copy (bare) and putting the main verb (with aspect) under *verum* focus (Höhle, 1992; Krifka, 2007) in a cleft-like structure. And in this case, it is possible to simply copy and front just the

(262) *Zhangsan <u>mai</u> zhe-xie hua   <u>mai-le</u>

      Zhangsan buy this-CL flower buy-ASP

      Intended: 'Buy these flowers, Zhangsan did.'

Suppose we take Type II to be a case of topicalization, as the Hebrew V(P)-fronting construction, it would naturally follow that the DFP is the constituent that provides new information about the fronted VP in Type II, i.e. one of the functions of Hebrew V(P)-fronting in Landau's conclusion. And since the DFP is obligatory in Type II (for reasons unknown at the moment), the absence of the affirmation/negation would then follow.

Further similarities between Type II and the Hebrew VP-fronting construction[23] can be found when we compare the behaviors of sentences involving more than one internal argument in both constructions. In such cases of Hebrew VP-fronting, we get the following word orders:

---

verb head. Cheng and Vicente (2013) call this construction the *verb doubling cleft*:

(i) Verb doubling clefts (Cheng and Vicente, 2013: 5, Ex. (8))

    a. Q: Nǐ chī-guò fàn měiyǒu?   b. A: [$_T$ **Chī**], [$_T$ wǒ] shì [$_F$ **chī**-guò], búguò...
         you eat-EXP rice not.have   eat   I   COP eat-EXP but
         'Have you eaten already?'   'As for eating, I have indeed eaten, but...'

It is clear from the above example that the fronted verb is invoked as a topic (given information, subscripted with T) by the question in (ia). And the main verb (with aspectual marking) is verum focus marked (subscripted by F) by the immediately preceding copula *shi*, which affirms the truth of the proposition. The subject in (ib) is also interpreted to be a topic in Cheng and Vicente (2013)'s analysis; however, what status the subject has should not concern us too much here. What is relevant for us is that the fronted verb is a topic and that there is a way in Mandarin to express the affirmation/negation function as the Hebrew V(P)-fronting construction via a similar verb-fronting mechanism. For a detailed analysis of verb doubling clefts, please see Cheng and Vicente (2013).

   It is also possible to have *VP*s fronted in verb doubling clefts:

(ii) Mai zhe-xie hua,   Zhangsan shi mai-le, buguo...
     buy this-CL flower Zhangsan COP buy-ASP but
     'As for buying these flowers, Zhangsan did indeed bought them, but...'

Yet, it is a different case from Type II because unlike in Type II, VPs under verb doubling clefts require the presence of the verum focus marker *shi* (a general property of verb doubling clefts), and are grammatical in the absence of a DFP, as shown above.

   [23]In Landau's (2006) analysis, the fronting of only the infinitival verb in Hebrew results from long-distance head-movement. Since as we have shown, Type II cannot involve simply moving the verb head, we will ignore the V-fronting case and focus on VP-fronting in Hebrew as our point of comparison to Type II.

(263) ✔[V DP]... *to*-PP/*[V *to*-PP]... DP   (Landau, 2007: 131, Ex. (7))

    a. [le'hagiš   et   ha-ma'amar], hu higiš   le-ktav-ha-et lifney ha-dedlyne.

        to-submit ACC the-article   he submitted to-the-journal before the-deadline

       'Submit the article to the journal, he did before the deadline.'

    b. *[le'hagiš   le-ktav-ha-et   ], hu higiš   et   ha-ma'amar lifney ha-dedlyne.

        to-submit to-the-journal   he submitted ACC the-article   before the-deadline

       'Submit the article to the journal, he did before the deadline.'

(264) ✔[V DP]... *to*-PP/✔[V *to*-PP]... DP   (Landau, 2007: 132, Ex. (9))

    a. [lixtov   mixtavim xosfaniyim], hi   katva le-Gil.

        to-write letters   revealing   she wrote to-Gil

       'Write revealing letters to Gil, she did.'

    b. [lixtov   le-Gil], hi   katva mixtavim xosfaniyim.

        to-write to-Gil   she wrote letters   revealing

       'Write revealing letters to Gil, she did.'

(265) ✔[V PP]... CP/*[V CP]... PP   (Landau, 2007: 132, Ex. (11))

    a. [lismox al Gil], hem samxu sě-ha-tekes   yatxil   ba-zman

        to-rely on Gil   they relied that-the-ceremony will-start on-time

       'Rely on Gil that the ceremony will start on time, they did.'

    b. *[lismox sě-ha-tekes   yatxil   ba-zman], hem samxu al Gil.

        to-rely that-the-ceremony will-start on-time   they relied on Gil

       'Rely on Gil that the ceremony will start on time, they did.'

(266) *[V PP]... CP/✔[V CP]... PP   (Landau, 2007: 133, Ex. (12))

    a. *[lidroš   me-Gil   ], hem daršu   še-ha-kofer   yišalax   tox   yomayim.

        to-demand from-Gil   they demanded that-the-ransom will-be-sent within two-days

       'Demand of Gil that the ransom should be sent within two days, they did.'

b. [lidroš   še-ha-kofer   yišalax   tox   yomayim], hem daršu   me-Gil.

    to-demand that-the-ransom will-be-sent within two-days   they demanded from-Gil

    'Demand of Gil that the ransom should be sent within two days, they did.'

As shown above, the VP can be *split*; that is, the different internal arguments can show up in the separate VPs, one fronted and the other in-situ[24]. The splitting is not without restrictions, yet, there does not seem to be a generalization that can be derived from the syntactic types of the arguments (e.g. PPs, CPs, etc.) in whether they regulate the fronting or stranding of the arguments. By comparing (263) to (264) and (265) to (266), we see both the availability and unavailability of a particular type of arguments in the fronted and in-situ VPs. And this non-uniformity of *which* VPs can be split *how* seems to be heavily dependent on the particular verbs.

    The generalization on Hebrew split-VP-fronting is better revealed once we consider the sentences below (Landau, 2007: 133-134):

(267) a. Gil raca   [le'hagiš   et   ha'ma'amar].   (cf. (263))

         Gil wanted   to-submit ACC the-article

         'Gil wanted to submit the article.'

      b. *Gil raca   [le'hagiš   le-ktav-ha-et   ].

         Gil wanted   to-submit to-the-journal

         'Gil wanted to submit to the journal.'

(268) a. hi nista [lixtov   mixtavim xosfaniyim].   (cf. (264))

         she tried   to-write letters   revealing

         'She tried to write revealing letters.'

      b. hi nista [lixtov   le-Gil].

         she tried   to-write to-Gil

         'She tried to write to Gil.'

---

[24]As Landau (2006, 2007) notes, the *non-split* version of the fronted VP (i.e. all the internal arguments are in the fronted VP) is always available in Hebrew; therefore, it is not specifically included in the discussion here. And one thing to note is that it has an analogous counterpart in Type II as well, where both internal arguments of the ditransitive verb are under the first verb copy, i.e. (255a).

(269) a. hem ne'elcu   [lismox al Gil]   (cf. (265))

            they were-forced   to-rely on Gil

            'They were forced to rely on Gil.'

       b. *hem ne'elcu   [lismox sě-ha-tekes   yatxil   ba-zman]

            they were-forced   to-rely that-the-ceremony will-start on-time

            'They were forced to rely that the ceremony will start on time.'

(270) a. *hem hexlitu [lidroš   me-Gil   ]   (cf. (266))

            they decided   to-demand from-Gil

            'They decided to demanded of Gil.'

       b. hem hexlitu [lidroš   sě-ha-kofer   yišalax   tox   yomayim]

            they decided   to-demand that-the-ransom will-be-sent within two-days

            'They decided to demand that the ransom be sent within two days.'

By comparing the cases of split VPs from (263) to (266), to their non-fronted counterparts from (267) to (270), where one of the internal arguments is dropped, we see a generalization. The generalization is that the fronted VP has to be a *good* VP in the non-fronted case, where the internal argument can stand independently with the verb. And which internal argument alone forms a good independent VP with the verb is idiosyncratic, which is reflected in the fronted portion of the split cases[25].

    In the case of Type II ditransitive sentences, we see a parallel generalization. We have shown the possible word orders one can get of ditransitive sentences under Mandarin VP-copying:

(271) a. Subj. ✔[V DO]... IO

            Lisi [song liwu^{DO}] song-le Mali^{IO} wu ci   ($\approx$(254a))

            Lisi give present give-ASP Mary five time

            'Lisi gave presents to Mary five times.'

---

[25]The non-split case of Hebrew VP-fronting also falls under this generalization since both of the internal arguments can together always form a good VP with the verb (Landau, 2007).

b. <u>Subj. *[V IO]... DO</u>

*Lisi [<u>song Mali</u>^{IO}] <u>song-le</u> wu ci   liwu^{DO}   (≈(254b))

Lisi   give Mary   give-ASP five time present

'Lisi gave presents to Mary five times.'

We have concluded that in the *split* case of Type II, the preverbally fronted verbal constituent is good with the direct object, but bad with the indirect object. Once we look at which internal argument forms a good VP with the verb alone, we get the Hebrew pattern:

(272) a. ✔Lisi [$_{VP}$ song-le (wu ci   ) liwu^{DO}]

Lisi   give-ASP   five time   present

'Lisi gave presents (five times) (to someone).'

b. *Lisi [$_{VP}$ song-le   Mali^{IO} (wu ci   )]

Lisi   give-ASP Mary   five time

'Lisi gave (something) to Mary (five times).'

This suggests that the generalization Landau (2007) concludes for Hebrew should follow from a cross-linguistically available syntactic operation, given the resemblance of VP-copying patterns one finds in an unrelated language like Mandarin[26]. If this is indeed the generalization for VP-copying/fronting cross-linguistically, then it is not surprising that both of the internal arguments

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[26]Note here that the implicit argument in these cases, in either Hebrew or Mandarin, should in Landau's (2007) terms be *lexically saturated* rather than projected as a *pro* given the different syntactic behaviors between the two cases (e.g. the *pro* in the latter case can support secondary predication or bind anaphors while the implicit argument in the former case cannot.). As will be shown when we describe the patterns of argument inversion in Mandarin in §5.2, the dropped argument (e.g. the IO) can in fact be a *pro* that is the conversational topic. And in that case, it can indeed bind an anaphor/support secondary predication:

(i) a. Q: Lisi song-le   Mali$_j$ shenme?
        Lisi give-ASP Mary what
        'What did Lisi give Mary$_j$?'

   b. A: Lisi song-le   *pro*$_j$ henduo liwu,   song-de *ta*$_j$ dou buhaoyisi   le
        Lisi give-ASP   a.lot   present give-DE her all   embarrassed PART
        'Lisi gave (her$_j$) a lot of presents and made her$_j$ all embarrassed.'

In comparison, the IO-dropped sentence in (272a) can be uttered out of the blue with a necessary existential interpretation of the dropped object. And in that case, it lacks the binding and predication ability the sentence in (ib) has:

of a ditransitive verb can be accommodated under the first copy in Type II, since their non-fronted counterparts always make a good independent VP with a fixed order between the IO and DO (i.e. IO > DO):

(273) a. ✔Lisi [song Mali^{IO} liwu^{DO}] song-le   wu ci   (≈(255))

        Lisi   give Mary present   give-ASP five time

        'Lisi gave Mary presents five times.'

    b. *Lisi [song liwu^{DO} Mali^{IO}] song-le   wu ci

        Lisi   give present Mary   give-ASP five time

        'Lisi gave Mary presents five times.'

(274) a. ✔Lisi [song-le   Mali^{IO} liwu^{DO}]   b. *Lisi [song-le   liwu^{DO} Mali^{IO}]

        Lisi   give-ASP Mary   present   Lisi   give-ASP present Mary

        'Lisi gave Mary presents.'   'Lisi gave Mary presents.'

5.1.2.2   Hebrew VP-fronting as topicalization + late adjunction

Given the resemblance between Hebrew VP-fronting and Type II, it is not trivial to review the analysis for Hebrew VP-fronting and see whether it would shed light on the mechanism of Type II. Under Landau's (2007) analysis of Hebrew VP-fronting, the *split* nature of the VP results from topicalization (of the fronted portion) plus late adjunction/late-merge[27] (of the stranded portion)[28].

(ii) *Lisi song-le   ∅$_j$ henduo liwu,   song-de *ta*$_j$ dou buhaoyisi   le
    Lisi give-ASP   a.lot   present give-DE s/he all   embarrassed PART
    *'Lisi gave (someone$_j$) a lot of presents and made him$_j$/her$_j$ all embarrassed.'

[27] We will use the terms 'late adjunction' (coming from Landau (2007)) and 'late-merge' interchangeably in our discussion.

[28] In accounting for Hebrew split VP-fronting, Landau (2007) argues against multiple previous analyses, *Layered and Cascade Syntax* (Pesetsky, 1995), *Incremental Merger* (Phillips, 2003), and *Remnant Movement* (Lechner, 2003), (which are motivated by VP-fronting in other languages,) by demonstrating that they cannot adequately capture the patterns observed in Hebrew. Based on the identical behaviors of Mandarin VP-copying (Type II) in what can be split and fronted, I will follow Landau (2007) and not consider these previous analyses as an adequate account for the Mandarin case.
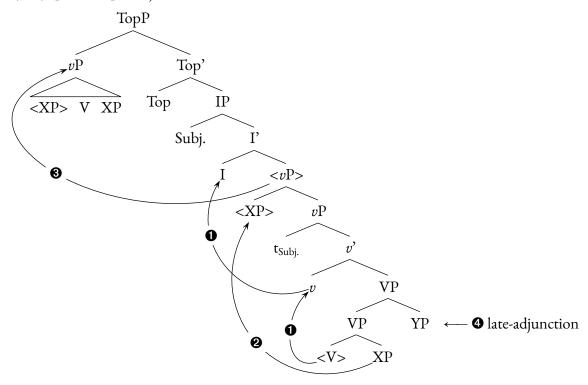
Recall the generalization on Hebrew (and Mandarin) VP-fronting that the fronted portion has to be able to be an independent VP in the language. In fact, Phillips (2003) has formulated a condition on VP-fronting and ellipsis along a similar line:

(275) Potential Complete VP Constraint (PCVC)

The constraint on partial VP-fronting or VP-ellipsis is that the fronted or deleted constituent must be large enough to be a potential complete VP, with the consequence that strictly subcategorized VP material cannot be stranded (Phillips, 2003: 75).

Landau (2007) takes the PCVC to hold in Hebrew, and argues that the stranded argument after the tensed verb could not have moved from the fronted VP prior to the VP's fronting (i.e. not some *remnant movement* analysis). Instead, the stranded argument's *appearing* stranded should result from some other operation, which he proposes to be late adjunction. And late adjunction merges the *stranded-looking* argument countercyclically into the main (non-fronted) VP:

(276) [$_{VP}$ V XP]$_1$ Subj Aux/V t_1 YP

In (276) is the series of movements of the Hebrew split VP-fronting under Landau's (2006, 2007)

analysis. We will go through it in detail. XP and YP in the derivations above represent the internal arguments of the verb, abstracting over the categories of the internal arguments. As we saw earlier, the internal arguments can be different kinds of phrases, but what fronts with the verb must be the argument that can stand alone with the verb as a good VP in the non-fronted case. Therefore, XP is merged in the original VP (i.e. the lowest VP) in the structure. To better distinguish the nature of XP and YP, we will sometimes refer to the former as the *obligatory* argument and the latter as the *optional* argument to facilitate our discussion.

In terms of how VP-splitting works, first, the main verb undergoes ❶ cyclic head-movement out of the VP to I°, which eventually renders it inflected for tense. And then the obligatory argument XP undergoes ❷ covert argument movement (analogous to QR) to the vP. Since the XP originates low in the given structure, Landau (2007) does this to get the scope and binding relations between the XP and YP, the latter of which will eventually be late-merged into the VP. The covert movement of the XP means that the XP that is actually pronounced is the lower one (The unpronounced copy in a movement chain is indicated by angled brackets.). After the covert movement of the XP, the vP undergoes ❸ movement to Spec.TopP. In other words, the movement of the vP is topicalization in Hebrew. In the copy theory of movement, which Landau (2006, 2007) adopts, chain resolution is an important issue. We do not pronounce *every* copy in the movement chain under the consideration of economy (Chomsky, 1995). Then how do we determine which copy to be pronounced? Landau (2006) takes the determination to be driven by P-recoverability:

(277) P-Recoverability (Landau, 2006: 56)

In a chain $<X_1...X_i...X_n>$, where some X_i is associated with phonetic content, X_i must be pronounced.

(278) Economy of Pronunciation (Landau, 2006: 57)

Delete all chain copies at PF up to P-recoverability.

Combining (277) and (278), we get the consequence that P-recoverability overrides Economy, i.e.

only the copy in the movement chain that carries phonetic content will and must be pronounced. Landau (2006) treats the pronounced copies in the movement of V and the *v*P, that is, the higher *v*P and the V in I°, as carrying phonetic content. The phonetic content of the *v*P comes from being the conversational topic: In Hebrew, the fronted topic receives an intonational contour that starts with a high tone at the stressed syllable of the fronted verb, followed by a plateau of low phrase accent, and ends in a high tone, marking the boundary of the topic (Landau, 2006: 39).

(279)   H*L⁻   (H%)
         likRO   et   ha-sefer, Gil kara.   (Landau, 2006: 39, Ex. (12))
         to-read   ACC the-book Gil read
         'As for read the book, Gil read.'

Landau (2006) takes this to be the phonological requirement from topicalization in Hebrew that makes licit the pronunciation of the higher *v*P copy. As for the phonetic content of the V in I°, it comes from the affixal needs of the tense and agreement features resting on I°: The tense and agreement must be spoken, and since Hebrew lacks *do*-support, the verb necessarily undergoes movement to I°, spoken inflected there (Landau, 2006: 58).

Finally, after all the movements (❶, ❷, and ❸), the *stranded* argument ❹ gets late-merged into the VP inside the unpronounced *v*P.

This line of analysis captures the generalization on split VP-fronting in Hebrew (and Mandarin). If the availability of argument-drop hinges on the availability of late-merging the argument, then it follows that the fronted VP[29] is always going to be a good independent VP in the non-fronted case, since the argument that will always be present in the VP is the obligatory argument (i.e. argument not late-mergeable) and will always front with the VP. On the other hand, the stranded argument's late-merge should be an available yet *optional* operation. The reason is that VP-splitting is not obligatory in Hebrew VP-fronting (nor is it in Mandarin). In cases

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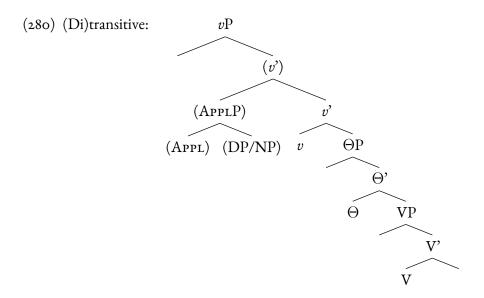
[29] We keep using the name *VP* instead of *v*P (as is really the case) just to be consistent with the general label of the phenomenon (i.e. VP-fronting).

where both of the internal arguments front with the VP, the optional argument will have been merged in the VP before the VP fronts to Spec.TopP.

We saw that Type II patterns identically with Hebrew VP-fronting in terms of splitting the arguments (or not). And VP-fronting in Hebrew is in fact vP topicalization. In the next section, we will see that Type II and Type I actually overlap to a great extent in their distributions. In §5.1.1, we have argued that Type I (bare object-preposing to the preverbal position) is sentence-internal topicalization. If Type II is also a case of topicalization, sentence-internal topicalization to be exact, given its distributional overlap with Type I, then we get a nice convergence of all of the movement patterns on topicalization (i.e. Hebrew VP-fronting, Type II, and Type I). This will be the motivation for a unified analysis for Type I and II under Pattern II as sentence-internal topicalization, which will be partially built upon Landau's analysis of Hebrew VP-fronting. But before we propose the unified analysis and walk through its details and derivations, we will in the next section first look at the distributional overlap between Type I and II, and review the previous analyses of Type II.

5.1.3 A unified account for Object-fronting and V-doubling

Although it has been shown that Pattern II involves two movement types of object-fronting with their own patterns, we will pursue a unified account for the respective types. One of the unifying factors, i.e. the presence of a DFP, will be incorporated into the account that eventually puts the two types under a general plot of how Mandarin organizes its verbal phrases and the arguments within them. In order to draw out the unified account, we will first look at where Type I and II movements overlap syntactically (at least superficially). Then we will look into the movement of VPs and review how it is generally treated in the literature, from where we will draw the unified account. The eventual proposal for the two types of movement will employ the structures we have developed for Mandarin transitive and ditransitive verbs, summarized as follows:

(280) (Di)transitive:

```
                    vP
              _____|_____
                         (v')
                    _____|_____
               (ApplP)           v'
             ____|____        ___|___
        (Appl)  (DP/NP)     v      ΘP
                                ___|___
                                     Θ'
                                  ___|___
                                 Θ      VP
                                      ___|___
                                            V'
                                         ___|___
                                        V
```

5.1.3.1   The surface parallelism between Type I and Type II movements

Traditionally, the bare object-preposing (Type I) and V-doubling (Type II) constructions have been treated as two independent constructions that are subject to their own syntactic and semantic restrictions and have no derivational relationships. Yet, they seem to demonstrate many superficial similarities that would be pretty surprising if coincidental. We will see in this section similarities they exhibit besides the co-occurrence of DFPs that motivates the later proposal of a unified account.

In the following we will list several constructions in Mandarin where Type I and Type II movement exhibit structural similarities[30]. For the sake of completeness, we will first start with ① the DFP construction that is our main interest:

(281) In the presence of a DFP, Type I & II—

Zhangsan (nian) **(zhe-ben) shu** <u>nian-le</u> *san   tian*

Zhangan   read   this-CL   book read-ASP three day

'Zhangsan read this book/books for three days.'

---

[30] All of the cases shown here pertain only to transitive verbs. There are discrepancies between Type I and Type II with ditransitive verbs in these constructions. However, those discrepancies can be accounted for under the unified account generalized from the transitive cases, as will be discussed in further detail when we get to the actual proposal.

Type I and Type II are also compatible with ② post-verbal manner adverbial phrases:

(282) In the presence of post-verbal manner adverbials, Type I & II—

　　　Zhangsan (nian) **(zhe-ben) shu**　nian-*de hen kuai*

　　　Zhangsan read　this-CL　　book read-DE very fast

　　　'Zhangsan read this book/books very fast.'

Mandarin has a way of introducing manner adverbials post-verbally, which is by means of a functional morpheme *de* attaching to the main verb. This morpheme cannot co-occur with aspectual morphemes and no post-verbal manner adverbials can occur in the mere presence of aspect[31]:

(283) a. *Zhangsan (nian) **(zhe-ben) shu**　nian-*de*-le　/ nian-le-*de*　*hen kuai*

　　　　　Zhangsan read　this-CL　　book read-DE-ASP　read-ASP-DE very fast

　　　　　'Zhangsan read this book/books very fast.'

　　　b. *Zhangsan (nian) **(zhe-ben) shu**　nian-***le***　*hen kuai*

　　　　　Zhangsan read　this-CL　　book read-ASP very fast

　　　　　'Zhangsan read this book/books very fast.'

Another construction where Type I and Type II pattern the same is ③ the resultative construction that also employs the morpheme *de*[32]:

---

[31] *De* being unable to co-occur with aspectual morphemes suggests that they compete for the same slot in the verbal complex, which in turn suggests that what we find about the aspectual restrictions that apply in Type II movement (i.e. the first reduplicated verb has to be bare without aspectual marking) should extend to the case of post-verbal manner adverbials. And it is indeed the case:

(i) Zhangsan nian-**(*de)** zhe-ben shu　nian-de hen kuai
　　Zhangsan read-DE　　this-CL book read-DE very fast
　　'Zhangsan read this book/books very fast.'

[32] There are two types of resultative constructions in Mandarin, one in the form of resultative compounds, as introduced in §1 (Li, 1995; Williams, 2005, 2008), the other via the use of *de* that introduces a post-verbal *result* phrase, as in (284) (Huang, 1988; Cheng, 2007). Whether this *de* is the same as that in the case of post-verbal manner adverbials is up for debate, due to the obvious meaning difference between the two constructions. However, the *de*'s in the two constructions have the same written form, and the elements introduced by *de* (the manner adverbial and the resultative phrase) occupy the same post-verbal position, as shown by their inability of co-occurrence:

(284) In resultative constructions, Type I & II—

Zhangsan (nian) **(zhe-ben) shu** <u>nian-*de* hen lei</u>

Zhangsan read   this-CL   book read-DE very tired

'Zhangsan got tired from reading this book/books.'

Note that in the presence of post-verbal manner adverbials and resultative phrases, the object necessarily precedes the main verb, with or without a reduplicated verb. There are no more available positions post-verbally, (285), unlike in the case of DFPs, where both the object and the DFP can be accommodated in the post-verbal field, (286):

(285) a. *Zhangsan nian-*de* **(zhe-ben) shu** *hen kuai/lei*

Zhangsan read-DE this-CL   book very fast/tired

'Zhangsan read this book/books very fast.'/
'Zhangsan got tired from reading this book/books.'

 b. *Zhangsan nian-*de hen kuai/lei* **(zhe-ben) shu**

Zhangsan read-DE very fast/tired this-CL   book

'Zhangsan read this book/books very fast.'/
'Zhangsan got tired from reading this book/books.'

(286) a. Zhangsan nian-le   **zhe-ben shu** (*san tian*)

Zhangsan read-ASP this-CL   book three day

'Zhangsan read this book for three days.'

(i) a. *Zhangsan (nian) (zhe-ben) shu   nian-*de* [*hen kuai*] [*hen lei*   ]
    Zhangsan read   this-CL   book read-DE   very fast   very tired
    'Zhangsan read this book/books very fast and got tired as a result.'

 b. *Zhangsan (nian) (zhe-ben) shu   nian-*de* [*hen lei*   ] [*hen kuai*]
    Zhangsan read   this-CL   book read-DE   very tired   very fast
    'Zhangsan got tired from reading this book/books very fast.'

These observations, in other words, suggest that the *de*-induced post-verbal manner adverbials and resultative phrases should be at least structurally analyzed on a par; thus, it is not surprising that Type I and Type II pattern the same in one if they pattern the same in the other. Of course, the introduced elements in the two constructions are modifying different things, i.e. the manner adverbial is modifying the verbal predicate, yet the result phrase is predicated of the subject. This will be seen as the morpheme *de*, being a functional element in the syntactic clausal spine, structurally selecting for two different types of complements, from within which the modificational differences arise. The modificational differences, however, should not concern us too much since they play no role on the preposing of objects (More on this later).

b. Zhangsan nian-le   (*san   tian*) **shu**

Zhangsan read-ASP three day   book

'Zhangsan read books for three days.'

This behavioral difference in allowing post-verbal objects between the manner adverbial and re-sultative constructions on the one hand, and the DFP construction on the other, will be the major motivation for treating Type I and Type II's derivations differently with respect to the different constructions (*de* vs. no *de*). More details will be provided when we lay out the analysis for Pattern II in later sections.

The fourth construction where Type I and Type II behave the same is what is termed by Liu (2000) ④ as "argument split topics":

(287) a. Wo (mai) lan   chenshan / zhei-zhong chenshan mai-le   san-jian[33]

I   buy   blue shirt   this-kind   shirt   buy-ASP three-CL

'I bought three blue shirts/three shirts of this kind.' (slightly adapted from Liu (2000))

b. Zhangsan (mai) niurou mai-le   san   bang

Zhangsan buy   beef   buy-ASP three pound

'Zhangsan bought three pounds of beef.'

It is not hard to see the logic behind the term: The post-verbal numeral phrase is modifying the preverbal object, i.e. the object is split in two places. And if we were to put the preverbal object in the post-verbal field, it would most naturally go after the numeral phrase, forming a complex DP argument:

(288) a. Wo mai-le   [DP san-jian lan   chenshan / zhei-zhong chenshan]

I   buy-ASP   three-CL blue shirt   this-kind   shirt

'I bought three blue shirts/three shirts of this kind.'

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[33]Liu's (2000) original example concerns only the *bare* preverbal object (i.e. Type I). The reduplicated verb is added by myself.

b. Zhangsan mai-le   [$_{DP}$ san   bang   niurou]

Zhangsan buy-ASP   three pound beef

'Zhangsan bought three pounds of beef.'

That is to say, part of the internal argument (the *core* part) undergoes some displacement to the preverbal position, which we have taken to be an internal topic position (Liu, 2000; Paul, 2002, 2005; Badan, 2008; Hsu, 2008, etc.), hence the name 'topics'. And as can be seen, V-doubling is also viable in this case.

Part of our arguments earlier for treating the V-doubling construction (Type II) as a case of copy-and-movement of the main VP was based on the facts that the V head in the preverbal [V + Obj.] sequence has to be identical to the main verb and that the preverbal sequence can accommodate all possible internal arguments the main VP can. If the preverbal position is indeed some internal topic position across all of the cases above where both Type I and Type II are found, then we provide another piece of evidence that the preverbal sequence is a copied VP constituent that has been internally topicalized. In fact, this view is supported by the fact that the bare object and the preverbal VP can also be topicalized to the sentence-initial position, another similarity Type I and Type II share:

(289) a. ([$_{NP}$ shu]) ta ([$_{NP}$ shu]) kan-le   haojige.xiaoshi   – Type I

book   he   book   read-ASP many.hour

'He read books for many hours.'

b. ([$_{VP_1}$ kan shu]) ta ([$_{VP_1}$ kan shu]) [$_{VP_2}$ kan-le   haojige.xiaoshi]   – Type II

read book   he   read book   read-ASP many.hour

'He read books for many hours.'   (Adapted from Hsu (2008))

If we pursue this route of treating the preverbal position as a topic position of some kind into which some constituent topicalizes, it raises several non-trivial questions: (i) What determines the preverbal position as an internal topic position? (ii) What are the differences between

the preverbal and sentence-initial positions as topic positions? (iii) How do Type I and Type II come about as cases of topicalization, especially when the bare object in Type I could not have been topicalized from the canonical post-verbal object position in the cases of post-verbal manner adverbials and resultatives? Questions (i) and (ii) have been answered when we scrutinized in §5.1.1 the properties of the preverbal object in Type I by comparing it to foci (preverbal and sentence-initial) and sentence-initial topics. Now we will focus on question (iii). Question (iii) extends to the case of sentence-initial topics as well since the post-verbal manner adverbial, resultative constructions, and argument split topics are equally compatible with the object or the reduplicated VP in the sentence-initial topic position:

(290) a. [**(nian)** (zhe-ben) shu] Zhangsan nian-de hen kuai   – Post-V manner adverbial

       read   this-CL   book   Zhangsan read-DE very fast

       'Zhangsan read this book/books very fast.'

   b. [**(nian)** (zhe-ben) shu] Zhangsan nian-de hen lei   – Resultative

       read   this-CL   book   Zhangsan read-DE very tired

       'Zhangsan got tired from reading this book/books.'

   c. [**(mai)** niurou] Zhangsan mai-le   san   bang   – Argument split topic

       buy   beef   Zhangsan buy-ASP three pound

       'Zhangsan bought three pounds of beef.'

Recall that our goal for Pattern II is to derive the peculiar transitive and ditransitive word orders and figure out DFPs' role in facilitating them. As we will try to address question (iii), our main focus will be on the DFP-construction and how it should be analyzed differently from the other constructions where Type I and Type II pattern the same.

      To sum up, despite usually seen as independent constructions with their own derivational mechanisms, Type I and Type II movements have many structural similarities that would be very surprising if coincidental. These similarities are summarized as follows:

(291)

	Type I (bare Obj.-preposing)		Type II (V-doubling)	
	Pre-V[34]	Sent.-initial	Pre-V	Sent.-initial
① DFP	✔	✔	✔	✔
② Post-V manner adverbial	✔	✔	✔	✔
③ Resultative	✔	✔	✔	✔
④ Argument split topic	✔	✔	✔	✔

Table 5.1: Type-I-Type-II distributions

Therefore, we will attempt a unified account for Type I and Type II that captures the similarities as well as derives the word orders of Pattern II. We will analyze Type I and Type II as different types of sentence-internal topicalization. Of course, their differences will also be accounted for under this unified analysis since one involves moving a nominal while the other, a copied verbal constituent.

5.1.3.2 Type I and Type II as sentence-internal topicalizations

As have been argued extensively, Type I is a case of internal topicalization, where the preverbal object exhibits many similarities with sentence-initial topicalized objects. We have also seen from the previous section that Type I and Type II (V-doubling) have tremendous distributional overlap. Therefore, it is not unfathomable to hypothesize that Type II is also a case of internal topicalization (And there are also cases where the copied VP occurs as an external topic.). In other words, in the case of Type II, the copied VP would be occupying the same inner Spec.TopP as the preposed object in Type I. Then the question is, how does the copy-and-movement mechanism work so that we get all and only the word orders in Pattern II?

Furthermore, there are constructions other than those involving DFPs where Type I and

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[34]The preverbal position here specifically refers to the position between the subject and the main verb, so as to be distinguished from the sentence-initial position.

II are also found. Whatever analysis for Pattern II we come up with needs to address those cases as well. This section will be devoted to unifying Type I and II in a topicalization account, as well as to explaining (to the best extent) Type I and II's behaviors in the non-DFP constructions.

We will start our discussion with how V-doubling in Mandarin has been previously analyzed. Two opposing viewpoints are held regarding constructions that involve multiple identical instances of the main verb (This would be inclusive of the DFP- *and* non-DFP constructions, e.g. post-verbal manner adverbial and resultative phrases). One treats all of them as the result of the same syntactic operation, i.e. the same VP-level operation applies across the constructions, giving rise to the same V-doubling surface structure (Huang, 1982; Cheng, 2007; Gouguet, 2006; Fang & Sells, 2007; Tieu, 2008, a.o.). The other distinguishes the structural differences between the underlying constructions, and argues for different construction-dependent V-copying operations that lead to superficial cross-construction similarities (Bartos, 2003). In the latter view, the post-verbal adverbial and resultative constructions are treated as involving the same underlying structure on the one hand, whereas the DFP-construction is taken to have a different structure on the other. Since our focus is on V-copying under the DFP-construction and we have shown in §5.1.3.1 that there is a fundamental difference between the DFP- and the other constructions in allowing for the co-occurrence of the DO and other post-verbal materials, the latter viewpoint serves our purpose well. However, the eventual analysis that we will propose actually has an in-between viewpoint: The V-copying phenomenon results from different operations in the DFP- and non-DFP constructions, yet part of the operations converge in the sentence-internal functional domain as the result of topicalization, i.e. the unifying factor in our account. I refer to the former viewpoint as *homogenous* and the latter, *heterogeneous*. We will begin with the analyses holding the *homogenous* view and work our way back to the final analysis for Pattern II.

A core commonality in the *homogenous* analyses sees a unique property of Mandarin phrase structure as the motivation for the V-copying process. Many Chinese linguists have discovered that Mandarin generally allows only one constituent following the verb. This unique property has been formalized as a constraint on the phrase structure in Mandarin by James C.-T.
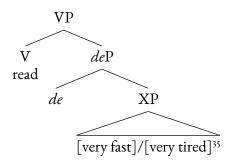
Huang (1982):

(292) Phrase Structure Constraint (PSC) (Huang, 1982):

> Within a given sentence in Chinese, the head (the verb or VP) may branch to the right only
> once, and only on the lowest level of expansion.
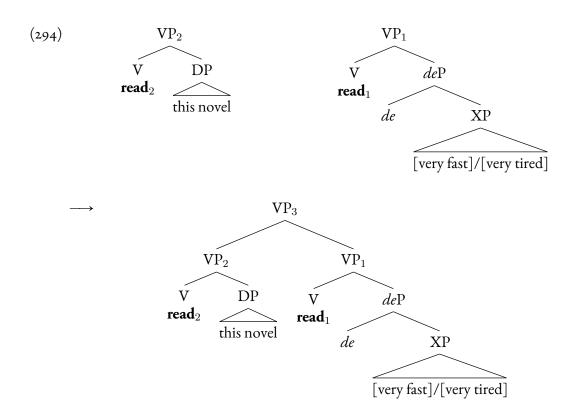
The PSC, in other words, restricts Mandarin verbs to having at most one complement in syntax. Recall that in the cases of post-verbal manner adverbials and resultatives, the object cannot co-occur post-verbally. If the PSC is on the right track, this fact suggests that the object and the post-verbal adverbial/resultative phrase are fighting for the same complement position and it is the adverbial/resultative phrase that takes it. As a result, many scholars have hypothesized V-copying to be a rescue strategy in Mandarin, where the object is accommodated by the verb that has undergone reduplication (Huang, 1988; Cheng, 2007; Tieu, 2008; a.o.). To illustrate, In Huang (1988) and Cheng's (2007) analyses on *de*-resultatives and Tieu's (2008) analysis on post-verbal manner adverbials, the morpheme *de* forms a constituent with the phrase that follows it and is the complement to the verb:

(293) Zhangsan [$_{VP_2}$ <u>nian</u> **zhe-ben xiaoshuo**] [$_{VP_1}$ <u>nian-*de*</u> hen kuai/lei   ]

Zhangsan   read this-CL   novel   read-DE very fast/tired

'Zhangsan read this novel very fast'/'Zhangsan got tired from reading this novel.'

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[35]Resultatives have the issue of predication: How does *tired* get predicated of the subject given the structure in (293)? Different approaches have been proposed. In Huang's (1988) analysis, the resultative phrase introduced by *de* is a small clause where a PRO is controlled by the subject: [$_{IP}$ Zhangsan$_i$ [$_{VP_2}$ read... [$_{VP_1}$ read [$_{deP}$ *de* [$_{SC}$ PRO$_i$ very tired]]]]]. In Cheng's (2007) analysis, from Sybesma (1999) she adopted the idea, the subject is base-generated inside the resultative clause and later moves to the matrix subject position: [$_{IP}$ Zhangsan$_i$ [$_{VP_2}$ read... [$_{VP_1}$ read [$_{deP}$
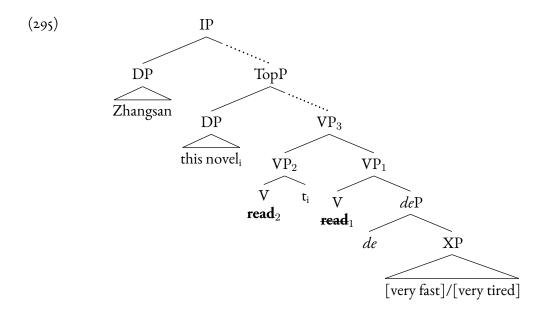
If the verb is one that requires a thematic internal argument, such as *nian* ('read') in this case, its theta-requirement will be satisfied by making a copy that merges with the argument as an object. Both Cheng (2007) and Tieu (2008) adopt Nunes' (2004) Sideward Movement to achieve this goal, where the verb copies and merges with the object on the side, and then merges back onto the original VP:

(294)

```
        VP₂                              VP₁
       /   \                            /    \
      V     DP                         V      deP
   read₂   /  \                     read₁    /   \
        this novel                         de     XP
                                                 /    \
                                          [very fast]/[very tired]
```

$$\longrightarrow$$

```
                            VP₃
                       /          \
                   VP₂              VP₁
                  /   \            /    \
                 V     DP         V      deP
              read₂   /  \     read₁    /   \
                   this novel         de     XP
                                            /    \
                                     [very fast]/[very tired]
```

Under this analysis, V-copying is viewed as the last resort to satisfy the theta-requirement of the verb since the only complement position where the internal argument can do so is occupied by another phrase. The DFP is analyzed to be also occupying the complement position on a par with the manner adverbials and resultatives and subject to the same copying process. Hence, the *homogenous* view glosses over different constructions under V-copying as one category structurally. In Tieu (2008), this copying process extends to Type I (bare Obj.-preposing), where the object in VP_2 undergoes topicalization to the sentence-internal topic position and V_1, treated as an iden-

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de [$_{XP}$ t$_i$ very tired]]]]]. Whether a control (the former) or a raising (the latter) analysis should be the right one for Mandarin resultatives does not affect the point major to our derivation of V-copying structure. Hence, we will take a neutral stance on this issue.

tical counterpart of V_2, gets deleted at the syntax-phonology interface due to some distinctness condition[36]:

(295)

```
                          IP
                      ／      ⋯⋯⋯
                   DP            TopP
                  ／         ／       ⋯⋯⋯
             Zhangsan     DP              VP₃
                        ／          ／        ＼
                   this novelᵢ    VP₂           VP₁
                               ／   ＼        ／    ＼
                              V     tᵢ      V        deP
                            read₂          read₁    ／    ＼
                                                  de       XP
                                                        ／      ＼
                                                  [very fast]/[very tired]
```

Clearly, if there is indeed a branch-right-only-once restriction for Mandarin VPs, it should somehow be tuned to specific types of constituents and specific verbs. Because as we have seen earlier, applicative constituents (*gei*-PPs) can *right*-adjoin inside VPs[37]. And some verbs allow for two post-verbal arguments:

(296) Zhangsan gaosu-le [Lisi] [zhe-jian shi   ]

Zhangsan tell-ASP   Lisi   this-CL matter

'Zhangsan told Lisi this matter.'

Both objects in the above sentence should be in the scope of the VP since the sentence cannot be analyzed as involving an applicative structure, because (i) what appears to be the DO cannot really be the DO, (297a), and (ii) there is no dative alternate or *gei*-suffixation for it, (297b):

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[36] This analysis accounts for the fact that the Type-I preverbal object in the cases of post-verbal manner adverbials and resultatives could not have moved from any post-verbal positions; it moves from the reduplicated VP where it is base-generated.

[37] The *right*-adjoining applicative constituent (*gei*-PP) cannot be taken to occupy the complement position to V even if we wish to have the phrase structural constraint apply across the board. Because if the *gei*-PP occupied the complement position, it would necessarily trigger V-copying the same way as the *de*-constituent does (the verb still needs a direct object); that is, we would always see V-copying when we see a sentence-final *gei*-PP, contrary to fact.

(297) a. *Zhangsan gaosu-le [zhe-jian shi   ]

Zhangsan tell-ASP   this-CL matter

'Zhangsan told this matter.'

b. Zhangsan gaosu-(*gei)-le [Lisi] [zhe-jian shi   ]/

Zhangsan tell-GIVE-ASP   Lisi   this-CL matter

*Zhangsan gaosu-le [zhe-jian shi   ] [gei   Lisi]

Zhangsan tell-ASP   this-CL matter   GIVE Lisi

'Zhangsan told Lisi this matter.'

Moreover, the sentence is incompatible with any of the *de*-involving constructions:

(298) *Zhangsan [$_{VP_2}$ gaosu Lisi zhe-jian shi   ] [$_{VP_1}$ gaosu-*de* hen kuai/lei   ]

Zhangsan   tell   Lisi this-CL matter   tell-DE   very fast/tired

'Zhangsan told Lisi this matter very fast.'/'Zhangsan got tired from telling Lisi this matter.'

In other words, there seems to be a correlation between the phrase structural restriction and the availability of the *de*-constructions (i.e. some verbs can take *de*Ps as complements and the complement *de*Ps somehow block the right-branching ability of the verbs). This correlation, however, will be left for future studies. For now, we will only take the PSC in (292) at its face value when it is relevant to our discussion.

Although the Sideward Movement account could be on the right track for post-verbal adverbials and resultatives, it is problematic in the case of DFPs for a couple of reasons. First, the DFP and the object can co-occur post-verbally. If we maintain the PSC, this would mean that either the DFP or the internal argument, very likely the latter, is the syntactic complement to the verb when both are post-verbal. It in other words suggests the adjunct-hood of the DFP, i.e. how we have been treating the DFP in the current framework. Moreover, both post-verbal manner adverbials and resultatives require the presence of this special functional morpheme *de* whereas DFPs occur independently. If *de* is what puts the manner adverbials and resultatives in

the complement position by forming a *de*P with them, then we should expect a different syntactic structure for DFPs; otherwise, the fact that post-verbal manner adverbials and resultatives share *de* as part of their structure whereas DFPs do not when all three occupy the same syntactic slot would be completely accidental. That is, there should be a correlation between the presence of *de* and the syntax of the *de*-induced items. This correlation would be lost under the *homogenous* view.

Second, under V-copying, post-verbal manner adverbials and resultatives exhibit different behaviors from DFPs in the case of ditransitives. While the IO can be stranded in the post-verbal field with the DFP, this is not the case with post-verbal manner adverbials and resultatives:

(299) a. Lisi [$_{VP_2}$ song **Mali**^{IO} **liwu**^{DO}] [$_{VP_1}$ song-le   wu ci   ]   ($\approx$(35a))

  Lisi   give Mary   present   give-ASP five time

  'Lisi gave presents to Mary five times.'

  b. Lisi [$_{VP_2}$ song **liwu**^{DO}] [$_{VP_1}$ song-le   **Mali**^{IO} wu ci   ]   ($\approx$(32))

  Lisi   give present   give-ASP Mary   five time

  'Lisi gave presents to Mary five times.'

(300) a. Lisi [$_{VP_2}$ jiao   **Mali**^{IO} **shuxue**^{DO}] [$_{VP_1}$ jiao-*de*   hen kuai]

  Lisi   teach Mary   math   teach-DE very fast

  'Lisi taught Mary math very fast.'

  b. *Lisi [$_{VP_2}$ jiao   **shuxue**^{DO}] [$_{VP_1}$ **Mali**^{IO} jiao-*de*   hen kuai]

  Lisi   teach math   Mary   teach-DE very fast

  'Lisi taught Mary math very fast.'

  c. *Lisi [$_{VP_2}$ jiao   **shuxue**^{DO}] [$_{VP_1}$ jiao-*de*   **Mali**^{IO} hen kuai]

  Lisi   teach math   teach-DE Mary   very fast

  'Lisi taught Mary math very fast.'

(301) a. Lisi [$_{VP_2}$ song **Mali**^{IO} **liwu**^{DO}] [$_{VP_1}$ song-*de* hen lei   ]

  Lisi   give Mary   present   give-DE very tired

  'Lisi got tired from giving Mary presents.'

b. *Lisi [$_{VP_2}$ song **liwu**^{DO}] [$_{VP_1}$ **Mali**^{IO} song-*de* hen lei   ]

  Lisi   give present   Mary give-DE very tired

  'Lisi got tired from giving Mary presents.'

c. *Lisi [$_{VP_2}$ song **liwu**^{DO}] [$_{VP_1}$ song-*de* **Mali**^{IO} hen lei   ][38]

  Lisi   give present   give-DE Mary   very tired

  'Lisi got tired from giving Mary presents.'
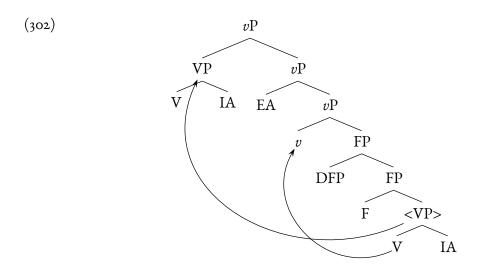
The behaviors of post-verbal manner adverbials and resultatives in (300) and (301) force us to hypothesize that the ditransitive structure can only be built on the reduplicated VP but not the main VP, an already ad hoc hypothesis. They further show that the ungrammaticality of building the ditransitive structure on the main VP seems to correlate with the functional projection of *de*, since DFPs that do not co-occur with *de* have no such issue. Again, these differences between the *de*-induced items and the DFP would be very surprising should they have the same syntactic structure, as in the *homogenous* view.

    Presented with the above arguments for the syntactic heterogeneity between the underlying structures of DFPs and the other *de*-involving constructions, we will take the *heterogeneous* view on our treatment for V-copying with DFPs. Under this view, DFPs will remain syntactic adjuncts, unlike post-verbal adverbials and resultatives, and V-copying will have a different trigger/mechanism. Bartos (2003) has held the *heterogeneous* view on treating V-copying in DFP constructions independently from the other cases, and suggested the direction of analyzing V-copying as cases of VP-copying. Gouguet (2006) has a similar analysis, differing in that all post-verbal materials mentioned so far are categorized as having the same underlying structure, i.e. the *homogenous* view. We have shown extensively that V-copying in DFP constructions should not be analyzed on a par with V-copying in other constructions due to their many differences. In addition, we have also seen from the examples of Type II under Pattern II that any arguments

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[38] This sentence is grammatical under the reading where Lisi gave presents and Mary got tired as a result. The reading is permissible given that the subject-controlled empty category of which the result is predicated can be replaced by an overt DP: [$_{VP_3}$ [$_{VP_2}$ give present] [$_{VP_1}$ give [$_{deP}$ *de* [$_{SC}$ Mary very tired]]]]. However, it is a relatively implausible reading and no possessor-interpretation is forced upon *Mary*, which we have argued to be what the ditransitive structure is contributing semantically.

(the DO or both the IO & DO) that can be subsumed under the main verb in regular sentences can likewise be subsumed under the reduplicated verb V_2, i.e. it is very likely copying of the main **VP**. Therefore, we will take the middle route of analyzing Type II in the DFP-case as a similar VP-copying operation to those proposed by Bartos (2003) and Gouguet (2006) with a slightly different syntactic structure while maintaining the Sideward Movement analysis for the *de*-involving post-verbal manner adverbials and resultatives.

Take Gouguet's (2006) analysis as a start. The V-copying construction is actually the result of two operations: (i) movement of the main VP, and (ii) movement of the V head out of the main VP. The derivation can be roughly summarized as follows:

(302)

In this account, the verb head V° is involved in two movements, one where the verb itself undergoes head movement to *v*, and the other where the VP containing it moves to a position higher than *v*P[39]. Other post-verbal material (DFPs, manner adverbials, resultatives) all merge at the

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[39]Although in the structure the moved VP is schematized as adjoining to *v*P, Gouguet (2006) in fact takes the VP to be moving to the functional periphery in the IP domain, rendering the movement process information- or scope-taking-related. This view converges with our idea about the sentence-internal Topic projection as the landing site for the copied VP. This aspect opposes that of the previous analyses which see V-copying as a last resort for satisfying the verb's theta-requirement, where the copied VP *sideward*-moves to its own original projection (Cheng, 2007; Tieu, 2008). However, we are arguing here that neither analyses should be taken to be the uniform analysis for all V-copying constructions. On the contrary, the information-related analysis should be for V-copying with DFPs while the last-resort analysis should be for V-copying with the other post-verbal materials, i.e. manner adverbials and resultatives. One more thing to note is that even though we treat the last resort as the right analysis for the cases of post-verbal adverbials and resultatives, we will show later that the copied VP in the last resort case can also move to the sentence-internal information-related functional projections (We have seen that it can move to the sentence-external functional projections, i.e. VPs as external topics in post-verbal manner adverbial/resultative constructions.).

specifier of a functional projection immediately above the VP[40]. This is a very different move from the previous proposals for the *de*-involving constructions. In order to get the word orders right in all cases, Gouguet hypothesizes that *de*, as well as the aspect markers, are different realizations of *v* since they are in complementary distribution[41]. However, there are some questionable aspects to this claim given that the possibility of the object and other post-verbal materials co-occurring post-verbally correlates with the presence of *de*. Based on our earlier argument that the DFP- and *de*-involving constructions should not be analyzed on a par, we will take the structure in (302) to be not applicable to the *de*-involving constructions and limit our discussion to DFPs only. In (302), there are two movement chains the verb is involved with. As mentioned when we reviewed Hebrew VP-fronting, under a copy-and-movement framework, string linearization is a major issue. How do the copies in a movement chain get pronounced without inducing any contradiction in linearization (i.e. violating Kayne's (1994) 'Linearization Correspondence Axiom' (LCA))? Gouguet resorts to asymmetric c-command for copy pronunciation: For all of the copies of a syntactic object, pronounce the copy α that is not c-commanded by another copy α'. This rule pronounces the 'head' of a movement chain. The two movement chains in (302) both have their tails unspoken, hence, the silent VP downstairs (indicated by the angled brackets). Yet, the copies of V° in both heads of the chains are in a non-c-command relationship, leading to the V-copying effects (i.e. pronouncing both Vs in the first VP and in *v*)[42]. The DFP, since it is outside the main VP, obtains a post-verbal surface order after the movements.

Gouguet's proposal matches our observations about the syntactic behavior of Type II,

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[40]Gouguet (2006) holds the *homogeneous* view and means the structure to apply to all constructions that have V-copying. In his original tree, a general label glossing over all the post-verbal materials occupies Spec.FP. Since we are taking a *heterogeneous* view on the analysis, DFPs are singled out in the structure.
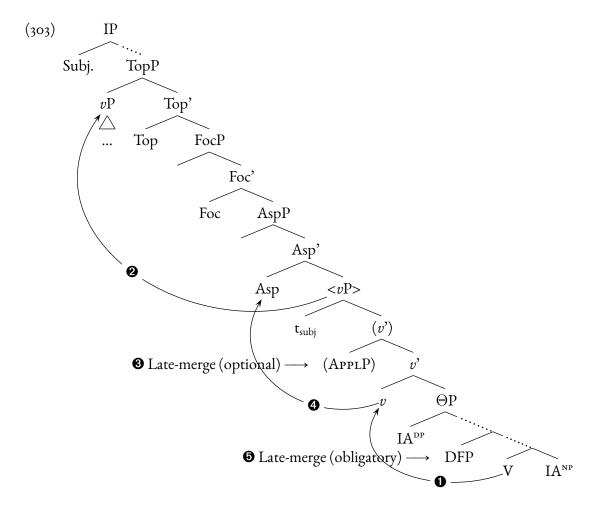
[41]In the analyses where *de* forms a constituent with the post-verbal materials as the complement to the verb, *de* cliticizes onto the verb due to adjacency.

[42]This is at variance with Landau's (2006, 2007) condition of P-recoverability: Only the copy that carries phonetic content will be spoken. If we take the view of P-recoverability, it is clear that in Gouguet's analysis, the phonetic content carried by the verb undergoing head-movement to *v* would be analogous to that carried by the verb moving to I° in Landau (2006, 2007), namely the affixal needs of *v* to be spoken as a dependent morpheme on the verb (either as aspect or *de*). However, it is not clear in Gouguet (2006) what the phonetic content carried by the copied-and-moved VP would be. But despite the variance in chain resolution, both accounts have a similar approach to analyzing VP-fronting/-copying in Hebrew and Mandarin respectively, i.e. separate movements of the verb and VP, and the result achieved is the same: Both the fronted VP (including the verb inside it) and the head-moved verb get pronounced, i.e. the V-doubling effect.

but there is one major difference between his and our assumption about the syntactic status of DFPs. Under his assumption, DFPs are introduced by a null functional morpheme above the main VP, on the surface marking the left edge of the VP. However, this assumption puts all DOs below the DFP (i.e. to the right of the DFP regardless of the DO's type), in opposition to our observation about the type-dependent positional relationship between the DO and the DFP in non-V-copying cases (i.e. Pattern I). Given the framework we developed for Pattern I, the main VP in Gouguet's structure would amount to our ΘP. In order to capture the positional NP-DP distinction, the DFP has to be a syntactic adjunct *inside* the ΘP (i.e. *inside* the lower VP in (302)), an assumption that we will stick to in our proposal for Pattern II[43].

We will now summarize the final analysis for Type II, along the lines of VP-copying plus V-movement in the sense of Landau (2006, 2007) and Gouguet (2006):

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[43]One might wonder whether we could adopt Gouguet's analysis of the syntax of DFPs, i.e. that they are introduced by a null functional head, in our current framework. I think the adoption would be untenable for two reasons. First, since we have the NP-DP distinction in the post-verbal field, the functional head that introduces the DFP would have to be put between where NP and DP objects compose. This, in other words, means that the functional head would be an intervener in the agreement between Θ° and V. Second, as will be shown in §5.1.4, the DFP faces the issue of copy-and-moving: The process that copies the verbal constituent and moves it forward cannot include the DFP, as the DFP is always post-verbal. We will eventually resolve this issue by means of late-merging the DFP à la Landau (2006, 2007). It is not clear to me how late-merging the DFP can happen if it is introduced by a functional head in the clausal spine. However, late-merging an adjunct (i.e. what we have been assuming the DFP to be) is to me a more simplistic and straightforward route.

(303)

IP
Subj.   TopP
  vP   Top'
  ...   Top   FocP
          Foc'
        Foc   AspP
              Asp'
          Asp   <vP>
              t_subj   (v')
  ❷
  ❸ Late-merge (optional) ⟶ (ApplP)   v'
              ❹   v   ΘP
                  IA^DP
  ❺ Late-merge (obligatory) ⟶   DFP
              ❶ ⟶   V   IA^NP

This analysis is analogous to Landau's (2007) analysis for Hebrew split VP-fronting, differing in that the topicalization of the copied VP is to the sentence-internal TopP. Likewise, two movements are involved, V-movement and VP-copying. We assume that the aspectual morpheme heads its own projection immediately above the vP and the main V moves cyclically into it through v. As for VP-copying, we know from the generalization on Hebrew and Mandarin VP-splitting concluded in §5.1.2.1 that the stranded argument is an optional argument upon which the legitimacy of an independent VP does not depend. In the ditransitive case of Type II in Mandarin, the applicative phrase (ApplP), where the indirect object is introduced, is an adjunct that can be optionally inserted under our analysis for Mandarin ditransitives in §4.4. And it is indeed the indirect object, and the indirect object only, that can be stranded in the split VP case under Type II (cf. (254)). Therefore, following Landau (2007), we will hypothesize that the indirect object, in fact, the ApplP as a whole, is late-merged into the unpronounced lower vP copy. Everything

is ordered in a particular way in this analysis. The verb (V) undergoes ❶ cyclic head-movement within the *v*P before the *v*P gets ❷ copied and topicalized into the inner Spec.TopP. What follows the topicalization of the *v*P is ❸ the optional late-merge of the APPLP[44]. Then the cyclic movement of V ❹ moves V out of the lower *v*P to Asp° (through APPL°[45]). Finally, the DFP adjunct is ❺ obligatorily late-merged into the lower ΘP after all of the movements have taken place. Both copies of V° in the copied-and-moved *v*P and in Asp° are pronounced given their non-c-command relationship, following Gouguet (2006)[46]. We will see more details in how this analysis works when we try to derive the word orders of the sentences under Type II in §5.1.4.

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[44]As in the Hebrew case, the optionality of later-merging the APPLP means the optionality of getting the indirect object in the topicalized (fronted) *v*P. That is, in cases where the APPLP is not late-merged, we will get the word order where the fronted *v*P contains both objects, whose precedence relationship is determined by the applicative structure (i.e. IO > DO).

[45]The cyclic movement of V has to be broken down into two steps in our derivations because of two facts: ① The verb copy in the fronted *v*P always precedes the object(s), (i), and ② in the case where the IO is stranded (=where it is late-merged), the main verb with aspectual marking can be a verbal complex with the incorporated APPL° *gei*, (ii).

(i) a. *Zhangsan [*v*P zhe-ben xiaoshuo^DO <u>xie</u>] <u>xie-le</u>   san   nian   (cf. (253))
       Zhangsan   this-CL novel   write write-ASP three year
       'Zhangsan wrote this novel for three years.'

   b. *Lisi [*v*P Mali^IO <u>song</u> liwu^DO] <u>song-le</u>   wu ci   (cf. (255a))
       Lisi   Mary give present give-ASP five time
       'Lisi gave Mary presents five times.'

   c. *Lisi [*v*P Mali^IO na-fen   liwu^DO <u>song</u>] <u>song-le</u>   wu ci
       Lisi   Mary that-CL present give   give-ASP five time
       'Lisi gave Mary that present five times.'

(ii) Lisi [*v*P <u>song</u> (na-fen) liwu^DO] <u>song**(-gei)**-le</u> Mali^IO wu ci
       Lisi   give that-CL present give-GEI-ASP Mary   five time
       'Lisi gave that present to Mary five times.'

According to the structure in (303), copying the *v*P before moving the verb would give us (i), which, as can be seen, is not grammatical. Therefore, the verb should move to the positions preceding the objects (i.e. to *v* in the case of late-merging the APPLP, and to APPL° otherwise) before the *v*P fronts. However, V-movement cannot go all the way through in one fell swoop to Asp°, given (ii), because late-merging the APPLP needs to take place after *v*P-fronting for the IO to be post-verbal, yet the verb should be able to pick up APPL° to form V-*gei* on its way up to Asp°. This leaves us no choice but to dissect V-movement in a way that late-merging the APPLP happens before the V moves out of the lower *v*P.

[46]One might wonder why we do not adopt Landau's (2006) notion of P-recoverability in resolving the pronunciations of the movement copies since we have demonstrated that Type II, as Hebrew VP-fronting, is also a case of topicalization. In fact, we can just as well do so and achieve the same V-doubling effect we are looking for. However, the evidence for the P-recoverability of the fronted VP in Hebrew is the intonational contour necessarily associated with the topicalization construction. In the case of Type II, it is less clear to me whether there is any intonational cue on the preverbal *v*P that comes as the consequence of the construction being topicalization. Therefore, I am taking a neutral stance on chain resolution here and simply using Gouguet's condition of speaking the heads of the movement chains since it delivers the same results in Type II as Landau's P-recoverability.

At this point, one may raise questions about the treatment of DFPs in this analysis, i.e. that they are *obligatorily* late-merged. This is not something Hebrew VP-fronting faces since it does not require the presence of an adverbial like the DFP. We, however, need to address the status of DFPs in the derivations of Type II. Since DFPs occur after the main verb, they should have the same ability as the IO to escape the copying process. And it is indeed the case that the well-formedness of the fronted verbal constituent does not depend on its containing a DFP. Therefore, DFPs, like the IO here (and other droppable internal arguments in Hebrew), should be subject to the late-merge operation that makes them appear after the main verb. Yet the contrast between them and the IO lies in the fact that DFPs can *only* appear after the main verb:

(304) a. *Zhangsan [$_{v}$P nian *san tian* shu] nian-le

        Zhangsan   read three day book   read-ASP

        'Zhangsan read books for three days.'

    b. *Zhangsan [$_{v}$P nian zhe-ben shu *san tian*] nian-le

        Zhangsan   read this-CL book three day   read-ASP

        'Zhangsan read this book for three days.'

(305) a. *Lisi [$_{v}$P song Mali^{IO} *wu ci* liwu^{DO}] song-le

        Lisi   give Mary five time present   give-ASP

        'Lisi gave Mary presents five times.'

    b. *Lisi [$_{v}$P song Mali^{IO} na-fen liwu^{DO} *wu ci*] song-le

        Lisi   give Mary that-CL present five time   give-ASP
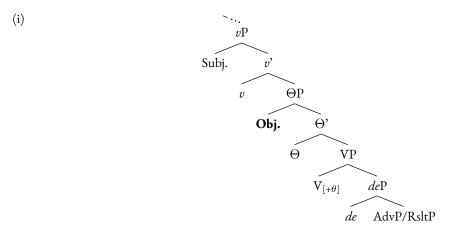
        'Lisi gave Mary that present five times.'

The sentences in (304) and (305) lead us to posit that DFPs **must** be late-merged after *v*P-copying has taken place. We choose this route over others, such as moving the DFP out of the *v*P before copying, given the following considerations: (i) the movement of DFPs prior to copying would

be ad hoc and lack motivation; it is not clear why DFPs have to move and where they would move to. And (ii) there is syntactic support that DFPs are generally late-merged in Mandarin[47].

Under our *heterogeneous* treatments for Mandarin V(P)-copying in the DFP- and *de*-involving constructions, there are different triggers for the copying process. In the *de*-involving constructions, V-copying happens as the last resort to satisfy the theta-requirement of the verb, which cannot be the case for the DFP-construction since the internal argument can stay post-verbal with the DFP, satisfying the theta-requirement and rendering V-copying unnecessary[48]. So the question is, what is the trigger for VP-copying in DFP-constructions? We will hypothesize

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[47]The syntactic support will also be given in the next section as part of the derivation process for Pattern II. The late-merge of DFPs will be taken to be a general phenomenon in both Type I and II, as suggested by the support.

[48]In our framework, if we want to maintain the Sideward Movement analysis for V-copying in the *de*-involving constructions, we need to have an account on how satisfying the theta-requirement of verbs can be a trigger, given that θ-roles are now provided not by verbs, but by a separate functional head $\Theta°$. In Cheng's (2007) analysis, the internal argument satisfies the verb's theta-requirement in the one-and-only complement position. And when that position is taken by a *de*P, the verb sideward moves and makes another complement position. In other words, V-copying in this case is the result of a gang effect from both the syntax of *de* and theta-assignment that fall in the same position restricted by the PSC.

However, since we have moved θ-roles away from verbs in our general argument structure, the complement position to the verb is no longer where theta-assignment takes place. That is, the three necessary criteria for V-copying in the Sideward Movement account: The PSC, *de*, and theta-assignment, do not converge at Comp.V any more. This permits us to have a structure like the following, where the *de*P still occupies the one-and-only Comp.V, yet the object can merge at Spec.ΘP to satisfy the verb's theta-requirement:

(i)

```
                              ` ·.·.
                              vP
                           /      \
                        Subj.      v’
                                 /    \
                                v      ΘP
                                    /      \
                                 Obj.       Θ’
                                          /    \
                                         Θ      VP
                                             /      \
                                        V[+θ]      deP
                                                 /      \
                                                de    AdvP/RsltP
```

In this case, V-copying would not be triggered, and we would end up deriving a wrong word order:

(ii) *Zhangsan nian-*de* [zhe-ben shu   ] [$_{AdvP/RsltP}$ hen kuai/lei   ]
    Zhangsan read-DE this-CL book   very fast/tired
    'Zhangsan read this book very fast.'/'Zhangsan got tired from reading this book.'

Therefore, we need to establish a dependency between the projection of *de*P and the unavailability of theta-assignment for V-copying to be triggered. Though stipulative, we can do so by hypothesizing that the functional morpheme *de* that eventually suffixes onto the verb disables the verb's agreement with $\Theta°$. As a result, the verb has to copy to be able to agree with $\Theta°$, and the object would naturally be introduced under the verb copy.

that the trigger is information-driven and the copied *v*P topicalizes into the topic positions (internal or external), as supported by its identical distribution to that of internal and external nominal topics (i.e. Type I) (see (291)). And we will further hypothesize that the sideward moved VP in the *de*-involving constructions can also move into the information-related functional projections despite its different V-copying mechanism hypothesized in the previous analyses that adjoins it back to its original projection[49]. This hypothesis comes from the following distribution of the copied VP that shows its capability of being in the sentence-internal functional domain:

(306) a. Lisi *lian* **(kan) manhua** *dou* <u>kan-*de*</u> hen kuai/lei

      Lisi even read   comic   all   read-DE very fast/tired

      'Lisi even read comics very fast'/'Lisi even got tired from reading comics.'

   b. Lisi **(jiao wuli)** *lian* Mali **(*jiao wuli)** *dou* **(jiao wuli)** jiao-*de* hen kuai/lei

      Lisi teach physics even Mali teach physics all   teach physics teach-DE very fast/tired

      'Teaching physics, Lisi even taught Mary very fast'/
      'Teaching physics, Lisi even got tired from teaching Mary.'

As above, the copied VP in both cases of post-verbal manner adverbials and resultatives can occur inside a FocusP, (306a), showing that it can land outside the matrix *v*P according to the IP-internal functional hierarchy in (250). And if there is already a focused phrase present, the copied VP must occur higher, putting it in the one-and-only internal TopP, (i.e. the ungrammaticality of the middle copy in (306b)). Moreover, if, as many previous analyses hypothesize (Paris, 1979, 1998; Paul, 2002, 2005; Badan, 2008), the adverb *dou/ye* in the *lian... dou* construction is marking the left edge of the matrix *v*P (or AspP when the main verb is aspectually marked), the availability of the copied VP occurring after *dou/ye* puts the copied VP inside the *v*P, on top of the original VP. The copied *v*P in the DFP-construction shows the same surface distribution in this regard:

---

[49]This uniform topicalization hypothesis is not ruling out the sideward moved VP adjoining back to the original VP projection in the *de*-cases since as shown in (306b) the sideward moved VP can occur inside the *v*P domain. It is ruling in the possibility of the sideward moved VP undergoing further movement to the information functional projections higher in the structure.

(307) a. Lisi *lian* **(kan) manhua** *dou* <u>kan-le</u>   wu ci/xiaoshi
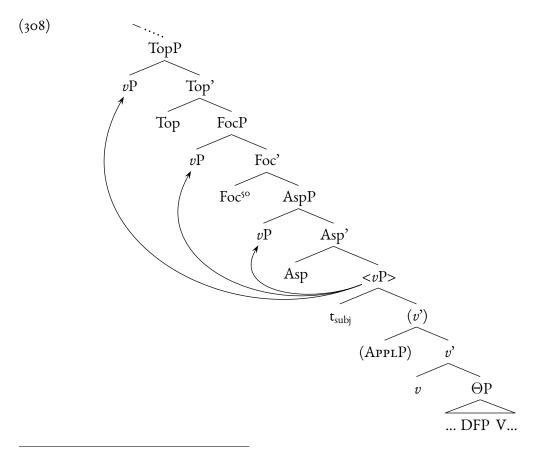
Lisi even read   comic   all   read-ASP five time/hour

'Lisi even read comics five times/for five hours.'

b. Lisi **(jiao wuli)**   *lian* Mali **(*jiao wuli)**   *dou* **(jiao wuli)**   <u>jiao-le</u>   wu ci/xiaoshi

Lisi teach physics even Mali teach physics all   teach physics teach-ASP five time/hour

'Teaching physics, Lisi even taught Mary five times/for five hours.'

Example (307b) in fact complicates slightly our analysis of Type II in the DFP-construction: In addition to the internal TopP, there should be another position below the internal functional domain for the copied *v*P to occur, supposing *dou/ye* is the divide between the functional and the verbal domains. We therefore revise the hypothesis to the following: The copied *v*P in the DFP-construction can move into *any* specifier of the functional projections along the clausal spine.

(308)

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[50] If we take the stance that *lian... dou* is marking the focus position in the middle field of Mandarin syntax and

Having a position below the functional domain in all cases captures the distribution of the copied *v*P under the interaction between Topic and Focus movements, as well as gives us a handle on accounting for the interaction between Type I and Type II[51,52].

We have been showing the distributions of Type I and II independently as in where we find either one (or both) of them. In fact, they can co-occur in the same sentence. Consider the following example:

(309) [IP Lisi [TopP **wuli**i [FocP [AspP [VP jiao **Mali** ti] [Asp' jiao-le   wu ci/xiaoshi]]]]]

   Lisi   physics   teach Mary   teach-ASP five time/hour

   'Teaching physics, Lisi taught Mary five times/for five hours.'

Given a ditransitive verb, the DO inside the preverbal copied *v*P can move further to a higher position between the *v*P and the subject. This case requires two distinct positions for the copied *v*P and the DO. But we already know that there is only one internal TopP; therefore, the copied *v*P could not have moved into the TopP before the movement of the DO. Introducing Spec.AspP as a preliminary landing site for the copied *v*P solves this case of Type-I-Type-II co-occurrence. It further accounts for the following example, where either the DO or the IO undergoes Focus movement to the internal FocP:

---

that the focused item moves into Spec.FocP, then it is not arbitrary to hypothesize *dou* as the lexical realization of Foc°. In fact, this idea has been proposed in previous analyses (cf. Shyu, 1995). It also aligns with the view that *dou* is delimiting the left edge of the main verbal phrase, given the cartographical structure we adopted from Paul (2002, 2005) and Badan (2008). However, since the status of the focus construction is not our main concern, we will be open on the morpho-syntactic treatment of the *lian... dou* construction.

[51]The functional domain we are assuming here does not include the aspectual projection since the main verb (V$_1$) in VP-copying constructions is treated to be projecting the verbal lexical domain in previous analyses, and the analyses gloss over main verbs that are aspectually or *de*-marked. Therefore, in the DFP case, the aspectually marked V$_1$ should still be in the verbal lexical domain, which includes the projection of the aspect head it merges with.

[52]Positing Spec.AspP as one of the possible landing sites for the copied *v*P in fact attenuates our idea about VP-copying being information-driven in the DFP case. However, it does not erase the fact that most of our previous examples, Type I and Type II alike, do possess informational properties. Therefore, I believe it is fair to say that topicalization is to a great extent responsible for Type II involving DFPs. The availability of Spec.AspP comes as a surprise under a strict view on topicalization being the trigger for Type II in Mandarin: Copying of the *v*P should not have happened if the copied *v*P did not move into Spec.TopP. But we also have cases where the copied *v*P is in the focus projection, (307a). All these examples suggest that VP-copying is an operation general to Mandarin information structure, i.e. VP-copying is available to topicalization or focalization (sentence-internally or -externally). And all of the empty specifiers on the path of the copied *v*P's informational movement, which include Spec.AspP, are possible landing sites, from where the *v*P itself or things inside it can move, leading to the various word orders in (309)-(312).

(310) a. [$_{IP}$ Lisi [$_{FocP}$ *lian* **wuli**$_i$ *dou*

   Lisi   even physics all

                           [$_{AspP}$ [$_{VP}$ jiao **Mali** t$_i$] [$_{Asp'}$ jiao-le   wu ci/xiaoshi]]]]

                           teach Mary   teach-ASP five time/hour

   'Even physics, Lisi taught Mary five times/for five hours.'

   b. [$_{IP}$ Lisi [$_{FocP}$ *lian* **Mali**$_i$ *dou*

   Lisi   even Mary all

                           [$_{AspP}$ [$_{VP}$ jiao t$_i$ **wuli**] [$_{Asp'}$ jiao-le   wu ci/xiaoshi]]]]

                           teach physics   teach-ASP five time/hour

   'Even Mary, Lisi taught physics five times/for five hours.'

To complete the picture, the copied *v*P can itself undergo the internal Focus movement, (311), from where the DO moves into the higher internal TopP, (312)[53]:

(311) [$_{IP}$ Lisi [$_{TopP}$ [$_{FocP}$ *lian* [$_{VP}$ jiao **Mali wuli**   ] *dou* [$_{AspP}$ jiao-le   wu ci/xiaoshi]]]]

   Lisi   even   teach Mary physics   all   teach-ASP five time/hour

   Teaching Mary physics, Lisi even did it five times/for five hours

(312) [$_{IP}$ Lisi [$_{TopP}$ **wuli**$_i$ [$_{FocP}$ *lian* [$_{VP}$ jiao **Mali** t$_i$] *dou* [$_{AspP}$ jiao-le   wu ci/xiaoshi]]]]

   Lisi   physics   even   teach Mary   all   teach-ASP five time/hour

   'Teaching physics, Lisi even taught Mary five times/for five hours.'

All of these examples receive a straightforward explanation if Spec.AspP is a landing site. And the same account carries over to Type II in the *de*-cases given its identical distribution there[54]:

---

[53]Internal topicalization of the IO is not possible in this case due to the same selectional restriction (*[+human]) imposed upon the internal TopP:

(i) *[$_{IP}$ Lisi [$_{TopP}$ **Mali**$_i$ [$_{FocP}$ *lian* [$_{VP}$ jiao t$_i$ **wuli**] *dou* [$_{AspP}$ jiao-le   wu ci/xiaoshi]]]]
   Lisi   Mary   even   teach physics all   teach-ASP five time/hour
   'Teaching Mary, Lisi even taught physics five times/hours.'

[54]In the *de*-cases, the preliminary landing site of the sideward moved VP would not be Spec.AspP because we

(313) a. Lisi **wuli**_i <u>jiao</u> **Mali** t_i <u>jiao-*de*</u> hen kuai/lei   (cf. (309))

Lisi physics teach Mary   teach-DE very fast/tired

'Lisi taught Mary physics really fast.'/'Lisi got tired from teaching Mary physics.'

b. Lisi *lian* **wuli**_i *dou* <u>jiao</u> **Mali** t_i <u>jiao-*de*</u> hen kuai/lei   (cf. (310a))

Lisi even physics all teach Mary   teach-DE very fast/tired

'Even physics, Lisi taught Mary very fast.'/
'Even physics, Lisi got tired from teaching Mary.'

c. Lisi *lian* **Mali**_i *dou* <u>jiao</u> t_i **wuli** <u>jiao-*de*</u> hen kuai/lei   (cf. (310b))

Lisi even Mary all   teach   physics teach-DE very fast/tired

'Even Mary, Lisi taught physics very fast.'/
'Even Mary, Lisi got tired from teaching physics (to her).'

d. Lisi *lian* <u>jiao</u> **Mali wuli** *dou* <u>jiao-*de*</u> hen kuai/lei   (cf. (311))

Lisi even teach Mary physics all teach-DE very fast/tired

'Teaching Mary physics, Lisi even did it very fast.'/
'Teaching Mary physics, Lisi even got tired from doing it.'

e. Lisi **wuli**_i *lian* <u>jiao</u> **Mali** t_i *dou* <u>jiao-*de*</u> hen kuai/lei   (cf. (312))

Lisi physics even teach Mary   all teach-DE very fast/tired

'Teaching physics, Lisi even taught Mary very fast.'/
'Teaching physics, Lisi even got tired from teaching Mary.'

In brief sum, all of the verb copying processes in the different constructions discussed so far share the availability of the information-driven movements, one of which (i.e. internal topicalization) pertains to the DFP-involving patterns we are interested in. If this idea is on the right track, then it is not surprising that the copied *v*P/sideward moved VP can also show up in <u>the IP-external domain, where the functional projections parallel:</u>

have assumed that *de* blocks the projection of Aspect (i.e. *de* and the aspect morpheme are in complementary distribution.). And because we maintain the Sideward Movement analysis for VP-copying in the *de*-cases, we will also maintain adjunction to the original VP being where the internal topicalization/focalization of the sideward moved VP (or the things inside it) originates. Moreover, we need to allow for the possibility of building more structure on the sideward moved VP, e.g. an IO-introducing applicative structure, so that the word orders in (313) are derivable.

(314) a. Focused transitive VP-copying + DFP—

Lian **kan manhua**, Lisi *dou/ye* <u>kan-le</u>   wu ci/xiaoshi

even read comic   Lisi all/also read-ASP five time/hour

'Even comics, Lisi read them five times/hours.'

b. Focused transitive VP-copying + Manner Adv./Resultative—

Lian **kan manhua**, Lisi *dou/ye* <u>kan-*de*</u>   hen kuai/lei

even read comic   Lisi all/also read-DE very fast/tired

'Even comics, Lisi read them very fast.'/
'Even comics, Lisi got tired from reading them.'

c. Focused ditransitive VP-copying + DFP—

Lian **jiao Mali wuli**,   Lisi *dou/ye* <u>jiao-le</u>   wu ci/xiaoshi

even teach Mary physics Lisi all/also teach-ASP five time/hour

'Even teaching Mary physics, Lisi did it five times/for five hours.'

d. Focused ditransitive VP-copying + Manner Adv./Resultative—

Lian **jiao Mali wuli**,   Lisi *dou/ye* <u>jiao-*de*</u>   hen kuai/lei

even teach Mary physics Lisi all/also teach-DE very fast/tired

'Even teaching Mary physics, Lisi did it very fast.'/
'Even teaching Mary physics, Lisi got tired from doing it.'

(315) a. Topicalized transitive VP-copying + DFP—

Kan manhua, Lisi <u>kan-le</u>   wu ci/xiaoshi

read comic   Lisi read-ASP five time/hour

'Reading comics, Lisi did it five times/for five hours.'

b. Topicalized transitive VP-copying + Manner Adv./Resultative—

Kan mahua, Lisi <u>kan-*de*</u> hen kuai/lei

read comic   Lisi read-DE very fast/tired

'Reading comics, Lisi did it very fast.'/
'Reading comics, Lisi got tired from doing it.'

c. Topicalized ditransitive VP-copying + DFP—
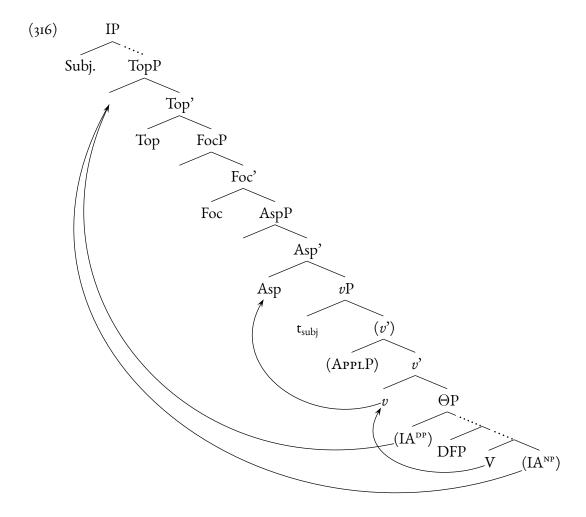
Jiao Mali wuli, Lisi jiao-le wu ci/xiaoshi

teach Mary physics Lisi teach-ASP five time/hour

'Teaching Mary physics, Lisi did it five times/for five hours.'

d. Topicalized ditransitive VP-copying + Manner Adv./Resultative—

Jiao Mali wuli, Lisi jiao-*de* hen kuai/lei

teach Mary physics Lisi teach-DE very fast/tired

'Teaching Mary physics, Lisi did it very fast.'/
'Teaching Mary physics, Lisi got tired from doing it.'

To conclude, internal topicalization across constructions is the unifying aspect of our proposal for Pattern II[55]. This operation encompasses two categorial constituents (nominals and verbals), giving rise to the very similar properties and distributions of Type I and Type II documented in the table in (291). And Type I, being the origin of our topicalization account, has the following analysis, where the DO, irrespective of its type, topicalizes sentence-internally:

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[55] This analytical aspect reveals more of the restrictive nature of the IP-internal functional domain in Mandarin. As opposed to the IP-external TopP that is recursive and can host a clausal object, the IP-internal TopP is the one-and-only and can host objects at most as big as a *v*P.

(316)

```
IP
├── Subj.
└── TopP
     └── Top'
          ├── Top
          └── FocP
               └── Foc'
                    ├── Foc
                    └── AspP
                         └── Asp'
                              ├── Asp
                              └── vP
                                   ├── t_subj
                                   └── (v')
                                        ├── (APPLP)
                                        └── v'
                                             ├── v
                                             └── ΘP
                                                  ├── (IA^DP)
                                                  │    └── DFP
                                                  └── ......
                                                       ├── V
                                                       └── (IA^NP)
```

One thing to note that sets Type I in DFP-constructions apart from Type I in the *de*-involving constructions is that the DO in the latter case could not have moved from the complement position since this is the position occupied by the *de*P. Therefore, the analysis for Type I proposed here pertains only to the case of DFPs. However, in the previous analysis for Type I in the *de*-cases (Tieu, 2008), the DO that is base-generated in the sideward moved VP eventually *topicalizes* sentence-internally[56]. This analysis resonates with the over-arching theme of our proposed account for Mandarin preverbal displacement, i.e. it is internal topicalization of various kinds of constituents (nominals in Type I and verbals in Type II). And now we have a unified account for both Type I and Type II movements under Pattern II. The next step is to derive the (di)transitive

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[56]Topicalization in this case is not necessary. However, if the object does not topicalize from the copied VP, the word order we get would involve two verbs with the object intervening since Type I in the *de*-constructions are a derived case from Type II. And one of the verbs would not be deleted by the adjacency condition on verb distinctness (see (295)).

word orders of Pattern II with our account. We will also see that our account can generate the correct word orders of the dative constructions of ditransitive verbs, proving that both of our ideas about the copy-and-movement of the vP and the applicative structure of ditransitive verbs are very likely to be on the right track.

Before we close this section, one more thing to address is the licensing nature of the DFP in VP-copying. We have already seen that DFPs are not required in Type I; there are many other cases where the object gets preposed without a DFP. All this can be understood under a topicalization account: As long as the informational conditions are met, the object can undergo Type I movement, the conditions being the object serving as the conversational topic and providing a limited domain to which the remaining part of the sentence applies as main predication (Paul, 2002, 2005). If Type II also constitutes a case of topicalization, we would expect the copying of the vP to be subject to the same informational conditions. And when those conditions are met, Type II should be available. Then, why is it the case that Type II cannot work without the presence of a DFP, as shown earlier (repeated here as (317) & (318))?

(317) Zhangsan <u>nian</u> (zhe-ben) shu   <u>nian-le</u>   *(**san xiaoshi**)   – Transitive

       Zhangsan read this-CL   book read-ASP three hour

       'Zhangsan read this book/books for three hours.'

(318) a. Lisi <u>song</u> [Mali/pengyou]$^{\text{IO}}$ [(na-fen) liwu   ]$^{\text{DO}}$ <u>song-le</u> *(**wu ci**)   – Ditransitive

          Lisi give   Mary/friend   that-CL present   give-ASP five   time

          'Lisi gave Mary/friends that present/presents five times.'

     b. Lisi <u>song</u> [(na-fen) liwu   ]$^{\text{DO}}$ <u>song-le</u> [Mali/pengyou]$^{\text{IO}}$ $^{\text{??/*}}$(**wu ci**) – IO-stranding

          Lisi give   that-CL present   give-ASP Mary/friend   five   time

          'Lisi gave Mary/friends that present/presents five times.'

Why is it that DFPs, as adjuncts in our assumption, play a role in the grammaticality of the sentence when the trigger of Type II in the DFP-case is more pragmatic than syntactic[57]? I think one

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[57] It goes without saying that Type II in the *de*-cases requires the presence of the post-verbal manner adverbials and resultatives since the *de*Ps *are* what causes VP-copying.

possible explanation has to do with the notion of topic and comment. If the copied vP is the topic of the sentence, the matrix predicate should as a comment say *something* about this topic. That includes the main verb and whatever the main verb has in its phrase. Without the DFP, the main verb is not predicating the copied vP of anything *new* since all of the known information ([V + (IO) DO]) is already contained in the copied vP as topic. In the case of Type I with no DFPs but simply a preposed object, the main verb per se can be interpreted as predicating of the preposed topical object of some additional information:

(319) Zhangsan **feiji** gan-shang le

Zhangsan flight catch-up PART

'Zhangsan caught the flight.'

Given the internal topic *feiji* ('flight') in (319), the main verb tells you that it was caught with Zhangsan being the subject. However, in the case of Type II with no DFPs, the sole main verb does not tell you anything that is not already known with the copied vP being the internal topic, i.e. the predication information from the verb is already part of the topic, cf. (317). As a result, the sentence is ruled out on pragmatic grounds.

This argument is further supported by the following example of *flight catching* in Type II, where the additional predication information is provided in the main verbal complex. And no DFPs are needed there:

(320) Zhangsan gan **feiji** gan-shang le

Zhangsan catch flight catch-up PART

'Zhangsan caught the flight.'

Catching flights translates to *gan feiji* in Mandarin, where the verb is simply *gan* that says nothing about the success or failure of the action. Yet the verb can be turned into a verbal complex with the particle *shang* ('up') that indicates the success of the flight catching event. With this additional piece of information, the copied vP *gan feiji* can occur in VP-copying with the verbal complex

gan-shang as the main predication, i.e. saying that it has a successful outcome[58]. On the flip side, the verbal complex cannot be in the copied vP[59]:

(321) *Zhangsan gan-shang **feiji** gan-shang le

Zhangsan catch-up flight catch-up PART

'Zhangsan caught the flight.'

5.1.4   Deriving Pattern II

Having established the foundations of our analyses for Type I and Type II movements, we can now derive the (di)transitive word orders in Pattern II. Let us recall the possible word orders under this pattern, generalized as the following templates (The DO/IO can be an NP/DP.):

(322) ① Subj. (V) DO V-ASP DFP (cf. (221&253)) ③ Subj. V (IO) DO V-ASP (IO) DFP

(cf. (254&255))

② Subj. DO V-ASP IO DFP (cf. (222))   ④ Subj. DO V IO V-ASP DFP (cf. (309))

These templates unite Type I and Type II, as well as transitive and ditransitive verbs. So we will address them separately with respect to the movement types. We will start with the derivations of Type I, which are more straightforward.

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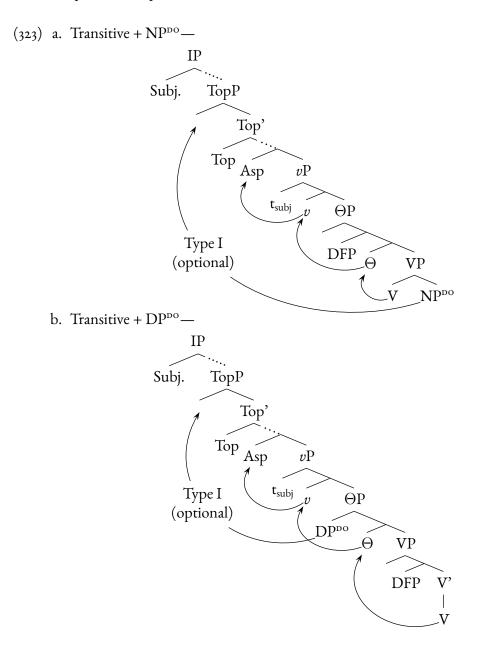
[58]Note that this case of VP-copying cannot be viewed as being of the same cause as that in the *de*-cases, where VP-copying is the necessary result due to competition between the object and some other constituent for the complement position, since the object is perfectly happy as the complement of the verbal complex:

(i) Zhangsan gan-shang **feiji** le
   Zhangsan catch-up   flight PART
   'Zhangsan caught the flight.'

[59]This line of argument leaves the IO-stranding case in (318b) puzzling as to why additional information about the IO being the recipient of the DO is insufficient for grammatical VP-copying. However, there seems to be some gradience in terms of grammaticality that puts the IO-stranding case between a perfectly grammatical case with a DFP and one with an empty main VP.
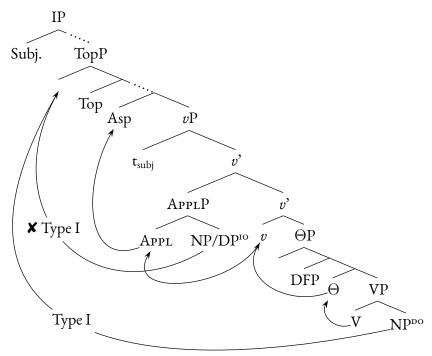
5.1.4.1 Type I: Object-fronting

The templates Type I makes reference to are half of ① (i.e. ①': Subj. DO V-ᴀꜱᴘ DFP) and ②. Here we have a case of transitives, ①', and one of ditransitives, ②. We will resort to the structures we have developed for transitive (i.e. ΘP) and ditransitive verbs (i.e. AᴘᴘʟP), together with the IP-internal functional projections, to derive the templates. In fact, we have seen part of the derivations in (316) when we discussed Type I movement. The following are more detailed structures that correspond to the post-verbal NP-DP distinction:

(323) a. Transitive + NPᴰᴼ—

b. Transitive + DPᴰᴼ—
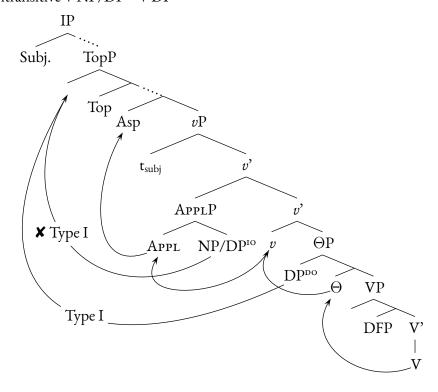
As shown, the DO moving to the internal TopP gives rise to ①'. In the case of ditransitives, an IO-introducing ᴀᴘᴘʟP is in the structure, and in theory, both the IO and the DO can undergo Type I movement to the internal TopP:

(324) a. Ditransitive + NP/DP^{IO} + NP^{DO}—

IP
Subj.   TopP
Top   Asp   vP
t$_{subj}$ v'
APPLP   v'
✘ Type I
APPL   NP/DP^{IO} v   ΘP
DFP   Θ   VP
Type I
V   NP^{DO}

b. Ditransitive + NP/DP^{IO} + DP^{IO}—

IP
Subj.   TopP
Top   Asp   vP
t$_{subj}$ v'
APPLP   v'
✘ Type I
APPL   NP/DP^{IO} v   ΘP
DP^{DO} Θ   VP
Type I
DFP   V'
V

However, as schematized, the Type I movement of the IO is not applicable, not due to any syntactic restrictions on the movement, but to the conflict between the selectional restrictions on the internal TopP and the IO. The internal TopP rejects [+human] items, yet the IO, given the denotation of Appl°, is a possessor that is almost always [+human]. As a result, the IO is out of the application domain of Type I movement and we hence derive ②, where only the DO is preverbal and the IO stranded after the main verb[60].

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[60]One might wonder what happens in cases where the indirect object is not exactly human, but a human-like proxy, as in the following:

(i) Zhangsan ji-le　　　[**na-jia gongsi**]^{IO} san　ci　[youjian]^{DO}
　　Zhangsan send-ASP　that-CL company　　three time　email
　　'Zhangsan sent that company emails three times.'

Given our proposed denotation of Appl°, the indirect object has to be interpreted as a possessor; hence, *na-jia gongsi* ('that company') cannot be a location but is coerced into a representation of the people at that company. Despite this representational interpretation, the company per se should still be considered [-human] since it is a *company*. And in that regard, it can indeed undergo Type I topicalization:

(ii) a. Transitive—

Zhangsan [**na-jia gongsi**]$^{DO}_i$ gao-le　t$_i$ san　ci
Zhangsan　that-CL company　　sue-ASP　three time
'Zhangsan sued that company three times.'

　b. Ditransitive—

Zhangsan [**na-jia gongsi**]$^{IO}_i$ ji-le　　　t$_i$ san　ci　[youjian]^{DO}
Zhangsan　that-CL company　　send-ASP　three time　email
'Zhangsan sent that company emails three times.'

The contrast between the sentences in (ii) and those that involve Type-I-moved [+human] IOs and DOs (as in (222) and (231), respectively) is clean-cut. The latter are simply ungrammatical.

　As mentioned before, the reason for this *[+human] restriction on the inner TopP is not at all clear. But we can be fairly sure that it is really *humanness*, but not *animacy* or anything of that sort that is relevant to Type I movement, given the following example:

(iii) a. Zhangsan wei-le　　[**na-zhi gou**]^{IO} san　tian [niurou]^{DO}
　　　Zhangsan feed-ASP　that-CL dog　　three day　beef
　　　'Zhangsan fed that dog beef for three days.'

　　b. Zhangsan [**na-zhi gou**]$^{IO}_i$ wei-le　t$_i$ san　tian [niurou]^{DO}
　　　Zhangsan　that-CL dog　　feed-ASP　three day　beef
　　　'Zhangsan fed that dog beef for three days.'
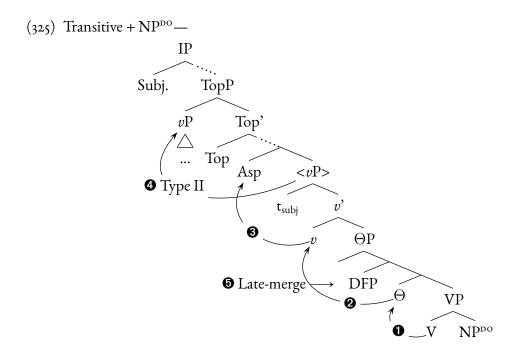
And our analysis on Type I can indeed derive the sentences in (ii) and (iiib) above, i.e. by moving the [-human] IO or DO into the inner Spec.TopP.

5.1.4.2 Type II: VP-copying
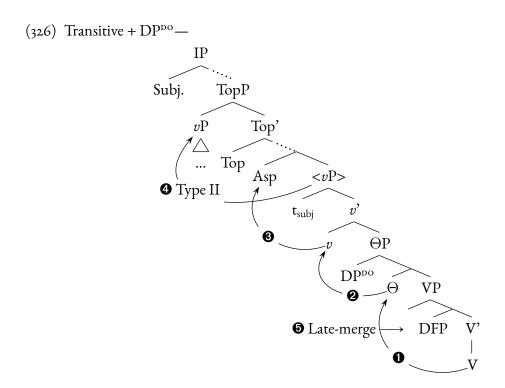
Now we turn to the other half of template ① (i.e. ①'': Subj. V DO V-ᴀsᴘ DFP) and template ③

that involve Type II (template ④ is the composite type, the result of Type-I-Type-II interaction,

and will be addressed last.). Again, we have a case of transitives, ①'', and one of ditransitives, ③.

We will start with the former:

(325) Transitive + NP^DO —

Our proposal for Type II consists of three parts: (i) cyclic movement of the V head, (ii) the copy-

and-movement of the vP, (iii) late-merge of the ᴀᴘᴘʟP and DFP (optional and obligatory, respec-

tively). In the case of transitives, ①'', we do not need to consider the operation of late-merging

the ᴀᴘᴘʟP. So, the derivation goes as above: V moves cyclically to Asp°, the vP copies and topi-

calizes into the inner Spec.TopP, and then the DFP is late-merged into the lower unpronounced

vP copy[61]. The heads of the movement chains are spoken. Therefore, the verb heads are spoken

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[61]V-movement in this case does not need to be interrupted by the copy-and-movement of the vP given the lack
of a late-merging ᴀᴘᴘʟP. Only in the case of a late-merging ᴀᴘᴘʟP (which leads to the consequence of a superficially
stranded IO) can we tell that V-movement out of the vP should be later than late-merging the ᴀᴘᴘʟP, given the verbal
complex V-*gei* in Asp° (see (328) & (329b)). All we need in the current case is for V-movement as a whole to precede
copy-and-moving the vP since we implement Gouguet's (2006) condition of speaking the non-c-commanded copy
of a movement chain in Mandarin VP-copying. It allows us to speak both the verb in Asp° and the vP in Spec.TopP
with an overt verb in the vP's head (i.e. in v, as the result of V-movement preceding vP-movement) since the verb in
the topicalized vP and the verb in Asp° have no c-command relations.

both in the topicalized vP and in Asp°, resulting in the surface form where the first verb copy is bare and the second is marked with aspect. The derivation above makes reference to NP objects that compose in Comp.V. DP objects involve the same derivation, differing only in where the DPs are base-generated inside the ΘP, i.e. in Spec.ΘP:

(326) Transitive + DP^{DO}—
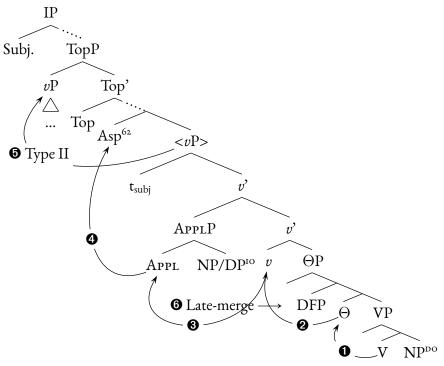
Now we have derived ①".
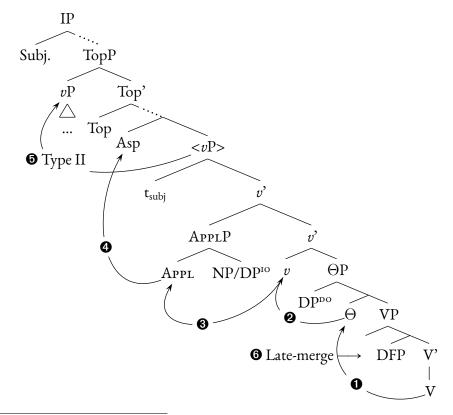
As for the ditransitive case, ③ (Subj. V (IO) DO V-ASP (IO) DFP), we include the operation of late-merging the APPLP. And given the optionality of this operation, we get the optionality of having a fronted IO or a post-verbal IO. The following examples show the derivations of *not* late-merging the APPLP, leading to the IO being fronted with the vP:

(327) Subj. V IO DO V-ASP DFP

a. Ditransitive + NP/DP^{IO} + NP^{DO} —

b. Ditransitive + NP/DP^{IO} + DP^{DO} —

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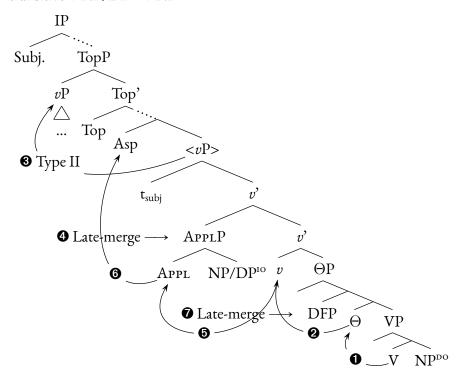
[62] Having the APPLP merged in the original structure predicts that we should be able to have the APPL° *gei* op-

When the APPLP is late-merged, the fronted vP does not include the IO and the IO looks on the surface stranded:

(328) Subj. V DO V-ASP IO DFP

a. Ditransitive + NP/DP^IO + NP^DO—

tionally spoken on the main verb when it moves through APPL° out of the vP into ASP°. But the fact is, we cannot have *gei* spoken on the main verb when the IO is fronted:

(i) Lisi song Mali^IO liwu^DO song-(*gei)-le wu ci
   Lisi give Mary present give-GEI-ASP five time
   'Lisi gave Mary presents five times.'

I argue that this is due not to the optional late-merge operation of APPLP hypothesized for Type II, but to a peculiar condition that requires surface adjacency between *gei* and the IO, where the IO has to immediately follow *gei*, modulo aspectual marking:
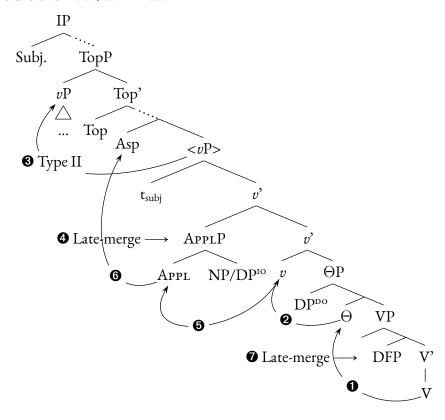
(ii) a. Lisi song-(**gei**)-le Mali^IO wu ci liwu^DO   b. Mali^IO, Lisi song-(**gei**)-le wu ci liwu^DO
     Lisi give-GEI-ASP Mary five time present   Mary Lisi give-GEI-ASP five time present
     'Lisi gave Mary presents five times.'   'Lisi gave Mary presents five times.'

In the canonical ditransitive sentence, (iia), *gei* can be optionally spoken on the main verb; however, when the IO is topicalized to the sentence-initial position, *gei* must remain silent. Since under our hypothesis of Mandarin applicative structure the constituency of [APPL + IO] is broken by APPL° being transported away by V through V-movement, the ungrammaticality of (iib) cannot be about the constituency but the linear adjacency of *gei* and the IO. The same reasoning should apply to the case of Type-II moving the IO to the preverbal position and breaking its linear adjacency with *gei* on the main verb, as in (i).

   The cause of this condition on the linearization of the surface APPL° IO string is a mystery at this point.

b. Ditransitive + NP/DP^{IO} + DP^{DO}—

Having the applied argument optionally late-merged in the sense of Landau (2006, 2007) gives rise to the various word orders subsumed under ③. Depending on whether the APPLP is late-merged, the first verb can have underneath it either one or both of the internal arguments. And the copied vP necessarily contains the DO; therefore, we would not find a case where only the IO topicalizes with the verb (cf. (254b)).

Further, this hypothesis of ordered V-movement and vP-topicalization, combined with the optional late-merge of the APPLP, predicts that we should optionally find the presence of *gei* (i.e. our optional lexical realization of APPL°) on the first verb when the IO is fronted: In cases where the APPLP is not late-merged, V should move cyclically to APPL° before the vP copies and topicalizes. As a result, the fronted vP should always simultaneously have in it both the verbal complex V-Θ-APPL-v as its head and the IO. It means that we would only find *gei* on the first verb in the presence of a fronted IO. When the APPLP is late-merged, the fronted vP would not contain the APPLP (hence no fronted IO). Consequently, the verbal complex in the head of the

fronted vP would not contain Appl°. Moreover, *gei* should be able to be optionally spoken on the main verb in the latter case, since the optional late-merge of the ApplP precedes V-movement out of the vP. The following contrast shows that these predictions are borne out:

(329) a. Lisi song-**(gei)** Mali$^{\text{IO}}$ liwu$^{\text{DO}}$ song-le wu ci

       Lisi give-GIVE Mary present give-ASP five time

       'Lisi gave Mary presents five times.'

    b. Lisi song-**(*gei)** liwu$^{\text{DO}}$ song-**(gei)**-le Mali$^{\text{IO}}$ wu ci

       Lisi give-GEI   present give-GEI-ASP Mary five time

       'Lisi gave Mary presents five times.'

Another key hypothesis that makes the word orders possible is the obligatory late-merge of DFPs. In our derivations, it is always the last step after the movements have taken place[63]. At this moment, the claim that DFPs must be late-merged is merely a stipulation. Yet, there are some independent cases where the late-merge of DFPs is also called for that lend support to our hypothesis about DFPs in Mandarin VP-fronting. They point to the direction that DFPs are possibly generally late-merged in Mandarin. Consider the following example:

(330) Zhangsan nian-le   zhe-ben xiaoshuo **san   ci/tian**,   er   Lisi **wu ci/tian**

     Zhangsan read-ASP this-CL novel   three time/day and Lisi five time/day

     'Zhangsan read this novel three times/for three days, and Lisi, five times/for five days.'

The sentence in (330) has the interpretation where Zhangsan and Lisi read the same book, namely, *this book*. Clearly, some kind of ellipsis is going on as the second clause is missing the verb plus the DO and the missing part retrieves the interpretation from the verb plus the DO in the first

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[63]Crucially, all we need is that the late-merge of DFPs follows the topicalization of the vP to derive the word orders. Whether late-merging DFPs should precede or follow V-movement out of the lower vP does not matter for the word order derivations. But given the discussion about (330) that ends in the conclusion of DFPs generally being merged really late in Mandarin, we order late-merging DFPs as the final operation in our analysis.

clause[64]. The question is, how does the ellipsis take place? We will assume that the ellipsis takes

place under the condition of Parallelism; that is, the elided part has the same syntactic structure

as its antecedent. Recall also that one of our major assumptions about the status of the DFP is

that it is an adjunct below where DP DOs compose. Given the two assumptions, we would not

expect to see an ellipsis like the above that leaves the DFP behind since the DFP should be part of

the constituent that gets elided. The only way to derive (330) would be to late-merge the DFPs

in both conjuncts:

(331) $[_{IP}$ ZS $[_{AspP}$ read$_i$-Asp $[_{\Theta P}$ this-novel $[_{VP}$ t$_i$]]]], and   – Ellipsis

   $[_{IP}$ LS $[_{AspP}$ read$_i$-Asp $[_{\Theta P}$ this-novel $[_{VP}$ t$_i$]]]]$

   $\xrightarrow{\text{Late Merge}}$ $[_{IP}$ ZS $[_{AspP}$ read$_i$-Asp $[_{\Theta P}$ this-novel $[_{\Theta'}$ $[_{DFP}$ 3-times/days$]$ $[_{VP}$ t$_i$]]]]], and

   $[_{IP}$ LS $[_{AspP}$ read$_i$-Asp $[_{\Theta P}$ this-novel $[_{\Theta'}$ $[_{DFP}$ 5-times/days$]$ $[_{VP}$ t$_i$]]]]]$

Several things that we have previously assumed for DFPs follow from this Late Merge hy-

pothesis. One famous example for Late Merge in the copy-and-movement theory is the bleeding

effects on violations of Condition C of the Binding Principles (Chomsky, 1981). For a movement

construction that necessarily reconstructs at LF, e.g. wh-movement, Condition C evaluation has

to be LF-sensitive since its potential reconstruction-induced violations can be obviated by the

late-merge of adjuncts, and adjuncts only (Lebeaux, 1988)[65]:

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[64]This is very likely not a case of gapping for two reasons. First, Mandarin arguably lacks gapping, at least in
transitive sentences (As fn. 66 discusses, Mandarin ditransitves do show a pattern resembling gapping; however, it
would not matter to our argument here.):

(i) a. Eventive—

   *Lisi nian-le *zhe-ben shu*, er Mali *na-ben shu*
   Lisi read-ASP this-CL book and Mary that-CL book
   'Lisi read this book, and Mary, that book.'

b. Stative—

   *Lisi xihuan *pingguo*, er Mali *xiangjiao*
   Lisi like   apple   and Mary banana
   'Lisi likes apples, and Mary, bananas.'

Second, it is not possible to Across-the-Board move the [V + DO] into the first conjunct and strand the subject and
DFP in the second conjunct when what we have is sentential conjunction, as in (330).

[65]Reconstruction in the copy-and-movement theory would be comparable to having two copies in the base and
moved positions, i.e. Comp.V and Spec.CP respectively in wh-movement, and semantically interpreting the unpro-
nounced lower copy.

(332) a. [Which argument that John$_1$ made] did he$_1$ believe t?

b. $^{??/*}$[Which argument that John$_1$ is a genius] did he$_1$ believe t?

If the adjunct *that John made* was base-generated in the underlying structure, it would be part of the lower copy of the wh-phrase (where the trace in (332) is), inducing a Condition C violation. Given (332a), it must not have been in the lower copy, and what we have is just the adjunct-less wh-phrase:

(333) [Which argument *that John$_1$ made*] did he$_1$ believe [which argument]

On the other hand, wh-phrases with a complement containing an r-expression co-indexed with the subject does induce a Condition C violation, proving that the complement is part of the base-generated wh-copy:

(334) $^{??/*}$[Which argument *that John$_1$ is a genius*] did he$_1$ believe [which argument *that John$_1$ is a genius*]

So the conclusion is that adjuncts and complements show a contrast in terms of Late Merge: Only adjuncts can be late-merged.

If the ellipsis case that we see in (330) is indeed made available by the late-merge ability of the DFP, we should find a contrast in the *de*-cases under ellipsis, where the post-verbal manner adverbials and resultatives are part of the complement to the verb. And we *do* find it:

(335) a. Post-V manner adverbial—

Zhangsan xiao-de   **hen dasheng**, er   Lisi *(xiao-de) **hen xiaosheng**

Zhangsan laugh-DE very loudly   and Lisi laugh-DE very quietly

'Zhangsan laughed very loudly, and Lisi, very quietly.'

b. Resultative—

Zhangsan pao-de **mantoudahan**, er   Lisi *(pao-de) **mianhongerchi**

Zhangsan run-DE all.head.sweaty and Lisi run-DE   face.ear.flushed

'Zhangsan got all sweaty from running, and Lisi, face-flushed (from running).'

This contrast further corroborates the route we took in analyzing the role DFPs play in Type I and Type II movements: They are adjuncts instead of complements to the verb, as opposed to post-verbal manner adverbials and resultatives. And since they are late-merged, they always come after the main verb after all of the movements are completed. All of the arguments made here about the late-merge of DFPs extend to Type I as well. DFPs cannot undergo Type-I movement to the preverbal position:

(336) a. Zhangsan nian-le   zhe-ben xiaoshuo san   ci/tian

           Zhangsan read-ASP this-CL   novel   three time/day

           'Zhangsan read this novel three times/for three days.'

     b. ✔Zhangsan [**zhe-ben xiaoshuo**]$_i$ nian-le t_i san   ci/tian   – DO-preposing

           Zhangsan   this-CL   novel   read-ASP   three time/day

           'Zhangsan read this novel three time/for three days.'

     c. *Zhangsan [**san   ci/tian**]$_i$ nian-le   zhe-ben xiaoshuo t_i – DFP-preposing

           Zhangsan   three time/day   read-ASP this-CL   novel

           'Zhangsan read this novel three times/for three days.'

If Type I is simply topicalization, one can imagine a scenario where the conversational topic is the duration or frequency in which the eventuality takes place. This context in theory makes the DFP subject to Type-I movement, and the ungrammaticality of (336c) comes out surprising. Alternatively, (336c) is a natural outcome of DFPs being late-merged, missing the timing of Type-I movement. As additional supporting examples, both Type I and Type II are eligible for VP ellipsis only when they involve DFPs:

(337) a. Type-I-transitive + DFP—

        Zhangsan **zhe-ben xiaoshuo** nian-le *san   ci/tian*,   er Lisi *wu ci/tian*

        Zhangsan this-CL   novel   read-ASP three time/day and Lisi five time/day

        'Zhangsan read this novel three times/for three days, and Lisi, five times/for five days.'

b. Type-I-ditransitive + DFP—

Zhangsan **na-fen liwu**   song-le Mali *san   ci*,   er   Lisi *wu ci*[66]

Zhangsan that-CL present give-ASP Mary three time and Lisi five time

'Zhangsan gave Mary that present three times, and Lisi, five times (giving).'

c. Type-I-transitive + Post-V manner adverbial/resultative[67]—

*Zhangsan **zhe-ben xiaoshuo** nian-de *hen kuai/lei*,   er   Lisi *hen   man/kaixin*

Zhangsan this-CL   novel   read-DE very fast/tired and Lisi very slow/happy

'Zhangsan read this novel very fast, and Lisi, very slow.'/
'Zhangsan got tired from reading this novel, and Lisi, happy (from doing the same).'

(338) a. Type-II-transitive + DFP—

Zhangsan <u>nian</u> **zhe-ben xiaoshuo** <u>nian-le</u> *san   ci/tian*,   er   Lisi *wu ci/tian*

Zhangsan read this-CL   novel   read-ASP three time/day and Lisi five time/day

'Zhangsan read this novel three times/for three days, and Lisi, five times/for five days.'

b. Type-II-ditransitive + DFP—

(i) Zhangsan <u>song</u> **Mali na-fen liwu**   <u>song-le</u> *san   ci*,   er   Lisi *wu ci*

Zhangsan give Mary that-CL present give-ASP three time and Lisi five time

'Zhangsan gave Mary that present three times, and Lisi, five times (giving).'

---

[66]This sentence is in fact ambiguous between the readings where *Lisi* in the second conjunct is interpreted to be the giver or the recipient. In the latter case, what we have is what looks like a case of gapping in Mandarin where the verb, as well as the DO, undergoes Across-the-Board movement from both conjuncts (Tang, 2001), resulting in the same surface string as in (337b). Since this is not of our primary interest, we will ignore this reading.

[67]Ditransitive verbs in the post-verbal manner adverbial/resultative constructions are incompatible with Type I movement because Type I only allows for the DO being preverbal, and there is no position in the post-verbal field where the IO can be stranded without copying the VP:

(i) a. *Zhangsan **na-fen liwu**   song-de Mali *hen kuai/lei*
       Zhangsan that-CL present give-DE Mary very fast/tired
       'Zhangsan gave Mary that present very fast.'/'Zhangsan got tired from giving Mary that present.'

b. Zhangsan **na-fen liwu**   <u>song</u> **Mali** <u>song-de</u> *hen kuai/lei*
   Zhangsan that-CL present give Mary give-DE very fast/tired
   'Zhangsan gave Mary that present very fast.'/'Zhangsan got tired from giving Mary that present.'

(ii) Zhangsan song **na-fen liwu**   song-le   Mali *san   ci*,   er   Lisi *wu ci*

Zhangsan give that-CL present give-ASP Mary three time and Lisi five time

'Zhangsan gave Mary that present three times, and Lisi, five times (giving).'

c. Type-II-transitive + Post-V manner adverbial/resultative—

*Zhangsan nian **zhe-ben xiaoshuo** nian-de *hen kuai/lei*, er   Lisi *hen man/kaixin*

Zhangan   read this-CL   novel   read-DE very fast/tired and Lisi very slow/happy

'Zhangsan read this novel very fast, and Lisi, very slow.'/
'Zhangsan got tired from reading this novel, and Lisi, happy (from doing the same).'

d. Type-II-ditransitive + Post-V manner adverbial/resultative—

*Zhansan song **Mali na-fen liwu**   song-de *hen kuai/lei*, er   Lisi *hen man/kaixin*

Zhangsan give Mary that-CL present give-DE very fast/tired and Lisi very slow/happy

'Zhangsan gave Mary that present very fast, and Lisi, very slow (giving).'/
'Zhangsan got tired from giving Mary that present, and Lisi, very happy.'
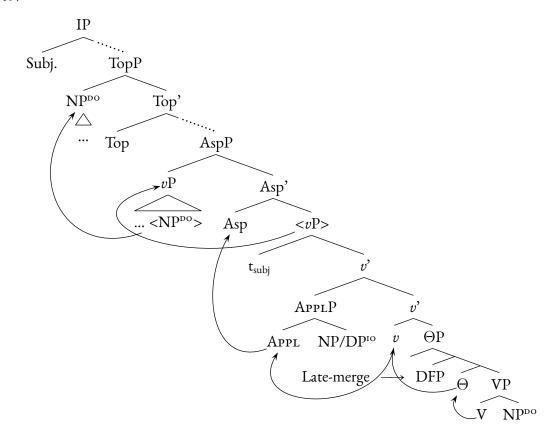
5.1.4.3 Type I + II: Object-fronting and VP-copying interactions

Last but not least, the derivation of the composite template, ④ (Subj. DO V IO V-ASP DFP), involves ordered applications of Type I and Type II movement. This is not hard to see since a verbal constituent containing solely the IO does not exist to be copied and moved (The moved vP always contains the DO whether the APPLP is late-merged or not.). Therefore, ④ cannot result from copy-and-moving [V + IO] plus preposing the DO from the DO's base position, but from copy-and-moving [$_{v\text{P}}$ V + IO + DO] followed by preposing the DO in that constituent. This analysis requires us to have two distinct *pre-main-verbal* positions for the copied vP and the preposed DO. We have already established in §5.1.3.2 that Spec.AspP should be an available position for Type II movement in the DFP-case[68]. Adding in the landing site for Type I movement,

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[68]Spec.AspP is not a possible landing site in the *de*-cases because of the complementary distribution between *de* and ASP°, as previously mentioned.
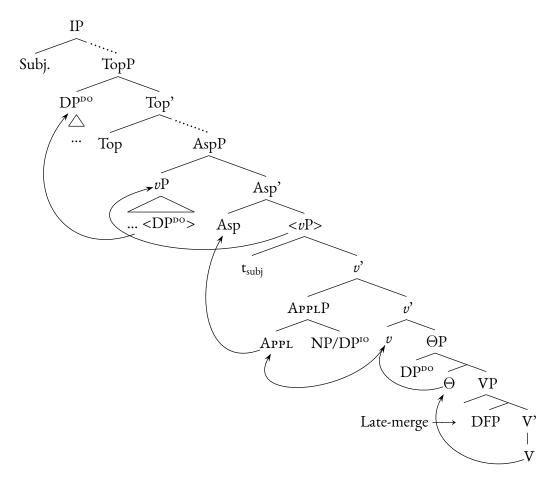
i.e. the internal Spec. TopP, we get the following derivation[69]:

(339) a. Ditransitive + NP/DP^{IO} + NP^{DO} —

IP
Subj.   TopP
NP^{DO} Top'
Top   AspP
vP   Asp'
... <NP^{DO}>   Asp   <vP>
t$_{subj}$ v'
A$_{PPL}$P v'
A$_{PPL}$ NP/DP^{IO} v ΘP
Late-merge   DFP
Θ   VP
V   NP^{DO}

---

[69]Note that the *de*-cases also show the same pattern (313a) and can be derived the same way since in the Sideward Movement account (Cheng, 2007; Tieu, 2008), there is also an additional adjunction position inside the *v*P for the copied VP.

b. Ditransitive + NP/DP^{IO} + DP^{DO}—

And as expected, the derivation where the IO in the copied *v*P undergoes Type I movement is blocked by the selectional restriction of the internal TopP (i.e. *[+human]). We thus account for the lack of the following word order and complete the paradigm generated by Type I + II:

(340) *Lisi **Mali** song **(na-fen) liwu** song-le san ci

  Lisi Mary give that-CL present give-ASP three time

  'Lisi gave Mary that present/presents three times.'

5.1.4.4 More word order predictions

Combined with our proposal for ditransitives, the current account for Type I and Type II movement makes predictions about the availability of some other word orders. We will look at those

that involve the dative alternates of ditransitive constructions. In our proposal, the difference between Mandarin ditransitive constructions and their dative alternates lies in the attachment sites of the ApplP. The dative alternates have the ApplP right-adjoining low inside the ΘP. In terms of their subjectivity to optional late-merge as hypothesized for their ditransitive counterparts, they should in theory behave the same[70]. Then two word orders involving the dative alternates are predicted to be possible, depending on whether the right-adjoining ApplP is late-merged or not: If it is not late-merged, it should front with the *v*P; if it is late-merged, it should stay behind the main verb. Both cases are indeed attested[71]:

---

[70]Despite being late-merged, the ApplP behaves differently from the DFP with respect to VP ellipsis:

(i) *Zhangsan song-le liwu   *gei*   *Yuehan*, er   Lisi *gei*   *Mali*
    Zhangsan give-ASP present GIVE John   and Lisi GIVE Mary
    'Zhangsan gave presents to John, and Lisi, to Mary.'

Unlike the DFP, the ApplP cannot escape the elided VP in the second conjunct. This behavior of the ApplP is predicted by our analysis of Type II, where late-merging the ApplP is ordered before V-movement into Asp°. Since VP ellipsis should apply after V-movement (cf. (331)), late-merging the ApplP necessarily applies before VP ellipsis by transitivity. Then we would never get a case where the ApplP is not included in the VP target for ellipsis. On the other hand, the ability of the DFP to escape the elided VP shows that there are different degrees of *lateness* to late-merge: In the DFP-case of VP ellipsis, the DFP has to be merged very late, even later than conjunction (cf. (331)).

[71]In theory, the sentence in (341) can as its ditransitive counterpart further undergo Type I movement of the DO (while the fronted *v*P is in Spec.AspP as its preliminary landing site). However, doing so results in a word order not distinguishable from that of the ditransitive case, i.e. ditransitive constructions with Appl° overtly realized lead to the same word order after the same movements. Nonetheless, we still see this result as supportive of our account:
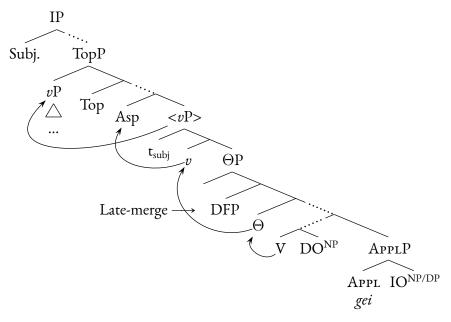
(i) a. Lisi **(na-fen) liwu**$_i$ song t$_i$ [*gei*   **pengyou/Mali**] song-le   san   ci   – Dative (Type I + Type II)
      Lisi that-CL   present give   GIVE friend/Mary   give-ASP three time
      'Lisi gave that present/presents to friends/Mary three times.'

   b. Lisi **(na-fen) liwu**$_i$ song-*gei*   **pengyou/Mali** t$_i$ song-le   san   ci   – Ditransitive (Type I + Type II)
      Lisi that-CL   present give-GIVE friend/Mary   give-ASP three time
      'Lisi gave friends/Mary that present/presents three times.'
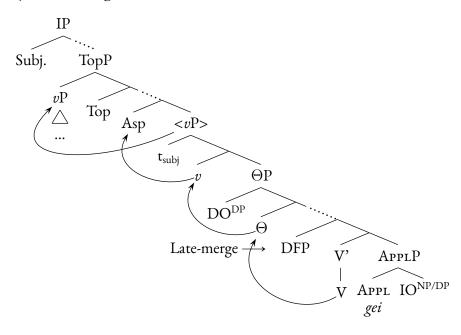
(341) Lisi song [_{NP/DP} **(na-fen) liwu**   ]^{DO} [*gei* [_{NP/DP} **pengyou/Mali**]^{IO}] song-le   wu ci

Lisi give   that-CL present   GEI   friend/Mary   give-ASP five time

'Lisi gave that present/presents to friends/Mary five times.'

a. Subj. [V DO^{NP} [*gei* IO^{NP/DP}]] V-ASP DFP—

```
            IP
          /   ⋰
     Subj.    TopP
            /    ⋱
         vP    Top
         △         \
        ...      Asp   <vP>
                      /    \
                   t_subj  v   ΘP
                          /  \
            Late-merge → DFP  \⋰
                         Θ      \
                           V  DO^{NP}   APPLP
                                       /    \
                                   APPL  IO^{NP/DP}
                                   gei
```
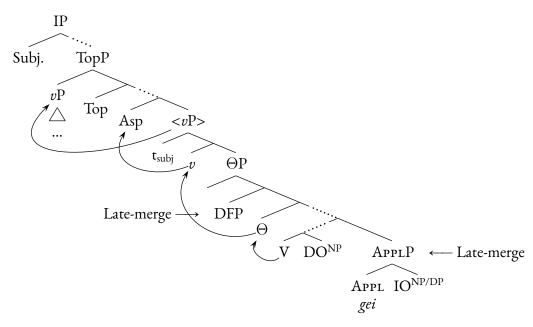
b. Subj. [V DO^{DP} [*gei* IO^{NP/DP}]] V-ASP DFP—

```
            IP
          /   ⋰
     Subj.    TopP
            /    ⋱
         vP    Top
         △         \
        ...      Asp   <vP>
                      /    \
                   t_subj  v   ΘP
                          /    \
                        DO^{DP}  ⋰
                         Θ        \
            Late-merge → DFP   V'   APPLP
                              |     /   \
                              V  APPL  IO^{NP/DP}
                                 gei
```
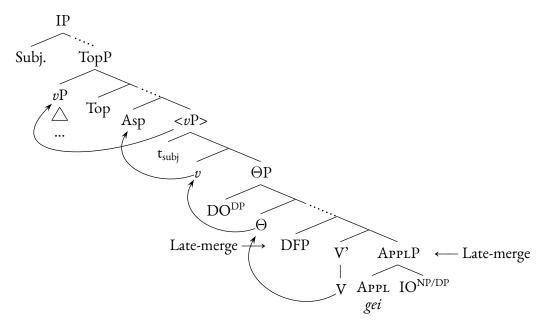
(342) Lisi song [NP/DP **(na-fen) liwu**]^DO song-le wu ci [*gei* [**pengyou/Mali**]^IO]

Lisi give   that-CL present   give-ASP five time   GEI   friend/Mary

'Lisi gave that present/presents to friends/Mary five times.'

a. Subj. [V DO^NP] V-ASP DFP [*gei* IO^NP/DP]—

b. Subj. [V DO^DP] V-ASP DFP [*gei* IO^NP/DP]—

On the other hand, in the *de*-cases, we see the same pattern of the *gei*-phrase showing in the sideward moved VP:

(343) a. Lisi song (na-fen) liwu^DO [*gei*   pengyou/Mali^IO] song-*de* hen kuai/lei

Lisi give that-CL present   GIVE friend/Mary   give-DE very fast/tired

'Lisi gave that present/presents to friends/Mary very fast.'/
'Lisi got tired from giving that present/presents to friends/Mary.'

b. Lisi song-(*gei*) pengyou/Mary^IO (na-fen) liwu^DO song-*de* hen kuai/lei

Lisi give-GIVE friend/Mary   that-CL present give-DE very fast/tired

'Lisi gave friends/Mary that present/presents very fast.'/
'Lisi got tired from giving friends/Mary that present/presents.'

Since the copied VP in these cases comes about via Sideward Movement, having examples like (343) means we would have to let Sideward Movement build more structure, whether it is ditransitive or dative. It is not possible to have the *gei*-phrase attaching in the post-verbal field in any way given the presence of the *de*P:

(344) Lisi song liwu   song-*de* (***gei Mali**) *hen kuai/lei*   (***gei Mali**)

Lisi give present give-DE GIVE Mary very fast/tired GIVE Mary

'Lisi gave presents to Mary very fast.'/
'Lisi got tired from giving presents to Mary.'

Contrasting (344) with (345), where the *gei*-phrase is able to co-occur post-verbally with a DFP, again supports the *heterogeneous* view on the underlying structures of the *de*- and DFP-cases (i.e. that they should not be analyzed on a par), and that there is some correlation between the branch-right-only-once constraint on Mandarin VPs and the *de*P (i.e. that the constraint is effective only in the presence of the *de*P; the *de*P somehow blocks the right-branching ability of VPs):

(345) Lisi song-le san ci   liwu   *gei*   **Mali**

Lisi give-ASP three time present GIVE Mary

'Lisi gave presents to Mary three times.'

5.1.5 Summary

We have shown that Pattern II involves movements of two types that are traditionally analyzed to be independent of each other. However, after further examining their distributions, we find a great overlap that would otherwise be surprising if accidental. The distributions of their moved items suggest a unified analysis that resorts to the information-related constructions in Mandarin. Adopting the functional hierarchies in both the IP-external and -internal domains from Paul (2002, 2005) and Badan (2008), we are able to capture the distributions, and proposing a copying mechanism that is analogous to that of Hebrew VP-fronting in Landau (2006, 2007), we in turn are able to derive the word orders of Mandarin VP-copying that likewise fall under the generalization on splitting VPs, suggesting the universal nature of the VP-copying process. Finally, we advocate the *heterogeneous* view on VP-copying in Mandarin, i.e. that instances of VP-copying in different constructions are only surface look-alikes; they involve different copying processes given what construction it is (DFP vs. *de*P). Based on our proposal for Pattern II, we are further able to capture the interactions between different information-related movements (IP-external & -internal topicalization & focalization) and make predictions of more word orders that are indeed borne out.

5.2   Pattern III: The inverted arguments

The second half of §5 concerns our last argument pattern, Pattern III, which is intuitively the most special pattern since it involves the inversion of the AGENT and PATIENT/THEME arguments in terms of their grammatical positions in the presence of DFPs. The word order to be accounted for in this pattern is fairly simple and straightforward, compared to the other patterns. We will start our discussion with the following baseline example:

(346) [DP **(Zhe-fen) zuoye**] <u>xie-le</u> [DP **Lisi**]/*[NP **xuesheng**] [DFP *san   tian/ci*]

      this-CL   assignment write-ASP   Lisi   student   three day/time

      'This/*(The) assignment(s) took Lisi/*(the) student(s) three days/tries to write.'

5.2.1 Pattern III recapitulation

Several observations can be made about Pattern III. First and foremost, the argument inversion is unavailable without the DFP:

(347) (Zhe-fen) zuoye   xie-le   Lisi/xuesheng *(**san tian/ci**)

      this-CL   assignment write-ASP Lisi/student   three day/time

      'Lisi/The student(s) wrote this/the assignment(s).'   ⤳ Not an available reading!
      #'This/The assignment(s) wrote Lisi/(the) student(s).'

Without the DFP, Mandarin behaves just like English, where the internal argument shows up post-verbally, and the external argument, preverbally. This observation tells us that the DFP should be part of what is responsible for the alternation of the argument structure that results in the inverted word order. The second observation is that only DPs are allowed in this construction. The major distinction between NP and DP arguments in our system is *non-referentiality* reflecting the semantic type of the argument. As can be seen from (346), neither of the arguments can be interpreted as non-referential even if there are no overt determiners or extended functional projections on the arguments. Recall that bare NPs in Mandarin can be *definite*, and we have analyzed that as the result of type-shifting (Partee, 1987). Recall also that property NPs under our framework cannot compose beyond a certain point in the structure (i.e. Θ'). Clearly, the first argument, although appearing to be the internal argument of the verb, is in the surface subject position that is syntactically high, rendering it a necessarily type-shifted definite NP (i.e. an underlying DP with the null functional type-shifter ι).

Our point of interest lies in the post-verbal AGENT argument. The fact that the post-verbal AGENT cannot obtain a non-referential reading conforms to the NP-DP positional distinction given that the DFP shows up sentence-finally in (346). Therefore, if we want to check whether the post-verbal AGENT under Pattern III can be a property NP, we would have to move the bare nominal AGENT *xuesheng* ('student') in (346) to the lowest position, that is, to the right of the DFP where property NPs compose. Yet, by doing so, we get ungrammaticality:

(348) a. *(**Zhe-fen**) **zuoye**$_{patient}$ xie-le *san tian/ci* **xuesheng**$_{agent}$

 this-CL   assignment write-ASP three day/time student

 'This/The assignment(s) took students three days/tries to write.'

 b. #(**Zhe-fen**) **zuoye**$_{agent}$ xie-le *san tian/ci* **xuesheng**$_{patient}$

 this-CL   assignment write-ASP three day/time student

 'This/The assignment(s) wrote students for three days/three tries.'

The bare nominal AGENT can no longer have the agent interpretation on the right of the DFP, as in (348a). In this case, it is necessarily interpreted as the THEME of the verb in this position, in turn forcing an agent reading on the surface subject, *this assignment*, and leading to a semantic anomaly, as shown by (348b). This observation about the non-referentiality-specific position (i.e. post-DFP) stands as strong evidence for our proposal of ΘP as it dictates an internal θ-relation with the verb: Anything that composes on the right of the DFP is in Comp.V and necessarily inside of the ΘP. In other words, the post-verbal AGENT under Pattern III must be composing somewhere higher than the ΘP, where it can still get the AGENT θ-role.

One other observation about Pattern III is that it only allows verbs with at most two arguments. Ditransitive verbs do not survive this pattern[72]:

(349) a. *(**Zhe-fen**) **liwu**^{DO} song-le **Lisi**$_{agent}$ [$_{DP/NP}$ **Mali/pengyou**]^{IO} *san ci*

 this-CL   present give-ASP Lisi   Mary/friend   three time

 'This/The present(s) took Lisi three tries to give to Mary/friends.'

---

[72]Note that (349b&c) are grammatical under the reading where *Mali/pengyou* are interpreted as the AGENT and Lisi, the GOAL-OF-POSSESSION, of the giving event; that is, the canonical ditransitive construction.

b. *[DP **Mali/pengyou**]$^{\text{IO}}$ song-le **Lisi**$_{\text{agent}}$ *san ci* [NP **liwu**]$^{\text{DO}}$

　　Mary/friend　　　give-ASP Lisi　　three time　　present

‘Mary/The friend(s) took Lisi three tries to give presents to.’

c. *[DP **Mali/pengyou**]$^{\text{IO}}$ song-le **Lisi**$_{\text{agent}}$ [DP **zhe-fen liwu**]$^{\text{DO}}$ *san ci*

　　Mary/friend　　　give-ASP Lisi　　this-CL present　　three time

‘Mary/The friend(s) took Lisi three tries to give this present to.’

Example (349) shows that regardless of which internal argument (the DO or the IO) occurs in the surface subject position, the other internal argument cannot stay post-verbal with the AGENT. And (349b&c) show that the ungrammaticality is unrelated to the types of the internal arguments and their relative positions to that of the DFP. Given (349), one hypothesis naturally follows: Only *one* argument is allowed in the post-verbal position. Since most verbs require an external argument but not necessarily an applied argument, it is not difficult to see that what occurs in the post-verbal position under Pattern III would always be the external argument, and the external argument only. This preliminary hypothesis can be supported by cases of verbs that have transitive-ditransitive alternations. Ditransitive verbs that can alternate to the transitive paradigm by dropping the applied argument can undergo Pattern III inversion:

(350) a. Lisi song-le Mali zhe-xie shuiguo　　b. Lisi song-le zhe-xie shuiguo

　　　　Lisi give-ASP Mary this-CL fruit　　　　　Lisi give-ASP this-CL fruit

　　　　‘Lisi gave Mary these fruits.’　　　　　　‘Lisi gave these fruits (to someone).’

c. **Zhe-xie shuiguo** song-le Lisi san ci

　　this-CL fruit　　give-ASP Lisi three time

　　‘These fruits took Lisi three tries to give (to someone).’

Given our previous observation that there can be only one post-verbal external argument in this pattern, this is not a surprising outcome[73].

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[73]Calling the argument a *post-verbal external* argument might be a little confusing since the argument appears to

However, Pattern III inversion comes with other restrictions. It is well-known that Mandarin is a topic-drop language. Licensed by the context, ditransitive verbs can sometimes drop their DOs:

(351) A: **Na-xie liwu**$_i$, Zhangsan chule Lisi, hai song-le   shei?

       that-CL present Zhangsan besides Lisi also give-ASP who

       'Who did Zhangsan also give those presents, besides Lisi?'

     B: Zhangsan hai song-le   Mali **pro**$_i$, erqie song-le   ta   **pro**$_i$ *san   ci*

       Zhangsan also give-ASP Mary   and   give-ASP her   three time

       'Zhangsan also gave Mary (those presents), and gave her (those presents) three times.'

If the number of syntactic positions allowed is the only restriction on this particular inversion pattern, we should expect the sentence in (351B) to be able to undergo inversion, as in the case where the IO is dropped, (350c). On the contrary, no such inversion alternation is possible:

(352) ****Mali**^{IO} song-le **Zhangsan**$_{agent}$ *san   ci*

     Mary   give-ASP Zhangsan   three time

     Intended: 'Mary took Zhangsan three tries to give (those presents) to.'

The observations about (349)-(352) combined tell us that the eligibility for Pattern III is limited to those verbs that have no more than two arguments syntactically realized, and that the inverted internal argument has to be the THEME/PATIENT.

Based on this conclusion, a follow-up question arises: What about verbs that have only one argument, e.g. unaccusatives and unergatives? It turns out that some of them can alternate to a pattern that looks very similar to the instances of Pattern III we have seen so far. The canonically intransitive verbs with external arguments, i.e. unergative and psych(ological) verbs, have this pattern whereas those with internal arguments, i.e. unaccusative verbs, do not[74]:

---

fall within the scope of the main VP. However, the term is mainly used to refer to the arguments that have the θ-roles of canonical external arguments, but show up in the post-verbal position.

    [74]This distinction in what kind of arguments these intransitive verbs have is according to the classification by Perlmutter (1978) and will reflect on the positions of the arguments in the underlying structures of the verbs.

(353) Unergative verbs—

    a. **Zhe-ge xiaohua** *xiao*-le   **Zhangsan** *(yi zheng tian)

       this-CL joke   laugh-ASP Zhangsan one whole day

       'This joke made Zhangsan laugh all day.'

    b. **Zhangsan** *xiao*-le   (***zhe-ge xiaohua**) (yi zheng tian)

       Zhangsan laugh-ASP this-CL   joke   one whole day

       'Zhangsan laughed about this joke (all day).'

(354) Psych-verbs—

    a. **Zhe-chang yiwai**   *nanguo*-le **Zhangsan** *(yi zheng tian)

       this-CL   accident be.sad-ASP Zhangsan one whole day

       'This accident made Zhangsan sad all day.'

    b. **Zhangsan** *nanguo*-le (***zhe-chang yiwai**) (yi zheng tian)

       Zhangsan be.sad-ASP this-CL   accident one whole day

       'Zhangsan was sad about this accident (all day).'

(355) Unaccusative verbs—

    a. *****Zhe-chang yiwai**   *si*-le   Zhangsan (san nian)

       this-CL   accident die-ASP Zhangsan three year

       Intended: (Lit.) 'This accident made Zhangsan dead for three years.'
       ≈ 'It has been three years since this accident killed Zhangsan.'

    b. **Zhangsan** *si*-le   (***zhe-chang yiwai**) (san nian)

       Zhangsan die-ASP this-CL   accident three year

       'It has been three years since Zhangsan died of this accident.'

Clearly, a contrast can be drawn between unergative and psych-verbs on the one hand, and unaccusative verbs on the other. The pattern found in (353a&354a) resembles the previous instances of Pattern III in that the presence of a DFP is obligatory, and that the external arguments show up post-verbally. The only difference is that the surface subjects, *this joke* in (353a) and *this accident*

in (354a), are not the internal arguments of the verbs because the verbs lack internal arguments, as shown by (353b&354b). Whether a DFP is present in the b. examples does not matter for their ungrammaticality. What is more about the pattern seen in (353&354) is that it has some kind of *causative* interpretation. Although they do not assume any thematic relations with the verbs, the surface subjects are understood to be the reason for the occurrence of the main verbal event with a necessary resultant time span/frequency indicated by the DFP.

Unaccusative verbs, however, do not share this pattern, as in (355a). If whether a causative interpretation is viable is key to the availability of this pattern, then it is quite surprising that unaccusative verbs do not have it since a causative interpretation should be equally possible in their case (i.e. *this accident* being the reason for *Zhangsan* being dead for three years in (355a)). This suggests that some syntactic/semantic constraint should also be taken into account to rule out the possibility of unaccusative verbs undergoing this pattern. The constraint we observed previously that the surface subject must be internally θ-marked *if* the verb demands an internal θ-role is plausibly related, because the surface subject in (355a) cannot be the internal argument of *si* ('die')[75]. What we need to do is show that the patterns we observed with transitive verbs (what we termed Pattern III) and with some intransitive verbs actually belong to the same pattern to make the constraint extendable to the intransitive case.

In addition to what has been noted, i.e. the obligatory presence of a DFP and a post-verbal external argument, the inverted alternation of transitive verbs also has in common with the intransitive verbs the causative meaning. In the intransitive case, this causative reading (accompanied by the DFP) is what alters the argument structure of intransitive verbs by adding in an extra argument as the cause. In the transitive case, there must also be some motivation for the inversion alternation. And if the intransitive and transitive cases belong to one general pattern of causativization, we should expect to find the same change in the causative meaning between the canonical and inverted transitive cases. The following examples show that we do:

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[75]Unergative and psych-verbs would not fall under this constraint since they do not have internal arguments. This, in a way, is saying that the *causer* reading is forced upon the internal argument and puts it as the surface subject only when where there is an internal argument. Otherwise, any plausible cause for the verbal event can be put as the surface subject, as in the case of unergative/psych-verbs.

(356) a. **Zhangsan** nian-le **zhe-ben shu** san tian/ci

Zhangsan read-ASP this-CL book three day/time

'Zhangsan read this book for three days/three times.'

b. **Zhe-ben shu** nian-le **Zhangsan** san tian/ci

this-CL book read-ASP Zhangsan three day/time

'This book took Zhangsan three days/tries to read.'

The canonical transitive sentence in (356a) merely reports an occurrence of a reading event, where *Zhangsan* is the AGENT, and *this book*, the THEME, and its time span/number of occurrences. In comparison, the inverted version in (356b) obtains a reading where in addition to all the known information given by (356a), *this book* is also *responsible* for *Zhangsan* spending three days/taking three tries reading. This meaning contrast is to the best extent captured by the contrast between the English translations of the respective sentences[76].

If Pattern III is indeed causativization, as the examples suggest, then it is somehow a very strict case of causativization in that it only allows the internal argument, if any, to be the cause:

(357) a. *__Zhe-chang kaoshi__ nian-le **Zhangsan** san tian/ci

this-CL exam read-ASP Zhangsan three day/time

'This exam made Zhangsan read (something) for three days/three times.'

b. *__Zhangsan__ nian-le **zhe-chang kaoshi** san tian/ci

Zhangsan read-ASP this-CL exam three day/time

*'Zhangsan read this exam for three days/thee times.'

Zhe-chang kaoshi ('this exam') cannot be the internal argument of *nian* ('read') and thus cannot work as the subject cause in this pattern, although it is perfectly plausible for *this exam* to be responsible for *Zhangsan*'s three-day/three-time reading. This strictness in causation carries over

---

[76]The analogy made here is not to be taken as a syntactic analogy between Pattern III and the English *take-time* sentences (i.e. that they should be syntactically analyzed on a par), but only to show the similar meaning contrast.

to the cases of unergative/psych-verbs as well. Although those verbs do not have an internal argument, their subject cause in this pattern has to be the subject matter that the eventualities are about. Take the unergative verb for example:

(358) Context—

Zhangsan told a bad joke to Lisi. Lisi didn't find the joke funny at all. But it made Lisi think of some other thing that was hilarious, and Lisi couldn't stop laughing about it. Mary saw Lisi laughing and asked what he's laughing about. Lisi told Mary, who later told Sue:

Mary: #Zhangsan-de xiaohua xiao-le   Lisi yi zheng tian

Zhangsan-GEN joke   laugh-ASP Lisi one whole day

'Zhangsan's joke made Lisi laugh all day.'

The sentence in (353a) is infelicitous in the above context where the laughing event was not about the joke per se but about something else that the joke led to. In other words, the subject cause, *Zhangsan's joke*, has to *itself* play some role in the laughing event, though not the internal θ-role. As a general preview, we will attempt a uniform causative analysis for Pattern III that rules in the verbs with the inversion alternation and rules out those without, given the causative interpretation observed across the different verb types. The causative strictness that appears to be the reason for internal θ-marking on the surface subject will receive more in-depth discussions in later sections.

Now let us summarize the word order under Pattern III and all of its associated properties. Pattern III has only a transitive paradigm and there is no non-referential NP availability. Therefore, the word order is very simple and straightforward:

(359)   (repeated from (43))
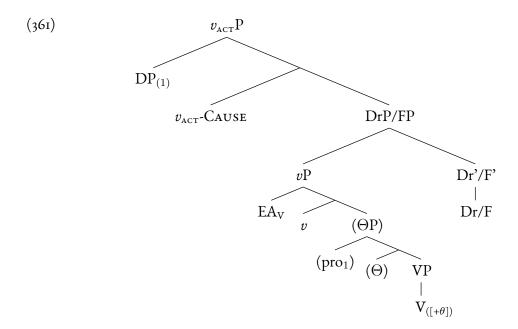
	Transitive
Pattern III	DP$_{(patient/theme)}$ > V > DP$_{(agent)}$ > DFP

And the following table lists the discussed properties of Pattern III that we will attempt to account for in our eventual proposal:

(360)
- ◆ The causative reading
- ◆ The obligatory presence of a DFP
- ◆ No applicative structure
- ◆ The post-verbal EA
- ◆ Mandatary internal θ-marking on the surface subject if applicable

5.2.2 Analysis overview

With all of the characteristics of Pattern III we have to take into consideration, we will resort

to an analysis that incorporates a null functional *causative* morpheme that derives the inversion

of the arguments. The causative morpheme, notated as CAUSE° in the analysis, to a great ex-

tent inherits from Pylkkänen's (2002; 2008) typological causative analysis across multiple lan-

guages, and yet still has its own quirks in terms of the syntactic structure and the associated prop-

erties/restrictions. The causative structure for Pattern III is given as follows:

(361)

```
                            v_ACT P
                          /        \
                     DP_(1)
                       /            \
                v_ACT-CAUSE          DrP/FP
                                   /        \
                                 vP          Dr'/F'
                               /    \           |
                            EA_V             Dr/F
                              v    (ΘP)
                                  /    \
                            (pro_1)  (Θ)   VP
                                            |
                                          V_([+θ])
```

We will briefly walk through this structure, and then try to motivate its parts individually in the

following sections, keeping in mind that the goal is to derive the word order, as well as capture

the peculiar properties of this pattern. Two things can be observed instantly about CAUSE° in

the above structure: (i) Cause° is bundled with a functional head v_{ACT}, and (ii) it takes two arguments, a DFP as the internal argument and a DP as the external argument. This analysis of Cause° adopts the main insight from Pylkkänen (2002, 2008) in hypothesizing that causativization in world's languages involves the introduction of a *causing eventuality* to another eventuality, turning the latter into a *caused* eventuality. Since Cause° only introduces a causing eventuality, the change of the verb's valency is not a necessary result of causativization, which receives much support from various languages[77]. However, in some languages, causativization does entail the change of the verb's valency, such as the unaccusative-causative alternation in English[78]. Therefore, some other element should be responsible for introducing the additional argument that is syntactically realized as the subject in the causative construction, as in English. Since the additional argument is always the *causer* in the construction, Pylkkänen (2002, 2008) then bundles Cause° with the Agent-introducing head, *v*, in English to make the external argument of the causative construction the Agent of the *causing* event. It will be shown later that Pattern III (and causative constructions in Mandarin in general) sides with English causatives in having Cause° bundled with an EA-introducing head. However, the EA-introducing head in Pattern III is not Agent-introducing, given the incompatibility between Pattern III and agent-oriented adverbs, discussions and examples of which will also be shown later. Hence, an *unvolitional* version of *v*, v_{ACT}, is posited to be bundled with Cause° in Pattern III, where the introduced argument by v_{ACT}, i.e. $DP_{(1)}$ in (361), is interpreted to be merely an unvolitional activator of the causing event.

As for the internal argument of Cause°, the DFP, it has a different syntactic status than what we have assumed before. Since Cause° is hypothesized to be relating two eventualities in terms of a causal relation, what the DFP denotes here is the caused eventuality. It is similar to a

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[77] According to Pylkkänen (2002, 2008), Japanese and Finnish have *unaccusative causatives* (i.e. intransitive verbs with causative morphology and a causative reading), examples of which can be found in §5.2.2.2.

[78] 'Valency' here refers to the number of arguments required by the verb. In the unaccusative-causative alternation of English, an external argument necessarily accompanies the causativization of the unaccusative verb, and is interpreted as the causer:

(i) a. The boat sank.   – Unaccusative   b. **John** sank the boat.   – Causative

However, in other languages, a causativized unaccusative might not have an external causer argument that is syntactically realized (see fn. 77).

small clause analysis where the duration/frequency term is the main predicate, and is predicated of some other eventuality by taking it as the external argument, i.e. the vP in this case. As will be elaborated on later, there are cases independent of Pattern III where the DFP does function as the main predicate and takes a clausal subject, supporting our hypothesis. We will then formally define the denotation of the caused DFP in our proposed structure. As a quick preview, the denotation of predicational DFPs amounts to the following, where the it takes a set of eventualities denoted by the vP and returns a *measured* set of eventualities in terms of temporal duration/frequency: $[\![Dr]\!] = \lambda P_{\langle s, t \rangle} \lambda e. \, P(e) \wedge \tau(e) = Dr$; $[\![F]\!] = \lambda P_{\langle s, t \rangle} \lambda e. \, P(e) \wedge Card(e) = F$. Our hypothesis about the DFP being the internal argument of CAUSE° is then analogous to saying that there is some eventuality being caused which lasted for a certain period/happened a number of times, and the eventuality is what the vP denotes. This move of making the DFP a caused eventuality in a way connects Pattern III to cases of resultatives, where a resultant state is caused by some action-denoting eventuality. In other words, we are subcategorizing cases of a general causativization process in Mandarin: In addition to causativizing eventualities with a stative nature as resultatives, Mandarin can also causativize the time frame of an eventuality, i.e. Pattern III. And if Pattern III and resultatives are under one general causativization scheme, then it is not surprising that we see cases of resultatives like the following, where the inversion of arguments is also observed[79]:

---

[79]Notice that the inversion in the resultative case is ungrammatical if the caused resultant state is left out, which is a necessary outcome if the inversion is indicative of causativiation, as our theory claims. One might argue that the ungrammaticality of (362) could be due to the morpheme *de* necessarily introducing a resultative phrase, but not to the inversion requiring a caused eventuality of some kind. While it might be true that a post-verbal resultative phrase always comes with *de*, it does not rule out the possibility that the inversion still requires some kind of caused result predication, be it some state or some time duration/frequency. That is, the ungrammaticality of (362) could be twofold: The lack of a result phrase induces ungrammaticality from the requirements of both *de* and the inversion. This thought is partially supported by the fact that the other *de*-involving construction, i.e. that with post-verbal manner adverbials, does not have the inversion:

(i) *Zhe-ben shu   nian-de Zhangsan **hen kuai**
   this-CL   book read-DE Zhangsan very fast
   (Lit) 'This book caused Zhangsan to read it very fast.'

In this case, the requirement of *de* (i.e. that it has to introduce either a result phrase or an adverbial) is satisfied by the presence of the adverbial, but it is difficult to construe the adverbial as a *caused* manner predicated of the verbal event; hence, the ungrammaticality.

(362) Zhe-ben shu   nian-de Zhangsan *(hen lei)

      this-CL   book read-DE Zhangsan very   tired

      (Lit.) 'This book caused Zhangsan to be tired from reading it.'
      ≈ 'This book made Zhangsan very tired from reading it.'

Given our proposal that the DFP is an internal argument of Cause°, it naturally follows that the DFP is a requirement in Pattern III. And going into the DFP small clause, there are some Pattern-III-specific properties implemented in its structure. The external argument inside the DFP can only be at most as big as a *minimal vP*. A *minimal vP* is defined as consisting of only the main components of *v*, a DP specifier and a VP complement (or a ΘP complement if the main V has an internal argument). This minimality hypothesis forbids the presence of an applicative structure, and hence eliminates the co-occurrence possibility of the post-verbal Agent and the applied argument in Pattern III. Also, there is *obligatory* null anaphora on the internal argument inside the ΘP (if there is a ΘP), indicated by the pro_1 controlled by the surface subject DP, i.e. the external argument of the v_{ACT}-bundling Cause°. This control relationship captures the required internal θ-marking on the surface subject DP, although the reason for its (mandatory) occurrence is not obvious at this moment. We will however proceed with it since it gives us a straightforward handle on deriving the correct interpretation of the surface subject under Pattern III when the verb is transitive[80].

    With the proposed structure and the null anaphora implementation, the inversion effect in Pattern III can be taken to have come from the cyclic movement of V from inside the *v*P to v_{ACT}-Cause°[81], details and discussions of which will be provided when we discuss the nature of v_{ACT}-Cause° in §5.2.2.3.

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[80]This, in a way, is saying that there is something special about the internal argument of the main verb that it has to be interpreted as the causer in this construction. More interestingly, it is like a mirror image of resultatives, where the object of the resultatives must be part of the *caused* (i.e. the resultant predicate must be predicated of the direct object, also known as the Direct Object Restriction (cf. Levin and Rappaport-Hovav, 1995). Although the current dissertation is not able to give an adequate account for this special status of the internal argument that follows from some general syntactic principles, it is definitely worthy as future agenda to explore how the control relationship can be established on more general grounds that might also reflect its mirror-image relationship with resultatives.

[81]This derivation would entail that the lower EA_V stays in-situ and subsequently raise the issue of Case-licensing the EA_V if it does not move to Spec.IP. The issue can be taken care of by the assumption that the EA_V receives Case from v_{ACT}.

5.2.2.1 Motivation for a causative analysis

As a further argument for our proposed causative analysis, we will try to motivate the analysis by comparing Pattern III to the causative construction in Mandarin and show their similarities and differences. We have mentioned earlier that the inverted word order involves some kind of causative interpretation. This claim mainly stems from the following pair of examples:

(363) a. Zhe-jian shi **shi/ling/rang** Zhangsan *nanguo*-le yi zheng tian
this-CL issue make/make/make Zhangsan be.sad-ASP one whole day
'This issue made Zhangsan sad all day.'

b. Zhe-jian shi ***nanguo-le*** Zhangsan *(yi zheng tian)
this-CL issue be.sad-ASP Zhangsan one whole day
'This issue made Zhangsan sad all day.'

The sentence in (363a) is a causative construction involving a causative verb *shi/ling/rang* whereas that in (363b) is an instance of Pattern III. The two sentences in (363) have identical interpretations. Given this interpretation identity, it is not arbitrary to hypothesize a parallel causative structure for (363a&b) that incorporates a functional causative morpheme, which can be overtly realized as a causative verb, as in (363a), or attract the lower V to it if covert, resulting in a case like (363b). However, this syntactic isomorphism probably would not work due to several differences between (363a&b). First, the DFP is only obligatory in (363b):

(364) Zhe-jian shi **shi/ling/rang** Zhangsan hen nanguo
this-CL issue make/make/make Zhangsan very be.sad
'This issue made Zhangsan very sad.'

If both causative sentences in (363) resulted from the same underlying structure, it would be hard to explain why the DFP is only obligatory in one case but not in the other. Second, the overt causative verb in (363a) takes as its complement a full clause, but there cannot be an embedded clause in (363b):

(365) a. Zhe-jian shi **shi/ling/rang**   [_{CP} Zhangsan *ma-le*   Lisi san   xiaoshi/ci]

   this-CL   issue make/make/make   Zhangsan scold-ASP Lisi three hour/time

   'This issue made Zhangsan scold Lisi for three hours/three times.'

   b. *Zhe-jian shi   *ma-le*_i   [_{CP} Zhangsan t_i Lisi san   xiaoshi/ci]

   this-CL   issue scold-ASP   Zhangsan   Lisi three hour/time

   'This issue made Zhangsan scold Lisi for three hours/three times.'

If the hypothesized covert causative head also embedded a full clause, (365b) would be a result of the head attracting the aspect-marked lower V across a clause boundary. I know of no accounts that allow head movement across a finite clause boundary. Moreover, it leads to a wrong word order where there are more than one post-verbal argument. As we already know, Pattern III forbids the post-verbal external argument to co-occur with any other arguments. Making either of the post-verbal arguments an implicit argument (i.e. a topic-dropped argument) leads to wrong interpretations for (365b):

(366) a. *Zhe-jian shi   *ma-le*_i   [_{CP} Zhangsan t_i **pro** san   xiaoshi/ci]

   this-CL   issue scold-ASP   Zhangsan   three hour/time

   'This issue made Zhangsan scold (someone) for three hours/three times.'

   b. *Zhe-jian shi   *ma-le*_i   [_{CP} **pro** t_i Lisi san   xiaoshi/ci]

   this-CL   issue scold-ASP   Lisi three hour/time
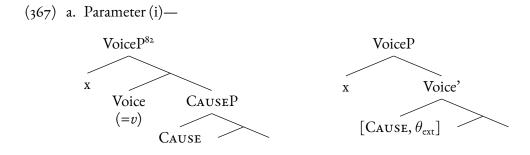
   'This issue made someone scold Lisi for three hours/three times.'

Although the sentences in (366) on the surface look identical to Pattern III, their interpretations are in fact not achievable. This observation is related to the third difference between Pattern III and the causative construction in that the matrix subject in (365a) can simply be interpreted as the cause of what is denoted by the embedded clause and presumes no thematic relations with the embedded verb. Whereas, the surface subject under Pattern III is necessarily the internal argument if the main verb is transitive (hence, (366a) is not a possible reading), and the post-verbal
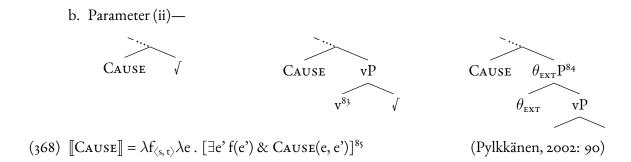
argument is necessarily the external argument (hence, (366b) is also not a possible reading.). All of these differences suggest separate analyses for Pattern III and the causative construction despite the causativity they share. In other words, the causativity in Pattern III enables a causative structure and it should be a causative structure of its own kind, given all these recorded peculiarities. Since we are dealing with some kind of causative construction here, we will look at Pylkkänen's (2002, 2008) typological causative analysis as a starting point and work to the eventual causative structure to assign to Pattern III, as shown in the analysis overview.

5.2.2.2 CAUSE^0 as a causing-event-introducer

Having investigated multiple languages, Pylkkänen (2002, 2008) proposes a parametric analysis that captures the cross-linguistic variations in how arguments are realized in causative constructions. In her analysis, there is a null causative morpheme CAUSE°, which does not alter the argument structure by introducing an external θ-role itself, but merely introduces an eventuality that is connected with the main eventuality through a causal relation. And two parameters are responsible for the cross-linguistic variations in argument realizations in causative constructions: (i) Whether CAUSE° is bundled with the AGENT-introducing v, (367a), and (ii) whether CAUSE° selects a verb root, a VP, or a vP as its complement, (367b):

(367) a. Parameter (i)—

VoiceP[82]   x   Voice (=v)   CAUSEP   CAUSE

VoiceP   x   Voice'   [CAUSE, θ_{ext}]

---

[82] In Pylkkänen (2002, 2008), Voice° is the external-argument-introducing head, which is equal to v in our system.

b. Parameter (ii)—

```
       ` ...                    ` ...                        ` ...
      /    \                  /     \                      /      \
  CAUSE     √             CAUSE      vP               CAUSE    θ_EXT P[84]
                                    /  \                       /    \
                                 v[83]  √                  θ_EXT    vP
                                                                    / \
```

(368) $[\![\text{CAUSE}]\!] = \lambda f_{\langle s, t \rangle} \lambda e \,.\, [\exists e' \, f(e') \,\&\, \text{CAUSE}(e, e')]$[85]   (Pylkkänen, 2002: 90)

The functional morpheme CAUSE° takes a set of eventualities denoted by the main verb, existentially closes it, and returns a set of eventualities that is the *cause* of the existentially closed main eventuality. In other words, what CAUSE° takes in and passes up remains a set of eventualities with no unsaturated argument positions. It is still the job of *v* to introduce the external argument in a causative construction; what CAUSE° does is only contribute the causative interpretation[86].

---

[83]Not to be confused with the external-argument-introducing *v*, 'v' here is a category-defining head.

[84]θ_{EXT}P is a general term for phrases that contain external arguments of any kind, which would be analogous to the *v*P in our framework.

[85]In the original denotation of CAUSE° given by Pylkkänen (2002), the existential closure of e' (i.e. ∃e') was enclosed in parentheses. In order to prevent the misinterpretation of the existence of the caused event being optional in the meaning of CAUSE°, the parentheses are removed here.

[86]In cases where the external argument of a causative construction cannot be an AGENT, as in the following Japanese example from Pylkkänen (2002: 84, Ex. (164) & (165)), Pylkkänen takes the Voice head to be denoting an identity function that equates the *causing* event to the event denoted by the subject:

(i) Sensoo-ga Taro-o   sin-ase-ta
    war-NOM Taro-ACC die-CAUSE-PST
    'The war caused Taro to die.'

```
         VoiceP   λe. (∃e')[Dying(e') & Theme(e', Taro) & CAUSE(e, e') & e = the war]
        /     \
   the war    Voice'   λxλe . (∃e')[Dying(e') & Theme(e', Taro) & CAUSE(e, e') & e = x]
             /     \
          Voice    CAUSE-P   λe . (∃e')[Dying(e') & Theme(e', Taro) & CAUSE(e, e')]
       λxλe . e = x
                  /        \
              CAUSE        λe . Dying(e) & Theme(e, Taro)
      λf_⟨s,t⟩λe . (∃e')[f(e') & CAUSE(e, e')]
                          /    \
                        die    Taro
```

Therefore, the claim that CAUSE° is always bundled with *v* in some languages, like English, encompasses cases with non-agent-like subjects, as the Japanese example above. She hypothesizes that this is a possible function of the Voice head due to the non-specific nature of the *causing* event that CAUSE° introduces: CAUSE° has no description about what kind of *causing* event it is. And this could be later filled in by the event-like subject, as in *The earthquake collapsed many buildings*. However, in our case of Pattern III, this function of event identity is insufficient since the subject can be neither agent-like nor event-like, as in (371). The subject is not agent-like because agent-oriented adverbs are not permissible in Pattern III in general, and the subject in (371) is clearly not an event, but an individual. Therefore, we need something slightly different from *v* to introduce the subject in Pattern III. It should also cover subjects that are event-like, as what (354) seems to suggest.

As for the typological parameters, the setting of the first parameter in a given language is indicated by the presence/absence of unaccusative causatives[87]: A language with a bundled Cause-*v* does not allow unaccusative causatives since an external Agent argument will always be introduced in the causative structure. According to Pylkkänen (2002, 2008), English is one such case. Demonstrating with a toy example, we see that the causative-unaccusative alternation in English depends on the presence of the bundled Cause-*v*:

(369) Mary broke glass.   (Pylkkänen, 2002: 92)

> **VoiceP** λe.[Agent(e, M) & (∃e') Breaking(e') & Th(e', gl) & Cause(e, e')]
>
> **Mary** **STEP2** **(Voice(CAUSE break glass)):**
> λxλe.[Agent(e, x) & (∃e') Breaking(e') & Th(e', gl) & Cause(e, e')]
>
> **STEP1** **(CAUSE(break glass)):**
> λe.[(∃e') Breaking(e') & Th(e', glass) & Cause(e, e')]
>
> **[CAUSE, Voice]** λe.[Breaking(e) & Th(e, glass)]
>
> break glass

In this causative structure, Cause° and *v* form a syntactic unit, but semantics-wise, they compose in a two-step fashion, as hypothesized by Pylkkänen (2002): After Cause° composes with the VP

---

[87]An example for an unaccusative causative would be the *desiderative constructions* in Finnish, a language which Pylkkänen concludes to have Cause° as a separate functional head from *v* (Pylkkänen, 2002: 86, Ex.(168)):

(i) a. Maija-a   laula-tta-a.   b. Maija-a   naura-tta-a.
   Maija-PART sing-CAUSE-3SG   Maija-PART laugh-CAUSE-3SG
   'Maija feels like singing.'   'Maija feels like laughing.'

Though not obvious, this particular construction has a causative meaning and it does have causative morphology. Yet, there is only one argument of the main verb present. Pylkkänen (2002) provides arguments for the causative meaning and several tests to show that the surface subject in this construction is actually a derived subject, i.e. it is not an external argument of the causative event. If Pylkkänen's conclusion is on the right track, it strongly suggests that we should find in Finnish a causative structure with no external argument as follows, which is only possible if Cause° is a separate category, as opposed to a Cause-*v*-bundling structure that always has an external argument of some kind, as in English:

(ii) Unaccusative causative   Cause-P

                                  Cause

[break glass], *v* composes via Event Identification and opens up a slot for the external argument *Mary*. *Mary* is thus interpreted as the AGENT of the *causing* event that CAUSE° introduces, and since *Mary* is the AGENT, we can modify the sentence with agent-oriented adverbs:

(370) Mary broke the glass deliberately. ⤳ The *causing* is deliberate.

Mandarin also disallows unaccusative causatives, suggesting that if there is a CAUSE° in its causative constructions, it is probably bundled with some EA-introducing head. And as we have seen, Pattern III, a causative construction under our hypothesis, is always transitive. However, the EA-introducing head in Pattern III cannot be *v* because the subject in this pattern cannot be interpreted as the **AGENT** of the *causing* event, despite its being a *causer* of some kind:

(371) *__Lisi guyi__   *da*-le   __Zhangsan__ san   xiaoshi/ci[88]

Lisi   deliberately hit-ASP Zhangsan three hour/time

*'Lisi deliberately took Zhangsan three hours/tries to hit.'

If CAUSE° was bundled with 'v_{AG}' under Pattern III, as in the causative cases in English, we would expect Pattern III to behave the same as the English causatives in terms of agent-oriented adverbial modification. However, the English example in (370) presents a contrast with (371). Agent-oriented adverbial modification is viable with English verbs that are hypothesized to have undergone causativization. And causativization, Pylkkänen style, is a consequence of CAUSE-v_{AG} bundling. Thus, (370) is not surprising. The ungrammaticality of (371) then begs the question: What is CAUSE° in Pattern III bundled with that introduces the external argument if we are to retain the hypothesis that CAUSE° only introduces a causing eventuality given the cross-linguistic considerations? Before we answer this question, we will look at a different set of verbs in Mandarin that resembles English causative verbs in terms of the unaccusative-causative alternation, which will help us answer the question about the EA-introducing head in Pattern III.

---

[88]This sentence is ambiguous between Pattern III and the canonical transitive pattern, where *Lisi* is the AGENT, and *Zhangsan*, the PATIENT, of *da* ('hit'). And the agent-oriented adverb is grammatical in the latter case.

As in English, there is a limited set of Mandarin verbs that shows the unaccusative-causative alternation. *Ronghua* ('melt') is one example[89]:

(372) a. UACCUSATIVE—

    Bing ronghua-le

    ice   melt-ASP

    'The ice melted.'

b. CAUSATIVE—

    Zhangsan ronghua-le bing

    Zhangsan melt-ASP   ice

    'Zhangsan melted the ice.'

And in terms of agent-oriented adverbial modification, they do behave the same as their English counterparts:

(373) Zhangsan **guyi**   ronghua-le bing

      Zhangsan deliberately melt-ASP   ice

      'Zhangsan deliberately melted the ice.'

The above examples tell us that there are indeed causativized verbs that have external arguments as AGENT. And their causative reading, unlike Pattern III, does not depend on the presence of

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[89]The set seems to be very limited. Only a very small number of verbs show this alternation without any overt morphological change on their verbal form. Some other examples are as follows:

(i) a. Men *kai/guan*-le
    door open/close-ASP
    'The door opened/closed.'

  b. Zhangsan *kai/guan*-le   men
    Zhangsan open/close-ASP door
    'Zhangsan opened/closed the door.'

Many verbs in Mandarin, whose English counterparts have no overt morphological change in alternating between an unaccusative and a causative, can only undergo the similar causativization process via turning into a resultative compound. *Po* ('break') is one example:

(ii) a. Huaping *po*-le
    vase   break-ASP
    'The vase broke.'

  b. Zhangsan ***(nong)**-po*-le huaping
    Zhangsan do-break-ASP vase
    'Zhangsan broke the vase.'

As shown in (iib), *po* cannot directly causativize without the help of an action verb like *nong* ('do'). *Nong* in a way is spelling out the causing event with *Zhangsan* as the agent, through which the state denoted by the verb *po* came about (*Nong* itself has only a generic meaning and does not specify how the causing took place; however, it can be replaced with some other verbs that denote specific actions to form a resultative compound with *po*, such as *da* ('hit') in *da-po*, or *ti* ('kick') in *ti-po*.). Resultative compounding is a very productive process in Mandarin. Therefore, it is not arbitrary to hypothesize that Mandarin prefers to signal causativity by overtly indicating a causing event on an otherwise unaccusative verb. In fact, causativization cases as those in (i) and (ii), *as well as* Pattern III, will be speculated to be under a more general causativization process Mandarin employs with some regulating factors that lead to these ramifications. More detailed discussions will be provided at the end of this chapter.
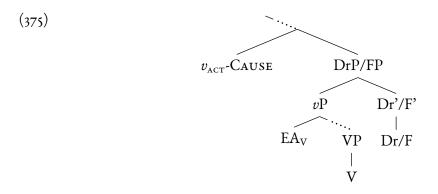
DFPs. These behavioral differences lead us to hypothesize that there are (at least) two different types of causativization in Mandarin, one analogous to the English case of v_{AG}-bundling Cause°, and the other that manifests Pattern III. We have argued that causative constructions in Mandarin always introduce an external argument of the causing event and sided with Pylkkänen in Cause° being a bundling case so as to maintain the bi-eventive analysis for causativization. Therefore, we need an element that introduces an *unvolitional* EA for Pattern III, bundled with Cause°:

(374)

$$v_{ACT}P$$

EA v_{ACT}-Cause[90]   .....

A counterpart of v_{AG}, v_{ACT}, is posited for the introduction of EA in Pattern III. It denotes the θ-role, Actor, which is taken to be Agent *minus* volition, and can be thought of as the initiator of the causing event introduced by Cause°.

So far, we have taken care of half of the overall structure for Pattern III. We now turn to the other half of the causative analysis that involves the internal argument of Cause°. Cause° in Pattern III is hypothesized to take the DFP as its internal argument, which denotes a caused measured/counted eventuality predicated of some other eventuality:

(375)

.....

v_{ACT}-Cause   DrP/FP

vP   Dr'/F'

EA$_V$ VP   Dr/F

V

The ground-breaking part of the above analysis is the DFP being the caused eventuality, which, on the surface, does not seem to fall into any of the typological options Pylkkänen (2002, 2008)

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[90]In terms of the semantic composition of this composite head, it will also follow the sequential fashion à la Pylkkänen (2002, 2008), where Cause° composes with its internal argument first before composing with v_{ACT} via Event Identification. We will have a clearer process of semantic composition in the next section once we have formally defined the denotation of Cause° and its internal argument.

hypothesizes for the internal argument of Cause°, (367b). In order to determine what types of verbal constituent Cause° takes as complement, Pylkkänen resorts to the scope of adverbial modification in the causative constructions of various languages. We will briefly review her argument for determining the size of Cause°'s verbal complement in different languages, and show that the same argument cannot carry over to Pattern III.

Cause° in English is claimed by Pylkkänen to be root-selecting, given the following pair, where the VP-level adverb *grumpily* cannot scope under the causing event to merely modify the main verbal event:

(376) a. Bill awoke grumpily.   (Pylkkänen, 2002: 92, Ex. (181))

     b. John awoke Bill grumpily.   (false if John wasn't grumpy)
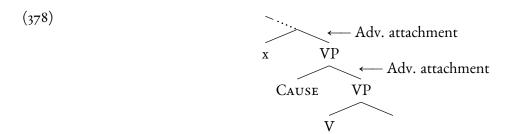
The above result naturally follows if what Cause° embeds is simply a root since the adverb is VP-modifying and can only attach after the root has been rendered into a verb, which would be by the Cause-bundling *v* in English:

(377)   *v*P
$$\overset{\displaystyle v\text{P}}{\underset{v_{\text{CAUSE}} \qquad \sqrt{\text{awake}}}{\diagup \diagdown}}$$

Therefore, *grumpily* can only come in at the level of *v*P in this case; as a result, its modification will always include the causing event.

And to tell apart the verbal constituent being of bigger sizes, i.e. a VP or a *v*P (the latter being any type of verbal phrases with external arguments under Pylkkänen's assumption), is to see whether there is scope ambiguity for VP-level adverbs and agent-oriented adverbs in the respective cases. If Cause° takes a VP complement, then there should be attachment sites both below and above Cause° for VP-level adverbs:

(378)

```
          ` ·..
        ╱      ╲  ←── Adv. attachment
      x        VP
            ╱      ╲   ←── Adv. attachment
       Cause       VP
                ╱      ╲
               V
```

This allows for a scoping possibility on only the lower verbal predicate in the causative construction, and we do find cases of those, Finnish being one of them:

(379) Opettaja laula-tti   kuoro-a   kauniisti   (Pylkkänen, 2002: 106, Ex. (213a))

teacher   sing-cause choir-part beautifully

'The teacher made the choir sing beautifully.'
(teacher's action does not need to be beautiful)

On the other hand, if Cause° takes a *v*P complement, then likewise, there should be attachment sites below and above Cause° for agent-oriented adverbs[91]:

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[91]When what Cause° takes is merely a VP, agent-oriented adverbs would not be able to scope under Cause° because there would be *no* agent under Cause° for the adverbs to be oriented to. This prediction is borne out in various languages, classifying Cause° as VP-selecting in those languages:

(i) Bemba (Givón, 1976: 329, Ex. (18))

Naa-mu-fuund-ishya   uku-laanda iciBemba ku-mufulo.
I-pst-him-learn-cause to-speak   Bemba   on-purpose
(i) 'I, on purpose, made him learn to speak Bemba.'
(ii) *'I made him on purpose learn to speak Bemba.'

(ii) Finnish (Pylkkänen (2002: 106, Ex. (213b))
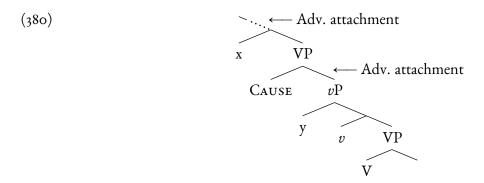
Ulla   rakenn-utti Mati-lla   uude-n   toimistopöydä-n innokkaasti.
Ulla.nom build-cause Matti-ade new-acc office.table-acc   enthusiastically
(i) 'Ulla, enthusiastically, had Matti build her a new office desk.'
(ii) *'Ulla had Matti, enthusiastically, build her a new office desk.'

(380)

And in turn, a scoping possibility on only the lower agentive event is predicted for agent-oriented adverbs, and supported by the following cases from Venda and Luganda:

(381) a. Venda   (Pylkkänen, 2002: 108, Ex. (221))

      Muuhambadzi o-reng-is-a   Katonga moḓoro nga   dzangalelo

      salesman   3sg.pst-buy-cause-fv Katonga car   with enthusiasm

      'The salesman made Katonga BUY THE CAR EAGERLY.'

   b. Luganda   (Pylkkänen, 2002: 108, Ex. (222))

      Omusomesa ya-wandi-s-a   Katonga ne   obu nyikivu

      teacher   3sg.pst-wrtie-cause-fv Katonga with the dedication

      'The teacher made Katonga WRITE WITH DEDICATION.'

According to Pylkkänen (2002: 108), "*Both sentences are judged true even in situations where the higher scope reading would be false (i.e. the highest agent is uneager, (221), or undedicated, (222)).*" In other words, the ability for VP-level/agent-oriented adverbs to scope under the causing event corresponds to the size of Cause°'s complement: A VP complement allows for VP-level adverbs to scope under, and a *v*P complement allows for agent-oriented adverbs to scope under.

      Going back to our case of Pattern III, we can also try to determine the size of Cause°'s complement by testing the modification scope of different types of adverbs. However, once we do that, we only run into problems given the restriction in Mandarin that the majority of adverbial-like constituents *must* occur preverbally in general[92]:

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[92]Despite the identical pronunciation, the preverbal adverbial morpheme *de* has a different written form from

(382) Zhangsan **(hen-kuai-de)** jiao-xing-le   (***hen-kuai-de**) Lisi (***hen-kuai-de**)

Zhangsan very-fast-ADV   call-awake-ASP very-fast-ADV   Lisi very-fast-ADV

(i) 'Zhangsan quickly awoke Lisi.'
(ii) *'Zhangsan awoke Lisi quickly. (But Zhangsan did the awaking slowly)'

Since adverbs are required to occur preverbally, which is always higher than where CAUSE° is in the clausal spine (assuming V-movement to CAUSE°), their modification scope will necessarily encompass the causing event, leaving no scope ambiguity. What we have in (382) is a case of resultative compounding that, as previously mentioned in fn. 89, is a close counterpart to English causative verbs like *awake*[93]. And the adverbial modification differences can be seen to have come from the adjunction differences between the two languages. The requirement of preverbal adverbial adjunction in Mandarin eliminates the possibility of *right*-adjoining lower than CAUSE° to modify only the main verbal event. To make matters worse, Pattern III does not even allow preverbal adverbials (We have already seen that it does not allow (preverbal) agent-oriented adverbials)[94]:

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that involved in the resultative and post-verbal manner adverbial constructions. Moreover, the *de* here attaches to the adverbs themselves rather than to verbs, unlike the other. Given these differences, the preverbal adverbial *de* is considered a different element than the post-verbal adverbial/resultative *de*.

[93] As expected, the unaccusative alternation of (382) is as follows:

(i) Lisi *xing*-le
  Lisi awake-ASP
  'Lisi awoke.'

[94] At this moment, it is not at all clear why Pattern III should prevent the occurrence of preverbal VP-level adverbials that modify the causing event. The structure we propose for Pattern III is making a correlation between the unvolitional EA (i.e. the surface subject) and the obligatory presence of the DFP: Only the v_{ACT}-bundling CAUSE° takes the DFP complement as the caused eventuality. And now the correlation seems to involve one more dimension: v_{ACT} for some reason also forbids the modification of VP-level adverbs. Pattern III, however, allows sentential adverbial modification, as more associated examples will be provided later. As speculative as it is, this modification availability seems to suggest a structural difference between v_{ACT} and the regular EA-introducing v, e.g. v_{ACT} may be syntactically higher than v so that it is out of reach for VP-level adverbs but yet within the scope of sentential ones. More future research should be done to reveal the cartographical nature of the domain where external arguments of various kinds are introduced in Mandarin. It would also be a program to confirm whether our proposal of there existing a v_{ACT} is on the right track.

(383) a. Zhe-ben shu   **(*hen-kuai-de)** nian-le   **(*hen-kuai-de)** Lisi **(*hen-kuai-de)**

   this-CL   book very-fast-ADV   read-ASP very-fast-ADV   Lisi very-fast-ADV

   san   xiaoshi **(*hen-kuai-de)**[95]

   three hour   very-fast-ADV

   'This book (quickly) caused Lisi to read it for three hours.'

   b. Zhe-ge xiaohua **(*hen-kuai-de)** xiao-le   **(*hen-kuai-de)** Lisi **(*hen-kuai-de)**

   this-CL joke   very-fast-ADV   laugh-ASP very-fast-ADV   Lisi very-fast-ADV

   san   fenzhong **(*hen-kuai-de)**

   three minute   very-fast-ADV

   'This joke (quickly) caused Lisi to laugh for three minutes.'

   c. Zhe-chang yiwai   **(*hen-kuai-de)** nanguo-ASP **(*hen-kuai-de)** Lisi **(*hen-kuai-de)**

   this-CL   accident very-fast-ADV   be.sad-ASP   very-fast-ADV   Lisi very-fast-ADV

   yi   zheng tian **(*hen-kuai-de)**

   one whole day very-fast-ADV

   'This accident (quickly) caused Lisi to be sad all day.'

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[95]Given the proposed structure for Pattern III, one might wonder about the possibility of adjoining manner adverbials in the lower vP that is the argument of the duration/frequency predicate. If adverbial adjunction to the lower vP were available, we would predict the possibility of post-verbal manner adverbs in cases like (383a&b), after the lower main verb has undergone movement to CAUSE°. I think there are two possible routes for explaining the unavailability of such adjunction. The first is that if we consider the fact that manner adverbials in Mandarin generally precede the aspectually marked main verb, it suggests that they adjoin to the aspectual projection that is bigger than the vP. As will be shown in the immediately following paragraphs, the verbal argument of the duration/frequency predicate cannot be more than a vP (hence the ban of aspectual marking on the verb, cf. (386)). It follows that manner adverbials cannot adjoin to the lower vP in our proposed Pattern III structure.

Another route is contingent upon the lower vP being a *minimal* vP. Suppose we do not assume that manner adverbials can only adjoin to aspectual projections in Mandarin and have vP be a possible adjunction site. Then the lack of manner adverbial adjunction on the lower vP in Pattern III might have to do with the minimality constraint imposed upon the vP. Although the cause of this minimality constraint is unclear (as will be shown in §5.2.2.3, DFPs in their regular predicational uses are not subject to this constraint), this constraint eliminates the occurrence of adverbs, since it restricts the components to those and only those that sufficiently make up a vP. Interestingly, the forbiddance of manner adverbial adjunction to the lower verb seems to find its counterpart in the English *take-time* sentences as well, sentences that we think reflect most closely the causative interpretations of Pattern III in Mandarin:
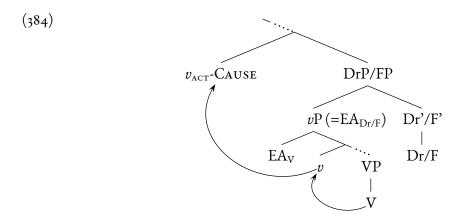
(i) This book took John three days to read **(*quickly)**.

This observation suggests CAUSE° (the contributor of the causative interpretation) being responsible for the minimality of the vP. The exact nature of this relationship, unfortunately, remains mysterious at this point.

Thanks to Kyle Johnson for pointing out this parallel case of adverbial modification in English to me.

However, given the fact that there is indeed a post-verbal EA in Pattern III (i.e. one of the properties that make this pattern unique), what CAUSE° takes should undoubtedly be some EA-containing verbal complement. Also considering the fact that DFPs are required in this pattern, it follows that DFPs should be part of what is caused. If we try to maintain the fundamental assumption of CAUSE° that it is only a relation between two eventualities so that we can align Mandarin causative constructions with their cross-linguistic counterparts, one way to do this would be merging the DFP and the lower eventuality into one eventuality by making the DFP be the main lower predicate that denotes the caused eventuality and take as its external argument the eventuality denoted by the lower V. In this sense, CAUSE° still takes an EA-containing verbal complement and falls under one of Pylkkänen's CAUSE°-complement categories; only that the head of the complement now is the duration/frequency term and the EA (i.e. EA$_{Dr/F}$ in (384)) is another verbal constituent instead of a nominal. The main V inside the vP (=EA$_{Dr/F}$) is hypothesized to head-move to CAUSE°, ending in the inverted word order:

(384)

This hypothesis about the complement of CAUSE° being a small clause headed by the duration/frequency term can be supported by independent examples where the DFP indeed is the main predicate taking a clausal subject:

(385) a. TRANSITIVE CLAUSAL SUBJECT—

Lisi *nian* zhe-ben shu   yijing   **san   tian/ci**   le

Lisi read this-CL   book already three day/time PART

'It has already been three days since Lisi started reading this book.'/
'It has already been three times that Lisi read this book.'

b. UNERGARIVE/PSYCH CLAUSAL SUBJECT—

Lisi *daxiao/menmenbule*   yijing   **san   xiaoshi/ci** le

Lisi laugh.hard/be.depressed already three hour/time PART

'It has already been three hours since Lisi started laughing hard/became depressed.'/
'It has already been three times that Lisi laughed hard/became depressed.'

c. UNACCUSATIVE CLAUSAL SUBJECT—

Lisi *siwang* yijing   **san   nian** le

Lisi die   already three year PART

'It has already been three years since Lisi died.'

There are two indications that the DFPs in the above examples are the matrix predicates. First, they are modified by the adverb *yijing* ('already'), which according to Huang et al. (2009), modifies the matrix predicate. And second, the verbs inside the clausal subjects cannot be aspectually marked, suggesting their non-matrix status:

(386) a. TRANSITIVE—

Lisi *nian*(-***le**) zhe-ben shu   yijing   san   tian/ci   le

Lisi read-ASP   this-CL   book already three day/time PART

'It has already been three days since Lisi started reading this book.'/
'It has already been three times that Lisi read this book.'

b. UNERGATIVE/PSYCH—

Lisi *daxiao/menmenbule*(-*le) yijing san xiaoshi/ci le

Lisi laugh.hard/be.depressed-ASP already three hour/time PART

'It has already been three hours since Lisi started laughing hard/became depressed.'/
'It has already been three times that Lisi laughed hard/became depressed.'

c. UNACCUSATIVE—

Lisi *siwang*(-*le) yijing san nian le

Lisi die-ASP already three year PART

'It has already been three years since Lisi died.'

The unavailability of aspectual marking suggests that instead of clausal subjects, what we have is more like verb-phrasal subjects that can be as big as a *v*P. This is a desirable benefit from drawing a connection between Pattern III and sentences with DFPs being the matrix predicates since the inverted word order naturally follows if the post-verbal EA in Pattern III can be generated under CAUSE° as part of CAUSE°'s DFP-complement, and the lower verb inside of the DFP-complement's argument eventually moves up. This connection also draws a parallelism between Pattern III and causative constructions involving small clauses as in English in (387), and better captures the intuition about Pattern III that the DFP is the 'focus' of what results, with additional information about what eventuality the time frame/frequency is predicated of:

(387) John made [$_{v}$P Dave [$_{v'}$ kiss$_i$ [$_{VP}$ t$_i$ Bill]]].

To segregate them from DFP adjuncts, we will label duration/frequency terms in Pattern III as a 'Pred(icate)' that projects a 'PredP', and their denotation is defined as follows, where they take as argument a set of eventualities and return a *timed/counted* set of eventualities[96]:

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[96] The denotation of DFPs here is in fact identical to when the DFPs were treated as adjuncts. In other words, the only difference about DFPs here is their syntactic status reflected by the structure they project.

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(388)

v_{ACT}-Cause   PredP $\lambda e \, . \, V(e) \wedge \dots \wedge \tau(e) = \textit{3-days}/\text{Card}(e) = \textit{3}$

$\lambda e \, . \, V(e) \wedge \dots$ vP   Pred'

    ... V...   Pred $\lambda P_{\langle s, t\rangle}\lambda e \, . \, P(e) \wedge \tau(e) = \textit{3-days}/\text{Card}(e) = \textit{3}$

            san tian/ci

Given the proposed syntax and semantics for DFPs in Pattern III (we will still refer to them as DFPs for convenience), we are able to maintain the typological role Cause° plays in terms of causally relating two eventualities, defined in Pylkkänen (2002, 2008). And since we maintain her denotation of Cause°, v_{ACT}-Cause composes sequentially with the PredP in terms of the bundling asepct:

(389) $[\![\text{Cause}]\!] = \lambda Q_{\langle s, t\rangle}\lambda e \, . \, \exists e' \, [Q(e') \wedge \text{Cause}(e, e')]; [\![v_{\text{ACT}}]\!] = \lambda x\lambda e \, . \, \text{Actor}(x, e)$
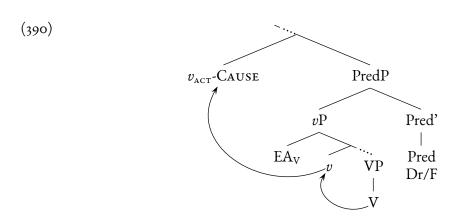
Step2 $[\![v_{\text{ACT}}]\!]([\![\text{Cause PredP}]\!]) =$
       $\lambda x\lambda e \, . \, \exists e' \, [V(e') \wedge \dots \wedge \tau(e') = \textit{3-days}/\text{Card}(e') = \textit{3} \wedge \text{Cause}(e, e') \wedge \text{Actor}(x, e)]$

Step1 $[\![\text{Cause}]\!]([\![\text{PredP}]\!]) =$
       $\lambda e \, . \, \exists e' \, [V(e') \wedge \dots \wedge \tau(e') = \textit{3-days}/\text{Card}(e') = \textit{3} \wedge \text{Cause}(e, e')]$

v_{ACT}-Cause   PredP $\lambda e \, . \, V(e) \wedge \dots \wedge \tau(e) = \textit{3-days}/\text{Card}(e) = \textit{3}$

Despite the merits, drawing a causative connection between Pattern III and the predicational use of DFPs (i.e. the former is basically the latter causativized) brings about several issues with respect to which predicate (the duration/frequency term or the lower V) should undergo head-movement to Cause° and what kind of phrases are permissible as the argument of the DFP in Pattern III.

5.2.2.3 The small-clause analysis and null anaphora

Let us spell out again the proposed structure so far for demonstration:

(390)

v_{ACT}-Cause   PredP

vP   Pred'

EA$_V$ v   VP   Pred
Dr/F

V

If the main predicate of Cause°'s complement is the duration/frequency term (Dr/F), the first question that arises is why the Dr/F is not what undergoes movement to Cause°, but rather the V inside the vP? In fact, if the Dr/F moved up in our structure, we would get ungrammaticality:

(391) a. Transitive—

*Zhe-ben shu **san-tian**/**ci**-le   Zhangsan nian

this-CL   book three-day/time-ASP Zhangsan read

'This book took Zhangsan three days/tries to read.'

b. Unergative—

*Zhe-ge xiaohua **san-xiaoshi**/**ci**-le   Zhangsan xiao

this-CL joke   three-hour/time-ASP Zhangsan laugh

'This joke made Zhangsan laugh for three hours/three times.'

c. Psych—

*Zhe-chang yiwai   **yi-zheng-tian**-le   Zhangsan nanguo

this-CL   accident one-whole-day-ASP Zhangsan be.sad

'This accident made Zhangsan sad all day.'

In other words, Cause° should have the ability to look inside the vP and attract the main V. Although being the main predicate below, the Dr/F in our proposal does not really say anything about what kind of eventuality is being caused. All it does is provide the temporal information of *some* eventuality. It is its EA that specifies the caused eventuality. Therefore, we will hypothesize

that Cause° requires incorporation of a *contentful* eventuality, namely, the V, in the sense that the essential properties of it being a particular eventuality are specified. If we are to define the target of Cause° on a more formal basis, we could say that Cause° attracts a syntactic head that has a semantic type of ⟨s, t⟩. Since under our framework, V is the only head-level category of type ⟨s, t⟩, it would necessarily be the only target of Cause°'s attraction. This also captures the intuition that what undergoes the head-movement is a verb-like thing, whose semantic content makes reference to event properties, which is what we mean by *contentful*.

Another issue with identifying Pattern III as the causativized predicational DFP-sentences has to do with the discrepancies between the types of verbs allowed in the two constructions. We have already seen that the predicational DFP-sentence allows for an unaccusative verbal subject, (385c). Moreover, it also allows for a ditransitive verbal subject:

(392) Zhangsan *song* Lisi liwu   yijing **san ci**   le
      Zhangsan give Lisi present already three time PART
      'It has been three times that Zhangsan gave Lisi presents.'

If Pattern III is the result of plugging the predicational DFP-construction under Cause°, we would expect to see the two mentioned verb types in Pattern III as well. However, as shown in §5.2.1, they are in fact not available in Pattern III. The verb-type discrepancies lead us to resort to Cause° being their source since it is the only difference between the two constructions under our hypothesis. In this regard, we will approach the issue by means of the nature of Cause°; more specifically, we will attempt to explain it via *direct causation* in the sense of Kratzer (2004), which will also give us a handle on the obligatory internal θ-marking on the surface subject in Pattern III discussed earlier.

Having investigated multiple languages, Bittner (1999) makes a typological generalization about causative constructions:

(393) Bittner's generalization:

If a causal relation is syntactically concealed (only its arguments are overtly expressed), then it is semantically direct (no intermediate causes).

If our idea about Pattern III being a causative construction is correct, Pattern III should fall into the category of *direct* causation under Bittner's generalization since there is no overt causative morpheme found. And indeed, a sentence in Pattern III is not felicitous in a scenario involving *indirect* causation:

(394) Context—

Lisi gave Zhangsan 'Harry Potter II' as a present on Zhangsan's birthday. Zhangsan really liked it and wanted to read it right away. But since he had never read any of the 'Harry Potter' series before, he decided to get 'Harry Potter I' and read that first. As a result, Zhangsan spent three days reading 'Harry Potter I'.

Sentence: #Hali Pote di-er   bu nian-le   Zhangsan san   tian

Harry Potter second part read-ASP Zhangsan three day

#'*Harry Potter II* took Zhangsan three days to read.'

We have not been articulate about what it is in the given context that makes it *indirectly* causative. If the above context is indeed *indirectly* causative, and if, as we gather from its behavior above, Pattern III is a case of *direct* causation, then we need to formally define *direct* and *indirect* causation, and implement the former in our proposed structure as a means to derive the pattern's peculiarities that specifically come from the *direct* nature of CAUSE°. Kratzer (2004) provides precise definitions of *direct* and *indirect* causation that serve our purpose:

(395) Kratzer (2004: 29):
    a.   Events of causing other events (direct causation):
         An event c is an event of causing an event e iff c is **the sum** of all the members of some causal chain with maximal element e.

b.   Events that causes other events (indirect causation):

An event c is an event that causes an event e iff c is the minimal element of some causal chain with maximal element e.

- A maximal element of a causal chain C is an event in C that does not cause any of the others in C.

- A minimal element of a causal chain C is an event in C that is not caused by any of the others in C.

Given these definitions, a causing event involving direct causation would require that the caused event be a culminating part of it, (395a). In other words, a directly causative construction amounts to an event-overlap between the causing and caused events. On the other hand, a causing event involving indirect causation would be a separate, non-intersective individual apart from the caused event, (395b). In the case of direct causation, the event-overlap is done through participant-sharing among the events in the causal chain. One illustrative example is the resultative constructions in German, as well as in English:

(396) a. Die Teekanne leer   trinken   (Kratzer, 2004)

         the teapot   empty drink

         'To drink the teapot empty.'

      b. John hammered the metal flat.

It is well-known that resultative constructions are causative constructions where an eventive eventuality causes a stative eventuality. The German and English resultatives would likewise fall into the category of direct causation under Bittner's generalization, and they indeed cannot involve any intermediate events in the causal chain not specified by the predicates in the resultatives. Therefore, the English resultative in (396b), for instance, is not felicitous in a scenario where John hammered a pump, and the pump triggered a machine that pummeled the metal to make it flat. Moreover, even making the causing and caused events distinctive without intermediate causes

would constitute indirect causation and lead to infelicity. As Kratzer (2004) shows with the German example, having simply two distinctive 'drinking' and 'being empty' events in a scenario where someone drinks all the water in a well that is the one-and-only water source, which results in no water for making tea, hence the teapot being empty, is sufficient for (396a) being infelicitous. Only when the teapot is also a participant of the drinking event, i.e. the INSTRUMENT, or when the metal is also a participant of the hammering event, i.e. the PATIENT, can the resultatives be uttered. The conclusion is that direct causation leads to necessary participant-sharing.

We see the same behavior from Pattern III: It is infelicitous in an indirectly causative context, (394)[97], and it demands participant-sharing, i.e. the participant in the causing event has to also be a participant in the caused event (the surface subject being internally θ-marked by the main V). Pattern III is however a stricter case of participant-sharing. As resultatives do not mandate the shared participant (i.e. the direct object) to be the internal argument of the eventive predicate, as in (396a), or in the following example of Mandarin resultative compounds, where the shared participant is an instrument, the surface subject in Pattern III cannot assume thematic relations other than the internal ones (PATIENT/THEME) with the lower V if the V is transitive:

(397) Zhangsan *qie-dun*-le   caidao

Zhangsan cut-dull-ASP food.knife

'Zhangsan made the cleaver dull by cutting (with it).'

Therefore, given a Pattern III sentence like the following, the surface subject is necessarily interpreted to be the PATIENT undergoing the event despite its usual role of being the INSTRUMENT:

(398) Context—
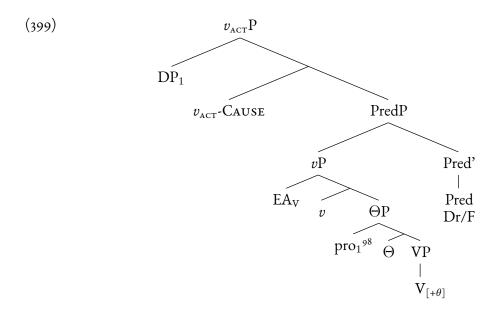
Zhangsan is a butcher. He just bought a new knife and was very excited about using it. So he cut meat with it for three hours.

---

[97] If not obvious, the *causer*, i.e. *'Harry Potter II'*, is in a separate eventuality, i.e. a null *causing* eventuality, from what is *caused*, i.e. *Zhangsan's reading 'Harry Potter I'*.

Sentence: #Zhe-ba dao   qie-le   Zhangsan san   xiaoshi

this-CL   knife cut-ASP Zhangsan three hours

Intended: 'This knife caused Zhangsan to cut (meat) with it for three hours.'
(Lit.) #'This knife took Zhangsan three hours to cut.'

Based on this observation, we will implement the strict participant-sharing (i.e. *direct* causation) in the proposed structure by establishing a control relation between the *causing* argument (i.e. the one introduced by v_{ACT}-CAUSE) and a null *pro* that receives the internal θ-role from the V:

(399)

This control implementation is based on the observation that Pattern III requires the internal argument of the lower verb to be the only candidate for participant-sharing. Yet, the reason behind this strict candidacy is not clear and does not follow from direct causation. Therefore, it is merely a stipulation right now that Pattern III involves obligatory null anaphora if the main verb is transitive. Of course, figuring out the driving force for making the internal argument somehow more privileged in this particular causative relationship, in turn rendering Pattern III such a unique pattern, is a totally non-trivial task that deserves a lot more attention. Although the current dissertation is unable to account for this peculiar aspect of Pattern III, I wish to emphasize

[98]The *pro* is assumed to be of type *e*, hence its being in Spec.ΘP.

that this privileged status of the internal argument seems to go hand in hand with the inversion pattern, which can also be found in Mandarin resultative constructions:

(400) a. Zhangsan qie-de **zhe-ba caidao**   hen dun   – *de*-resultative

       Zhangsan cut-DE this-CL food.knife very dull

       'Zhangsan made this cleaver very dull by cutting (with it).'

    b. Zhangsan qie-dun-le **zhe-ba caidao**   – resultative compound

       Zhangsan cut-dull-ASP this-CL food.knife

       'Zhangsan made this cleaver dull by cutting (with it).'

(401) a. **Zhe-ba caidao**   qie-de Zhangsan hen lei   – *de*-resultative

       this-CL food.knife cut-DE Zhangsan very tired

       Intended: 'This cleaver made Zhangsan very tired from cutting (with it).'
       (Lit.) [#]'This cleaver made Zhangsan very tired from cutting (it).'

    b. **Zhe-ba caidao**   qie-lei-le   Zhangsan   – resultative compound

       this-CL food.knife cut-tired-ASP Zhangsan

       Intended: 'This cleaver made Zhangsan tired from cutting (with it).'
       (Lit.) [#]'This cleaver made Zhangsan tired from cutting (it).'

Despite the fact that resultative constructions do not require the shared participant (i.e. the surface objects in (400)) to be the internal argument of the main verb (or of the manner verb in the resultative compound), when the shared participant shows up as the surface subject in the inversion pattern (401), it is necessarily the internal argument of the main verb (or the manner verb in the compound) in the resultative construction. Worthy as a future agenda, a thorough comparative investigation between Pattern III and the resultative cases above might very likely shed light on the mysterious IA-required participant-sharing, implemented as obligatory control in our Pattern III structure. At this point, we will just take the control structure as is, and demonstrate in the next section that it derives adequately the inversion pattern and the semantic interpretations we are after.

Back to the structure in (399), in terms of its semantic composition, since we have a controlled *pro* (i.e. a bound variable) downstairs, eventually we will need to have it abstracted over by the set of individuals introduced as the ACTOR by v_{ACT}. This step should take place in the composition between $[\![v_{\text{ACT}}]\!]$ and $[\![\text{CAUSE PredP}]\!]$. Hence, we will propose a slightly modified version of Event Identification for this composition step:

(402) Causative Event Identification[99]:

If $f \in D_{\langle e, st\rangle}$, and $c \in D_{\langle st\rangle}$ is a causative event containing a bound variable indexed n, then

$$\begin{array}{cccc} f & c & \longrightarrow & h \qquad \lambda x \lambda e \,.\, f(x)(e) \wedge c^{\,g^{(n/x)}}(e) \\ \langle e, \langle s, t\rangle\rangle & \langle s, t\rangle & & \langle e, \langle s, t\rangle\rangle \end{array}$$

We will have a better look at how this rule works in the next section when deriving the word orders and denotations of Pattern III sentences. Going back to our previously mentioned issue about the discrepancies between the types of verbs allowed in Pattern III and predicational DFP-sentences, it should be clear by now that CAUSE° has certain semantic restrictions that reflect on the syntactic structures of the argument of its internal argument, i.e. the *v*P. We will then hypothesize that CAUSE° also restricts the structure of the *v*P to being at most a *minimal v*P that have only the *core* arguments, an internal and an external argument (i.e. no applied arguments)[100]. Although for now this is a stipulation for unclear reasons, it is suggesting that there can only be so many arguments syntactically realized in causative constructions, regardless of what verb type it is. The following pair of resultatives shows a contrast supportive of the hypothesis:

(403) a. Zhangsan *song-guang*-le liwu

Zhangsan give-gone-ASP present

'Zhangsan gave away all the presents.'

---

[99]As suggested by the name, this composition rule is specific to Pattern III since Pattern III is the only causative structure so far that contains a controlled *pro*. Whether the scope of this rule should extend to other event-denoting structures containing a controlled *pro* should undoubtedly receive further future investigation.

[100]In other words, the *core* arguments inside of a *v*P are those that to the minimal extent sufficiently make up a *v*P.

b. *Zhangsan *song-guang*-le ren   liwu

    Zhangsan give-gone-ASP person present

    'Zhangsan gave away all the presents to people.'

c. *Zhangsan *song-guang*-le liwu   gei   ren

    Zhangsan give-gone-ASP present GIVE person

    'Zhangsan gave away all the presents to people.'
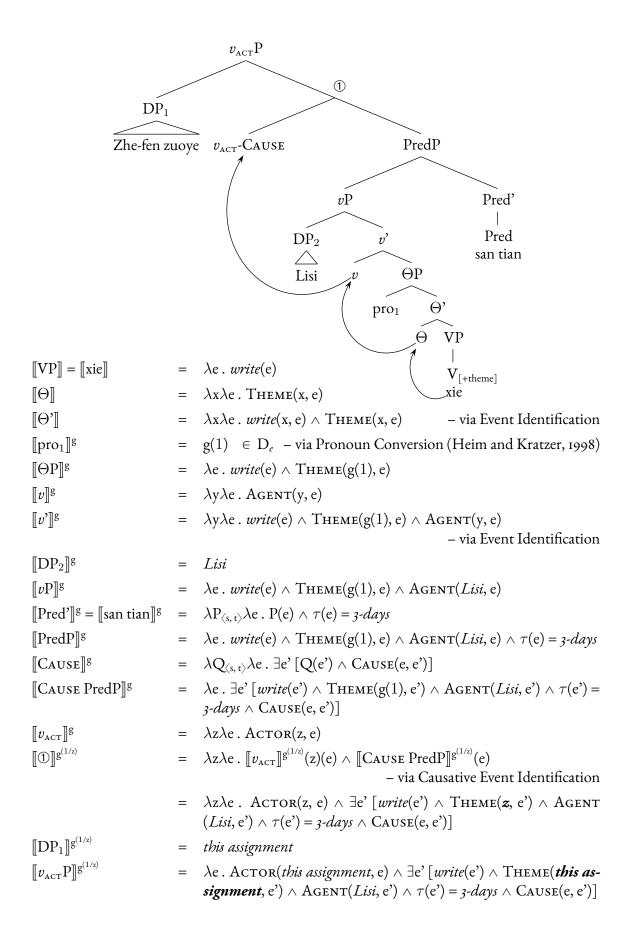
Once we try to ditransitivize the eventive predicate in the resultative compound by inserting an applied argument, whether as an indirect object, (403b), or in a *gei*-phrase, (403c), ungrammaticality arises. This contrast not only shows Cause°'s ability to limit the argument structures of the predicates it is relating, but also puts Pattern III under one general causative umbrella with resultatives, as we have previously pointed out the possibility that Pattern III and resultatives are similar strategies of causativization Mandarin employs to target various kinds of predicates. As for unaccusative verbs being allowed in predicational DFP-sentences but not in Pattern III, there will be a more thorough discussion in the derivation processes of Pattern III in the next section.

5.2.3 Derivations, predictions and consequences

Now that we have spelled out the complete structure for Pattern III, we can derive the word orders and denotations of the types of verbs found in this pattern.

(404) Transitive—
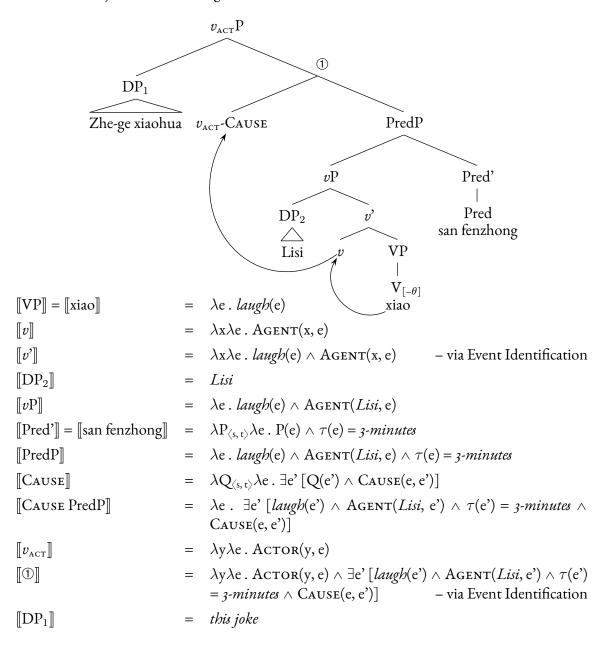
    Zhe-fen zuoye   *xie*-le   Lisi san   tian

    this-CL assignment write-ASP Lisi three day

    'This assignment took Lisi three days to write.'

$v_{\text{ACT}}\text{P}$

DP$_1$ ①

Zhe-fen zuoye v_{ACT}-C<small>AUSE</small> PredP

vP Pred'

DP$_2$ v' Pred
san tian

Lisi v ΘP

pro$_1$ Θ'

Θ VP

V$_{[+\text{theme}]}$
xie

$$
\begin{aligned}
\llbracket \text{VP} \rrbracket = \llbracket \text{xie} \rrbracket \quad &= \quad \lambda e \,.\, \textit{write}(e) \\[4pt]
\llbracket \Theta \rrbracket \quad &= \quad \lambda x \lambda e \,.\, \text{T\scriptsize HEME}(x, e) \\[4pt]
\llbracket \Theta' \rrbracket \quad &= \quad \lambda x \lambda e \,.\, \textit{write}(x, e) \wedge \text{T\scriptsize HEME}(x, e) \quad\quad \text{– via Event Identification} \\[4pt]
\llbracket \text{pro}_1 \rrbracket^g \quad &= \quad g(1) \quad \in D_e \;\text{– via Pronoun Conversion (Heim and Kratzer, 1998)} \\[4pt]
\llbracket \Theta \text{P} \rrbracket^g \quad &= \quad \lambda e \,.\, \textit{write}(e) \wedge \text{T\scriptsize HEME}(g(1), e) \\[4pt]
\llbracket v \rrbracket^g \quad &= \quad \lambda y \lambda e \,.\, \text{A\scriptsize GENT}(y, e) \\[4pt]
\llbracket v' \rrbracket^g \quad &= \quad \lambda y \lambda e \,.\, \textit{write}(e) \wedge \text{T\scriptsize HEME}(g(1), e) \wedge \text{A\scriptsize GENT}(y, e) \\
& \hspace{5.5cm} \text{– via Event Identification}
\end{aligned}
$$

$$
\begin{aligned}
\llbracket \text{DP}_2 \rrbracket^g \quad &= \quad \textit{Lisi} \\[4pt]
\llbracket v\text{P} \rrbracket^g \quad &= \quad \lambda e \,.\, \textit{write}(e) \wedge \text{T\scriptsize HEME}(g(1), e) \wedge \text{A\scriptsize GENT}(\textit{Lisi}, e) \\[4pt]
\llbracket \text{Pred'} \rrbracket^g = \llbracket \text{san tian} \rrbracket^g \quad &= \quad \lambda P_{\langle s, t \rangle} \lambda e \,.\, P(e) \wedge \tau(e) = \textit{3-days} \\[4pt]
\llbracket \text{PredP} \rrbracket^g \quad &= \quad \lambda e \,.\, \textit{write}(e) \wedge \text{T\scriptsize HEME}(g(1), e) \wedge \text{A\scriptsize GENT}(\textit{Lisi}, e) \wedge \tau(e) = \textit{3-days} \\[4pt]
\llbracket \text{C\scriptsize AUSE} \rrbracket^g \quad &= \quad \lambda Q_{\langle s, t \rangle} \lambda e \,.\, \exists e' \, [Q(e') \wedge \text{C\scriptsize AUSE}(e, e')] \\[4pt]
\llbracket \text{C\scriptsize AUSE PredP} \rrbracket^g \quad &= \quad \lambda e \,.\, \exists e' \, [\textit{write}(e') \wedge \text{T\scriptsize HEME}(g(1), e') \wedge \text{A\scriptsize GENT}(\textit{Lisi}, e') \wedge \tau(e') = \\
& \hspace{1.5cm} \textit{3-days} \wedge \text{C\scriptsize AUSE}(e, e')] \\[4pt]
\llbracket v_{\text{ACT}} \rrbracket^g \quad &= \quad \lambda z \lambda e \,.\, \text{A\scriptsize CTOR}(z, e) \\[4pt]
\llbracket ① \rrbracket^{g^{(1/z)}} \quad &= \quad \lambda z \lambda e \,.\, \llbracket v_{\text{ACT}} \rrbracket^{g^{(1/z)}}(z)(e) \wedge \llbracket \text{C\scriptsize AUSE PredP} \rrbracket^{g^{(1/z)}}(e) \\
& \hspace{4cm} \text{– via Causative Event Identification} \\[4pt]
&= \quad \lambda z \lambda e \,.\, \text{A\scriptsize CTOR}(z, e) \wedge \exists e' \, [\textit{write}(e') \wedge \text{T\scriptsize HEME}(\boldsymbol{z}, e') \wedge \text{A\scriptsize GENT} \\
& \hspace{1.5cm} (\textit{Lisi}, e') \wedge \tau(e') = \textit{3-days} \wedge \text{C\scriptsize AUSE}(e, e')] \\[4pt]
\llbracket \text{DP}_1 \rrbracket^{g^{(1/z)}} \quad &= \quad \textit{this assignment} \\[4pt]
\llbracket v_{\text{ACT}}\text{P} \rrbracket^{g^{(1/z)}} \quad &= \quad \lambda e \,.\, \text{A\scriptsize CTOR}(\textit{this assignment}, e) \wedge \exists e' \, [\textit{write}(e') \wedge \text{T\scriptsize HEME}(\boldsymbol{\textit{this as-}} \\
& \hspace{1.5cm} \boldsymbol{\textit{signment}}, e') \wedge \text{A\scriptsize GENT}(\textit{Lisi}, e') \wedge \tau(e') = \textit{3-days} \wedge \text{C\scriptsize AUSE}(e, e')]
\end{aligned}
$$

The transitive case of Pattern III is derived without difficulty: We get the desired word order and denotation for the sentence by the various proposed structural implementations. If we apply the structure to unergative and psych-verbs, we get the following derivations:

(405) a. UNERGATIVE—

Zhe-ge xiaohua *xiao*-le   Lisi san   fenzhong

this-CL joke   laugh-ASP Lisi three minute

'This joke made Lisi laugh for three minutes.'

$[\![\text{VP}]\!] = [\![\text{xiao}]\!]$	=	$\lambda e \,.\, laugh(e)$
$[\![v]\!]$	=	$\lambda x \lambda e \,.\, \text{AGENT}(x, e)$
$[\![v']\!]$	=	$\lambda x \lambda e \,.\, laugh(e) \wedge \text{AGENT}(x, e)$ — via Event Identification
$[\![\text{DP}_2]\!]$	=	*Lisi*
$[\![v\text{P}]\!]$	=	$\lambda e \,.\, laugh(e) \wedge \text{AGENT}(Lisi, e)$
$[\![\text{Pred'}]\!] = [\![\text{san fenzhong}]\!]$	=	$\lambda P_{\langle s, t \rangle} \lambda e \,.\, P(e) \wedge \tau(e) = \textit{3-minutes}$
$[\![\text{PredP}]\!]$	=	$\lambda e \,.\, laugh(e) \wedge \text{AGENT}(Lisi, e) \wedge \tau(e) = \textit{3-minutes}$
$[\![\text{CAUSE}]\!]$	=	$\lambda Q_{\langle s, t \rangle} \lambda e \,.\, \exists e' \, [Q(e') \wedge \text{CAUSE}(e, e')]$
$[\![\text{CAUSE PredP}]\!]$	=	$\lambda e \,.\, \exists e' \, [laugh(e') \wedge \text{AGENT}(Lisi, e') \wedge \tau(e') = \textit{3-minutes} \wedge \text{CAUSE}(e, e')]$
$[\![v_{\text{ACT}}]\!]$	=	$\lambda y \lambda e \,.\, \text{ACTOR}(y, e)$
$[\![①]\!]$	=	$\lambda y \lambda e \,.\, \text{ACTOR}(y, e) \wedge \exists e' \, [laugh(e') \wedge \text{AGENT}(Lisi, e') \wedge \tau(e') = \textit{3-minutes} \wedge \text{CAUSE}(e, e')]$ — via Event Identification
$[\![\text{DP}_1]\!]$	=	*this joke*
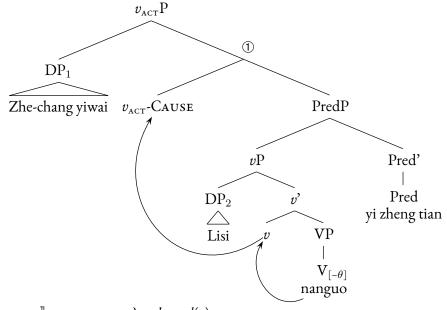
$[\![v_{\text{ACT}}\text{P}]\!]$ = $\lambda e \,.\, \textsc{Actor}(\textit{this joke}, e) \wedge \exists e' \,[\textit{laugh}(e') \wedge \textsc{Agent}(\textit{Lisi}, e') \wedge \tau(e') = \textit{3-minutes}$
$\wedge \textsc{Cause}(e, e')]$

. . . .

b. Psych—

Zhe-chang yiwai   *nanguo*-le   Lisi yi   zheng tian

this-CL   accident be.sad-ASP Lisi one whole day

'This accident made Lisi sad all day.'

$[\![\text{VP}]\!] = [\![\text{nanguo}]\!]$ = $\lambda e \,.\, \textit{be.sad}(e)$

$[\![v]\!]$ = $\lambda x \lambda e \,.\, \textsc{Experiencer}(x, e)$

$[\![v']\!]$ = $\lambda x \lambda e \,.\, \textit{be.sad}(e) \wedge \textsc{Experiencer}(x, e)$
           – via Event Identification

$[\![\text{DP}_2]\!]$ = $\textit{Lisi}$

$[\![v\text{P}]\!]$ = $\lambda e \,.\, \textit{be.sad}(e) \wedge \textsc{Experiencer}(\textit{Lisi}, e)$

$[\![\text{Pred}']\!] = [\![\text{yi zheng tian}]\!]$ = $\lambda P_{\langle s, t \rangle} \lambda e \,.\, P(e) \wedge \tau(e) = \textit{all-day}$

$[\![\text{PredP}]\!]$ = $\lambda e \,.\, \textit{be.sad}(e) \wedge \textsc{Experiencer}(\textit{Lisi}, e) \wedge \tau(e) = \textit{all-day}$

$[\![\textsc{Cause}]\!]$ = $\lambda Q_{\langle s, t \rangle} \lambda e \,.\, \exists e' \,[Q(e') \wedge \textsc{Cause}(e, e')]$

$[\![\textsc{Cause PredP}]\!]$ = $\lambda e \,.\, \exists e' \,[\textit{be.sad}(e') \wedge \textsc{Experiencer}(\textit{Lisi}, e') \wedge \tau(e') = \textit{all-day}$
$\wedge \textsc{Cause}(e, e')]$

$[\![v_{\text{ACT}}]\!]$ = $\lambda y \lambda e \,.\, \textsc{Actor}(y, e)$

$[\![①]\!]$ = $\lambda y \lambda e \,.\, \textsc{Actor}(y, e) \wedge \exists e' \,[\textit{be.sad}(e') \wedge \textsc{Experiencer}(\textit{Lisi}, e')$
$\wedge \tau(e') = \textit{all-day} \wedge \textsc{Cause}(e, e')]$ – via Event Identification

$$\llbracket \text{DP}_1 \rrbracket \quad = \quad \textit{this accident}$$

$$\llbracket v_{\text{ACT}}\text{P} \rrbracket \quad = \quad \lambda\text{e . } \text{A\small{CTOR}}(\textit{this accident}, \text{e}) \wedge \exists\text{e' } [\textit{be.sad}(\text{e'}) \wedge \text{E\small{XPERIENCER}}(\textit{Lisi}, \text{e'}) \wedge \tau(\text{e'})$$
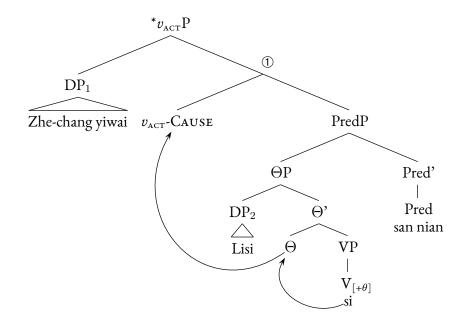$$= \textit{all-day} \wedge \text{C\small{AUSE}}(\text{e, e'})]$$

There is one thing different in the derivation processes of unergative and psych-verbs than in that of transitives: Since the verbs do not have any internal arguments, there in theory would be no ΘP inside the vP and hence no null anaphora for the obligatory internal θ-marking of the surface subject. Given the semantic derivations in (405a&b), strictly speaking, the surface subjects are only interpreted to be the causer of the eventualities denoted by the lower verbs. Nothing in the structures demands that they be thematically interpreted with respect to the lower verbs. Yet, as we have seen before, the surface subjects of unergative and psych-verbs in Pattern III still obtain a close relationship with the lower verbs, i.e. they have to be the subject matters that the main eventualities are centered upon, i.e. *this joke* in (405a) should be what the *laughing* is about, and *this accident* in (405b), what the *sadness* is about. I will argue that this aspect, though pragmatic in a sense since it is not directed by our proposed structure per se, comes from the nature of direct causation Pattern III encodes: The merging of the causing and main eventualities requires event-overlap (i.e. participant-sharing over the surface subject), which necessarily makes the surface subject a participant in the main eventuality. And the most natural way to interpret the surface subject in this case as a participant of the lower main eventuality is by making it a theme-like object that the eventuality is related to. The cases of unergative and psych-verbs under Pattern III can then be derived.

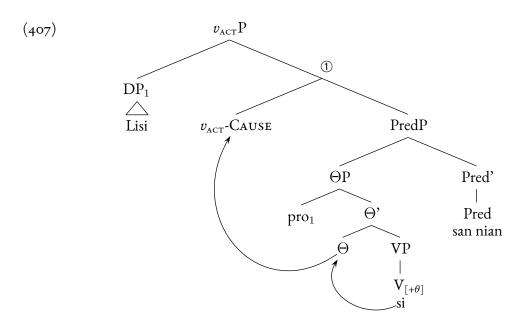Now let us turn to the final case of unaccusative verbs in Pattern III:

(406) U\small{NACCUSATIVE}—

    *Zhe-chang yiwai   *si*-le   Lisi san nian

    this-\small{CL}   accident die-\small{ASP} Lisi three year

    'It has been three years since this accident killed Lisi.'

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*v_{ACT}P

DP₁ ①

Zhe-chang yiwai v_{ACT}-CAUSE   PredP

ΘP   Pred'

DP₂   Θ'   Pred
△   san nian
Lisi   Θ   VP

V$_{[+\theta]}$
si

If we apply the structure to uaccusative verbs, one might expect to encounter a parallel deriva-
tion to that of unergative and psych-verbs, as the tree given above. However, it would not be
a possible tree generated by our proposal since we have made obligatory null anaphora over the
internal θ-position in the caused eventuality (i.e. strict participant-sharing). And the difference
between unaccusative verbs, on the one hand, and unergative and psych-verbs, on the other, is
that unaccusative verbs do have internal arguments, although it is the only argument they have.
If we apply the controlled *pro* in the lower structure, which is where the events overlap in the
semantic derivation, we would get the following tree:

(407) v_{ACT}P

DP₁   ①
△
Lisi v_{ACT}-CAUSE   PredP

ΘP   Pred'

pro₁   Θ'   Pred
san nian
Θ   VP

V$_{[+\theta]}$
si

307

As one may have noticed, this tree leads to not the inverted word order of Pattern III, but the canonical word order as when the unaccusative verb has not undergone Pattern-III causativization. This leads to a prediction that an unaccusative sentence with a DFP should be ambiguous between a non-causativized and a causativized interpretation, the latter of which would have the semantic denotation below, given the tree in (407):

(408) Lisi si-le   san   nian

   Lisi die-ASP three year

   (i) 'Lisi has been dead for three years.'
   (ii) #'Lisi caused his own death, which has been three years.'

   · Semantic derivation of (ii):

$[\![\text{VP}]\!] = [\![\text{si}]\!]$	$=$	$\lambda e \,.\, die(e)$
$[\![\Theta]\!]$	$=$	$\lambda x \lambda e \,.\, \textsc{Theme}(x, e)$
$[\![\Theta']\!]$	$=$	$\lambda x \lambda e \,.\, die(e) \wedge \textsc{Theme}(x, e)$
		— via Event Identification
$[\![\text{pro}_1]\!]^g$	$=$	$g(1) \;\in D_e$
$[\![\Theta\text{P}]\!]^g$	$=$	$\lambda e \,.\, die(e) \wedge \textsc{Theme}(g(1), e)$
$[\![\text{Pred'}]\!]^g = \quad [\![\text{san nian}]\!]^g$	$=$	$\lambda P_{\langle s, t\rangle} \lambda e \,.\, P(e) \wedge \tau(e) = \textit{3-years}$
$[\![\text{PredP}]\!]^g$	$=$	$\lambda e \,.\, die(e) \wedge \textsc{Theme}(g(1), e) \wedge \tau(e) = \textit{3-years}$
$[\![\textsc{Cause}]\!]^g$	$=$	$\lambda Q_{\langle s, t\rangle} \lambda e \,.\, \exists e' \,[Q(e') \wedge \textsc{Cause}(e, e')]$
$[\![\textsc{Cause PredP}]\!]^g$	$=$	$\lambda e \,.\, \exists e' \,[die(e') \wedge \textsc{Theme}(g(1), e') \wedge \tau(e') = \textit{3-years}$ $\wedge \textsc{Cause}(e, e')]$
$[\![v_{\text{ACT}}]\!]^g$	$=$	$\lambda y \lambda e \,.\, \textsc{Actor}(y, e)$
$[\![\text{①}]\!]^{g(1/y)}$	$=$	$\lambda y \lambda e \,.\, \textsc{Actor}(y, e) \wedge \exists e' \,[die(e') \wedge \textsc{Theme}(\textbf{\textit{y}}, e') \wedge$ $\tau(e') = \textit{3-years} \wedge \textsc{Cause}(e, e')]$
		— via Causative Event Identification
$[\![\text{DP}_1]\!]^{g(1/y)}$	$=$	$\textit{Lisi}$
$[\![v_{\text{ACT}}\text{P}]\!]^{g(1/y)}$	$=$	$\lambda e \,.\, \textsc{Actor}(\textit{Lisi}, e) \wedge \exists e' \,[die(e') \wedge \textsc{Theme}(\textbf{\textit{Lisi}}, e')$ $\wedge \tau(e') = \textit{3-years} \wedge \textsc{Cause}(e, e')]$

The derived causative denotation leads to a self-inflicted state of death by Lisi that has lasted for three years. However, the signature inversion of Pattern III cannot be observed from the sentence, and the sentence does not seem to have a causative interpretation of any kind, i.e. (i) is

the only interpretation.

This ambiguity prediction about unaccusatives pushes us to having to restrict the over-generating aspect of our proposal by again limiting the type of verbal arguments the predicational DFP can take in Pattern III. Before, we said that CAUSE° puts an upper bound on what the Dr/F, as the main predicate in the lower structure, can take as its external argument, i.e. those *at most* as big as a minimal vP. Now, we will strengthen our hypothesis by setting a lower bound on the size of EAs the Dr/F can take, which is *also* the minimal vP. That is, we are making the minimal vP the only syntactically available argument for the predicational DFP in Pattern III by brute force. This is clearly an ad hoc and unwanted stipulation to make. However, we might be able to find some explanation for it down the path of causation: Perhaps θ-role-bundling causation in general requires at least two arguments respectively from the two events be syntactically realized[101]. Hence, in English causative constructions for instance, one does not find a null bound reflexive for a self-inflicted causative interpretation, (409a), which can sometimes be found in other non-causative constructions, (409b):

(409)   a. John made *(**himself**) *come*$_{\text{unacc}}$.

(The self-inflicted causative aspect would be analogous to that in (408ii).)

b. John *shaved* (**himself**).

Under this hypothesis, the obligatory null anaphora in Pattern III obviously conflicts with the 'two-overt-argument requirement' in the case of unaccusatives, whose presence is then blocked due to the latter, since the only argument from the lower eventuality is an obligatorily *null* one. Only when the lower V also has an external argument can both requirements be met (two syntactically realized arguments *plus* obligatory null anaphora on the lower IA, with the latter vacuously met in the case of unergative/psych-verbs), giving rise to the exclusive presence of transitive and unergative/psych-verbs in Pattern III. This line of analysis is, however, no more than a conjecture

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[101]The 'θ-role-bundling' aspect is to not accidentally rule out cross-linguistic causative cases where only one argument is syntactically realized, e.g. in languages like Finnish or Japanese that have unaccusative causatives.

that stands in the face of potential cross-linguistic counterexamples. Yet, counterexamples are absolutely welcome to reveal further the relationship between causativization and the argument structures of different verb types.

The last puzzle that we should briefly address is the fact that Pattern III forbids VP-level manner adverbials, in addition to the forbiddance of agent-oriented adverbial modification that gave birth to the proposal of v_{ACT}. We hinted in passing in fn. 94 that there might in fact be a structural difference between the unvolitional v_{ACT} and the regular v that contributes to the difference in manner adverbial modification. We will demonstrate with the following sentence:

(410) Lisi da-le   Zhangsan san   fenzhong

Lisi hit-ASP Zhangsan three minute

‘Lisi hit Zhangsan for three minutes.’
‘Lisi took Zhangsan three minutes to hit.’ (Pattern III)

As shown before, the sentence is ambiguous between the canonical transitive interpretation and the inverted Pattern III interpretation, given the presence of a DFP. One observation is that once we plug in a manner adverbial, it is no longer ambiguous:

(411) Lisi **kuaisu-de** da-le   Zhangsan san   fenzhong
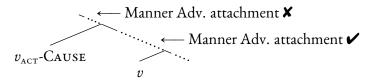
Lisi rapidly   hit-ASP Zhangsan three minute

‘Lisi rapidly hit Zhangsan for three minutes.’
*‘Lisi rapidly took Zhangsan three minutes to hit.’ (Pattern III)

Given our proposed structure for Pattern III and where preverbal manner adverbials normally adjoin in Mandarin (i.e. before the final landing site of the main V), if the manner adverbial were available in Pattern III, it would have to attach higher than the v_{ACT}-bundling CAUSE°, which would unequivocally scope over the causing eventuality, where *Lisi* is the initiator (i.e. the non-existent reading in (411)). Faced with the adverbial contrast in (411), we have one account possibility that the modification scope of the Pattern III sentence is too high for low manner adverbials to reach. This possibility is under the assumption that v_{ACT} is higher than v in syntax, which is how the proposed Pattern III structure arranges them, modulo the predicational DFP:

(412) Potential cartography of the middle-field—

Therefore, the availability of manner adverbial modification determines which EA-introducing functional head is present. This hypothesis about the correlation between the heights of the EA-introducing heads and adverbial modification is making a distinction between the syntactic categories of v and what we posited to be v_{ACT}, based on the theory that the distinction between 'high' and 'low' adverbs is reflective of the syntactic heights of the types of phrases they target (High adverbs target CPs/IPs, and low adverbs, vPs/VPs.). The hypothesis in turn makes some predictions and has some consequences about the nature of v_{ACT} (or v_{ACT}-CAUSE, to be exact, since this is the only case so far that we have seen the possible presence of v_{ACT} in Mandarin's inventory of functional heads). The first prediction it makes is that high adverbs, those that take sentential scope, should have no problems with Pattern III sentences. And it is in fact the case[102]:

(413) **(Adv,)** zhe-fen zuoye   **(Adv)** xie-le   Zhangsan san xiaoshi

this-CL assignment   write-ASP Zhangsan three hour

'(Adv,) this assignment (Adv) took Zhangsan three hours to write.'

$$\Rightarrow \text{Adv} = \left\{ \begin{array}{l} \textit{linrenyiwai-de} \text{ ('surprisingly'),} \quad \textit{qianqianhouhou} \text{ ('back-and-forth')} \\ \textit{buyiwai-de} \text{ ('unsurprisingly'),} \quad \textit{buxing-de} \text{ ('unfortunately')} \\ \textit{churenyiliao-de} \text{ ('unexpectedly'),} \quad \textit{momingqimiao-de} \text{ ('inexplicably')} \\ \textit{ruyuqi-de} \text{ ('expectedly'),} \quad \textit{wukebimian-de} \text{ ('inevitably')} \\ \qquad\qquad\qquad\vdots \\ \text{Epis. Adv}^{103} = \left\{ \begin{array}{ll} \textit{haoxiang} \text{ ('seemingly'),} & \textit{sihu} \text{ ('seemingly')} \\ \textit{yiding} \text{ ('denifitely'),} & \textit{yinggai} \text{ ('supposedly')} \\ \textit{juedui} \text{ ('absolutely'),} & \textit{keneng} \text{ ('possibly')} \\ \qquad\qquad\vdots \end{array} \right. \end{array} \right\}$$

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[102] We switch to an unambiguous sentence (i.e. the canonical transitive reading is unavailable) to let the high adverbial modification surface under Pattern III more clearly.

[103] As opposed to the other sentential adverbs, the epistemic adverbs can only go between the subject and the main

The adverbs that are found in Pattern III are all sentential, as in (413). Most of them can alternate between the sentence-initial position and the immediately preverbal position, but *all* of them can appear in the latter position.

The second prediction is that inserting a low adverb into unambiguously Pattern III sentences should alter their argument structures and could result in semantic anomaly or ungrammaticality, since only *v* is compatible with low adverbs:

(414) a. Zhe-bei jiu *he*-le   Zhangsan san-shi   fenzhong   – Transitive

        this-glass wine drink-ASP Zhangsan three-ten minute

        'This glass of wine took Zhangsan thirty minutes to drink.'

     b. Zhe-ge bing *ke*-le   Zhangsan san   tian   – Unergative

        this-CL illness cough-ASP Zhangsan three day

        'This illness made Zhangsan cough for three days.'

     c. Zhe-ge jieguo *xingfen*-le   Zhangsan yi   zheng tian[104]   – Psych

        this-CL result be.excited-ASP Zhangsan one whole day

        'This result made Zhangsan excited all day.'

(415) a. #Zhe-bei jiu **manman-de** *he*-le   Zhangsan san-shi   fenzhong   – Transitive

        this-glass wine slow-ADV   drink-ASP Zhangsan three-ten minutes

        #'This glass of wine slowly drank Zhangsan for thirty minutes.'

     b. *Zhe-ge bing **manman-de** *ke*-le   Zhangdan san   tian   – Unergative

        this-CL illness slow-ADV   cough-ASP Zhangsan three day

        *'This illness slowly coughed Zhangsan for three days.'

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verb. This placement restriction could suggest them being modality operators that are specific to certain functional projection domain in syntax.

   [104]Just to avoid confusion, the verb *xingfen* ('be excited') in Mandarin cannot be used transitively like its English counterpart:

(i) *Zhe-ge jieguo xingfen-le Zhangsan

    this-CL   result excite-ASP Zhangsan

    'This result excited Zhangsan.'

    c. *Zhe-ge jieguo **hen-kuai-de** *xingfen*-le   Zhangsan yi   zheng tian   – Psych

       this-CL   result very-fast-ADV be.excited-ASP Zhangsan one whole day

       'This result quickly excited Zhangsan that he remained excited all day.'

In (414) are well-formed Pattern III sentences that involve a non-animate subject. Once a low manner adverb is inserted, as in (415), the only available argument structures for these sentences would be the *v*-headed ones. This shift in argument structure turns the sentence in (415a) into a semantic anomaly, where the external θ-role of the verb is in conflict with the non-animacy of the subject. Matters are worse in the other cases, (415b&c), where not only semantic anomaly (i.e. the subjects conflicting with their assigned external θ-roles by *v*), but also ungrammaticality ensues, since there are now objects not θ-licensed by the verbs.

    Earlier, we mentioned that Mandarin has ways of causativization that prefer spelling out the causing event, which are usually in the form of resultative compounding. Only a very limited group of verbs can undergo the unaccusative-causative alternation without any morphological change (fn. 89). We also mentioned that Pattern III is very likely a sub-case of resultatives given its causative interpretation and that resultatives also exhibit the inverted word order (i.e. (362)). If we combine the two ideas, we can form a general plot of causativization strategies Mandarin employs: There are (at least) three types of null causativization in Mandarin[105], unaccusative-causative alternation (limited applicability, e.g. *kai* ('open')/*guan* ('close')), resultative compounding (overtly spelling out the causing event), and Pattern III (null causing event with a required DFP). In the first two cases, what is caused is typically a stative eventuality denoted by an unaccusative verb; whereas in the third case, what is caused is a *time-framed, external-argument-containing* eventuality. If we look more closely into the argument structures of the first two, we see that introducing a *v*-bundling CAUSE° in syntax (à la Pylkkänen (2002, 2008)) on top of the stative verbs gives an adequate account. And it is true that the null causative verbs and resultative compounds can be modified by low adverbs:

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[105]'Null' causativization here specifically refers to causative constructions without overt causative verbs.

(416) a. Zhangsan **manman-de** *kai*/*guan*-le   men   – Null causative

         Zhangsan slow-ADV   open/close-ASP door

         'Zhangsan slowly opened/closed the door.'

    b. Zhangsan **hen-kuai-de** da-po-le   huaping   – Resultative

         Zhangsan very-fast-ADV hit-break-ASP vase

         'Zhangsan quickly broke the vase.'

As for Pattern III, the presence of v in the caused time-framed eventuality pushes CAUSE° higher up the clausal spine where it is in our theory bundled with some other EA-introducing head. This is in accordance with our conjecture about the modification scope over the causing event being too high for low adverbs, which boils down to the question of what functional domain is CAUSE° in in this case. Attempting to answer this question brings up consequences to what we have theoretically assumed to be the EA-introducing head CAUSE° is bundled with in Pattern III. If v_{ACT} is as 'verbal' as v, there should be no problems with manner adverbial modification over it. Given the manner modification contrast, v_{ACT} could belong to a different category that is part of the functional projection domain higher than vP, resonating with our hypothesis about the modification height: It is just not the kind of categories low adverbs modify. This leads to a more fundamental issue with what we have assumed for CAUSE°. In order to align with cross-linguistic facts about causativization, we have treated CAUSE° uniformly as merely introducing a causing eventuality, since it has been demonstrated in multiple languages that it should not be argument-introducing. But perhaps in Mandarin, it *can* be an argument-introducing head. This would eliminate the need of v_{ACT} once and for all, and make CAUSE° its own functional category not modifiable by low adverbs. It also means that under our conjecture about the general null causativization process in Mandarin, CAUSE° would only introduce unvolitional EAs when in the functional *middle-field*, resulting in a unique argument inversion. This, however, is a somewhat un-uniform and undesired result for the general/typological treatment of CAUSE°. On the other hand, if we keep v_{ACT} for a uniform treatment of CAUSE° and place Pattern III under a typological

account of causativization, we can enrich the vocabulary of world's languages' causativization processes by adding to the categories of things that can be syntactically causativized 'times', in addition to 'states'. On the Mandarin-specific level, we might also be able to explain why the preference to overtly spell out the causing event is not found in Pattern III, if we assume that the majority of Mandarin verbs that could spell out the causing event, as in the resultative case, involve *volitional* agents.

Both routes have pros and cons. Despite it being a nice research program for investigating the nature of the functional middle-field of Mandarin and figuring out how it could affect the valency of causativization, from which some typological generalizations may be derived, it is beyond the scope of this dissertation. We will leave this issue open for future continuation.

5.2.4   Summary

To sum up, we have proposed a structure that allows us to derive the unique inverted argument realization order correlated with the presence of a DFP, i.e. Pattern III. It also captures the peculiar properties that come with the inversion. We have hypothesized that Pattern III is a subtype of causative constructions in Mandarin and related it to a general causativization process cross-linguistically by adopting the functional element CAUSE° from Pylkkänen (2002, 2008), parametrized by what other functional element it can be bundled with and what it can embed (i.e. what it can *cause*). We have reached a conclusion that in addition to causing the kind of eventualities that we see in cross-linguistic causative constructions, e.g. unaccusative-causative alternation, resultatives, etc., it can also cause a *temporal* eventuality, i.e. the predicational DFP. And there are some restrictions on what kind of things this caused temporal eventuality can be predicated of, i.e. the *minimal v*P. This minimality constraint, as well as the obligatory internal θ-marking on the surface subject when the main verb is transitive, can assume some explanation from the null CAUSE° encoding *direct* causation, in the sense of Kratzer (2004), under Bittner's (1999) generalization. Although there remain stipulations and open issues with our overall pro-

posal, I believe we have made some advancement in broadening the horizons on causativization in general and accounting for an interesting and unique puzzle of argument realization.

CHAPTER 6

CONCLUSION

In the studies of argument structure, semantic compositionality is generally a non-trivial aspect that determines the syntax of verbs and their arguments. The projections of arguments with particular thematic interpretations are linked to particular syntactic positions inside the verb phrase with underlying assumptions like semantic saturation of arguments takes precedence over other semantic processes. This way, a one-to-one correspondence between the syntax and semantics of verbs can be established and language-specific word orders can be consequently derivable.

However, the one-to-one correspondence between the verb's syntax and semantics, which I take to be the syntax-semantics interface of argument introduction, no longer seems one-to-one after considering the distributions of arguments in Mandarin. We see that arguments with certain thematic interpretations can in fact be located in different syntactic positions. And these distributions are regulated by the semantic types of the arguments, correlated with their morphological forms and semantic interpretations (i.e. DPs vs. NPs). That is, the one-to-one correspondence between thematicity and syntactic projection should be a three-way intersection, also factored by semantic type, i.e. Pattern I.

With the proposal of the internal-argument-introducing head, Θ°, we are able to mediate the distributions of arguments by their semantic types. Moreover, the proposal of Θ° helps us define a boundary of syntax from which various morphological properties associated with the different distributions of arguments result. It helps us better probe the domain of Pseudo-(Noun)-

Incorporation and acquire a general understanding of typological variation in this type-regulated realization of arguments. From the process of generalizing over the argument structures of languages that have or lack Pseudo-Incorporation, we reach a place where Morphology should likewise be accountable in syntactically distributing arguments by means of obviating the mechanism of semantic saturation. We reach a conclusion that languages can vary in how they look at the boundary between Morphology and Syntax, i.e. whether the syntax-semantics interface of argument structure can be part-morphology, depending on the presence of Θ°.

Further, we go from the base-generation of internal arguments to cases where the arguments show up in positions external to the verb phrases they are generated in, contingent upon the occurrence of a duration/frequency phrase (DFP). We see a pragmatics-driven picture of argument displacement that makes Mandarin similar to languages like Hebrew, i.e. Pattern II. We also see a picture of argument inversion that makes Mandarin really unique in a way that causativization can be imposed upon the relation between the temporal aspect of the verbal predicate and its arguments, i.e. Pattern III. Still, there are many open questions and issues with regards to how the causativization, as indicated by the inverted word order, should be implemented formally. But having at least a preliminary investigation of a peculiar argument pattern as such, I hope to spur future inquiries of argument realization in general, cross-linguistically or not.

Coming back to the research goal of this dissertation mentioned in §1, although much successive work is needed, I believe the framework of argument realization developed in this dissertation has made some advancement in the theories of argument structure by spelling out more clearly the relationships between Syntax, Semantics, and Morphology, as well as how languages incorporate them as part of the grammatical system. A promising direction for future studies then would be to find empirical evidence that corroborates or falsifies the predictions made by our proposed theory.

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