

# Adverbials and Mandarin argument structure

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## 1 Introduction

This paper deals with the syntax and interpretation of postverbal adverbials and the internal argument in Mandarin Chinese. It will be shown for internal arguments and adverbial expressions such as duration, iteration, manner predicates, resultative clauses and resultative verbal compounds, that their varying distributional patterns all reduce to the same basic syntax. This will contrast with current approaches that require variation in the syntax of First Merge for these elements. Underpinning the uniformity of our account is a reduplicative phenomenon, known as verb copying (VC), that interacts with the different adverbials mentioned. In a theoretical framework along the lines of Chomsky (2000, 2001), involving movement by copy, we arrive at a novel account of reduplication, without multiplying stipulations. Reduplication, it will be argued, may occur when certain structural conditions are met; no special morphology is required. Assuming an analysis of VC that meets these conditions means assuming that the various constructions that are compatible with VC must all have the same basic structure needed to produce these conditions. Though this assumption constrains the possible analyses of the verbal domain ( $\nu$ P) in Mandarin, it does not diminish descriptive scope over the data, relative to competing proposals – on the contrary, it extends the scope, at the same time streamlining the description.

We begin in section 2 with a look at the different types of postverbal adverbials and their distribution with respect to the internal arguments of transitive verbs. Included is a presentation of VC. Section 3 lays out our analysis of the basic structure of  $\nu$ P in Mandarin, including the variety of constructions produced by the interaction of properties specific to the different adverbials and two other factors: the movement of the internal argument and the movement of VP. The essentials of the syntax of reduplication are put forth in section 4, including a comparison to the surprisingly non-reduplicative phenomenon of remnant movement. And in section 5 we will consider the structural assumption that is common to most other analyses of these constructions, but that is inherently incompatible with our own proposal.

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## 2 The data

### 2.1 Adverbials and Verb complementation

Traditional Chinese grammar distinguishes between two classes of adverbials according to distribution with relation to the verb. Preverbal adverbials are referred to as *zhuangyu*, and they typically include those adverbials which situate the event in time or space, express manner or speaker attitude. Postverbal adverbials, or *buyu* – the class which most concerns us here – include expressions of duration, iteration, result and (again) manner.<sup>1</sup> Examples are given below. Notice that resultatives can be clausal or incorporated into a compound with the main verb.

(1) *Buyu* types<sup>2</sup>

a. *duration*

wo pao le san xiaoshi  
1s run PFV three hour  
'I ran for three hours.'

b. *iteration*<sup>3</sup>

wo tiao le san ci  
1s jump PFV three time  
'I jumped three times.'

c. *manner*

ta chang de hen haoting.  
3s sing DE very good.listen  
'He sings well.'

d. *resultative clause*

tamen chang de wo mei xinsi kan xiaoshuo.  
3pl sing DE 1s have.no mood read novel  
'Their singing made me not in the mood to read novels.' (from Li 1998)

e. *resultative verb compound*

ta chang-lei le.  
3s sing-tired PFV  
'She sang herself tired.'

The distribution of *buyu* adverbials shows variation relative to the internal argument (IA) of the main verb. Duratives and iteratives can be directly preceded or followed by IA (though each order imposes its own interpretative restrictions; see footnote 15).

<sup>1</sup>Traditionally, *zhuangyu* can be translated as 'adverbial' and *buyu* as 'complement'.

<sup>2</sup>Abbreviations used throughout in the glosses: CL=classifier; EXP=experiential; PFV=perfective.

<sup>3</sup>"Frequency" is the term usually employed in the literature, instead of "iterative", but it seems better suited to describe adverbials that express the relation between event occurrences and time frame, such as *chang*<sup>2</sup> ('often').

- (2) a. wo kan le san xiaoshi shu  
 1s read PFV three hour book  
 'I read for three hours.'
- b. wo kan le zhei ben shu san xiaoshi  
 1s read PFV this CL book three hour  
 'I read this book for three hours.'
- (3) a. wo piping le san ci Zhangsan  
 1s criticize PFV three time Zhangsan  
 'I criticized Zhangsan three times.'
- b. wo piping le Zhangsan san ci  
 1s criticize PFV Zhangsan three time  
 'I criticized Zhangsan three times.'

IA cannot follow result clause adverbials at all, though it can directly precede them, as shown in (4).<sup>4</sup> In (5) we see that IA may neither follow nor directly precede manner adverbials.

- (4) a. \*ta qi de hen lei ma.  
 3s ride DE very tired horse
- b. ta qi de ma hen lei.  
 3 ride DE horse very tired  
 'He rode the horse until it was tired.'
- (5) a. \*ta chang de hen haoting ge.  
 3s sing DE very good.listen song  
 (intended: 'He sings songs/the song well.')
- b. \*ta chang de ge hen haoting.  
 3s sing DE song very good.listen

In the case of *resultative verbal compound* (RVC) constructions, the compounding of the result expression with the verb means that a postverbal IA is necessarily post-adverbial—there is no place for a pre-adverbial postverbal argument.

- (6) ta qi-lei le (nei pi) ma.  
 3s ride-tired PFV that CL horse  
 'He rode horseback/ that horse and got tired.'  
 'He rode the horse until it was tired.' (cf. Cheng (2005))

Note, however, that (6) has two different readings: one where the resultative is subject-oriented, one where it is object-oriented.<sup>5</sup>

<sup>4</sup>See Li (1999:459) for a demonstration that the nominal construed the IA of the main verb cannot be analyzed as being in the result clause.

<sup>5</sup>An additional difference between the readings is discussed in footnote 15.

## 2.2 Verb copying

There is another possibility for the postverbal distribution of *buyu* and IA, open to all *buyu* (listed), and that is the VC construction. In these cases, the verb occurs twice, the first occurrence directly preceding the IA, the second occurrence, possibly inflected for aspect, directly preceding the adverbial.

- (7) ta kan zhei ben shu kan le san ci / san xiaoshi  
 3s look this CL book look PFV three time / three hour  
 ‘She read this book three times/ for three hours.’
- (8) ta qi nei pi ma qi de hen lei  
 3s ride that CL horse ride DE very tired  
 ‘He rode that horse such that he/it got tired.’
- (9) ta chang ge chang de hen haoting  
 3s sing song sing DE very good.listen  
 ‘She sings (songs) well.’

In the case of RVCs, the resultative predicate is compounded with the second occurrence of the verb, directly following it, and directly preceding any aspectual inflection.

- (10) ta qi (nei pi) ma qi-lei le  
 3s ride that CL horse ride-tired PFV  
 ‘He rode horseback/ that horse and got tired.’

Notice that in (10), in contrast with (6) and (8), only the subject-oriented reading is available and not the object-oriented one.

On the surface, the VC construction appears somewhat symmetrical, having two VPs, each with same V head, only with different complements. So it is important to note the more asymmetrical properties of VC: aspectual morphology can only appear on the second V, not the first, (7)’; and IA and the adverbial cannot switch places, (7)’<sup>6</sup>.

- (7)’ \*ta kan le zhei ben shu kan san xiaoshi  
 (7)’’ \*ta kan san xiaoshi kan le zhei ben shu

Another important property is that the first occurrence of V can move leftwards with IA.

- (11) (kan shu) wo (kan shu) keyi (kan shu) kan san tian.  
 look book 1s look book can look book look three day  
 ‘I can read books for three days.’ (cf. Tang 1990:198)

## 2.3 Summary

Before moving on to the analysis of these data, let us have an overview of the different properties it should account for.

<sup>6</sup>A reviewer suggests that the first instance of V can be aspectually marked. However, native speakers interviewed only accept such sentences if there is a break before the second V, which I take to mean that these are biclausal or *vP*-coordinated structures.

(12) Postverbal distribution of IA relative to *buyu* adverbials

<i>Buyu</i> type	Pre-adverbial	Post-adverbial	VC
Durative	Yes	Yes	Yes
Iterative	Yes	Yes	Yes
Result clause	Yes	No	Yes
Manner	No	No	Yes
Resultative compound	n/a	Yes	Yes

In addition to these distributional facts, a proper analysis of VC and the  $\nu$ P phase in Mandarin should account for:

- (13) a. the asymmetry of VC – ex. (7)', (7)"  
 b. the mobility of V + IA – ex. (11)  
 c. subject/object-orientation in RVC constructions – ex. (6) and (8) vs. (10)

### 3 Analyzing $\nu$ P and VC

In this section, we will look at the basic syntax of  $\nu$ P in transitive constructions<sup>7</sup> containing *buyu* adverbials, proceeding from one construction to the next by the manipulation of three factors: IA movement, VP movement and verb movement.

#### 3.1 $\nu$ P

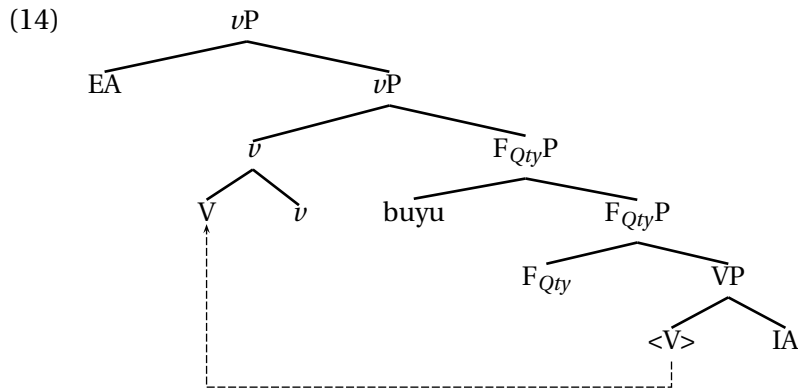
Beginning at the bottom, IA is selected by V, with which it merges as a complement. VP is then selected by a functional head  $F_{Qty}$  (for "quantity"), associated with a *telic* 'inner' aspect (see Pereltsvaig (2000), Kratzer (2002), and Borer (2005), among others). This head requires a *situation delimiter argument* (Wechsler and Lee (1996)), and to that end it may either agree with a bound IA or with an adverbial expression merged as its specifier, as seen in (14).<sup>8</sup> Next, the light verb  $\nu$  merges, introducing the external argument (EA) (Kratzer (1994), Chomsky (1995)). We assume that 'outer' aspectual morphology, like the perfective *le* or the 'experiential' *guo*, are realizations of  $\nu$ . We also assume that the *de* particle that directly follows the verb before result clauses and manner adverbials realizes  $\nu$ .<sup>9</sup> As in many languages,  $\nu$  triggers head movement, causing V to adjoin to it. As it stands, (14) derives post-adverbial distribution of the IA, as in (2a).<sup>10</sup>

<sup>7</sup>The syntax of the corresponding unergative constructions differs in no substantial way not directly deducible from the absence of IA.

<sup>8</sup>The agreement relation here might be the assigning of accusative case. See Travis (1984), Wechsler and Lee (1996), Pereltsvaig (2000), Kratzer (2002), and Borer (2003), among others.

<sup>9</sup>*De*, like *le* and *guo*, is a functional, toneless variant of a lexical verb. It is also in complementary distribution with them.

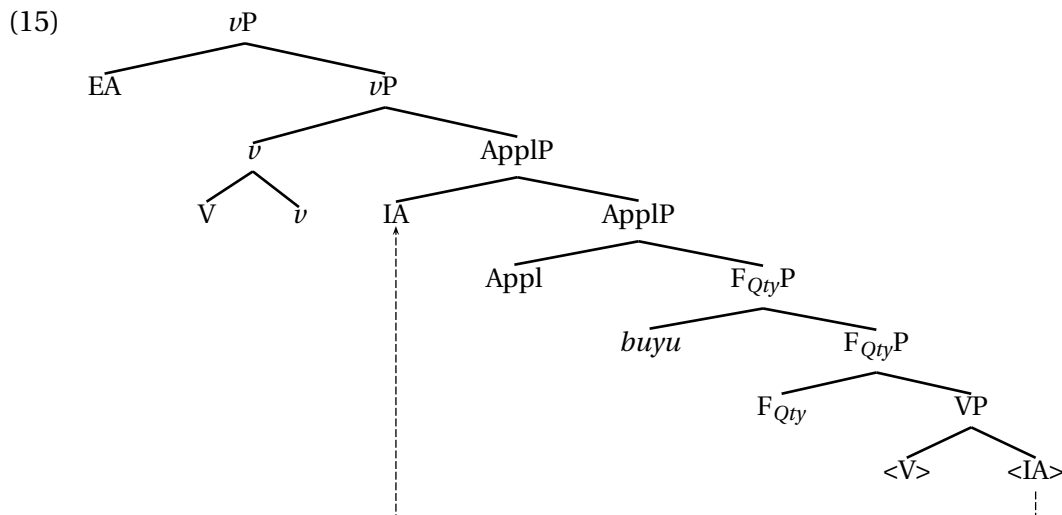
<sup>10</sup>The angle brackets are an informal notation indicating an unpronounced copy (i.e., a 'trace'). Only the top node of an unpronounced constituent is bracketed.



This structure is distinct from other proposals for Mandarin in that all *buyu* adverbials are merged in a position c-commanding VP. In addition to deriving post-adverbial IA distribution, it is also a key step for deriving the constructions analyzed in the following sections.

### 3.2 IA movement

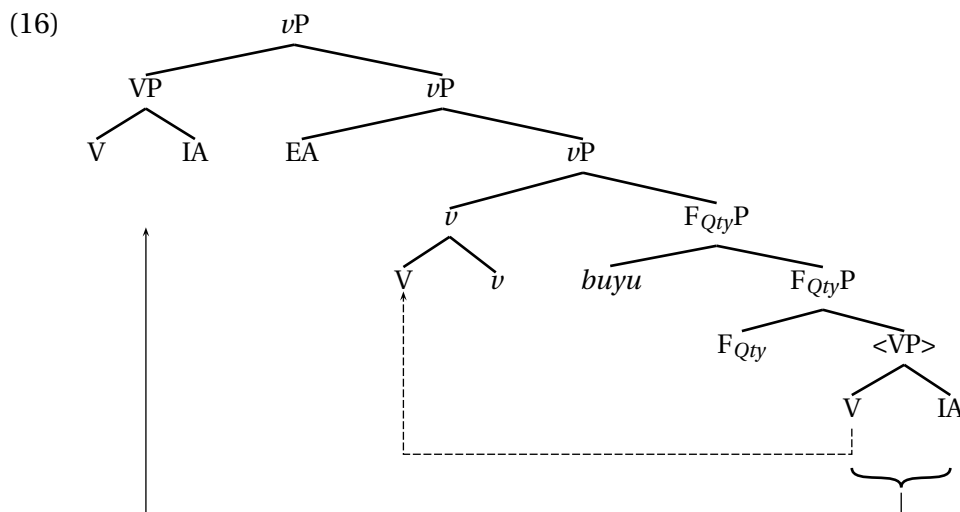
Pre-adverbial distribution is produced by raising IA to the spec of a projection higher than the adverbial, as argued for by Soh (1998). I have given this projection the designation of applicative (Appl) for reasons that will come to light below, in section 3.5. But this position could just as well be an outer specifier of  $F_{Qty}P$ , so long as it c-commands the adverbial.



This structure accounts for the distribution observed in (2)b, with duratives and iteratives, and in (4)b, with resultative clauses.

### 3.3 VC

The derivation of VC constructions picks up where we left off in (14). The next crucial step is when movement of VP to the edge of the phase is opted for.<sup>1112</sup>



So V is involved in two displacements: in one it moves as a head, in the other a constituent containing it is moved. V now has two occurrences, one as the head of a chain, the other within the head of a chain. Crucially, the relation of c-command does not obtain between the two. In section 4, we will propose that whatever the operation is that selects which copy in a movement chain is pronounced, it relies on c-command to recognize such a chain. In this case, no chain is formed directly between the upper occurrences of V, allowing both to be pronounced, deriving the reduplication of VC constructions. How this case differs from remnant movement, despite obvious similarities, will also be discussed in section 4.

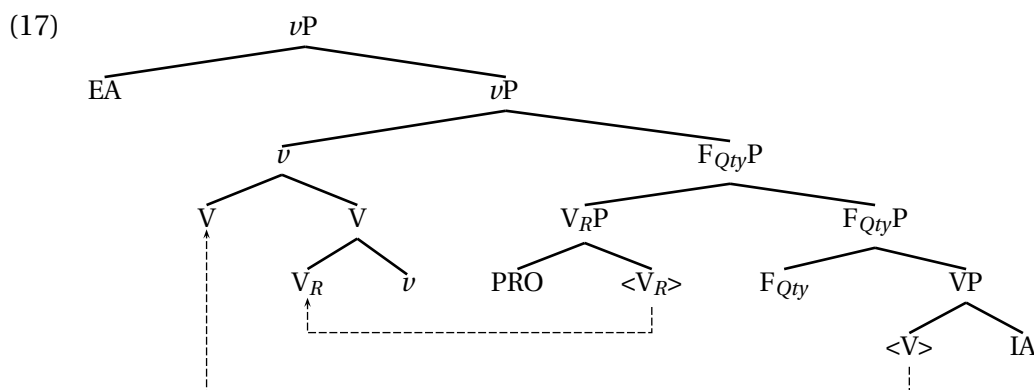
The derivation in (16) succeeds in capturing the asymmetrical properties of VC featured in (7)' and (7)". The first V cannot bear aspectual marking since it is still in VP. And the adverbial cannot switch places with IA and directly follow the first V, because it is not V's true complement and there is no constituent exclusively containing V and the adverbial which could raise to the edge of  $vP$ . As V and IA do form a constituent, it is not surprising to see them move together, in (11), to positions higher than the edge of  $vP$ .

<sup>11</sup>Following Belletti's (2001) idea of a "VP periphery" or Chomsky's (2005) notion of "edge features", we expect VP's movement to the edge of  $vP$  to be related to information structure or scope-taking. This prediction seems to be borne out—see Tsao (1990) and Tang (1990). This view of VC is contrasted with proposals claiming that the phenomenon is mainly a 'last resort' strategy for argument licensing. These are discussed briefly in section 5.

<sup>12</sup>This basic structure for VC was first proposed independently in Gouguet (2003) and Bartos (2003). Bartos' proposal only uses this structure to account for cases involving duratives and iteratives, using an entirely different structure for result and manner (see section 5). The account of the reduplicative effect proceeds along different lines as well.

### 3.4 RVCs

The particular properties of RVC constructions stem from a difference in the adverbial itself, and this difference interacts with the three derivation types just seen. While result clause adverbials are full CPs, the resultative in RVCs has no independent flexional structure – it is analyzed as a VP (noted as  $V_{RP}$ ) with a null argument (following Huang 1992).<sup>13</sup> Because of this,  $V_R$  is in the domain probed by  $v$ , causing it to raise at the same time as the main V. Thus the compound  $V-V_R-v$  is formed in an example of ‘multiple’ verb movement (cf. Collins (2002a)). That RVC should be derived through multiple verb movement is already proposed by Wu (2004b), though the overall structure is somewhat different. When multiple verb movement takes place in a derivation such as (14), we arrive at this structure:<sup>14</sup>



Basically following Huang’s (1989) general control theory, a null subject in Chinese will be bound by the first c-commanding DP in its domain (or free if there is no such DP). Here, PRO’s domain is the full clause, meaning that it will be bound by EA. As such, (17) derives the subject-oriented reading of (6), repeated here.

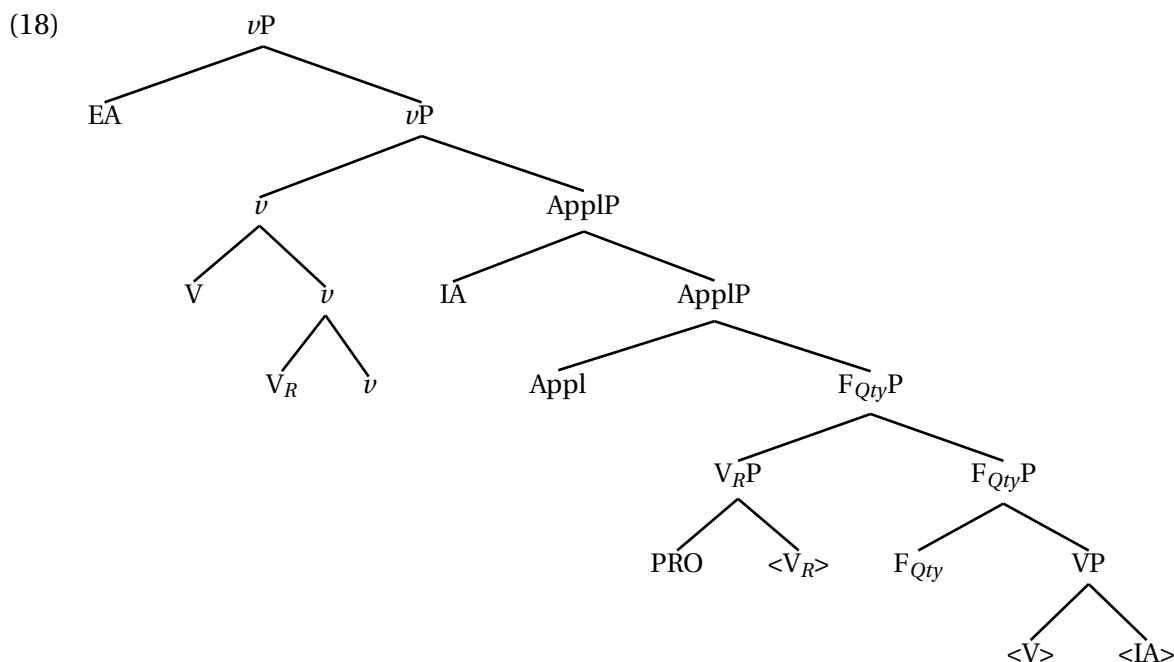
- (6) ta qi-lei le (nei pi) ma.  
 3s ride-tired PFV that CL horse  
 ‘He rode horseback/ that horse and got tired.’  
 ‘He rode the horse until it was tired.’ (cf. Cheng (2005))

Turning to a derivation similar to (15), involving an applicative head, IA moves over  $V_{RP}$ , but the displacement is rendered string vacuous after  $v$ -driven head movement raises  $V_{RP}$ .

<sup>13</sup>In fact it may have a fuller argument structure—see Li (2005). Here we have limited the discussion to predicates taking a single argument.

<sup>14</sup>Though the step is omitted in (17), V should move through  $F_{Qty}$  in obedience of the Head Movement Condition (Travis (1984)). If this is the case, then the complex head  $V-F_{Qty}$ , as the head of  $v$ ’s complement, could be considered closer to  $v$  than  $V_R$ . Head adjunction to  $v$  must then proceed by ‘tucking in’ (Richards (1997), Collins (2002b)), meaning that the second of two adjunctions is the closest, i.e., after V (or  $V-F_{Qty}$ ) adjoins to  $v$ ,  $V_R$  does not adjoin to  $V-v$ , but directly to  $v$ , deriving  $V-V_R-v$ .





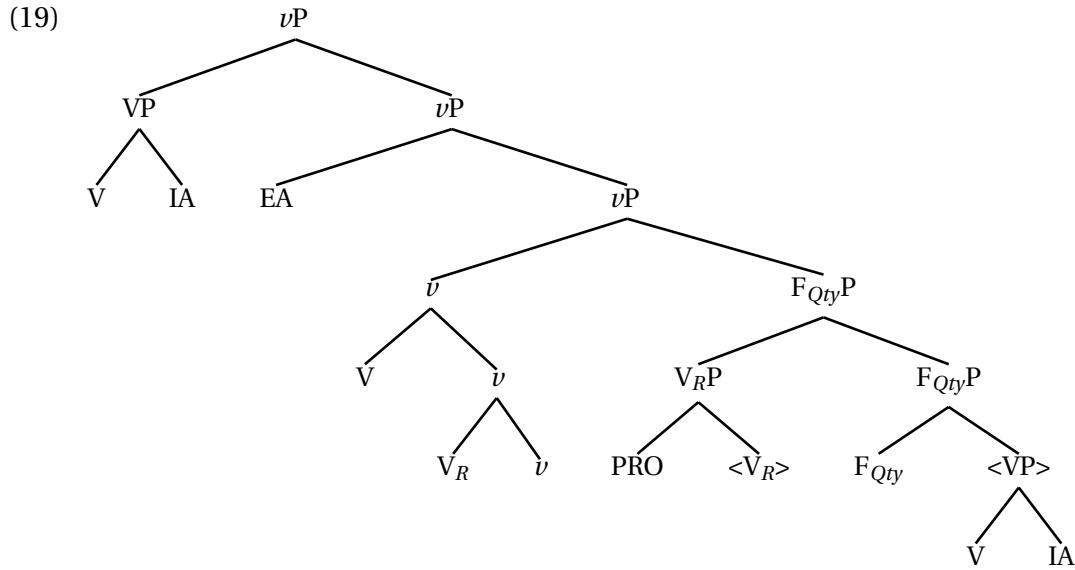
Despite no phonological evidence for it, the movement is detected in the interpretation: with IA now in Spec,ApplP, it binds PRO in  $V_{RP}$ , producing the object-oriented resultative in the second reading of (6).<sup>15</sup>

When multiple verb movement occurs in a VC derivation based on (16) (or perhaps more accurately, when VP movement occurs in an RVC derivation like (17)), we arrive at the structure (19) that underlies clauses with both VC and RVC, such as (10), repeated below.

<sup>15</sup>An additional argument for the movement of IA comes from comparison with constructions containing durative or iterative adverbials. As seen in (i), the pre-adverbial IA cannot be a weak, unquantified indefinite.

- (i) \* ta kan le shu san xiaoshi.  
 3 read PFV book three hour  
 intended: 'She read (books) for three hours.'

If this restriction applied to the underlying pre-adverbial position in RVC constructions, it would account for the incompatibility of weak, unquantified, indefinite IAs with the object-oriented readings—i.e., (6) does not have the reading 'ride horses tired', only 'ride THE horses tired' or 'ride horses to the point that one is tired'.



- (10) ta qi (nei pi) ma qi-lei le  
 3s ride that CL horse ride-tired PFV  
 ‘He rode horseback/ that horse and got tired.’

In this structure, EA, and not IA, binds PRO in  $V_{RP}$ , thus predicting that only the subject-oriented reading is available when VC combines with RVC—a prediction confirmed by (10)l.

Before closing this subsection on RVC, let’s consider a final type of construction, as seen in this example from Huang (1992):

- (20) Zhangsan ku - shi le shoupa  
 Zhangsan cry wet PFV handkerchief  
 ‘Zhangsan cried the handkerchief wet.’

Since (20) is not a subject-oriented resultative, we might expect it to have the object-oriented structure of (18). But *shoupa* (‘handkerchief’) is not the IA of *ku* (‘cry’), a fact which explains why a VC version of the construction is not possible in (21)—no copy of *shoupa* is contained in VP.

- (21) \*Zhangsan ku shoupa ku - shi le  
 Zhangsan cry handkerchief cry wet PFV

*Shoupa* is thematically licensed by the resultative predicate *shi* (‘wet’), so the most natural representation would resemble (17), but with *shoupa* in place of PRO, and with a non-branching VP.

### 3.5 ApplP

In section 3.2 we proposed that IA moves to the spec of the projection ApplP, instead of adjoining to the projection hosting the adverbial, even though it changes little for our account of  $\nu P$  in Mandarin. One reason for this choice relates to the effect of moving to

this position in RVC constructions, as seen in the previous section. Since this position controls the orientation of the result phrase, it seems appropriate to characterize it as an A-position, be it an unthematic and derived one. This projection merges a lower subject (or outer object) to the complex predicate that is its complement. As it is not a thematic position, Spec,AppIP can only be filled by ‘internal merge’ (Move) (Chomsky (2000, 103)). The use of the term ‘applicative’ is perhaps not entirely appropriate; here, AppIP does not introduce a new argument (cf. (Pylkkänen, 2002)), but a new argument position. Another term could be used without changing our analysis. One should note, however, that there is some basis for comparison with more typical applicatives. Consider the case of double-object constructions, as in this example taken from Huang et al. (2004, 189).<sup>16</sup>

- (22) ta shang-guo Zhangsan (liang ci) jinyinzhubao.  
 3s award-EXP Zhangsan two time money.jewelry  
 ‘He awarded Zhangsan money and jewelry (twice).’

The indirect object, often analyzed as being introduced by an applicative (Marantz (1993)), has the same distribution relative to iterative adverbials as does the displaced IA in the examples we have seen. Perhaps the projection under consideration is a non-thematic variant of the standard AppIP (just as unaccusative *v* is a non-thematic variant of transitive or unergative *v*).<sup>17</sup>

The fact that Spec,AppIP has an effect on the orientation of RVC was attributed to  $V_R P$ 's not being a separate domain for binding, leaving its null argument to be controlled by the displaced IA, or if there is no movement of IA, by EA. What then is the relation between this position and the orientation of result clauses, in cases where these have null subjects? Consider first example (23), where there's a result clause and VC:

- (23) woi da Zhangsan j da de e<sub>i</sub>/\*<sub>j</sub> hen lei /e<sub>\*i</sub>/<sub>j</sub> hao-tao-da-ku  
 1s hit Zhangsan hit DE very tired howl-wail-great-cry  
 ‘I beat Zhangsan such that [I/\*he] got tired/ [\*I/he] cried out.’

Here, the adverbial can be oriented to either EA or IA (provided a pragmatically compatible result is chosen) in contrast with the case of RVC and VC in (10), where only subject-orientation is possible. If the result clause is a full CP (see, for example, Li

<sup>16</sup>Huang et al. (2004, 190) consider other examples, where the iterative expression is clause final, but find that such constructions are substantially different.

<sup>17</sup>Another relevant example is the so-called “flip-flop” construction, described by Li (1999) and Wu (2004a), among others. This construction, which necessarily involves a resultative (clause or compound), reverses the distribution of EA and IA, as shown in (i). Notably, EA appears to the right of *v* and is interpreted as the subject of the resultative. These properties of the construction could be accounted for if we assume that EA is exceptionally first-merged in an A-position between  $vP$  and FQ<sub>ty</sub>P—possibly another variant of what we have undertaken to call ‘AppIP’.

- (i) a. zhe ben shu kan \*(-lei) le Lisi  
 this CL book read-tired PFV Lisi  
 ‘Reading this book made Lisi tired.’  
 b. zhe ben shu kan de Lisi \*(jin-pi-li-jin)  
 this CL book read DE Lisi exhausted  
 ‘Reading this book made Lisi exhausted.’

(adapted from Wu (2004a))

(1999)) and an independent binding domain, then it doesn't matter that only EA c-commands the null subject (IA being embedded in VP), since it is free in its domain; the contrast is predicted. Turning back to Spec,ApplP, structurally, we would not expect that IA in this position would determine the orientation of the result clause. And yet, (24) only seems to have the object-oriented reading.

- (24) woi da de Zhangsanj e<sub>\*i/?j</sub> hen lei /e<sub>\*i/j</sub> hao-tao-da-ku  
 1s hit de Zhangsan very tired howl-wail-great-cry  
 'I beat Zhangsan such that [\*I/?he] got tired/ [\*I/he] cried out.'

We might conclude from this that ApplP has more than a structural role to play, that by making its spec a lower subject of the complex predicate it functionally binds the null subject (if there is one) of the result clause. An advantage to this sort of account would be to explain why manner *buyu* do not admit pre-adverbial IAs, as was shown in (5b), repeated here:

- (5) b. \*ta chang de ge hen haoting.  
 3s sing DE song very good.listen

If Appl is merged then the phrase *hen haoting* is forced to be predicated of the IA rather than the event, i.e., it is coerced to a resultative. The deviance of (5)a then would derive from the predicate being an unsuitable one for this usage; it would mean something like "she sang the song nice to listen to".

On the other hand, Li (1999, 448) presents examples where pre-adverbial IA doesn't force object-orientation, including (25):

- (25) wo deng de ta zuo-li-bu-an.  
 1s await DE 3s restless  
 'I became restless from awaiting him.'

Such examples favor seeing ApplP's role as only structural, provided that the contrast with (24) can be accounted for. Further research is needed.

### 3.6 Summary

In this section, we have demonstrated that it is possible to account for the bulk of the data in section 2 by assuming a *vP* structure, common to all the constructions under consideration, where adverbials are hosted by a projection (properly) containing VP. The variation between the constructions stems from three factors: whether Appl is merged, whether the adverbial constitutes an independent domain, and whether VP moves the edge of *vP*. These factors determine, respectively, the displacement of IA, verb compounding and 'verb copying'.

One issue, however, hasn't been addressed: the lack of post-adverbial distribution for IA in the case of clausal result or manner *buyu*, in (4) and (5). In section 5 we will put this aspect of the analysis into perspective with other contemporary approaches to *vP* in Mandarin. But first, we will consider a theoretically more explicit description of VC.

## 4 Syntactic reduplication

The copy theory of movement (Chomsky (1995)) is obviously well suited to the description of reduplicative phenomena in syntax insofar as there is the potential to pronounce more than one link in a movement chain.<sup>18</sup> This potential has been exploited in several recent accounts of VC, including Bartos (2003), Cheng (2005), Gouguet (2003, 2004) and Wu (2004b). Of course, it is vital to any such account to explain why it differs from the norm, where movement doesn't lead to the pronunciation of more than one occurrence of a given lexical item. In this section we set out to show that our proposal, which builds on Gouguet (2003, 2004), doesn't differ from the so-called norm in any substantial way. The key difference is in the timing of operations.

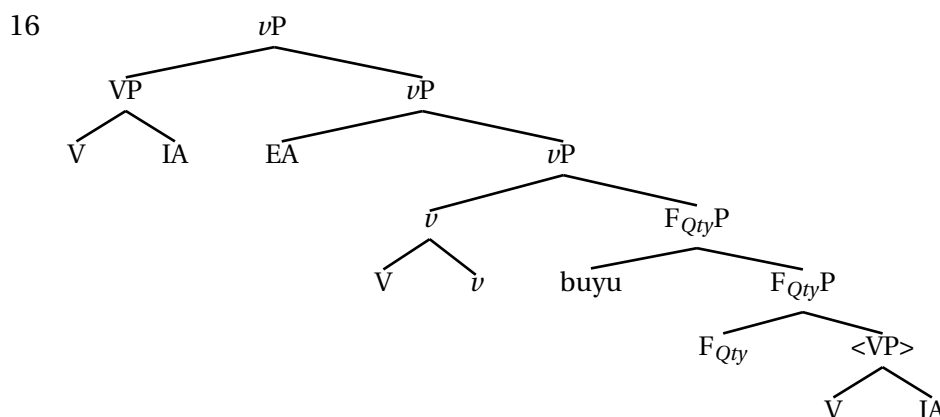
### 4.1 Copy pronunciation

As the normal situation seems to be one in which only the structurally highest link of a copy-chain is pronounced, let us propose the following operation:<sup>19</sup>

(26) *Copy pronunciation:*

Pronounce copy *a* of syntactic object *A* iff there exists no copy *a'* such that *a'* c-commands *a*.

Notice that (23) does not rely on recognizing inherent differences between copies, as opposed to Nunes' (2005) Chain Reduction (in combination with Formal Feature Elimination) that must compare the number of uninterpretable features between copies (see also Chomsky (2000)). Here, only the structural context of each copy need be considered.<sup>20</sup> We'll assume that (23) is part of operations that cyclically 'transfer' parts of the derivation to PF (Uriagereka (1999), Chomsky (2001)). Let's see now how it applies to the derivation of VC in (16), repeated here:



<sup>18</sup>We may distinguish between reduplication in syntax and reduplication in morpho-phonology, where the latter is an apparently word-internal process.

<sup>19</sup>A reviewer suggests a “non-technical” alternative to (26): “the second occurrence of a verb (the copy) cannot be c-commanded by the first.” Since movement normally involves a copy c-commanding another copy of the same syntactic object, I assume that “occurrence” here means a phonologically interpreted copy. The suggested constraint then seems to hold, but it does less work than (26) since it does not tell us which copy to interpret when one copy c-commands another.

<sup>20</sup>See Chomsky's (2000) notion of *occurrence*.

Copy Pronunciation will mark the upper VP copy for interpretation at PF, as well as the copy of V within it, since neither is c-commanded by copies of themselves. The copy of V adjoined to *v* will be marked for pronunciation as well. The lower copy of VP being c-commanded by the upper, and thus will not be pronounced.

In (16), there is no departure from the so-called normal situation, since there is only the pronunciation of the heads of two different chains. The only thing that might be said to be unusual is that copies of the same syntactic object appear in both chains. In fact, this situation arises frequently in syntax, in cases of remnant movement. But this then raises a new question, one that is addressed immediately in the next section.

## 4.2 Remnant movement

Sentences such as (27a), which are given a remnant movement analysis, (27b), pose a direct challenge to (23). Isn't it predicted that *Peter* will be treated like V in a VC construction and thus pronounced twice?

- (27) a. Geküsst hat sie Peter nicht.  
           kissed has she Peter not  
           'She has not kissed Peter.'
- b. [<sub>CP</sub> [<sub>VP</sub><Peter> geküsst] hat sie Peter nicht < [<sub>VP</sub><Peter> geküsst]>]

Not necessarily. According to phase theory (Chomsky, 2000, 2001), all extraction from the complement of *v*—*v*'s domain—must take place before the merger of C; when C is merged, the domain of *v* is spelled out, becoming an island to extraction according to the Phase-Impenetrability Condition.

### (28) Phase-Impenetrability Condition

In a phase  $\alpha$  with head H, the domain of H is not accessible to operations outside  $\alpha$ , only H and its edge are accessible to such operations. (Chomsky 2000:108)

This means that in (27), where XP is the complement of *v*, *Peter* must scramble out of XP during the  $\nu$ P phase, moving at least as high as  $\nu$ P.<sup>21</sup> But does XP, which ultimately moves to CP, also have to move to  $\nu$ P? Since XP is *v*'s complement, it seems that (28) renders it inaccessible to the next phase head, C, unless it moves to the edge of  $\nu$ P. But I propose that the domain of *v* should be taken to be the domain dominated by *v*'s complement—the interior of the complement—and not the complement itself. XP is not in the island created by (28), because it is the island. So XP, as a whole, can still be accessible in the next phase, allowing it to move directly to Spec,CP.<sup>22</sup> However, the interior of XP is spelled out before movement takes place, meaning that Copy Pronunciation determines that the XP-internal copy of *Peter* is not pronounced. At the end

<sup>21</sup>XP is either VP or a functional projection containing VP.

<sup>22</sup>See Nunes and Uriagereka (2000) for a similar proposal on Spell-out domains and accessibility. It should be noted that this proposal doesn't lessen the intended empirical scope of (28). Also it allows the 'edge' of a phase to be defined as the syntactic objects immediately contained by the projection of the phase head. One advantage of such a definition is that it avoids complement-to-specifier movement, which would be required for a phase-head's complement to become accessible to operations in the next phase.

of the CP phase, where XP moves to the left periphery, the remainder of the derivation is transferred and Copy Pronunciation determines that the upper copy of XP is pronounced, giving us (27a/b).

The only relevant difference between the case of remnant movement and the case of VC is whether the constituent containing the syntactic object in question—the verb in (16) or IA in (27)—moves before or after it is subject to Spell-out. So under the simple assumption that only the heads of chains are pronounced, it is possible to derive both reduplication and remnant movement, provided we pay close attention to the order of operations in a cyclic derivation.

## 5 Comparison with existing accounts

While space doesn't allow us consider other accounts in great detail, we will in this section look at one aspect that unites them – namely, the placement of adverbials in *v*P. The fact that other accounts (Bartos (2003), Cheng (2005), Huang (1992), Li (1999), Paul (2002), Tang (1990), Wu (2004b) among others) consistently merge result and manner adverbials as complements of V, following Larson (1988).

This is of great interest to us because it is completely incompatible with our analysis and therefore poses a great threat to it. For VC to be described as VP movement, it is necessary that VP contain IA and exclude the adverbial, otherwise the adverbial would move along with the rest of VP. Let us then consider the motivation for placing the adverbial in VP.

### 5.1 Extraction

Li (1999) concludes that result clause adverbials must be in a complement position from the fact that they allow extraction, as seen in (29b), derived from (29a) by topicalization.

- (29) a. tamen chang de wo mei xinsi kan xiaoshuo  
 3.pl sing DE I have.no mood read novel  
 'Their singing made me not in the mood to read novels.'
- b. nei ben xiaoshuo, tamen chang de [<sub>CP</sub> wo mei xinsi kan \_\_\_\_].  
 that CL novel 3.pl sing DE I have.no mood read  
 'That novel, I wasn't in the mood to read because of their singing.'

This conclusion only follows if extraction from specifiers is impossible. But, as pointed out by Di Sciullo and Isac (2004), specifiers can be extracted from:

- (30) Who is there a description of \_\_\_\_ in this book?

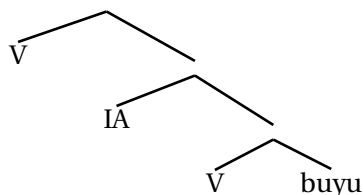
Di Sciullo and Isac suggest that it is not specifiers per se, but moved phrases, that are islands to extraction. Since in our analysis, result clauses are merged directly as Spec,<sub>F<sub>Q</sub>ty</sub>P, no island effect is expected; and even if we do not accept that movement alone causes island formation, (30) still shows that adequately that specifier-hood cannot be a sufficient cause either.

## 5.2 Distribution

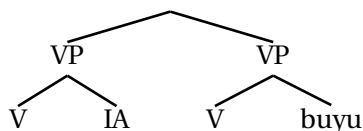
Merging result and manner *buyu* as complements of V has the advantage of accounting for the lack of post-adverbial distribution of IA when these adverbials are involved (see (4) and (5), above). But while this could be seen as a possible cause, it is not a necessary one, only being argued for *ex silentio*. Likewise, if IA is the complement of V, as we have assumed, it does not follow that it must always be able to appear preceded by the adverbial.

In contrast, that the adverbial is the complement of V entails that IA is not (assuming binary branching)—a prediction that is, at least apparently, contradicted by VC. For this reason, other accounts are either forced to analyze the first occurrence of V in a VC construction as not forming a constituent with IA (Bartos 2003, Cheng (2005), Paul 2002), or if they do analyze the two as forming a constituent, then it is some sort of base generated ‘VP-adjunct’, distinct from the main VP (Cheng (2005), Huang (1992), Tang (1990), Wu (2004b)).<sup>23</sup> These two approaches are represented abstractly by (31a) and (31b):

(31) a.



b.



In the first case, the two occurrences can be related by standard head movement, but additional stipulations are needed to account for the pronunciation of a lower copy in a c-command chain (for instance, the morphological fusion operation proposed by Nunes (2005), (adopted by Cheng (2005))). In the second case, one appeal to Copy Pronunciation for reduplication, but the two occurrences of V cannot be related by standard movement.

In the first case, the two occurrences can be related by standard head movement, but additional stipulations are needed to account for the pronunciation of a lower copy in a c-command chain (for instance, the morphological fusion operation proposed by Nunes (2005), adopted by Cheng (2005)). In the second case, one may appeal to Copy Pronunciation and lack of c-command for reduplication, but the two occurrences of V

<sup>23</sup>The attentive reader will notice that both types of account are attributed to Cheng (2005). Cheng uses the first type to derive object-orientation of result, the second for subject-orientation, maintaining that orientation is determined by control. Consequentially, VC is to be seen as a derivationally heterogeneous phenomenon. Bartos (2003) arrives at the same conclusion, though by a different route (see footnote 11).



cannot be related by standard movement. Either they must be unrelated, i.e. resulting from separate lexical insertions, or linked by “sideward” movement (Cheng 2005, adopting Nunes 2005). This would be an unusual instance of sideward movement because it requires that the V head trigger its own movement, while it is still the “locus” of the derivation (Collins (2002a)), instead of merging the IA as a spec. Cheng (2005) proposes that indefinite IA’s cannot be merged in Spec,VP, forcing the sideward movement of V to IA as a “last resort”. This very interesting proposition seems to be undermined by the fact that definite nominals and proper names can be the IA in a VC construction.<sup>24</sup>

### 5.3 Conclusion

In this paper we have seen that it is possible to give a uniform account of Mandarin *v*P internal adverbial expressions, ranging from full clauses to elements of compounds, and including VC constructions. This account was shown to be compatible with a syntactic analysis of reduplication, derived only from what is needed to account for the normal (non-reduplicative) interpretation of chains at PF and the timing of operations.

## References

- Bartos, Huba, 2003. Mandarin verb-copying is (often) vp-copying. Handout CEACL-3, Gent, Belgium.
- Belletti, Adriana, 2001. Inversion as focalization. In Hulk, Aafke and Jean-Yves Pollock (eds.), *Subject Inversion in Romance and the Theory of Universal Grammar*, pp. 60–90. Oxford: Oxford University Press.
- Borer, Hagit, 2005. *Structuring Sense*. Oxford: Oxford University Press.
- Cheng, Lisa Lai-Shen, 2005. Verb copying, resultatives and morpho-syntax interface. Handout, LSA Summer Institute, Harvard/ MIT.
- Cheng, Lisa Lai-Shen and C.-T. James Huang, 1994. On the argument structure of resultative compounds. In Chen, M. and O. Tzeng (eds.), *Interdisciplinary Studies on Language and Language Change in honor of Wang, William S.-Y.*, pp. 187–221. Pyramid.
- Chomsky, Noam, 1995. *The Minimalist Program*. Cambridge, MA: MIT Press.
- , 2000. Minimalist inquiries: the framework. In Martin, R., D. Michaels, and J. Uriagereka (eds.), *Step by step: essays on minimalist syntax in honor of Howard Lasnik*, pp. 89–155. Cambridge, MA: MIT Press.

<sup>24</sup>In the cases where Cheng (2005) uses (31a) to analyse VC, IA is VP’s spec, so non-indefinites *are* expected to be compatible. But this structure is used to derive the object-oriented reading of the resultative, so it cannot account for the possibility of a subject-oriented resultative VC construction with a non-indefinite IA, e.g. (23).

- , 2001. Derivation by phase. In Kenstowicz, Michael (ed.), *Ken Hale: A Life in Language*, pp. 1–52. Cambridge, MA: MIT Press.
- Collins, Chris, 2002a. Eliminating labels. In Epstein, Samuel D. and T. Daniel Seely (eds.), *Derivation and explanation in the Minimalist Program*, vol. 33, pp. 42–64. Oxford: Blackwell.
- , 2002b. Multiple verb movement in ≠hoan. *Linguistic Inquiry*, 33:1–29.
- Di Sciullo, Anna Maria and Daniela Isac, 2004. Possible extraction domains and move/re-merge as an asymmetric relation. Paper presented at Interfaces: the fourth Conference of the Natural Language Processing Federation, Université du Québec à Montréal.
- Gouguet, Jules, 2003. *La copie du VP: la prononciation de la structure événementielle en mandarin*. D.E.A. thesis, Université de Paris 7.
- , 2004. Verb copying and the linearization of event structure in Mandarin. Paper presented at the 27th GLOW Colloquium, Thessaloniki, Greece.
- Huang, C.-T. James, 1992. Complex predicates in control. In Larson, Richard K. (ed.), *Control and Grammar*, pp. 109–147. Dordrecht: Kluwer.
- Huang, C.-T. James, Y.-H. Audrey Li, and Yafei Li, 2004. The syntax of chinese. ms.
- Kayne, Richard, 1994. *The Antisymmetry of Syntax*. Cambridge MA: MIT Press.
- Kratzer, Angelika, 1994. The event argument and the semantics of voice. University of Massachusetts Occasional Papers 17.
- , 2002. Telicity and the meaning of objective case. ms, University of Massachusetts at Amherst.
- Larson, Richard K., 1988. On the double object construction. *Linguistic Inquiry*, 19:335–391.
- Li, Yafei, 1999. Cross-componential causativity. *Natural Language and Linguistic Theory*, 17:445–497.
- , 2005. *X<sup>0</sup>: A Theory of the Morphology-Syntax Interface*. Cambridge, MA: MIT Press.
- Marantz, Alec, 1993. A late note on late insertion. In Yoon, Jong-Yurl (ed.), *Explorations in Generative Grammar: A Festschrift for Dong-Whee Yang*, pp. 396–413. Seoul: Hankuk.
- Müller, Gereon, 1998. *Incomplete category fronting*. Dordrecht: Kluwer.
- Nunes, Jairo, 2001. Sideward movement. *Linguistic Inquiry*, 32:303–344.
- , 2005. *Linearization of Chains and Sideward Movement*. Cambridge, MA: MIT Press.

- Nunes, Jairo and Juan Uriagereka, 2000. Cyclicity and extraction domains. *Syntax*, 3:20–43.
- Paul, Waltraud, 2002. Proxy categories in Phrase Structure Theory and the Chinese VP. *Cahiers de Linguistique- Asie Orientale*, 31:137–174.
- Pereltsvaig, Asya, 2000. On accusative adverbials in Russian and Finnish. In Alexiadou, Artemis and Peter Svenonius (eds.), *Adverbs and adjunction*, pp. 155–176. Linguistics in Postdam 6.
- Pylkkänen, Liina, 2002. *Introducing arguments*. Cambridge, MA: MIT Press.
- Richards, Norvin, 1997. *What moves where when in which language*. Ph.D. thesis, MIT, Cambridge, MA.
- Soh, Hooi Ling, 1998. *Object scrambling in Chinese*. Ph.D. thesis, MIT, Cambridge, MA.
- Tang, Chih-Chen Jane, 1990. *Chinese phrase structure and the extended X-bar theory*. Ph.D. thesis, Cornell University.
- Travis, Lisa, 1984. *Parameters and Effects of Word Order Variation*. Ph.D. thesis, MIT.
- Tsao, Feng-Fu, 1990. *Sentence and clause structure in Chinese: A functional perspective*. Taipei: Student Book Co.
- Uriagereka, Juan, 1999. Multiple spell-out. In Epstein, Samuel D. and Norbert Hornstein (eds.), *Working minimalism*, pp. 251–282. Cambridge, MA: MIT Press.
- Wechsler, Stephen and Yae-Sheik Lee, 1996. The domain of direct case assignment. *Natural Language and Linguistic Theory*, 14:629–664.
- Wu, Teresa Ching-huei, 2004a. Some notes on resultative constructions: on Flip-Flop constructions. *McGill Working Papers in Linguistics*, 18:89–125.
- , 2004b. The syntax of subject-orientation in resultatives. Paper presented at the 27th GLOW Colloquium, Thessaloniki, Greece.

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