EVIDENCE ON LONG HEAD MOVEMENT IN MANDARIN PREDICATE CLEFT

by

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STATEMENT OF THESIS APPROVAL

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ABSTRACT

This thesis investigates the predicate cleft (PC) constructions in Mandarin Chinese. Cheng & Vicente conclude that the topicalized verb and the lower verb in bare PC form a long head movement relation, discarding a remnant movement analysis based on vP-external scrambling. However, to be complete, the argument also needs to consider vP-internal scrambling observed by Soh and a selective deletion analysis. I show that vP-internal scrambling cannot serve to derive a plausible remnant movement analysis; nor can a selective deletion analysis be accomplished. Long head movement is necessary to account for Mandarin bare PC. However, although this conclusion converges with cross-linguistic treatment of predicate clefts, I point out the unreliability of idiom interpretation as a diagnostic for long head movement used in several studies. Moreover, I present the puzzling restriction on the types of categories that can undergo pied-piping with the fronted verb. Last, I show that the verb doubling effect, an unresolved issue in Cheng & Vicente, can be accounted for, if the proposal on parallel chains is adopted.

The necessity of a long head movement analysis supports bare phrase structure whereby head-to-spec movement is expected. In addition, it constitutes as an empirical argument against eliminating syntactic head movement. The compositionality of idiom interpretation and the restriction on full PC are worth further study.

CONTENTS

ACKNOWLEDGMENTS

CHAPTER 1

INTRODUCTION

1.1 Mandarin Predicate Cleft

Mandarin Chinese has a *verum focus sentence* (Paul & Whitman 2008), as in (1)[1], with the copula *shi* receiving focal stress.

(1) [F ta SHI zuo-le   wan-fan](, buguo bu gou   san-ge ren   chi).
     he COP make-PERF dinner   but   not enough three-CL person eat
     'He did make the dinner, but it's not enough to feed three persons.'

Mandarin predicate cleft (PC) is when the verb or verb-object string undergo topicalization on top of (1), as in (2) and (3). The lower verb still receives phonetic realization, resulting in the doubling phenomenon observed by Cheng & Vicente (2013). However, although the object can be optionally pied-piped, it cannot be duplicated, (3). Hereafter, constructions like (2) and (3) will be referred to as bare PC and full PC, respectively.

(2) [T **zuo**], [F ta shi **zuo**-le   (wan-fan)], buguo... .   *bare PC*
     make   he COP make-PERF dinner   but
     'As for making, he did make the dinner, but... .'

(3) [T **zuo** wan-fan], [F ta shi **zuo**-le   (*wan-fan)], buguo... .   *full PC*
     make dinner   he COP make-PERF   dinner   but
     'As for making dinner, he did make it, but... .'

While full PC is an obvious case of phrasal movement, the same analysis does not necessarily extend to bare PC. In fact, Cheng & Vicente (2013) argue that the higher verb in (2) is displaced by long head movement (head-to-spec A′-movement). However, their analysis is incomplete. In this study,

(i) I show that long head movement is the only possible analysis of Mandarin bare PC, and argue against phrasal movement analyses, specifically remnant movement and selective deletion (Fanselow & Ćavar 2002, Nunes 2004);

(ii) I point out the unreliability of idiom interpretation as a diagnostic of long head movement;

(iii) I show the puzzling restriction on the fronting categories in the *full PC*. Mandarin full PC is not discussed at all previously, let alone its restriction. Cross-linguistic treatments of PC seldom touch upon this issue except Landau (2007) and Ott (2010). Moreover, the ditransitive fronting restriction provides an additional argument against remnant movement;

(iv) I show that the multiple spell-out issue can be resolved, if linearization reads off difference of chain types (Chomsky 2008, Aboh & Dyakonova 2009).

1.2   Theoretical Framework

The current study is primarily concerned with the size of the projection of the topicalized element in bare PC. From the Government-Binding (GB) Theory to the Minimalist Program, the theory on movement and projection has evolved drastically (Chomsky 1993, 2001). Therefore, the current study will proceed along the core assumptions of Minimalist reasoning. In section 1.2.1, I will review the basic assumptions of the Minimalist Program and highlight aspects crucially relevant for the current study.

1.2.1   The Minimalist Program

According to Chomsky (1993), the Minimalist Program assumes that language faculty is the optimal realization of interface conditions. In particular, the computation system must minimally interface with *articulatory-perceptual* system and *conceptual-intentional* system, given the trivial fact that linguistic expressions have both form and meaning. The metrics of the notion "optimality" are economy principles of two kinds, *methodological economy* and *substantive economy*. In particular, *methodological economy* represents the pursuit of theoretical parsimony and simplicity, or "Occam's razor": all things being equal, fewer theoretical primitives are better than more (Hornstein et al. 2005). *Substantive economy* stands for the notion that "language design may really be optimal in some respects, approaching a 'perfect solution' to minimal design specifications" (Chomsky 2000).

The GB theory on movement has thus undergone close scrutiny under these Minimalist assumptions. Canonical head movement, the only displacement operation of a single head in GB era, has received considerable challenge in the Minimalist Program. In particular, Chomsky (2001) argues that a substantial core of head-raising processes is not part of the narrow-syntactic computation, but instead an operation of the phonological component. He argues that verbs are not interpreted differently whether they remain in situ or raise to T or C. More generally, "semantic effects of head raising in the core inflectional system are slight or nonexistent". Moreover, the strong features on D, T, and C do not have a uniform checking process in terms of movement. Specifically, the strong V feature on T

is satisfied by moving V to T whereas the strong nominal feature by raising the nominal to [Spec,T]. This implementation conflicts with methodological economy, compared with a uniform mechanism that checks strong features. He also noted other problems associated with the nature of the adjunction rule, which will be elaborated on in section 2.1.1. In a word, Minimalism motivates the elimination of canonical head movement, the only possible syntactic head movement.

1.2.1.1   Bare Phrase Structure

As the current study directly concerns the size of projection of the topicalized elements, it is worthwhile to review the standard theory of phrase structure in Minimalism, namely, *bare phrase structure.*

X-bar Theory assumes a template of phrase structure in UG which stipulates that a phrase consists of parts with various bar-levels. Namely, X, X′ and XP differ as if they have distinct intrinsic categorial features. By contrast, bare phrase structure captures the intuition of the X-bar Theory based on local relational properties between parts within a phrase. The relational definition of projections are (4) – (6).

(4)　　*Minimal Projection:* X^0

　　　　A minimal projection is a lexical item selected from the numeration.

(5)　　*Maximal Projection:* XP

　　　　A maximal projection is a syntactic object that does not project.

(6)　　*Intermediate Projection:* $X′$

　　　　An intermediate projection is a syntactic object that is neither an X^0 nor an XP.

(Chomsky 1995a)

The notation of the projection is represented in (7). This structure removes categorial labels but still captures the categorial properties. For example, [*saw John*] and [*Mary saw John*] are both dominated by the same type *saw*, indicating they are both verbal in nature. Also, according to (5), a complement, a specifier or an adjunct of X are necessarily maximal. Therefore, it derives the property that complements, modifiers, and specifiers are maximal projections without stipulation.

(7)

```
                        saw
                       /    \
                  Mary      saw
                           /    \
                       saw      John
```
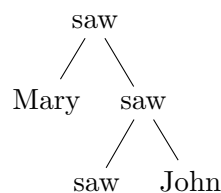
In sum, bare phrase structure presents several advantages over X-Bar Theory in that (i) it distinguishes different levels of projections in compliance with the Inclusiveness Condition, (8); (ii) it does not have vacuous projections; (iii) it derives the fact that complements, specifiers, and adjuncts are maximal projections; and (iv) it allows the elimination of the distinction between terminal nodes and lexical items.

(8)   **Inclusiveness Condition**
        The LF object λ must be built only from the features of the lexical items.

                                                                    (Chomsky 1995b)

The phrase structure is built via Merge which is a two-place iterative operation that forms larger syntactic objects and its application follows the Extension Condition, (9). In addition, for Merge to capture the endocentricity of phrase structure, it needs a labeling mechanism that reflects the asymmetry of head-complement, spec-head, or modification. Due to Last Resort, Merge can only be licensed if it serves a grammatical purpose. Thus only under head-complement, spec-head, and modification relation can it be licensed. The labeling choice follows from the inherent features of a head which bears selectional criteria on complement, specifier, and modifier.[2]

(9)   **Extension Condition**
        Applications of Merge can only target root syntactic objects.

In sum, grounded in Minimalist principles, bare phrase structure and Merge can capture many properties of phrase structure represented by X-Bar Theory and provide a principled account of these properties.

1.2.1.2   The Copy Theory of Movement

Movement is conceptualized as Copy and Merge in the Minimalist Program. Movement chains are thus identical lexical items. The theoretical primitive *trace* is dispensed with, because it violates the Inclusive Condition. In contrast, the operation *Copy* is independently

needed for numeration to take lexical items out of lexicon. Empirically, Afrikaans data show that traces can be pronounced (du Plessis 1977) and this suggests that movement leaves copies and whether they receive pronunciation or not seems better relegated to PF.

1.2.2   Topic and Focus

Traditionally, the complementizer system assumed a single CP projection. However, it was found that different complementizer-like constituents occupy different structural position. Rizzi (1997) then proposes a cartographic approach to the CP system which is split into multiple projections delimited by two heads. The higher head is Force, expressing illocutionary force whereas the lower head is Fin(iteness), representing finite or non-finite character of the clause. The projections between these two heads host positions dedicated to information properties such as topic and focus, in addition to scope properties and discourse semantics.

Topicalization and focalization are characterized with special interface properties. At PF, they are marked by special prosodic contours. At LF, they express information structure properties and respectively represent given and new information that are complex and subject to cross-linguistic variation (Rizzi 2013).

Rizzi (1997) further assumes a criterial approach to the interpretive mechanism of the extended CP. Specifically, scope-discourse properties are represented by dedicated functional heads, which assign interpretive roles such as topic, focus, etc. So, for example, in a topic-comment sentence, a functional Top head would mediate between a specifier (the topic) and a complement (the comment). The topic and focus structure can then be assumed to involve the following syntactic representations:

(10)   (11)

```
        TopP                                        FocP
        / \                                         / \
     XP                                          XP
        / \                                         / \
     Top   YP                                    Foc   YP
```
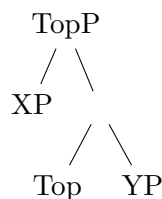
XP = topic   XP = focus
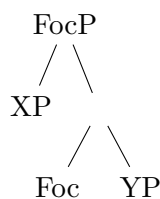
YP = comment   YP = presupposition

Criterial positions can co-occur and are subject to cross-linguistic variation. For example, V2 languages such as German only allow one single left-periphery specifier, as a function of the V2 constraint whereas non-V2 languages like Gungbe admit ordered unique topic and

focus positions. In addition, Italian and other Romance languages allow a variety of topics, both preceding and following a unique focus position. For a review of the cartographic and criterial approach to topic and focus, see Rizzi (2013).

CHAPTER 2

LITERATURE REVIEW

2.1 Theoretical Concerns

2.1.1 Head Movement

Head movement is displacement of a head out of its projection to another head position. It respects Head Movement Constraint (henceforth HMC) in (1). A modern version of HMC, (2), also derives the purported complementary distribution of head movement and phrasal movement.

(1)   *Head Movement Constraint* (Travis 1984)

An X^0 may only move into the Y^0 which properly governs it.

(2)   *Head Movement Generalization* (Pesetsky & Torrego 2001)

Suppose a head H attracts a feature of XP as part of a movement operation.

    a.   If XP is the complement of H, copy the head of XP into the local domain of H.

    b.   Otherwise, copy XP into the local domain.

A derivation of *V-to-Mod-to-T* head movement in Hungarian is represented in (3-b). Crucially, head movement proceeds in a successive roll-up fashion, creating head adjunction structure. It is considered a complex head and opaque to syntax.

(3)   a.   olvas-hat-om

        read-PERMISSIVE-1SG.PRESENT

        b.
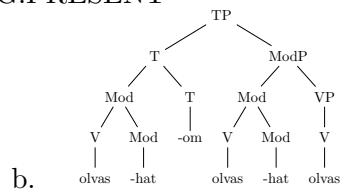
(Brody 2000:38, (9))

In addition, head movement displays Mirror Generalization, a constraint on the syntax-morphology interface (Baker 1988). The hierarchical ordering of morphemes directly reflects

the hierarchy of projections in the clause. If head movement feeds affixation and each affix heads a projection, the Mirror Generalization is predicted. In other words, Mirror Generalization results from the HMC and *prohibition on excorporation*. If excorporation is allowed, a head can move without picking up affixes at successive higher heads. This, then, will not derive Mirror Generalization.

2.1.1.1 Problems of Head Movement

a) **No Excorporation Condition:** As discussed above, prohibition on excorporation is necessary in order to derive Mirror Generalization. This constitutes a problem for head movement as phrasal movement does not require this condition. Its puzzling restriction needs an explanation.

b) **Violation of Extension Condition and c-command condition:** According to (4), Merge should always extend the trees. Example (5) shows H is Merged to XP. However, head movement is based on adjunction which creates morphological complex heads in (3-b) reduced into (6). Clearly, head movement does not extend the structure.

(4)   *Extension Condition*
         Applications of Merge can only target root syntactic objects.

(5)

```
                    HP
                   /  \
                  H    XP
                      / \
                     α
```

(6)

```
                    TP
                   /    \
                  T      ModP
                  |      /  \
           olvas-hat-om Mod  VP
                        |     |
                    olvas-hat V
                              |
                            olvas
```
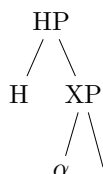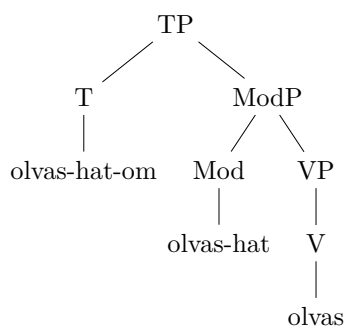
In addition, since (4) derives the c-command restriction on movement, head movement also violates this restriction. Kayne (1994) redefines c-command in order to allow c-command out of adjunction. However, this reformulation is ad hoc and stipulative.

In sum, any theory of head movement needs to account for the following interrelated properties:

- Head Movement Constraint
- No Excorporation Condition
- Mirror Generalization
- Violation of Extension Condition
- Violation of c-command condition

2.1.1.2 Reanalyses of Head Movement

In view of the above theoretical issues of head movement, many attempts have been made to reanalyze it. Generally, head movement is either relegated to remnant movement or PF (Chomsky 2000, Brody 2000, Abels 2001, 2003, Boeckx & Stjepanović 2001, Harley 2004). Below I review a syntax-PF analysis by Matushansky (2006) and a PF proposal by Brody (2000). Remnant movement will be reviewed in section 2.1.4.

- **Matushansky (2006)**

  - **Proposal:** Matushansky proposes that both head movement and phrasal movement are triggered by feature valuation followed by (Re)Merge. Specifically, head movement is defined as three consecutive operations: C-Select, Merge, and m-merger.

  - **Derivation:** head movement is triggered by C-Select, a highly local feature valuation operation, as in (7). Then the selected head is merged to the specifier of the selecting head, as in (8). Finally, m-merger applies under *head adjacency configuration* as in (9) and two heads are morphologically derived into one indivisible feature bundle – a head.

    (7)

$$
\begin{array}{c}
\text{XP} \\
\diagdown \\
\text{X}_{[uF]} \quad \text{YP} \\
\diagdown \\
\text{ZP} \quad \text{Y}' \\
\diagdown \\
\text{Y}_{[iF]} \quad \text{WP}
\end{array}
$$

(8)

$$
\begin{array}{c}
\text{XP} \\
\diagup \quad \diagdown \\
\text{Y}_i \quad \text{X}' \\
\quad \diagup \quad \diagdown \\
\quad \text{X} \quad \text{YP} \\
\quad\quad \diagup \quad \diagdown \\
\quad\quad \text{ZP} \quad \text{Y}' \\
\quad\quad\quad \diagup \quad \diagdown \\
\quad\quad\quad \text{t}_i \quad \text{WP}
\end{array}
$$

(9)

$$
\begin{array}{c}
\text{XP} \\
\diagup \quad \diagdown \\
\boxed{\begin{array}{c} \text{X} \\ \diagup \ \diagdown \\ \text{Y}_i \quad \text{X} \end{array}} \quad \begin{array}{c} \text{YP} \\ \diagup \ \diagdown \\ \text{ZP} \quad \text{Y}' \\ \quad \diagup \ \diagdown \\ \quad \text{t}_i \quad \text{WP} \end{array}
\end{array}
$$
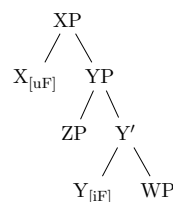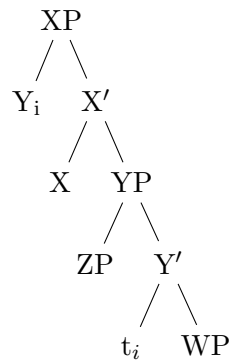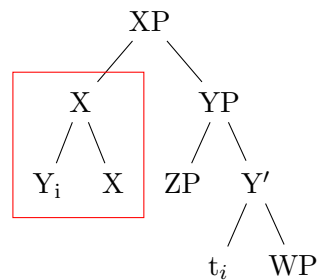
- **Problems**

  * Optionality of m-merger in *head adjacency configuration*: Since the only evidence of m-merger comes from purported correlation between m-merger and *head adjacency configuration*, its optionality under this condition seriously undermines its empirical motivation.

  * Why does not m-merger manifest in any long-distance phrasal movement?

  * It is unclear why *head adjacency configuration* is special at PF. Adjacent heads do not always result in m-merger, not even among cases of specifier-head adjacency. In addition, if *head adjacency configuration* alone is sufficient for m-merger, it is unclear why specifier-head adjacency is more special than head-complement adjacency.

- **Brody (2000): Mirror Theory's hypotheses**

  - **Mirror:** The syntactic relation "X complement of Y" is identical to an inverse-order morphological relation "X specifier of Y".

– **Telescope:** A head X in a syntactic tree ambiguously represents both the X^{min} and zero-level head and the phrasal node.

– **Spell-out:** Spell-out proceeds according to the specifier-head-complement order. Spell-out of co-members of a morphological word (MW) is the inverse of their syntactic order. Spell-out takes place in the deepest unit of the MW if no other elements have a "strong feature"; otherwise, Spell-out takes place in the highest strong position.

- **Mechanism:** In (10), left-branching nodes represent specifiers in their respective domains whereas right-branching nodes stand for complements. The complementation line "I-F-v-V" is the inverse order of an MW "V-v-F-I". In French, Spell-out takes place at I. Specifiers are pronounced before their corresponding heads, which precede their corresponding complements (and contents of their complements). Therefore, the surface form is Subj-{V-v-F-I}-Adv-Obj. In English, Spell-out takes place at V. As a result, the surface form is Subj-Adv-{V-v-F-I}-Obj. Since the complementation line always represents an MW, it is always pronounced altogether.

(10)

```
                I
               / \
            Subj   F
                  / \
               Adv   v
                    / \
                (Subj)  V
                       / \
                    Obj   …
```
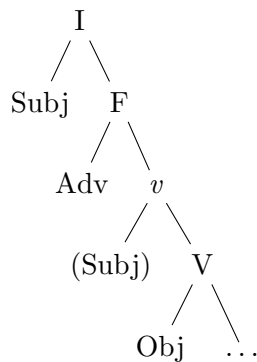
The head movement in Matushansky (2006) consists of both a syntactic and PF component while Brody (2000) reformulates it into an entirely PF phenomenon in a representational system. Brody can only derive canonical head movement and concedes that his theory cannot account for long head movement. Matushansky assumes head-to-spec movement, following bare phrase structure (Chomsky 1995a). Crucially, this option is suitable for an analysis of Mandarin bare PC, as will become clear.

2.1.2 Wh-movement

Wh-movement is one of the two major types of phrasal movement, the other being A-movement. In the context of the current study, a few properties of wh-movement are noteworthy.

First, wh-movement can in principle cross unbounded tensed clause boundaries, (11).

(11)   **Who**$_i$ do you think [t_i will win]?

In addition, the movement proceeds successive cyclically. In particular, substantial evidence suggest that movement proceeds through intermediate CPs. One piece of evidence comes from wh-island constraint. Sentence (12-b) is bad because an intermediate landing site is taken by a wh-element. Therefore, movement cannot proceed through the embedded CP.

(12)   a.   Where$_i$ do you think [that John put the key t_i]?
         b. *Where$_i$ did you ask [**what** Bill put t_i]?

However, wh-movement is not entirely unrestricted. It is subject to island constraints which specify a collection of structures where wh-elements cannot move out of, including adjunct island, complex NP island, coordinate structure island, and subject island, in addition to the aforementioned wh-island constraint. See Carnie et al. (2014) for a comprehensive review.

The phrases that participate in wh-movement pose two puzzles. One concerns pied-piping (Ross 1967) – displacement of a constituent larger than a wh-word:

(13)   a.   **What** did he borrow?
         b.   [**Whose** car] did he borrow?
         c.   [**Whose** parents' car] did he borrow?

Cable (2007, 2010) proposes a particle Q that heads a projection QP that dominates the moved phrases, based on Tlingit data below. Wh-movement is actually always movement of QP and in many languages, Q is null. In this view, pied-piping is a matter of the distribution of Q. For a recent alternative account, see Heck (2008, 2009).

(14)   [Daa] **sá** i   éesh   al'óon?
         what Q your father he.hunts.it
         'What is your father hunting?'

(15)   [Aadóo yaagu] **sá** ysiteen?
         who   boat   Q you.saw.it
         'Whose boat did you see?'

(16)   [Aadóo teen] **sá** yigoot?
         who   with Q you.went
        'Who did you go with?'

(17)   [Wáa kwligeyi   xáat] **sá** i   tuwáa sigóo?
         how it.is.big.REL fish   Q your spirit it.is.happy
        '[A fish that is how big] do you want?'

<div align="right">Cable (2007)</div>

Another puzzle is relative clause where it is not transparent what phrase undergoes wh-movement.

(18)   John borrowed the book that Bill wrote.

One type of derivation merges the head *book* in the main clause and moves an operator to the specifier position of the relative CP. Another type of derivation generates the noun within the relative clause and it then undergoes movement. Its derivation is still a topic of debate. See Carnie et al. (2014) for further discussion.

2.1.3   Long Head Movement

Classic head movement does not move across an intervening head. In this study, long head movement refers to any displacement of head across (at least) an intervening head. One type of long head movement was introduced by Lema & Rivero (1990) and Rivero (1994). Consider (19):

(19)   **Dezir** -vos **he**   cosa   *Old Spanish*
         tell   -you will.1s thing
        'I will tell you something.'

<div align="right">Rivero (1993)</div>

The non-finite verb has moved from its merged position across the finite auxiliary verb, violating HMC. This kind of movement is attested in older Romance languages and some Slavic languages. Rivero's solution is that the verb forms an agreement chain with T as well as a movement chain with C. Thus, there is a set of chains linking three neighboring heads. This view entails that the HMC is a condition on representations instead of on derivations. This becomes a problem in the Minimalist Program as the computational system is derivational.

Another type is head-to-spec movement, proposed by Koopman (1984), Riemsdijk (1989), Larson & Lefebvre (1991), Hoge (1998), Holmberg (1999), Harbour (2008), Bastos (2002), Fanselow (2002), Landau (2006), Vicente (2007), Vicente (2009), and Ott (2010).

Crucially, assuming bare phrase structure, long-distance head-to-spec movement is expected. Since projections are defined relatively, at the specifier position, the head is simultaneously a maximal and minimal project. Under this view, the burden of argument lies in banning head-to-spec movement which would require additional empirical and theoretical justifications.

2.1.4   Remnant Movement

As noted in 2.1.1, head movement posits a number of theoretical problems and has been reanalyzed as either a PF phenomenon (see section 2.1.1) or as remnant movement. In this section, I introduce a representative reanalysis of head movement as remnant movement by Mahajan (2003), among others (Koopman & Szabolcsi 2000, Hinterhölzl 2002, Nilsen 2003). It's concluded that remnant movement can be a potential analytical route for Mandarin bare PC.

Remnant movement is defined as displacement of XP to a position c-commanding an element that had already been extracted from XP.

Mahajan (2003) reanalyzed head movement as remnant movement. He made the following two assumptions:

(i) Syntactic computation can only move phrases.

(ii) Only phrases can check features when they are in the specifier position of the checking head[3].

A remnant movement analysis of a typical *V-to-T* movement is represented in (20). The tense morphology is achieved via adjacency between V and T, and by ensuring that the VP has V as its right peripheral (overt) element[4].

(20)   ... V $_{vp}$] T t_{vp} (Mahajan 2003:223, (7))

Given that phrasal movement is in principle long distance, Mahajan (2003) derives the HMC by the notion that feature checking is subject to certain local constraints. In particular, consider:

(21)   [... I$_1$ [$_{vp1}$ V$_1$ I$_2$[$_{vp2}$ V$_2$]]]   (Mahajan 2003:229, (21))

V$_2$ would check the V feature of I$_2$ by VP$_2$-movement and therefore be unavailable to check the V feature of I$_1$ when it is Merged later. This would block the long head movement

involving V and I. However, A′-feature checking (topicalization, focus, etc.) is still possible and can trigger remnant VP-movement, yielding apparent long head movement, as in Hindi in (22).

(22)   khaaye   to   us-ne   socaa   ki   raam-ne   saare phal   the
        eat-PERF-masc-pl to-FOC he-ERG thought that Ram-ERG all   fruits be-masc-pl-PAST
        'He thought that Ram had EATEN all the fruits'

(Mahajan 2003:229, (22))

The above discussion makes clear that remnant movement provides a plausible analytical route for Mandarin bare PC. Section 3.1 discusses if this analysis can extend to Mandarin.

2.1.5   Linearization and Verb Doubling

Linearization is an important issue in the Minimalist Program and the doubling effect poses a challenge for the standard account of chain reduction (Nunes 2004)[5].

First, note that, traditionally, in the GB framework, linear relations were of secondary interest to hierarchical relations and were captured by directionality parameters (Chomsky 1981, Stowell 1981, Koopman 1984, Travis 1984). Under the Minimalist Program, linearization follows from the PF interface condition required by the Articulatory-Perceptual System. In particular, the reason linear order exists is that the A-P system can only manipulate one-dimension representations instead of the two-dimension hierarchical representations which have both precedence and dominance relations. As a result, a linearization mechanism is a necessary response to the PF legibility requirement.

Canonically, only the highest copy of a movement chain spells out. Principles determining this pattern have been proposed by several authors (Pesetsky 1998, Bošković 2001, Nunes 2004, Landau 2006, Harbour 2007). Nunes (2004) derives this pattern based on the Linear Correspondence Axiom, (23). In particular, if one copy is pronounced at more than one structural position, it will precede and follow itself, violating LCA. Hence, copies must be deleted for LCA to apply. However, not all copies can be deleted due to recoverability. As a result, in general, only one copy gets pronounced. Since the highest copy is the locus of the most feature checking, it remains undeleted.

(23)   *Linear Correspondence Axiom* (Kayne 1994:33)
        Let X, Y be nonterminals and x, y terminals such that X dominates x and Y dominates y. Then if X asymmetrically c-commands Y, x precedes y.

In this view, it is not transparent how the doubling effect arises in Mandarin PC. One would expect that only the higher verb receives phonetic realization, as in the case of German.

(24) Gelesen   hat Jürgen   das Buch
      read.PERF has Jürgen.NOM the book.ACC
      'As for reading, Jürgen has read the book.'   (Ott 2010:(1a))

Cheng & Vicente (2013) discuss two possible causes of the doubling phenomenon proposed in the literature and conclude that none of them can (fully) resolve the issue.

They first consider the *morphological repair* mechanism (Riemsdijk 1989, Abels 2001, Landau 2006): movement separates a lexical root from a bound morpheme. In order to avoid morphologically deviant structure, the lower copy is pronounced to host the bound morpheme. However, in Mandarin, although the lower verb can have aspectual markers, their presence is not obligatory, as in (25).

(25) chi, wo shi   tiantian chi, ...
      eat I   COP daily   eat
      'As for eating, I certainly eat every day, but...'   (Cheng & Vicente 2013:(60a))

Another strategy is *morphological fusion* (Marantz 1984, Embick & Noyer 2001, Nunes 2004, Matushansky 2006): two independent but linearly adjacent syntactic terminals are combined into one, as in (26) whose internal structural is invisible to syntax. In other words, the upper β is contained inside the fused constituent $[\alpha\beta]$ and is thus inaccessible for linearization purpose. As the chain reduction process is thus bled, both instances of β get pronounced.

(26) *Morphological fusion of α and β*
      $[\alpha][\beta] \rightarrow [\alpha\beta]$

However, the only constant constituent in a PC, namely the copula *shi*, cannot fuse with the lower copy because it is not obligatorily adjacent to the verb, as in (25). Maybe the verb can undergo fusion with a phonetically null focus head, as in the case of Brazilian Sign Language (BSL) (Nunes & de Quadros 2005). But unlike BSL which can also double a nominal, Mandarin can only double a predicate. Morphological fusion should take place regardless of the categorial status of the head. As a result, Cheng & Vicente (2013) conclude that this mechanism still cannot provide a straightforward explanation for the doubling effect.

In Chapter 5, I provide a solution to the doubling effect based on Chomsky (2008) and Aboh & Dyakonova (2009).

2.2   Predicate Cleft

In this section, I will present a previous account on Mandarin bare PC and discuss why the argument by Cheng & Vicente (2013) is incomplete. I then discuss cross-linguistic treatments of PC. The accounts surveyed here argue for head movement and against phrasal movement, except Harbour (2008). However, I show that Harbour's analysis cannot be extended to Mandarin and is in itself problematic.

2.2.1   Cheng & Vicente (2013) on Mandarin

Cheng & Vicente (2013) observe that Mandarin bare PC shows island sensitivity. Below, the island boundaries coincide with the focus boundaries.

(27)   [$_T$ **kan**], wo xiangxin [$_F$ ta shi **kan**-guo]   *long distance movement*
        see   I   believe   he COP see-EXP
        'As for seeing, I believe he has indeed seen it'

(28)   *[$_T$ **chi**], [$_F$ ta shi yiding **chi**-le]   yihou, wo cai huidao jia   *adjunct island*
        eat   he COP already eat-PERF after   I   then return home
        Intended: 'As for eating, I returned home after he has indeed already eaten.'

(29)   *[$_T$ **kan**], wo tongyi nei-ge   [$_F$ ta shi **kan**-guo (yici)] de kanfa   *complex NP*
        see   I   agree   that-CL   he COP see-EXP once   DE opinion
        island

        Intended: 'As for seeing, I agree on the opinion that he has indeed seen it once'

                              (Cheng & Vicente 2013:7-8, (11A, 12a, b))

This suggests the higher verb is displaced by wh-movement. However, what moves can be a null operator that licenses merger of the verb as a topic (Cable 2004). Cheng & Vicente (2013) rule out this possibility by lexical identity effects. Specifically, the higher verb has to stay identical to the lower verb; it is not possible for them to form a genus-species semantic relation in (30). This is unexpected given that Mandarin allows aboutness topic, as in (31).

(30)   ***lüxing**, [$_F$ wo shi **zuo**-guo feiji].   *lexical identity effects*
        travel   I   COP sit-EXP   airplane
        Intended: 'As for traveling, I have taken a plane.'

(31)   **yie-sheng dong-wu**, wo zui   xi-huan **shizi**.   *aboutness topic*
        wild   animal   I   most like   lion
        'As for wild animals, I like lions best.'   (Cheng & Vicente 2013:9, (15a, 16))

They follow Cable (2004) and Vicente (2007) in attributing the above effects to the copy theory of movement. Specifically, if both verbs are in a movement chain, their identity is enforced. Therefore, the higher verb has to be moved instead of being externally Merged.

Despite the typical wh-movement properties, Cheng & Vicente (2013) argue that the higher category undergoes head movement because a phrasal movement analysis cannot be implemented. In particular, as the object is stranded, it seems the derivation involves remnant movement. However, they argue this is not tenable due to the lack of a productive scrambling process that can feed remnant movement.

In particular, they consider a scrambling operation observed by Badan (2007) who argues that noun phrases in the position between the subject and the verb are contrastive topics, as in (32). As shown in (33-b-ii)[6], the object is scrambled to a pre-negation vP-external position and this should induce a contrastive topic reading. However, it is not the case that the object has to be interpreted as a contrastive topic in Mandarin bare PC. Thus this derivation undergenerates. In addition, Cheng & Vicente (2013) also contend that some of the movements are unmotivated, specifically the word-order movement in (33-b-iv)[7]. Therefore, a remnant movement analysis based on vP-external scrambling is untenable for Mandarin bare PC.

(32) Zhangsan [$_T$ na-ben shu] mei   kan.
      Zhangsan   that-CL book not.have read
      'Zhangsan has not read that book (but has read some other book(s)). '

(33) a. **kan**, Zhangsan shi mei   **kan** na-ben shu.
          read Zhangsan COP not.have read that-CL book
          'As of reading, Zhangsan has indeed not read that book.'
      b. (i)   Base representation: Zhangsan shi mei **kan** na-ben shu
          (ii)   Object scrambling[8]: Zhangsan [na-ben shu]$_i$ shi mei **kan** t_i
          (iii) Remnant fronting: [kan t_i]$_j$, Zhangsan [na-ben shu]$_i$ shi mei [**kan** t_i]$_j$
          (iv)   Word-order mvt: [kan t_i]$_j$, Zhangsan [shi mei [**kan** t_i]$_j$]$_k$ [na-ben shu]$_i$ t_k

They also note that Soh (1998) shows Mandarin has vP-internal object scrambling, but then immediately dismiss this option because "typically, objects do not scramble to the left of the verb". They only consider the scrambling discussed in Badan (2007), because here the object raises to the left of the aspectually marked verb, landing in a lower Top projection. In other words, they assume that a remnant movement analysis is only possible if the object is derivationally linearly to the left of the surface verb.

However, it is unclear why remnant movement has to be based on this assumption. I suspect their reasoning is that by moving the object to the left of the surface verb, the constituent containing the surface verb can undergo remnant fronting, straightforwardly capturing the fact that the verb is the only overt element at the left periphery in bare PC. By contrast, if object lands at the right of the surface verb, then the possible constituents undergoing remnant fronting have to be dominated by the projection containing the surface verb, which entails that the fronted category only has a covert verb. In this case, one has to explain why the verb is overt at the left periphery. However, this does not have to be a difficulty. The phonological requirement of the topic head imposes pronunciation of some constituent. It is not surprising that the head of the remnant phrase, the verb, receives phonetic realization. Note that it is not a problem that the object does not get pronounced, because the phonological requirement presumably only imposes a lower bound.

Therefore, the assumption restricting the possible derivations of remnant movement is not theoretically justified. Below, I further show empirical problems if one adopts vP-external scrambling.

Recall that the object lands in a Topic projection lower than CP. In addition, the object proceeds negation, as in (32), and aspectually marked verbs, as in (34).

(34)   Zhangsan [$_T$ na-ben shu] kan-guo le.   *vP-external scrambling*
       Zhangsan   that-CL book read-EXP PART
       'Zhangsan has read that book (but has not read some other book(s)).'

This means that the Top projection is higher than AspP but lower than CP, as in (35). In principle, AspP, vP and VP can all undergo remnant fronting, although Cheng & Vicente's said assumption suggests their derivation fronts AspP only, due to their reliance on the notion of surface verb. However, fronting AspP is problematic as this predicts that the higher verb would carry its aspectual marker, which is banned, (36).

(35)   CP > TopP > AspP > vP > VP

(36)   *kan-guo, Zhangsan [$_T$ na-ben shu] shi   kan(-guo) le.
        read-EXP Zhangsan   that-CL book COP read-EXP PART
        'As for having read, Zhangsan has read that book (but has not read some other book(s)).'

To circumvent this problem, an additional PF mechanism has to be posited, which has to account for why Mandarin does not allow the higher verb to surface with aspectual morphology whereas German and Russian do allow it, as in (37). Due to this empirical

challenge, fronting AspP is not a very plausible remnant movement analysis.

(37) Gelesen   hat Jürgen   das Buch.   *German*
      read.PERF has JürgenNOM the book.ACC
      'As for reading, Jürgen has read the book.'   (Ott 2010:(1a))

(38) Pisat'-(to)   ona   ego   pišet,...   *Russian*
      write.INF.IMPF-(PTCL) she.NOM him.ACC write.PRS.IMPF
      'As for writing, she does write it, ...'   (Aboh and Dyakonova 2009:(10a))

Another option is to front *v*P. This would predict that the subject can co-occur with verb and object at the left periphery. However, this is not an option in Mandarin, shown in (39). Note that (39) differs from a string-identical construction (40) in that a prosodic pause is obligatorily absent in the latter where the verb-object string presumably lands in a CP-internal topic position. Since regular PCs are compatible with a prosodic pause after the clause-initial topic, the fact that (39) is bad when it has a prosodic pause suggests subject-verb-object fronting is impossible.

(39) *wo kan shu, (wo) shi   kan-guo   le.
       I read book   COP read-EXP PART
       Intended: 'As for me reading book, I have indeed done so.'

(40) wo kan shu shi kan-guo le.

Consequently, VP is the only viable target of the fronting operation, and this is exactly predicted by *v*P-internal scrambling, shown in (41) (Soh 1998). The object lands in [Spec,FP], leaving VP as the only choice for fronting.

(41)
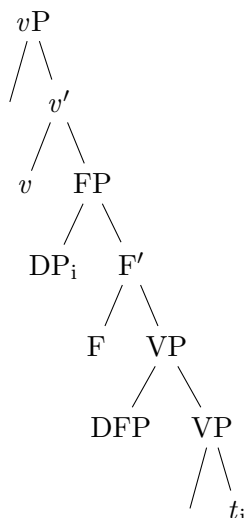
In a word, a remnant movement analysis based on Badan's vP-external scrambling faces more empirical challenges than that based on Soh's vP-internal scrambling. As Cheng & Vicente's argument crucially relies on the failures of remnant movement, it is necessary to consider all potential analyses, especially the most plausible one. They did not consider the full range of analyses, because of their assumption on the relative surface order of object and verb. However, this assumption is unwarranted, so their quick dismissal of the alternative analysis is not justified. Therefore, in order for the argument to be complete, it is necessary to consider the alternative scrambling operation. In section 3.1.1, I show that the alternative analysis is also untenable.

2.2.2   Landau (2006) on Hebrew

Landau (2006) discusses phrasal-infinitive fronting (*PI-fronting*) and bare-infinitive fronting (BI-fronting) in Hebrew, (42) and (43).

(42)   liknot et   ha-praxim, hi kanta.   *PI-fronting*
        to-buy ACC the-flowers she bought
        'As for buying the flowers, she bought.'

(43)   liknot, hi kanta   et   ha-praxim   *BI-fronting*
        to-buy she bought ACC the-flowers
        'As for buying, she bought the flowers.'

(Landau 2006:37, (8, 9))

He shows that the relation between the higher and the lower VP positions is formed by A′-movement due to their unbound and island-sensitive dependency. Also, PI-fronting trivially involves vP-copying whereas BI-fronting is long head movement instead of remnant movement. He argues that a remnant movement analysis is a nonstarter for Hebrew because it lacks a productive scrambling operation. In addition, movement vacating VP cannot be motivated for licensing purpose since this movement is never attested independent from VP-fronting and furthermore, there seems no restriction on the type of elements that can be stranded in VP-fronting, such as PPs and secondary predicates as in (44) and (45). Given the above, he concludes that BI-fronting has to be long head movement.

(44)   le'hitxabe, Gil hitxabe me'axorey ha-aron.
        to-hide   Gil hid   behind   the-closet
        'As for hiding, Gil hid behind the closet.'   (Landau 2006:(39a))

(45)   lecalem   et   GIl, Rina cilma   be-erom.
        to-photograph ACC Gil Rina photographed in-nude
        'As for photographing Gil, Rina photographed in nude.'   (Landau 2006:(39b))

2.2.3 Vicente (2007) on Hungarian

The general pattern of PC described by Vicente (2007) is that the verb cannot pied-pipe any constituents except particle preverbs, which are obligatorily pied-piped and repeated in the tail. The particles can be selected by the verb or nonselected.

For PCs without preverbs, he argues for a long head movement analysis from T to Top because the movement show island sensitivity, such as in (46) and no complements can be pied-piped, such as (47).

(46) a. *Úszni,   a hírt   hallottam, hogy úszott   Péter *Complex NP Island*
          swim.INF the news.ACC heard.1SG that swam.3SG Peter
          'As for swimming, I've heard the news that Peter swam.'

      b. *Úszni,   elolvastam a könyvet miután úszott   Péter *Adjunct Island*
          swim.INF PV.read.1SG the book.ACC after   swam.3SG Peter
          'As for swimming, I read the book after Peter swam'

      c. Úszni,   hallottam, hogy úszott   Peter
          swim.INF heard.1SG that swam.3SG Peter
          'As for swimming, I've heard that Peter swam.'

                                                         (Vicente 2007:(17))

(47) a. *A szobába menni, a szobába ment   tegnap   Péter
          the room.into go.INF the room.into went.3SG yesterday Peter
          'As for going into the room, Peter went into the room yesterday.'

      b. *A szobába menni, ment   tegnap   Péter
          the room.into go.INF went.3SG yesterday Peter
          'As for going into the room, Péter went into the room yesterday.'

      c. Menni, ment a szobába tegnap   Péter
          go.INF went the room.into yesterday Peter
          'As for going, Peter went into the room yesterday.'

                                                         (Vicente 2007:(21))

Particle preverbs in another type of PC construction must be pied-piped and repeated downstairs. In this type of PC, he argues that the verb and the particle move independently, landing in two different topic positions.

(48) El-olvasni, el-olvasta
      PV.read.INF PV.read.3SG
      'As for reading, he read (it).'   (Vicente 2007:(25a))

In particular, he shows that the verb and the particle does not form a constituent in the tail.

(49) a. El-olvasni, ki olvasta tegnap el?
          PV.read.INF who read.3SG yesterday PV
          'As for reading, who did some reading yesterday?'

      b. El-olvasni, nem olvasta János el
          PV.read.INF not read.3SG János PV
          'As for reading, János didn't read.'

(Vicente 2007:(25))

Also, the clefted verb can pied-pipe a climbed particle that it has not selected. Namely, two movement analysis seems independently needed.

(50) El akarni, el akart   menni Mari
      PV want.INF PV wanted.3SG go.INF Mari
      'As for wanting, Mari wanted to go.'   (Vicente 2007:(39))

He counters a remnant movement analysis with two main points: (i) since the target of the topicalization is T, a remnant movement analysis needs to displace AspP, the complement of T. According to the implementation of Koopman & Szabolcsi (2000), every subconstituent below the TP level needs to move independently of the rest. These movements are hard to motivate and will end up being stipulative; (ii) moreover, the verb and the particle have to move to the AgrS projection independently. However, if a remnant movement analysis has to posit independent movements to AsrS layer, it is unclear why the same operation cannot happen to the Top layer. Remnant movement thus loses its conceptual advantage in this case. Therefore, he concludes a remnant movement analysis is not superior at all.

In addition, he also shows that the construction cannot be derived by selective deletion, demonstrated by quantifier raising, idiom interpretation, and NPI licensing. See section 5.2 in Vicente (2007).

2.2.4   Harbour (2008) on Haitian Creole

Harbour (2008) proposes that PC in Haitian (52) derives from predicate reduplication in (51). Example (52) may mean that *Bouki is running flat out* or that *Bouki is running* as opposed to, say, *walking.* Construction like (51) is independently attested and its effect is similar to English "really/truly", or in the case of progressive aspect, *keep.*

(51) Bouki ap   kouri kouri
      Bouki PROG run   run
      'Bouki keeps running.'   (Harbour 2008:(3))

(52) Se kouri_i Bouki ap   *t*_i kouri.
      SE run   Bouki PROG   run
      'Bouki is *running.*'   (Harbour 2008:(1))

He emphasizes that the analysis is essentially phrasal movement, avoiding the problem of long head movement. In particular, a sisterhood relation is created from the two copies of the predicate in (52), one of which will project. It is immaterial which predicate projects as the branching node will be the same. Assuming bare phrase structure (Chomsky 1995b), the non-projecting predicate will be a maximal projection and thus undergoes wh-movement unproblematically.

(53)
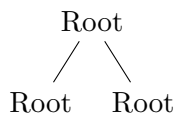
He further argues that his implementation is not a technical trick by pointing out a correct prediction it makes. That is, reduplication and PC cannot co-occur since the former feeds the latter, shown below.

(54) ?*Se kouri kouri Jan ap   kouri kouri.
       SE run   run   John PROG run   run

(55)   *Se kouri kouri Jan ap   kouri.
        SE run   run   John PROG run

(56) **Se kouri Jan ap   kouri kouri.
       SE run   John PROG run   run

                                           (Harbour 2008:(28, 29, 30))

However, this analysis is not portable to other languages due to the absence of productive syntactic reduplication. Also, he did not show that a duplicate can move independently of its sister, as independent evidence for his analysis.

2.2.5   Vicente (2009) on Spanish

Spanish PC allows fronting of a bare infinitive (57) or a predicate with its dependent (58).

(57) Leer,   Juan ha leído un libro.   *bare infinitive clefting*
      read.INF Juan has read a   book
      'As for reading, Juan has read a book.'

<div align="right">(Vicente 2009:159, (1a))</div>

(58) [Leer   el libro], Juan lo ha leído.   *full predicate clefting*
      read.INF the book   Juan CL has read
      'As for reading the book, Juan has indeed read it.'

<div align="right">(Vicente 2009:167, (10a))</div>

Vicente (2009) shows PC in Spanish is A′-movement due to its unbound dependency and island sensitivity and argues that it cannot be a case of remnant movement because vP-internal constituents do not show signs of having moved out of vP, based on evidence from binding, indefinites, subextraction, and clitic doubling.

For example, indefinite objects receive an obligatory specific reading if they evacuate their thematic domain (Diesing 1992). This pattern holds up for Spanish (Ordóñez 1997, 1998). In particular, indefinite objects in SVO and VSO clauses are ambiguous between a specific and nonspecific reading, (59), whereas nonspecific reading disappears in a VOS clause, (60).

(59) a. [$_{SUB}$ Cada policía]   arrestó [$_{OBJ}$ a un ladrón].   [specific/nonspecific]
              each policeman arrested   to a   thief
          'Each policeman arrested a thief.'   (Vicente 2009:(28a))

      b. Hoy   arrestó [$_{SUB}$ cada policía]   [$_{OBJ}$ a un ladrón]. [specific/nonspecific]
          today arrested   each policeman   to a   thief
          'Each policeman arrested a thief today.'   (Vicente 2009:(28b))

(60) Hoy   arrestó [$_{OBJ}$ a un ladrón] [$_{SUB}$ cada policía].   [specific/*nonspecific]
      today arrested   to a   thief   each policeman
      'Each policeman arrested a thief today.'   (Vicente 2009:(29))

Given the asymmetry, a remnant movement analysis would predict that stranded indefinites should be exclusively specific, since they must move out of vP. However, Spanish PC allows nonspecific reading for indefinite objects, shown in (61). Consequently, they cannot involve remnant movement.

(61) a. Arrestar, cada policía   arrestó   a un ladrón.   [nonspecific thief]
          arrest.INF each policeman arrested.3SG to a   thief
          'As for arresting, each policeman arrested a thief.'   (Vicente 2009:(30a))

      b. Comprar, Juan quiere   comprar un coche.   [nonspecific car]
          buy.INF   Juan wants.3SG buy.INF a   car
          'As for buying, Juan wants to buy a car.'   (Vicente 2009:(30b))

2.2.6   Ott (2010) on German

Ott (2010) argues that V-topicalization in German as in (62) is long head movement.

(62)   Gelesen   hat Jürgen   das Buch
       read.PERF has Jürgen.NOM the book.ACC
       'As for reading, Jürgen has read the book.'[9]   (Ott 2010:(1a))

Evidence comes from idiom interpretation, extraposition, freezing effects, subextraction, indefinites, and mismatch between categories that putative remnant movement can strand but are unable to be scrambled in other contexts.

For example, the categories that can be stranded under PC are distinct from those that can undergo scrambling independently. Consider the following:

(63)   a.   Geküsst hat Hilde   niemanden
            kissed   has Hilde.NOM nobody.ACC

       b.   Geküsst hat sie   bestimmt wen
            kissed   has she.NOM her   house.ACC red

       c.   Angemalt hat sie   ihr Haus   rot
            painted   has she.NOM her house.ACC red
                                                          (Ott 2010:(19))

A remnant movement analysis of (63) requires scrambling of *nemanden*, *wen*, and *rot*. However, (wh-)indefinites and small-clause predicates cannot be scrambled independently:

(64)   a.   weil (*niemanden) Hilde (*niemanden) ja (niemanden) geküsst hat
       b.   weil (*wen) sie (*wen) bestimmt (wen) geküsst hat
       c.   weil (*rot) sie (*rot) ihr Haus (*rot) ja (rot) angemalt hat

                                                          (Ott 2010:(20))

CHAPTER 3

THE ANALYSIS

3.1 Remnant Movement

3.1.1 Scrambling

Cheng & Vicente (2013) show that scrambling to vP external position is not compatible with a remnant movement analysis of bare PC. This section shows that although scrambling to vP internal position can feed remnant movement, PC also occurs in absence of scrambling. Therefore, this analysis undergenerates the data.

Soh (1998) proposes that Mandarin can scramble object to an vP internal position based on interaction between multiplicatives[10] and scope reading, as in (1) and (2)[11].

(1) wo qing-guo   [liang ci]   [quanbu de xuesheng].   *base order*
     I   invite-PERF two   time all   DE student
     'Twice, I have invited all students.'   [*$\forall > 2x$ / $2x > \forall$]

(2) wo qing-guo   [quanbu de xuesheng]$_i$ [liang ci] t_i.   *scrambled order*
     I   invite-EXP all   DE student   two   time
     'I have invited all the students twice'   [$\forall > 2x$ / $2x > \forall$]

This scrambling operation can provide the right configuration for remnant movement. If it indeed feeds remnant movement in PC, then PC would be incompatible with the order in (1). However, PC is compatible with the base order (3).

(3) qing, wo shi qing-guo   [liang ci]   [quanbu de xuesheng].
     invite I   COP invite-EXP two   time all   DE student
     'As for inviting, twice, I have indeed invited all the students.'

This means that Soh's scrambling cannot obligatorily feed remnant movement. Although there might be other scrambling operations in Mandarin that can feed remnant movement, until they are found in Mandarin, remnant movement does not provide a plausible analysis for Mandarin bare PC.

3.1.2 Subextraction

In this section, I provide subextraction facts that show remnant movement is an unlikely derivation for Mandarin bare PC.

Consider (4-a) and (5-a). A head noun can be topicalized from its modifier. However, the sentences become highly marked if the head noun is topicalized after the whole object was scrambled, as in (4-b) and (5-b). If either type of object scrambling occurs in (6), a bare PC, this would leave unexplained why the head noun can be topicalized from a scrambled position in (6) but the same extraction is marked in (4-b) and (5-b). In other words, any remnant movement analysis would create a mystery regarding extraction of a head noun from a scrambled position. Conversely, if scrambling never occurs in (6), the mystery would not occur.

(4)   *vP-external scrambling*

    a.   shu$_i$, wo du-le   [guanyu Zhongguo de t_i]
        book I   read-PERF   about   China   DE
        'As for the book, I have read the one about China.'

    b. ??shu$_j$, wo [guanyu Zhongguo de t_j]$_i$ du-le t_i
        book I   about   China   DE   read-PERF
        Intended: 'As for the book, I have read the one about China.'

(5)   *vP-internal scrambling*

    a.   shu$_i$, wo du-le   [liang ci]   [guanyu Zhongguo de t_i].
        book I   read-PERF two   time   about   China   DE
        'As for the book(s), twice, I have read the ones about China.'

    b. ??shu$_i$,   wo du-le   [guanyu Zhongguo de t_i]   [liang ci] .
          book I   read-PERF about   China   DE two time
        'As for the books, I have read twice the ones about China.'

(6)   shu$_i$, **du**, wo shi **du**-le   [guanyu Zhongguo de t_i]
        book read I   COP read-PERF about   China   DE
        'As for the book, as for reading, I have indeed read the book about China.'

3.2   Selective Deletion

In addition to remnant movement, an alternative analytic route is selective deletion (Fanselow & Ćavar 2002, Nunes 2004). This requires some mechanism that can delete the object in the topicalized VP. In particular, this analysis predicts that bare PC and full PC have the same LF interpretation but only differ at PF. Therefore, LF diagnostics such as scope interpretation, NPI licensing, and idiom interpretation will be instrumental.

I argue that scope interpretation disproves a selective deletion analysis in section 3.2.1.

Since Mandarin NPI licensing is subject to PF restriction, it cannot be used as a diagnostic. Last, idiom interpretation, a widely used diagnostic, shows a different pattern in Mandarin, suggesting that it is not a reliable cross-linguistic diagnostic.

3.2.1   Scope Interpretation

In this section, I show that bare and full PC are differentiated by scope interpretation. Specifically, if a bare upper predicate, as in (7-b), contains a covert object, then its LF would be the same to a full PC in (7-a). However, this is not the case. The universal quantifier cannot take wide scope over the existential quantifier, hence *[∀ >2]. By contrast, if the object is not pied-piped, the ambiguity in (7-b) follows.

(7)   a.   **ma**   [mei   yi-ge   nanhai], liang-ge nühai shi   **ma**-le.
            swear.at every one-CL boy   two-CL girl   COP swear.at-PERF
            'Sworn at every boy, two girls have.'   [2 > ∀ / *∀ >2]

       b.   **ma**,   liang-ge nühai shi   **ma**-le   [mei   yi-ge   nanhai].
            swear.at two-CL girl   COP swear.at-PERF every one-CL boy
            'Two girls have sworn at every boy.'   [2 > ∀ / ∀ >2]

This shows that at LF, the two sentences have very different structures. If the difference is entirely PF-related, then scope asymmetry would not exist.

Note that it is logically possible that there is some LF deletion operation that deletes the purported object in (7-b). However, this runs into a serious theoretical problem. Crucially, there is no independent justification for LF deletion and it is also very problematic for LF deletion to correlate with PF deletion. If LF deletion is contingent upon PF deletion, this would require LF read off PF information, contra the standard architecture of the grammar. Moreover, it is not even clear what kind of selective deletion would operate in this construction, let alone LF deletion that is dependent on PF deletion. The conditions where the selective deletion applies need to be principled and restricted. Without a principled mechanism, the possibility of selective deletion is at best a logical possibility for PC. In a word, the asymmetry between (7-a) and (7-b) can be straightforwardly captured by the analysis here. Positing an LF deletion operation without any independent evidence is ad hoc and uneconomical.

3.2.2   NPI

Vicente (2009) demonstrates that NPI licensing differentiates bare and full PC in Spanish. The same pattern holds in Mandarin.

(8) ??**mai** [renhe shu], ta shi mei   **mai**, buguo ... .
         buy any   book he COP not.have buy   but
      'As of buying any books, he indeed has not bought, but... .'

(9)   **mai**, ta shi mei   **mai** renhe shu, buguo ... .
      buy   he COP not.have buy any   book but
      'As of buying, he indeed has not bought any books, but ... .'

However, Mandarin NPI is subject to PF restriction, (10). In particular, if NPI licensing is strictly LF conditioned, then the subject in (10) can reconstruct to its theta position and be c-commanded by the negation. Since this is not true, then NPI licensing is also regulated by PF restriction. Namely, its phonetic realization has to be c-commanded by negation too.

(10)   *renhe ren   mei   lai
        any   person not.have come
        Intended: '*Anyone did not come.'

Given this PF restriction, the asymmetry between (8) and (9) cannot be readily attributed to different LF structures at the left periphery. The fronted categories can both contain an NPI object, one overt and one covert. The reason example (8) is bad can be that the overt object in (8) at the left periphery is not c-commanded by the negation. As a result, NPI licensing cannot be a diagnostic differentiating the two competing analyses in Mandarin.

3.2.3   Idiom Interpretation

Several studies show that bare PC disallows idiomatic reading of verb-object idioms (cf. Hebrew in Landau (2006), Spanish in Vicente (2009) and German in Ott (2010)). Under the assumption that the topic needs to be referential and that idiom interpretation is noncompositional, this is taken to mean that only the head is displaced; otherwise, the higher category should retain the idiomatic reading if it is an verb-object string at LF. For example, in Spanish, if the verb-object string is moved together as in (11), the sentence is ambiguous between a literal and an idiomatic reading. By contrast, fronting the verb alone disallows the idiomaticity as in (12).

(11)   [Estirar   la pata], Juan la ha estirado
        stretch.INF the leg   Juan cl has stretched
        'Juan has stretched his leg (as a warm-up exericse).'

        'Juan has died.'

(12) [Estirar], Juan ha estirado la pata.
       stretch.INF Juan has stretched the leg
      'Juan has stretched his leg.'

      '*Juan has died.'

However, in Mandarin, the idiomatic reading can be preserved by topicalizing either the verb or the object only, (13)[12] and (14)[13].

(13) **chao**, gongsi shi mei   **chao** youyu, dan fa,   shi fa-le
      Stir.fry company COP not.have stir.fry squid   but penalize COP penalize-PERF
      gongzi.
      salary
      'As for firing, the company has not fired (him), but they have indeed deducted his salary.'

(14) youyu$_i$, gongsi shi mei   chao   t$_i$, dan gongzi, queshi shi fa-le.
      squid   company COP not.have stir.fry   but salary indeed COP penalize-PERF
      'As for firing, the company has not fired (him), but they have indeed deducted his salary.'

This is surprising if idiom interpretation is entirely noncompositional. If topicalizing the verb allows idiomaticity while topicalizing the object does not, this could mean that the verb in fact pied-pipes a silent object, hence a remnant movement analysis. If topicalizing either the verb or the object disallows idiomaticity, this could mean that the verb moves alone. However, it is unexpected that topicalizing either preserves idiomaticity, as any component of an idiom should not be able to carry the idiomaticity.

A potential explanation would be that idioms differ in how compositional their interpretation is. In Mandarin, it is possible to say (15) and (16). Namely, a possessive and a DP can represent the patient of the event; it is even possible to quantify the object to convert an abstract idea of criticism into quantified instances of criticism, as in (16-c). This means these idioms are, to a certain extent, compositional. In (15), the object, *squid*, might be conceptualized as *job*, although *squid* cannot take modifiers for *job*. In the case of (16), the object, *cold water* seems to represent criticism or discouragement while the verb denotes 'carry out' the criticism or discouragement. Similarly, English example (17) shows that topicalizing a component does not necessarily disallow idiomaticity. The fact that an idiom component can be modified shows its degree of compositionality.

Vicente (2009) in fact hinted on this possibility in a footnote, stating " ... the different resistance of idioms to assigning a contrastive interpretation to just one of their parts". This seems to suggest that the idiom is to a certain extent compositional, if idiomaticity can be

preserved when its parts are interpreted contrastively. If it is noncompositional, then the contrastive interpretation of its parts would not be idiomatic.

If (some) idioms are to a certain extent compositional, then it is not surprising that fronting either the verb or the object can preserve idiomaticity.

(15)   a.   chao   ta-de   youyu
              stir-fry he-POSS squid
              'fire him/staff'

        b.   chao   yuangong youyu
              stir-fry staff   squid
              'fire staff'

(16)   a.   po   ta-de   leng shui
              pour he-POSS cold water.
              'dampen his enthusiasm'

        b.   po   chuangye-zhe leng shui
              pour entrepreneur   cold water
              'dampen entrepreneur's enthusiasm'

        c.   po   san-tong leng shui
              pour three-CL cold water
              'make three points of criticism'

(17)   *Those* strings, he wouldn't pull for you.[14]

An alternative account would be that the referential requirement may not be true and idioms can reconstruct to theta positions. Consider (18). Chomsky (1993) observes that for the idiomatic reading of *take picture*, *himself* can only be co-indexed with *Bill*. This argues for obligatory reconstruction of idioms to its first merged position in wh-movement. If this is true, then it is not unexpected that fronting either the verb or the object can preserve the idiomaticity. In the case of Spanish example (12), repeated below as (19), *leg* is an inalienable object[15] in the string *stretch the leg*. This property might require strict inseparability of the verb and object, if idiomaticity needs to be maintained. So the loss of idiomaticity might be attributed to the inalienability instead of a general restriction on idiom interpretation. Again, in this view, idiom interpretation cannot be a diagnostic for head movement, as whatever gets displaced will reconstruct to its theta position at LF.

(18)   John wondered which picture of himself$_i$ Bill$_i$ took.

(19)   [Estirar],   Juan ha estirado   la   pata.
         stretch.INF Juan has stretched the leg
         'Juan has stretched his leg.'

   '*Juan has died.'

3.3   Long Head Movement

Example (22) represents a derivation for the bare PC sentence (2), repeated below as (21). The verb undergoes canonical head movement from V to Asp, via v, which forms a verb raising chain. Head movement to Asp is required in Mandarin, due to example (20). On the other hand, the [topic] feature at the left periphery probes the verb which undergoes A′ movement to the specifier of Top, forming a A′ chain.

(20)   Zhangsan zuo-le   wanfan.
        Zhangsan make-PERF dinner
        'Zhangsan has made the dinner'

(21)   [$_T$ **zuo**], [$_F$ Zhangsan shi   **zuo**-le   (wan-fan)], buguo... .   *bare PC*
         make   Zhangsan COP make-PERF   dinner   but
        'As for cooking, Zhangsan did cook the dinner, but... .'

(22)
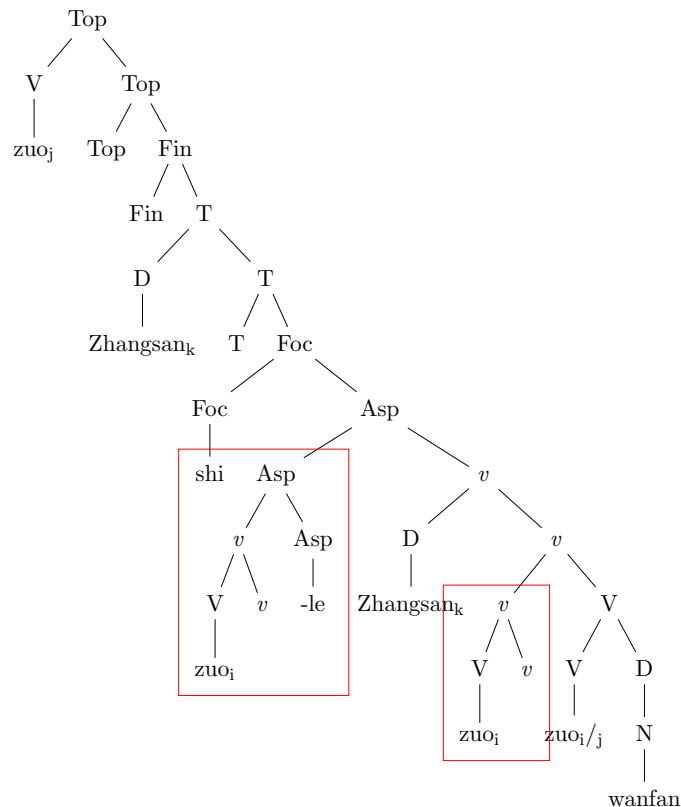
Note the current study is only committed to the representation of the topicalization operation. It remains neutral in terms of the syntax of the bare *verum* focus clause or whether Mandarin has T. Also, the focus interpretation is presumably achieved through covert movement to [Spec,Foc]. However, I remain noncommittal on all these issues. I believe the derivation of the topicalization operation is independent from these issues and if anything, it has to be accommodated by any analyses on the other details of the construction.

CHAPTER 4

THE PUTATIVE VP FRONTING

It was shown in 1.1 that objects can be optionally pied-piped with the verb in (3), repeated below as (1). Thus far, I have only presented data where there is only one object. Below I show the fronting pattern of a ditransitive verb, whose restriction follows the constituency. Then, I provide data on the puzzling restriction on fronting when VP-internal constituents are not nominals.

(1)   [T **zuo** wan-fan], [F ta shi **zuo**-le   (*wan-fan)], buguo... .   *full PC*
         make dinner   he COP make-PERF   dinner   but
   'As for making dinner, he did make it, but... .'

First, consider the fronting pattern involving a ditransitive verb, *gei*, 'give'.

(2)   Zhangsan gei-le   wo yi-ben shu.   *Base sentence*
       Zhangsan give-PERF me one-CL book.
       'Zhangsan has given me a book.'

(3)   [T gei], Zhangsan shi gei-le   wo yi-ben shu.   *Bare PC*
         give Zhangsan COP give-PERF me one-CL book.
       'As for giving, Zhangsan has indeed given me a book.'

(4)   *[T gei wo], Zhangsan shi gei-le   (wo) yi-ben shu.   *Verb+IO*
         give me   Zhangsan COP give-PERF me   one-CL book.
       Intended 'As for giving me, Zhangsan has given me a book.'

(5)   [T gei yi-ben shu], Zhangsan shi gei-le   (wo) (*yi-ben shu)   *Verb+DO*
         give one-CL book Zhangsan COP give-PERF   me   one-CL book
       'As for giving a book, Zhangsan has indeed given (me) one.'

(6)   [T gei wo yi-ben shu], Zhangsan shi gei-le   (*wo) (*yi-ben shu) *Verb+IO+DO*
         give me one-CL book Zhangsan COP give-PERF   me   one-CL book
       'As for giving me a book, Zhangsan has indeed done so.'

This fronting pattern respects constituency. As shown in (7), given that the *give-me* string does not form a constituent, it is not surprising that (4) is bad. By contrast,

give-a-book and *give-me-a-book* all form a constituent and thus undergoing fronting is not problematic. Note that it is unclear how a remnant movement analysis can account for this pattern. In principle, the object, *a book*, can be scrambled out of *v*P, and this would render (4) a possible construction.

(7)
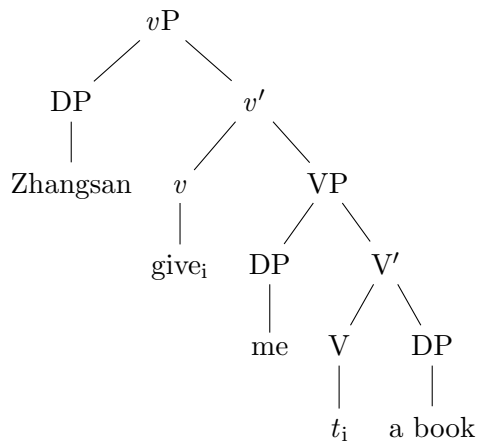
It was assumed in this study up to this point that (all) VP can be fronted. However, this is not true. Specifically, VPs with a PP, CP, or AdvP complement cannot undergo fronting, shown below. At this point, I do not have an explanation and the puzzling data are worth further study.

(8) **PP**

    a. *[T **ting** zai xuexiao], [F che   shi   **ting** (zai xuexiao)].
        park at school   vehicle COP park at   school
        'As of being parked at the school, the vehicle is indeed parked there.'

    b. [T **ting**], [F che   shi   **ting** *(zai xuexiao)].
        park   vehicle COP park at   school
        'As of parking, the vehicle is indeed parked at the school.'

(9) **CP**

    a. *[T **huaiyi** qian   mei-le],   [F ta shi huaiyi (qian   mei-le)].
        suspect money disappear-PERF   he COP suspect money disappear-PERF
        'As of suspecting, he is indeed suspecting the money has disappeared'

    b. [T **huaiyi**], [F ta shi **huaiyi** qian   mei-le].
        suspect   he COP suspect money disappear-PERF
        'As of suspecting, he is indeed suspecting the money has disappeared.'

(10) **AdvP**

a. *[T **jiang**   de hen qingchu], [F laoshi   shi   **jiang**   de hen qingchu].
        Explain DE very clear   teacher COP explain DE very clear
    'As of explaining very clearly, the teacher indeed explained very clearly.'

b.   [T **jiang**], [F laoshi   shi   **jiang**   *(de hen   qingchu)].
        explain   teacher COP explain DE   very clear
    'As of explaining, the teacher indeed explained very clearly.'

CHAPTER 5

THE VERB DOUBLING EFFECT

In this chapter, I present a solution to the multiple spell-out phenomenon observed in Mandarin PC, based on the view on A- versus A′-chains in Chomsky (2008).

Consider (1-a) which is derived by two separate movements, one moving *who* from [Spec,vP] to [Spec,TP] and the other moving it to [Spec,CP]. The derivation is represented in (1-b).

(1)   a.   Who saw Bill?

        b.   who$_i$ [C [who$_j$ [T [who$_{i/j}$ v [see John]]]]]

Chomsky points out that there is no direct relation between the head of the A-chain and that of the A′-chain. Aboh & Dyakonova (2009) extend this intuition to head movement, specifically, PC with doubling in Russian and Gungbe, and, following the standard version of chain reduction proposed by Nunes (2004), argue that doubling is just an instance of parallel chains where the overt copies are heads of two distinct chains anchored to the same foot. Namely, doubling only occurs when two probes find the same goal.

In the case of Mandarin, the verb undergoes head movement to AspP and this canonical head movement chain will be subject to chain reduction. Additionally, the verb is probed by the Top head and undergoes A′ movement to the left periphery. The head of the A′-chain thus receives phonetic realization.

This solution also applies to languages such as German which only has one phonetic realization of the verb, as in (2). Since the fronted verb is a perfect participial, the verb launches from Asp, the landing site of verb raising. In other words, Top and Asp do not find the same goal, hence bleeding doubling.

(2)   Gelesen   hat Jürgen   das Buch
        read.PERF has Jürgen.NOM the book.ACC
        'As for reading, Jürgen has read the book.'   (Ott 2010:(1a))

Note that this solution converges with my discussion on the topicalization operation. Crucially, the launching site has to be V in order for the doubling effect to occur.

CHAPTER 6

CONCLUSION

6.1   Predicate Cleft

To recap, I complement Cheng & Vicente's argument on refuting a phrasal movement analysis for Mandarin bare PC. Instead, a long head movement analysis clearly captures the empirical facts. I have achieved this goal by considering a full range of possibilities of phrasal movement. Regarding remnant movement, I have shown that vP-internal scrambling warrants consideration although ultimately it fails to yield a empirically adequate analysis; I have also provided converging evidence against remnant movement based on the subextraction facts and the ditransitive fronting pattern. On the other hand, selective deletion or any PF account is directly disproved by scope interpretation.

Crucially, the current study does not claim that bare PC across languages should all be analyzed as long head movement. The current view on Russian PC adopts a remnant movement analysis (Abels 2001, Aboh & Dyakonova 2009).

A few words are in order regarding the theory on the displacement of heads. First, head-to-spec movement is expected under the Minimalist Program (Chomsky 1995b). Structure building in bare phrase structure is a function of Merge that makes reference to the featural content in lexical items. In addition, projection size is defined relationally. A head landing in a specifier position is simultaneously a minimal and maximal projection. Given the right feature to be probed, nothing prevents heads from moving in the same manner to phrases. The current finding thus supports bare phrase structure and poses no surprise given the current theoretical framework. In fact, ruling syntactic head movement out would require additional justification.

Second, it is not problematic for canonical head movement to be syntactic or have a syntactic component. Canonical head movement was thought to be the only type of displacement operation of a head. Due to its special properties, arguments have been made to get rid of syntactic head movement altogether (Chomsky 2001, Brody 2000, Mahajan 2003, Matushansky 2006). In particular, the head adjunction operation has to be stipulated;

canonical head movement is also subject to strict locality, in addition to violating Extension Condition or having no LF effect. Due to its many problems, attempts have been made to analyze syntactic head movement as phrasal movement (Koopman & Szabolcsi 2000, Hinterhölzl 2002, Mahajan 2003, Nilsen 2003) or a PF phenomenon (Chomsky 2000, Brody 2000, Abels 2001, 2003, Boeckx & Stjepanović 2001, Harley 2004). However, given the strong empirical evidence for A′ head-to-spec movement, syntactic displacement of a single head is independently needed and it also displays LF effects. Given this, the motivation to dispense with syntactic head movement becomes much weaker, as a single head minimally has to be able to move and this movement does not necessarily have the oddities mentioned before. Moreover, head movement and phrasal movement become more parallel, with both canonical head movement and A-movement showing no LF effect while their A′ types behave similarly. The fact that verb raising shows strict locality can be attributed to the overt expression of subcategorization (Svenonius 1994, Pesetsky & Torrego 2001, Matushansky 2006). In sum, it no longer appears problematic for canonical head movement to be syntactic or to have at least a syntactic component.

Two questions are worth further study. First, what conditions the fronting restriction in Mandarin full PC? It is also worthwhile to see if similar pattern holds cross-linguistically. Second, why can VP be probed by Top while *v*P is banned in Mandarin? Both options are available in a number of languages, such as Spanish and German (Vicente 2009, Ott 2010).

6.2   The Doubling Effect

I have also shown that the verb doubling effect can be accounted for, adopting the proposal on parallel chain formation (Chomsky 2008). Under this hypothesis, the doubling effect conforms to the general principles of chain reduction – only heads of chains are pronounced (Aboh & Dyakonova 2009).

6.3   Idiom Interpretation

In addition, I have shown that idiom interpretation shows a more complicated pattern than what is presented in several studies, which renders it a problematic diagnostic for long head movement. I have presented two alternative accounts on the preservation of idiomaticity in partial topicalization of idioms. The interpretation of idioms is generally thought to be noncompositional and they are canonically considered to be a chunk, much like a lexical item, in syntax. However, given the facts in section 3.2.3, this understanding is not uncontroversial and certainly merits further examination.

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Notes

[1]Hereafter, focus and topic will be marked with [$_F$ ...] and [$_T$ ...] respectively, while constituents bearing focal stress will be in small caps.

[2]I assume early version of Merge but it is compatible with later Minimalist syntax.

[3]This entails multiple specifier positions because T has both D and V feature

[4]Mahajan (2003) also addresses how SVO and SOV word-order can be derived. I left it out because it is not directly relevant to the discussion here.

[5]I will not provide a review on resumption which is defective spell-out, different from the doubling phenomenon in question.

[6]Cheng & Vicente (2013) in fact attempt a remnant movement analysis for the *lian...dou* construction, another focus construction considered in parallel with the bare PC for the purpose of deriving remnant movement analysis. However, they did not give a sample derivation of Mandarin bare PC.

[7]They did not specify which one but the only plausible one would be (33-b-iv)

[8]In principle, the object can also land between the copula and negation.

[9]No translation was offered in the original paper.

[10]Or, duration/frequency phrase (DFP) in her terms.

[11]Native speakers differ in whether to accept a post-multiplicative demonstrative pronoun. See Tang (1990), Kung (1993), Huang (1994) and Lin (1994)

[12]Four out of four informants accept this sentence.

[13]Three out of four informants accept this sentence

[14]http://people.umass.edu/scable/LING720-FA13/Handouts/Keine-Presentation.pdf

[15]Thanks to Beth Levin for her feedback during UUSCIL 2015