

## Linking Semantics and Syntax in Mandarin Serial Verbs: A Role and Reference Grammar Account\*

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This paper discusses resultative verb constructions (RVCs) and serial verb constructions (SVCs) in Mandarin within the framework of Role and Reference Grammar (Van Valin & LaPolla 1997, Van Valin 2005), with the goal of finding out how NP arguments are linked to syntax. Following van Voorst (1988), Dowty (1991), van Hout (1993), Tenny (1994), Croft (1998), Rosen (1996, 1999), Van Valin & LaPolla (1997:128), Chang (2003), and many others, this paper argues that it is the participant role rather than the thematic role an argument plays that determines how and where the argument is linked to the syntax. To account systematically for the complex grammatical phenomena of RVCs and SVCs in Mandarin, this paper proposes: (a) that the semantic macrorole of Undergoer should be divided into the Undergoer macrorole that undergoes the action and the Undergoer macrorole that participates in the endpoint; and (b) that when there are two identical arguments in a logical structure, one is syntactically expressed while the other is satisfied by binding and is not syntactically realized according to the proposed Macrorole Prominence Hierarchies (Chang 2003). The role hierarchy in Mandarin RVCs is suggested as: Actor<sub>1</sub> > Actor<sub>2</sub> > Undergoer<sub>2</sub> > Undergoer<sub>1</sub>, whereas in Mandarin SVCs the role hierarchy is suggested as: Actor<sub>1</sub> > Actor<sub>2</sub> > Undergoer<sub>1</sub> > Undergoer<sub>2</sub>.

Key words: argument linking, syntax-semantics interface, serial verbs, resultative verbs, Role and Reference Grammar, *ba*-construction, verb-copying construction, Mandarin

### 1. Introduction

In modern Mandarin, both resultative verb constructions (hereafter, RVCs) and

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\* An early version of this paper was presented at the 2005 International Course and Conference on Role and Reference Grammar, held at Academia Sinica, Taipei, Taiwan, June 26-30, 2005. I have benefited from comments and suggestions from Isabelle Bril, Jackson T.-S. Sun, James H.-Y. Tai, Kiyoko Toratani, Robert Van Valin, Jiun-Shiung Hunter Wu, and Joy Wu. In addition, I would like to express my gratitude to the anonymous reviewers for their suggestions and comments.

serial verb constructions (hereafter, SVCs) can be composed of two lexical verbs.<sup>1</sup> The two verbs of an RVC denote a cause and result relationship, whereas the two verbs of an SVC denote an action and purpose relationship.<sup>2</sup> This paper discusses RVCs and SVCs in Mandarin within the framework of Role and Reference Grammar (RRG), developed by Van Valin & LaPolla (1997) and Van Valin (2005), with the goal of finding out how NP arguments are linked to syntax in these two different constructions. Following van Voorst (1988), Dowty (1991), van Hout (1993), Tenny (1994), Croft (1998), Rosen (1996, 1999), Van Valin & LaPolla (1997:128), and Chang (2003), this paper argues that it is the participant role an argument plays in the logical structure, rather than the thematic role an argument plays, that determines how and where the argument is linked to the syntax.

The rest of this paper is divided into the following sections. §2 introduces the linking algorithms in RRG; §3 discusses the linking of arguments to syntax in Mandarin RVCs; §4 discusses the linking of arguments to syntax in Mandarin SVCs; and §5 consists of concluding remarks.

## 2. Linking algorithms in RRG

In RRG, the linking algorithm works both from the syntax to the semantics and from the semantics to the syntax. It postulates a single syntactic representation and a

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<sup>1</sup> The verb complexes in Mandarin RVCs are often referred to as verb compounds in literature (Chang 1990, Chao 1968, Cheng 1997, Cheng & Huang 1994, Li 1990, Li & Thompson 1981, Lin 1989, Lien 1994, Ross 1990, Smith 1990, Tai 1984, among others). Because each verb in Mandarin RVCs has its own argument structure and can function as predicate in a single clause, this paper, following Chang (1998) and Hansell (1993), takes the two verbs of a Mandarin RVC as two independent verbs. It should be noted that resultative compounds such as *kan-dao* (look at-arrive) ‘see’ and *mai-diao* (sell-drop) ‘sell’ are regarded as resultative compounds rather than serial verbs for the reason that the original meanings of *dao* and *diao* are lost and become telic markers in these two cases (Szeto 1988). I shall not discuss this type of compound in this paper for the reason that *dao* and *diao* in these compounds do not refer to arguments.

<sup>2</sup> A so-called serial verb construction (SVC) has generally been used to refer to a surface string of verbs or verb-like items that occur within what appears to be a single clause (Bradshaw 1982, Sebba 1987, Baker 1989, Zhang 1991, Wu 1992, Collins 1997, and many others). Li & Thompson (1981:594-621) divide the Mandarin SVCs into four groups: two separate events, one verb phrase or clause serving as the subject or direct object of another verb, pivotal constructions, and descriptive clauses. In this paper, I treat only the two separate events denoting action and purpose relationship as SVCs, while sentential subject/object constructions, pivotal constructions, and descriptive clause constructions are not (Chao 1968).

single semantic representation and there is a direct mapping between the semantic representation and the syntactic representation.

The semantic representation of a sentence is based on the lexical representation of verbs. Following Dowty (1979), Van Valin & LaPolla (1997) use *states* as primitives, representing the end state of an event. They reformulate Vendler's (1967) four categories, using logical definitions and the primitives BECOME, DO, and CAUSE. The derivational relationships between Vendler's four aspectual categories are given in (1).<sup>3</sup>

- (1) Logical structures for different aspectual categories
- a. State:  
**predicate'** (x) or (x, y)
  - b. Achievement:  
[BECOME **predicate'** (x) or (x, y)]
  - c. Activity:  
[**do'** (**predicate'** (x) or (x, y))]
  - d. Accomplishment:  
[[**do'** (**predicate'** (x) or (x, y))] CAUSE [BECOME (**predicate'** (y) or (z))]]

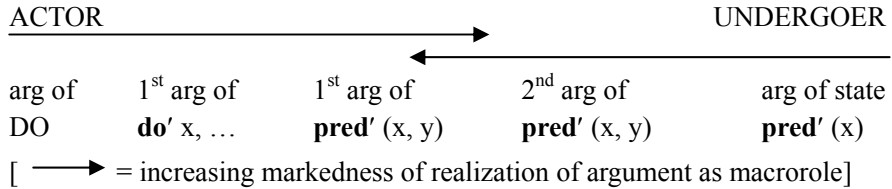
Van Valin & LaPolla (1997:102) present *constants* (which are normally predicates) in boldface followed by a prime, whereas they present *variable elements* in normal typeface (e.g. x, y, etc.). The elements in both boldface and prime are part of the vocabulary of the semantic metalanguage used in the decomposition; they are not words from any particular human language. The capitalized words, such as CAUSE and BECOME, are modifiers of the predicate in the logical structure. Note that there is no special formal indicator when a predicate is stative. All activity logical structures contain the generalized activity predicate **do'**, which serves as the marker of membership in this class.

There are three steps for linking semantics to syntax. The first step is to constitute the logical structure and then replace the variables in it with referring expressions. The next step is to determine which argument is actor and which is undergoer. This selection is based on the Actor-Undergoer Hierarchy, as given in (2). This hierarchy refers to the argument positions in logical structures. The leftmost argument in the hierarchy will be selected as actor, and the rightmost will be selected as undergoer.

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<sup>3</sup> Vendler's four aspectual classes are further categorized into State, Activity, Achievement, Semelfactive, Accomplishment, Active Accomplishment, and Causative in RRG (for detailed discussion, see Van Valin 2005:45).

(2) The Actor-Undergoer Hierarchy



After actor and undergoer have been selected, the third step is to map the arguments into syntax. It should be pointed out that RRG adopts a construction-specific conception of grammatical relations; it allows the selection of the appropriate clause structure and the selection of the privileged syntactic argument (PSA) (generally known as 'subject') for each construction. The hierarchy governing the selection of privileged syntactic arguments is given in (3). In syntactically accusative constructions, the highest ranking macrorole is default choice, while in syntactically ergative constructions, the lowest ranking macrorole is default choice.

(3) Privileged syntactic argument selection hierarchy:

arg of DO > 1<sup>st</sup> arg of do' > 1<sup>st</sup> arg of pred' (x, y) > 2<sup>nd</sup> arg of pred' (x, y)  
 > arg of pred' (x)

After the brief introduction of the linking algorithms in RRG, in the following I shall investigate how these linking algorithms can be used to account systematically for the grammatical phenomena of RVCs and SVCs in Mandarin.

### 3. Mandarin resultative verb constructions

#### 3.1 Different types of Mandarin RVCs

Before discussing argument linking in RVCs, I shall first classify Mandarin RVCs into six different types, based on the following two criteria: (a) how many arguments each of the verbs takes (e.g. transitive or intransitive); and (b) whether the arguments from two different verbs denote the same entity. In the following discussion, I shall point out the related syntactic structures associated with different types of RVCs.<sup>4</sup>

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<sup>4</sup> This paper does not discuss the construction such as *Pizza chi-diao le kouhong* (Pizza eat-drop LE lipstick) 'Eating pizza erases lipstick' or *Zhe ping jiu he-zui le Zhangsan* (this Cl. wine drink-drank LE Zhangsan) 'Zhangsan drank this bottle of wine and he was drunk as a result' because both examples involve mismatching arguments. For related discussion, the reader can see Hsiao (2005).

Mandarin RVCs can be composed of two intransitive verbs such as *ku-xing* ‘cry-awake’. It is noted that the single argument of  $V_1$  (i.e. *ku* ‘cry’) and the single argument of  $V_2$  (i.e. *xing* ‘awake’) can either refer to the same entity (RVC of Type I) or refer to two different entities (RVC of Type II), as shown in (4) and (5), respectively.

- (4) RVC in which arg. of  $V_1$  = arg. of  $V_2$  (Type I)  
 Zhangsan ku xing le.  
 Zhangsan cry awake LE  
 ‘Zhangsan was awake from crying.’
- (5) RVC in which arg. of  $V_1$   $\neq$  arg. of  $V_2$  (Type II)  
 Zhangsan ku xing le Lisi.  
 Zhangsan cry awake LE Lisi  
 ‘Lisi was awake from Zhangsan’s crying.’

Because the two arguments of the RVC in (4) denote the same entity, only one of the identical arguments is realized in the syntax, i.e.  $NP_1+V_1V_2$ , in which the argument of  $V_1$  (i.e.  $NP_1$ ) is represented in the subject position,<sup>5</sup> while the argument of  $V_2$  is not overtly realized in syntactic structure. The arguments of the RVC in (5) do not refer to the same entity; therefore, both arguments must appear in syntactic structure, i.e.  $NP_1+V_1V_2+NP_2$ , in which the argument of  $V_1$  (i.e.  $NP_1$ ) is represented in the subject position, whereas the argument of  $V_2$  (i.e.  $NP_2$ ) is represented in the position immediately following the second verb (i.e.  $V_2$ ).

It is noted that the RVC of Type II composed of two intransitives such as *ku* ‘cry’ and *xing* ‘awake’ in (5) can have a corresponding *ba*-construction, as shown in (6), but it does not have a corresponding Verb-copying construction, as shown in (7). It should be pointed out that when there are two identical verbs occurring in a given sentence, it is the first identical verb, rather than the second one, that is thought of as a copied verb.<sup>6</sup>

<sup>5</sup> Mandarin has been considered as topic-oriented language (Li & Thompson 1981). The term ‘subject’ is used here just for the descriptive purpose rather than for arguing that Mandarin is a subject-oriented language.

<sup>6</sup> Opinions differ as to which of the two identical verbs is a copied verb in the Verb-copying construction. Huang (1982) and Tai (1999) suggest that the first of the two identical verbs is an original verb. According to Tsao (1987), the first verb and the NP argument are treated as a topicalized matrix V, which is moved out of the matrix VP. After the movement, the second dummy verb is inserted to fill the empty verb position left behind by verb topicalization. Following Li (1990), I argue that the second of the two identical verbs is in fact an original verb. For more related discussion, see Chang (2001:225-226).

- (6) *ba*-construction  
 Zhangsan ba Lisi ku xing le.  
 Zhangsan BA Lisi cry awake LE  
 ‘Lisi was awake from Zhangsan’s crying.’
- (7) Verb-copying construction  
 \*Zhangsan ku Lisi ku xing le.  
 Zhangsan cry Lisi cry awake LE  
 ‘Lisi was awake from Zhangsan’s crying.’

Mandarin RVCs can be composed of a transitive verb (e.g.  $V_1$ ) and an intransitive verb (e.g.  $V_2$ ). Such RVCs can be divided into three different groups: (a) the second argument of a transitive verb ( $V_1$ ) is identical with the single argument of an intransitive verb ( $V_2$ ) (Type III); (b) the first argument of a transitive verb ( $V_1$ ) is identical with the single argument of an intransitive verb ( $V_2$ ) (Type IV), and (c) none of the three NP arguments are identical (Type V). For example, the RVC involving the verb complex *da-po* ‘hit-broken’, as in (8), is composed of a transitive verb *da* ‘hit’, which has two arguments (e.g. *Zhangsan* and *boli* ‘glass’), and an intransitive verb *po* ‘broken’, which has one argument (e.g. *boli* ‘glass’).<sup>7</sup> In this type of RVC (Type III), the second argument of  $V_1$  is identical with the single argument of  $V_2$ . Sentences with this type of RVC have a corresponding *ba*-construction, as in (9), but they do not have a corresponding Verb-copying construction, as in (10).

- (8) RVC in which 2<sup>nd</sup> arg. of  $V_1$  = arg. of  $V_2$  (Type III)  
 Zhangsan da po le boli.  
 Zhangsan hit broken LE glass  
 ‘Zhangsan hit the glass and as a result the glass was broken.’
- (9) *ba*-construction  
 Zhangsan ba boli da po le.  
 Zhangsan BA glass hit broken LE  
 ‘Zhangsan hit the glass and as a result the glass was broken.’
- (10) Verb-copying construction  
 \*Zhangsan da boli da po le.  
 Zhangsan hit glass hit broken LE

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<sup>7</sup> The verb *po* in Mandarin is considered as an adjectival verb (thus translated as ‘broken’) since it can co-occur with the aspect marker *le* and the degree words such as *hen* or *feichang* ‘very’, as in *Na dong fangzi yijing hen po le* (that Cl. house already very broken) ‘That house is dilapidated.’

Like the RVC in (8), the RVC in (11) is also composed of a transitive verb and an intransitive verb, but unlike the RVC in (8), the RVC in (11), in which the first argument of  $V_1$  is identical with the single argument of  $V_2$ , can have a corresponding Verb-copying construction, as in (12), but it does not have a corresponding *ba*-construction, as in (13).

- (11) RVC in which 1<sup>st</sup> arg. of  $V_1$  = arg. of  $V_2$  (Type IV)

Zhangsan he zui jiu.  
 Zhangsan drink drunk wine  
 ‘Zhangsan was drunk from drinking wine.’

- (12) Verb-copying construction

Zhangsan he jiu he zui le.  
 Zhangsan drink wine drink drunk LE  
 ‘Zhangsan was drunk from drinking wine.’

- (13) *ba*-construction

\*Zhangsan ba jiu he zui le.  
 Zhangsan BA wine drink drunk LE

The RVC in (14) is also composed of a transitive verb and an intransitive verb, but in this type of RVC, the two verbs such as *chang* ‘sing’ and *ya* ‘hoarse’ have three totally different NP arguments. Since none of these three arguments refer to the same entity, all of them are represented in the syntax. The sentence in (14) involves a Verb-copying structure but not the *ba*-structure. However, it may involve both the *ba*-structure and the Verb-copying structure at the same time if the argument of  $V_2$  (i.e. *sangzi* ‘throat’) is displaced before the first verb, as in (15).

- (14) RVC with no identical arguments (Type V)

Zhangsan chang ge chang ya le sangzi.<sup>8</sup>  
 Zhangsan sing song sing hoarse LE throat  
 ‘Zhangsan sang songs and his throat became hoarse as a result.’

- (15) RVC with Verb-copying construction + *ba*-construction

Zhangsan chang ge ba sangzi chang ya le.  
 Zhangsan sing song BA throat sing hoarse LE  
 ‘Zhangsan sang songs and his throat became hoarse as a result.’

<sup>8</sup> Because Mandarin is a pro-drop language, some arguments may not be overtly expressed in discourse. For this reason, the example in (14) may appear as *Zhangsan chang-ya le sangzi* (Zhangsan sing-hoarse LE throat) (with one argument missing) or *Zhangsan chang-ya le* (Zhangsan sing-hoarse LE) (with two arguments missing) in discourse.

The last type of RVCs (Type VI) involves two transitive verbs such as *xue* ‘study’ and *hui* ‘know’, and the two arguments of  $V_1$  refer to the same entities as those of  $V_2$ , as given in (16). This type of RVC has a corresponding *ba*-construction, but it does not have a corresponding Verb-copying construction, as shown in (17) and (18).

- (16) RVC in which 1<sup>st</sup> arg. of  $V_1$  = 1<sup>st</sup> arg. of  $V_2$ , and 2<sup>nd</sup> arg. of  $V_1$  = 2<sup>nd</sup> arg. of  $V_2$   
 Ta xue hui le zhe ge jishu. (Type VI)  
 he study know LE this CL skill  
 ‘He learned the skill.’
- (17) *ba*-construction  
 Ta ba zhe ge jishu xue hui le.  
 he BA this CL skill study know LE  
 ‘He learned the skill.’
- (18) \*Ta xue zhe ge jishu xue hui le.  
 he study this CL skill study know LE

I have discussed six types of RVCs according to the number of arguments the given verbs take, and whether the given arguments refer to the same entity. The syntactic distribution of these types of RVCs can be summarized as follows:<sup>9</sup>

**Table 1:** Different types of RVCs and the syntactic constructions associated with them

type	Arguments of verbs	Surface form	<i>ba</i> -construction	Verb-copying construction
I	$V1(Vi)+V2(Vi)$ arg. of $V_1$ = arg. of $V_2$	<i>ku-xing</i> ‘cry-awake’ $NP_1+V_1V_2$	No	No
II	$V1(Vi)+V2(Vi)$ arg. of $V_1 \neq$ arg. of $V_2$	<i>ku-xing</i> ‘cry-awake’ $NP_1+V_1V_2+NP_2$	Yes	No
III	$V1(Vt)+V2(Vi)$ 2 <sup>nd</sup> arg. of $V_1$ = arg. of $V_2$	<i>da-po</i> ‘hit-broken’ $NP_1+V_1V_2+NP_2$	Yes	No
IV	$V1(Vt)+V2(Vi)$ 1 <sup>st</sup> arg. of $V_1$ = arg. of $V_2$	<i>he-zui</i> ‘drink-drunk’ $NP_1+V_1V_2+NP_2$ (rare) $NP_1+V_1+NP_2+V_1V_2$	No	Yes
V	$V1(Vt)+V2(Vi)$ No identical arguments	<i>chang-ya</i> ‘sing-hoarse’ $NP_1+V_1+NP_2+V_1V_2+NP_3$	Yes	Yes
VI	$V1(Vt)+V2(Vt)$ 1 <sup>st</sup> arg. of $V_1$ = 1 <sup>st</sup> arg. of $V_2$ 2 <sup>nd</sup> arg. of $V_1$ = 2 <sup>nd</sup> arg. of $V_2$	<i>xue-hui</i> ‘study-know’ $NP_1+V_1V_2+NP_2$	Yes	No

<sup>9</sup> The Mandarin RVC such as *Zhangsan qi-lei le ma* (Zhangsan ride tired LE horse) may have two possible interpretations: (a) ‘The horse was tired from Zhangsan’s riding’, or (b) ‘Zhangsan was tired from riding horse.’ I do not discuss the RVCs with ambiguous interpretations in this paper. The reader can see Chang (2001:242-247) for the detailed analysis.



### 3.2 The Linking of arguments in RVCs to syntax

The RVCs in Mandarin are accomplishment verbs (Tai 1984, Szeto 1988, Lin 2004); based on the distribution of arguments in different types of RVCs in Table 2, the logical structure of RVCs in Mandarin is proposed as in (19), in which both the **do'** predicate and the BECOME predicate can be either transitive or intransitive. The arguments with subscripts such as  $x$ ,  $y$ , and  $z$  indicate whether the arguments are co-indexed.

**Table 2:** Distribution of the arguments in RVCs

Type	Arguments of $V_1$		Arguments of $V_2$	
	1 <sup>st</sup> arg.	2 <sup>nd</sup> arg.	1 <sup>st</sup> arg.	2 <sup>nd</sup> arg.
RVC I	$NP_x$		$NP_x$	
RVC II	$NP_x$		$NP_y$	
RVC III	$NP_x$	$NP_y$	$NP_y$	
RVC IV	$NP_x$	$NP_y$	$NP_x$	
RVC V	$NP_x$	$NP_y$	$NP_z$	
RVC VI	$NP_x$	$NP_y$	$NP_x$	$NP_y$

- (19) ([**do'** (predicate' ( $x$ ) or ( $x$ ,  $y$ ))] CAUSE [BECOME (**predicate'** ( $x$ ) or ( $y$ ) or ( $z$ ) or ( $x$ ,  $y$ ))]).

As mentioned in §2, the three steps for linking semantics to syntax are: (a) to constitute the logical structure and then replace the variables in it with referring expressions; (b) to determine which argument is actor and which is undergoer, based on the Actor-Undergoer Hierarchy, and (c) to link the arguments into syntax.

In the case of RVCs in Mandarin, after the logical structure of RVCs is constituted and the variables in it are replaced with referring expressions, we need to determine which argument is actor and which is undergoer. The actor and undergoer are selected according to the Actor-Undergoer Hierarchy, proposed by Van Valin (2005:61), as given in (2). Then we can link the arguments into syntax.

As discussed in §3.1, an RVC comprising a transitive verb and an intransitive verb is allowed to have three distinct or two sharing NP arguments. When two NP arguments refer to the same entity, one is syntactically expressed while the other is not. To account for which NP argument is syntactically expressed and which is not, I suggest the Macrorole Prominence Hierarchy, as given in (20). It is suggested that when the two arguments refer to the same entity, only the NP argument with the macrorole in a higher hierarchy is syntactically expressed. The unrealized NP argument is bound to the NP with the macrorole in a higher hierarchy. (The macroroles subscripted with 1 or 2 indicate whether the given macrorole is denoted by  $V_1$  or  $V_2$ .)



(22) Constructional schema for Mandarin RVCs

PSA Copied V+OBJ-NP Ba+OBJ-NP V<sub>1</sub>+V<sub>2</sub> OBJ-NP<sup>11</sup>

The constructional schema in (22) has shown that there are four different positions for linking the arguments of RVCs: (a) the PSA position, (b) the position immediately following a copied verb, (c) the position immediately following the word *ba*, and (d) the position immediately following the second verb. The linking principles, as proposed in (23), account for how the arguments in Mandarin RVCs are linked to syntax. The linking system for Mandarin RVCs is suggested as in (24).

(23) The Linking Principles for RVCs in Mandarin:

Principle A: The Actor<sub>1</sub> is linked to the PSA position.

Principle B: The Undergoer<sub>2</sub> is linked to the position immediately following the second verb, or the position immediately following the word *ba*.

Principle C: The Undergoer<sub>1</sub> is linked to the position immediately following a copied verb.

The reader may notice that there is no linking principle for Actor<sub>2</sub> in my proposed linking principles for RVCs in Mandarin. This is because when Actor<sub>2</sub> occurs in the logical structure of an RVC, it will refer to the same entity as Actor<sub>1</sub> and thus will not be syntactically expressed, according to the Macrorole Prominence Hierarchy in (20).

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<sup>11</sup> The constructional schema in (22) shows that there are four possible syntactic positions for NP arguments of an RVC, but it does not mean that different NP arguments can take these syntactic positions at the same time. That is, if the OBJ-NP occurs after V<sub>2</sub>, there will be no *ba*+OBJ-NP, and vice versa, because they are optional syntactic positions of the same macrorole. But it should be pointed out that the meaning differs slightly when the given macrorole occurs in these two different positions.

(24) The linking system for RVCs in Mandarin

CONSTRUCTIONAL SCHEMA &

SYNTACTIC FUNCTIONS: PSA Copied V+OBJ Ba+OBJ  $V_1+V_2$  OBJ



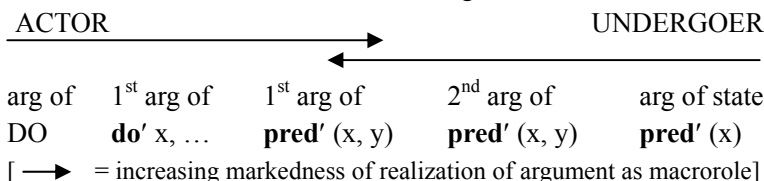
THE MACROROLE PROMINENCE HIERARCHY:

Actor<sub>1</sub> > Actor<sub>2</sub> > Undergoer<sub>2</sub> > Undergoer<sub>1</sub>

[When two arguments refer to the same entities in logical structure, only the NP argument with the macrorole in a higher hierarchy is syntactically expressed.]



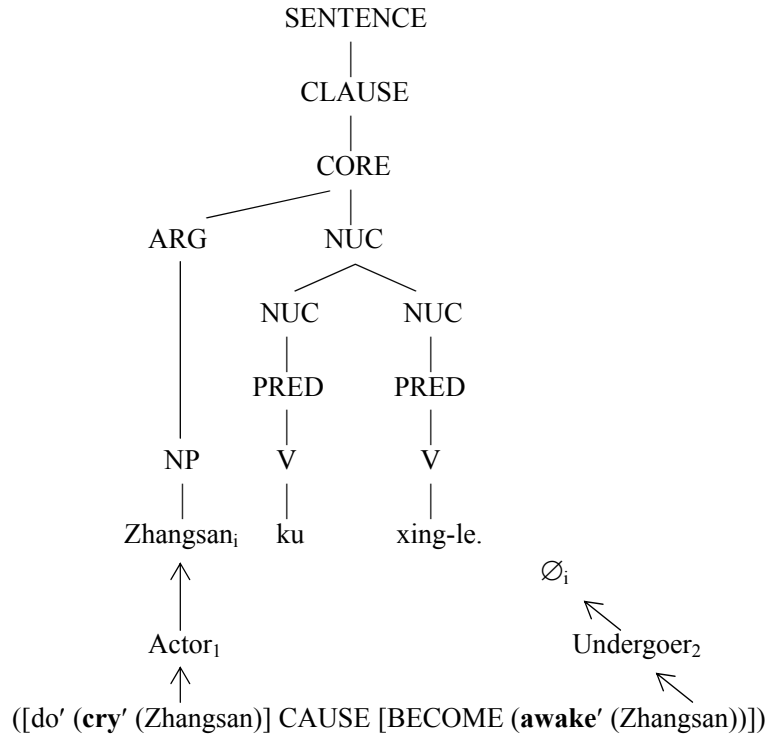
SEMANTIC MACROROLES: Actor Undergoer



Argument positions in LOGICAL STRUCTURE

As already pointed out by Van Valin & LaPolla (1997:531), the RVCs in Mandarin involve a nuclear juncture, in which a single core contains multiple nuclei. The RVC of Type I, as in (25) is composed of two intransitive verbs, and the two NP arguments refer to the same entity. To account for how the arguments are linked to syntax, we first constitute the logical structure of the RVC involving the verbs such as *ku-xing* ‘cry-awake’; then, we replace the variables in the logical structure with referring expressions and select a macrorole for each NP argument in the logical structure (e.g. Actor<sub>1</sub> and Undergoer<sub>2</sub>), following the Actor-Undergoer Hierarchy in (2). Because Actor<sub>1</sub> and Undergoer<sub>2</sub> refer to the same entity, only Actor<sub>1</sub> is syntactically expressed, while Undergoer<sub>2</sub> is not. The reason is that Actor<sub>1</sub> is higher than Undergoer<sub>2</sub> in the hierarchy, following the Macrorole Prominence Hierarchy in (20). Actor<sub>1</sub> (i.e. *Zhangsan*) is the default linking for the PSA position, following the linking principle A, given in (23).

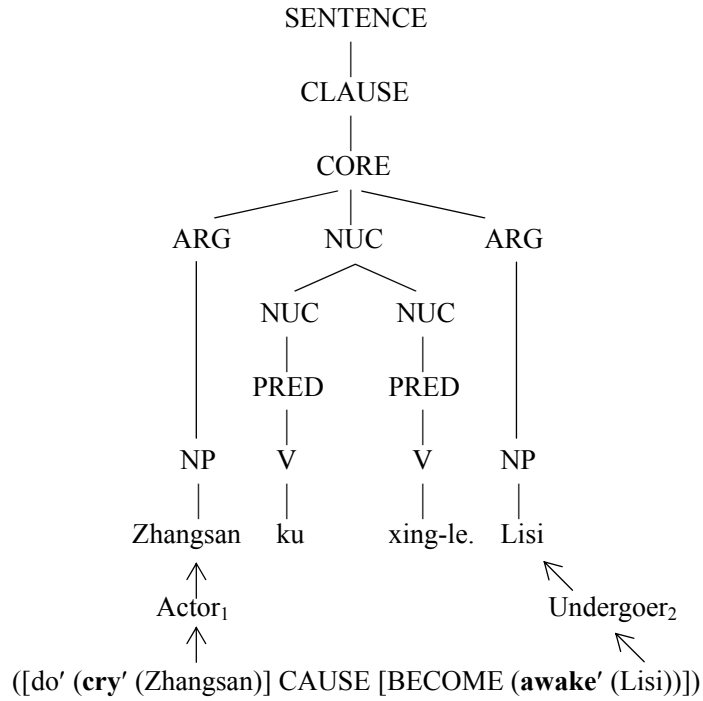
- (25) Zhangsan ku xing le.  
 Zhangsan cry awake LE  
 ‘Zhangsan was awake from crying.’



Though the Type II RVC in (26) is also composed of two intransitive verbs, the two arguments are not identical. Therefore, both arguments can be syntactically expressed. The argument of  $V_1$  (i.e. *Zhangsan*) is selected as the Actor<sub>1</sub> and the argument of  $V_2$  (i.e. *Lisi*) is selected as the Undergoer<sub>2</sub>. According to the linking principles A and B, given in (23), Actor<sub>1</sub> (i.e. *Zhangsan*) is linked to the PSA position, whereas Undergoer<sub>2</sub> (i.e. *Lisi*) can be linked to either (a) the position immediately following the second verb, as shown in (26), or (b) the position immediately following the word *ba*, as given in (27a).<sup>12</sup> The structure in (27b) represents the structure of sentence (27a).

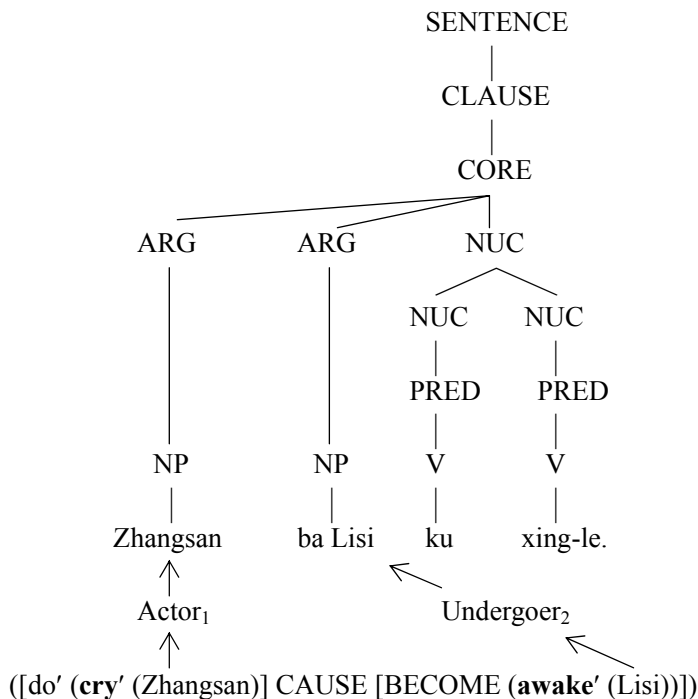
<sup>12</sup> When the Undergoer<sub>2</sub> in the logical structure of an RVC is linked to the preverbal position (i.e. before  $V_1$ ), it will be marked by the word *ba*; therefore, the word *ba* is treated as a macrorole marker in this paper.

- (26) Zhangsan ku xing le Lisi.  
 Zhangsan cry awake LE Lisi  
 'Lisi was awake from Zhangsan' crying.'



- (27) a. Zhangsan ba Lisi ku xing le.  
 Zhangsan BA Lisi cry awake LE  
 ‘Lisi was awake from Zhangsan’s crying.’

b.



In the RVC of Type III, as given in (28), the first verb contains two arguments, whereas the second verb contains one. The argument of  $V_2$  refers to the same entity as the second argument of  $V_1$ . The first argument of  $V_1$  is selected as Actor<sub>1</sub>, the second argument of  $V_1$  is selected as Undergoer<sub>1</sub>, whereas the argument of  $V_2$  is selected as Undergoer<sub>2</sub>. Because Undergoer<sub>1</sub> and Undergoer<sub>2</sub> refer to the same entity, Undergoer<sub>2</sub>, which is higher than the Undergoer<sub>1</sub> in the hierarchy, is syntactically expressed, following the Macrorole Prominence Hierarchy. According to the linking principles, given in (23), the Actor<sub>1</sub> (i.e. *Zhangsan*) is linked to the PSA position, while the Undergoer<sub>2</sub> (i.e. *boli* ‘glass’) can be linked to the position immediately following the second verb, as in (28), or the position immediately following the word *ba*, as in (29).

- (28) Zhangsan da po le boli.  
 Zhangsan hit broken LE glass  
 ‘Zhangsan hit the glass and as a result the glass was broken.’

- (29) Zhangsan ba boli da po le.  
 Zhangsan BA glass hit broken LE  
 ‘Zhangsan hit the glass and as a result the glass was broken.’

The RVC of Type IV, as given in (30), involves three arguments denoted by a transitive verb and an intransitive verb. The first argument of  $V_1$  (i.e. *Zhangsan*) is selected as Actor<sub>1</sub>, the second argument of  $V_1$  (i.e. *jiu* ‘wine’) is selected as Undergoer<sub>1</sub>, while the argument of  $V_2$  (i.e. *Zhangsan*) is selected as Undergoer<sub>2</sub>. It is noted that the Actor<sub>1</sub> and the Undergoer<sub>2</sub> refer to the same entity; therefore, the Actor<sub>1</sub>, which is higher than the Undergoer<sub>2</sub> in the Macrorole Prominence Hierarchy, is syntactically expressed. Based on the linking principles in (23), the Actor<sub>1</sub> is linked to the PSA position whereas the Undergoer<sub>1</sub> is linked to the position immediately following a copied verb (here, *he* ‘drink’), as (30) shows.<sup>13</sup> It should be pointed out that it seems that the Undergoer<sub>1</sub> (i.e. *jiu* ‘wine’) can also occur in the position immediately following the second verb, as in (31a), but such an example is rare. The Undergoer<sub>1</sub> can occur in the position immediately following the second verb of an RVC only when it is non-referential.<sup>14</sup> Therefore, the replacement of the non-referential NP *jiu* ‘wine’ with other NPs such as *pjiu* ‘beer’ or *na ping jiu* (that CL wine) ‘that bottle of wine’ is not possible, as in (31b).

- (30) Zhangsan he jiu he zui le.  
 Zhangsan drink wine drink drunk LE  
 ‘Zhangsan was drunk from drinking wine.’
- (31) a. Zhangsan he zui jiu.  
 Zhangsan drink drunk wine  
 ‘Zhangsan was drunk from drinking wine.’  
 b. \*Zhangsan he zui na ping jiu.  
 Zhangsan drink drunk that CL wine  
 ‘Zhangsan was drunk from drinking that bottle of wine.’

<sup>13</sup> The first copied verb of an RVC, as in example (30) is treated as a macrorole marker, because it is used to mark the Undergoer<sub>1</sub> when this macrorole is linked to syntax. Based on RRG framework, Chief (2005) argues that the Verb-copying construction serves the function of distinguishing Actor control from Undergoer control.

<sup>14</sup> In English, NP arguments such as *beer* in activity expression such as *drink beer* do not have definite reference and are called *inherent arguments* in Van Valin & LaPolla (1997). They cannot be interpreted as having any specific reference, and are treated quite differently from normal, referential arguments in two different ways: First, they can be freely omitted in English and in many other languages, and second, they are often incorporated into the verb (e.g. *She’s gone beer drinking*) (Van Valin & LaPolla 1997:122-123).



The RVC of Type V in (32) involves three arguments denoted by a transitive verb and an intransitive verb. Since none of these three arguments refer to the same entity, all of them can be represented in the syntax. The first argument of  $V_1$  (i.e. *Zhangsan*) is selected as Actor<sub>1</sub>; thus, it is linked to the PSA position. The second argument of  $V_1$  (i.e. *ge* ‘song’) is selected as Undergoer<sub>1</sub>; thus, it is linked to the position immediately following a copied verb (here, *chang* ‘sing’). The argument of  $V_2$  (i.e. *sangzi* ‘throat’) is selected as Undergoer<sub>2</sub>; thus, it can be linked to the position after the second verb, as in (32), or to the position immediately following the word *ba*, as in (33). The linking of Undergoer<sub>1</sub> and Undergoer<sub>2</sub> to the syntax explains why an RVC may involve both the Verb-copying structure and the *ba*-structure at the same time.

- (32) Zhangsan chang ge chang ya le sangzi.  
 Zhangsan sing song sing hoarse LE throat  
 ‘Zhangsan sang songs and his throat became hoarse as a result.’
- (33) Zhangsan chang ge ba sangzi chang ya le.  
 Zhangsan sing song BA throat sing hoarse LE  
 ‘Zhangsan sang songs and his throat became hoarse as a result.’

The RVC of Type VI, as in (34), is composed of two transitive verbs of *xue* ‘study’ and *hui* ‘know’; therefore, there are four arguments in this type of RVC. Following the Actor-Undergoer Hierarchy, the first argument of  $V_1$  is selected as Actor<sub>1</sub>, the second argument of  $V_1$  is selected as Undergoer<sub>1</sub>, the first argument of  $V_2$  is selected as Actor<sub>2</sub>, while the second argument of  $V_2$  is selected as Undergoer<sub>2</sub>. Note, however, that the Actor<sub>1</sub> and the Actor<sub>2</sub> refer to the same entity, while the Undergoer<sub>1</sub> and the Undergoer<sub>2</sub> refer to the same entity. Following the Macrorole Prominence Hierarchy, the Actor<sub>2</sub> and the Undergoer<sub>1</sub> are not expressed. When the Actor<sub>1</sub> is linked to the PSA position and the Undergoer<sub>2</sub> is linked to the position immediately following the second verb, we have sentence (34), while when the Undergoer<sub>2</sub> is linked to the position immediately following the word *ba*, we have sentence (35).

- (34) Ta xue hui le zhe ge jishu.  
 he study know LE this CL skill  
 ‘He learned the skill.’
- (35) Ta ba zhe ge jishu xue hui le.  
 he BA this CL skill study know LE  
 ‘He learned the skill.’

### 3.3 Summary

In §3, I have shown how the complex linguistic phenomena of RVCs in Mandarin are accounted for in terms of linking algorithms within the framework of RRG. I have proposed the Macrorole Prominence Hierarchy to illustrate which argument is syntactically expressed and which is not when the two NP arguments refer to the same entity, and the linking principles to account for different syntactic patterns associated with the RVCs in Mandarin.

My current analysis of Mandarin RVCs differs from the previous analyses in the following ways: First, in the analyses proposed by Huang & Lin (1992), Li (1990, 1995), and Chang (1998), the thematic role of an NP argument plays an important role in determining how and where the argument is linked to syntax, whereas in my analysis it is the macrorole (event participant role) that an NP argument plays determines how and where the argument is linked to syntax.<sup>15</sup> Second, in the previous analyses the words such as *ba* in the *ba*-construction (Liang 1971, Goodall 1986, Huang 1992, Y. Y. Huang 1991) and a copied verb in the Verb-copying construction (Li 1990) are considered as Case markers, whereas in my analysis they are treated as macrorole markers.

In the sections that follow, I shall account for the complex phenomena in Mandarin SVCs and show how these phenomena can be accounted for in RRG.

## 4. Mandarin serial verb constructions

### 4.1 Different types of Mandarin SVCs

Following the classification of Mandarin RVCs in §3.1, this section will categorize Mandarin SVCs with action-purpose relationship into different groups according to how many arguments each of the two verbs takes and whether the arguments denoted by the two verbs can refer to the same entity.<sup>16</sup> It should be pointed out that unlike RVCs, SVCs do not have a corresponding counterpart of either the *ba*-construction or the Verb-copying construction.

Mandarin SVCs may consist of a transitive verb as  $V_1$ , and an intransitive as  $V_2$ . There are two different syntactic representations for this type of SVCs. If the single argument of  $V_2$  refers to the same entity as the first argument of  $V_1$  (Type I), as shown in (36), the given SVC is represented as  $NP_1+V_1+NP_2+V_2$ , in which there is an NP

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<sup>15</sup> For the critical review of Li (1995), the reader is referred to Wang (2003:46-51), while for the critical review of Li (1990), the reader can read Huang & Lin (1992).

<sup>16</sup> For related discussion of SVCs in Mandarin, the reader can see Li & Thompson (1973), Waltraud (1988), Li (1991), Wilawan (1993), and Law (1996).

argument intervening between the two verbs. But if none of these arguments refer to the same entity (Type II), the given SVC is represented as NP<sub>1</sub>+V<sub>1</sub>+NP<sub>2</sub>+gei+NP<sub>3</sub>+V<sub>2</sub>, in which the argument of V<sub>2</sub> is placed immediately before the second verb and is marked by *gei* ‘give/for/to’, as shown in (37). Note, however, that the SVC denoting the action-purpose relationship in which the argument of V<sub>2</sub> is identical with the second argument of V<sub>1</sub> is not found.

- (36) SVC in which 1<sup>st</sup> arg. of V<sub>1</sub> = arg. of V<sub>2</sub> (Type I)  
 Ta pu maotan shuijiao.  
 he spread out blanket sleep  
 ‘He spread out the blanket in order to sleep.’
- (37) SVC with no identical arguments (Type II)  
 Ta pu maotan gei women shuijiao.  
 he spread out blanket GEI we sleep  
 ‘He spread out the blanket for us to sleep.’

Mandarin SVCs can be composed of two transitive verbs, thus involving four arguments in total. Such SVCs can be divided into four different groups: (a) the first argument of V<sub>1</sub> refers to the same entity as the first argument of V<sub>2</sub>, while the second argument of V<sub>1</sub> refers to the same entity as the second argument of V<sub>2</sub> (Type III); (b) the second argument of V<sub>1</sub> refers to the same entity as the second argument of V<sub>2</sub>, but the first argument of V<sub>1</sub> and the first argument of V<sub>2</sub> refer to two different entities (Type IV); (c) the first argument of V<sub>1</sub> refers to the same entity as the first argument of V<sub>2</sub>, but the second argument of V<sub>1</sub> and the second argument of V<sub>2</sub> denote different entities (Type V); and (d) none of the arguments denoted by the two verbs refer to the same entity (Type VI), as exemplified in (38)-(41).

- (38) SVC in which 1<sup>st</sup> arg. of V<sub>1</sub> = 1<sup>st</sup> arg. of V<sub>2</sub>; 2<sup>nd</sup> arg. of V<sub>1</sub> = 2<sup>nd</sup> arg. of V<sub>2</sub> (Type III)  
 Ta dao jiu he.  
 he pour wine drink  
 ‘He poured wine to drink.’
- (39) SVC in which 1<sup>st</sup> arg. of V<sub>1</sub> ≠ 1<sup>st</sup> arg. of V<sub>2</sub>; 2<sup>nd</sup> arg. of V<sub>1</sub> = 2<sup>nd</sup> arg. of V<sub>2</sub> (Type IV)  
 Ta dao jiu gei women he.  
 he pour wine GEI us drink  
 ‘He poured wine for us to drink.’

- (40) SVC in which 1<sup>st</sup> arg. of V<sub>1</sub> = 1<sup>st</sup> arg. of V<sub>2</sub>; 2<sup>nd</sup> arg. of V<sub>1</sub> ≠ 2<sup>nd</sup> arg. of V<sub>2</sub> (Type V)  
 Ta tuo wazi xi jiao.  
 he take off socks wash feet  
 ‘He took off his socks to wash his feet.’
- (41) SVC with no identical arguments (Type VI)  
 Ta tuo wazi gei women xi jiao.  
 he take off socks GEI we wash feet  
 ‘He took off his socks for us to wash his feet.’

The SVC of Type III, in which the arguments denoted by V<sub>1</sub> are identical with the arguments denoted by V<sub>2</sub>, is represented as NP<sub>1</sub>+V<sub>1</sub>+NP<sub>2</sub>+V<sub>2</sub>, but if the first argument of V<sub>1</sub> does not have the same entity as that of V<sub>2</sub>, the given SVC is represented as NP<sub>1</sub>+V<sub>1</sub>+NP<sub>2</sub>+gei+NP<sub>3</sub>+V<sub>2</sub> (Type IV). However, if the SVC in which the first arguments of both V<sub>1</sub> and V<sub>2</sub> refer to the same entity, while the second arguments denoted by both V<sub>1</sub> and V<sub>2</sub> do not, then the given SVC will be represented as NP<sub>1</sub>+V<sub>1</sub>+NP<sub>2</sub>+V<sub>2</sub>+NP<sub>3</sub> (Type V). When none of the arguments denoted by two transitive verbs of an SVC refer to the same entity, the syntactic representation of this given SVC is NP<sub>1</sub>+V<sub>1</sub>+NP<sub>2</sub>+gei+NP<sub>3</sub>+V<sub>2</sub>+NP<sub>4</sub> (Type VI).

I have discussed six types of SVCs according to the number of arguments the given verbs take, and whether the given arguments refer to the same entity. The syntactic representations of different types of SVCs can be summarized as in Table 3.

**Table 3:** SVCs and their syntactic representations

Type	Arguments of verbs	Surface form
<b>I</b>	V1(Vt)+V2(Vi) 1 <sup>st</sup> arg. of V <sub>1</sub> = arg. of V <sub>2</sub>	<i>pu...shuijiao</i> ‘spread out-sleep’ NP <sub>1</sub> +V <sub>1</sub> +NP <sub>2</sub> +V <sub>2</sub>
<b>II</b>	V1(Vt)+V2(Vi) 1 <sup>st</sup> arg. of V <sub>1</sub> ≠ arg. of V <sub>2</sub>	<i>pu...shuijiao</i> ‘spread out-sleep’ NP <sub>1</sub> +V <sub>1</sub> +NP <sub>2</sub> +gei+NP <sub>3</sub> +V <sub>2</sub>
<b>III</b>	V1(Vt)+V2(Vt) 1 <sup>st</sup> arg. of V <sub>1</sub> = 1 <sup>st</sup> arg. of V <sub>2</sub> 2 <sup>nd</sup> arg. of V <sub>1</sub> = 2 <sup>nd</sup> arg. of V <sub>2</sub>	<i>dao...he</i> ‘pour-drink’ NP <sub>1</sub> +V <sub>1</sub> +NP <sub>2</sub> +V <sub>2</sub>
<b>IV</b>	V1(Vt)+V2(Vt) 1 <sup>st</sup> arg. of V <sub>1</sub> ≠ 1 <sup>st</sup> arg. of V <sub>2</sub> 2 <sup>nd</sup> arg. of V <sub>1</sub> = 2 <sup>nd</sup> arg. of V <sub>2</sub>	<i>dao...he</i> ‘pour-drink’ NP <sub>1</sub> +V <sub>1</sub> +NP <sub>2</sub> +gei+NP <sub>3</sub> +V <sub>2</sub>
<b>V</b>	V1(Vt)+V2(Vt) 1 <sup>st</sup> arg. of V <sub>1</sub> = 1 <sup>st</sup> arg. of V <sub>2</sub> 2 <sup>nd</sup> arg. of V <sub>1</sub> ≠ 2 <sup>nd</sup> arg. of V <sub>2</sub>	<i>tuo...xi</i> ‘take off-wash’ NP <sub>1</sub> +V <sub>1</sub> +NP <sub>2</sub> +V <sub>2</sub> +NP <sub>3</sub>
<b>VI</b>	V1(Vt)+V2(Vt) 1 <sup>st</sup> arg. of V <sub>1</sub> ≠ 1 <sup>st</sup> arg. of V <sub>2</sub> 2 <sup>nd</sup> arg. of V <sub>1</sub> ≠ 2 <sup>nd</sup> arg. of V <sub>2</sub>	<i>tuo...xi</i> ‘take off-wash’ NP <sub>1</sub> +V <sub>1</sub> +NP <sub>2</sub> +gei+NP <sub>3</sub> +V <sub>2</sub> +NP <sub>4</sub>

## 4.2 The linking of arguments in SVCs to syntax

SVCs in Mandarin can be composed of a transitive verb and an intransitive verb, or two transitive verbs. When the second verb of an SVC is intransitive, the argument of  $V_2$  can refer to the same entity as the first argument of  $V_1$ , or it can refer to the entities different from the two arguments of  $V_1$ , but it cannot refer to the same entity as the second argument of  $V_1$ . However, if the second verb is transitive, both arguments of  $V_2$  can refer to the same entities as those of  $V_1$ , or the second argument of  $V_2$  can be identical with the second argument of  $V_1$ , or the first argument of  $V_2$  can be identical with the first argument of  $V_1$ . Based on the distribution of arguments in different types of SVCs in Table 4, the logical structure of SVCs in Mandarin is proposed in (42).

**Table 4:** Distribution of the arguments in SVCs

Type	Arguments of $V_1$		Arguments of $V_2$	
	1 <sup>st</sup> arg.	2 <sup>nd</sup> arg.	1 <sup>st</sup> arg.	2 <sup>nd</sup> arg.
SVC I	NP <sub>x</sub>	NP <sub>v</sub>	NP <sub>x</sub>	
SVC II	NP <sub>x</sub>	NP <sub>v</sub>	NP <sub>z</sub>	
SVC III	NP <sub>x</sub>	NP <sub>v</sub>	NP <sub>x</sub>	NP <sub>v</sub>
SVC IV	NP <sub>x</sub>	NP <sub>v</sub>	NP <sub>z</sub>	NP <sub>v</sub>
SVC V	NP <sub>x</sub>	NP <sub>v</sub>	NP <sub>x</sub>	NP <sub>z</sub>
SVC VI	NP <sub>x</sub>	NP <sub>v</sub>	NP <sub>z</sub>	NP <sub>w</sub>

$$(42) \quad ([\text{do}' (\text{predicate}' (x, y))] \text{PURP} [(\text{predicate}' (x) \text{ or } (y) \text{ or } (z) \text{ or } (x, y))]).^{17}$$

After the logical structure of an SVC is constituted and the variables are replaced with referring expressions, the arguments of a given SVC are selected for macroroles, according to the Actor-Undergoer Hierarchy, as given in (2). The macroroles with the subscripts such as 1 and 2 (e.g. Actor<sub>1</sub>, Undergoer<sub>1</sub>, Actor<sub>2</sub>, and Undergoer<sub>2</sub>) indicate whether the given macrorole is denoted by  $V_1$  or  $V_2$ .

In addition, as discussed in the RVC cases, when there are two identical arguments, one of the arguments is not syntactically expressed. To account for which argument is syntactically expressed when there are two identical arguments in an SVC, I propose the Macrorole Prominence Hierarchy for Mandarin SVCs, as given in (43). The hierarchy

<sup>17</sup> The SVCs with an action-purpose relationship, in which one action is done with the intent of realizing another state of affairs (Van Valin 2005:206-207), have the following logical structure: **want'** (x, LS<sub>2</sub>)  $\wedge$  DO (x, [[LS<sub>1</sub>]  $\diamond$ CAUSE [LS<sub>2</sub>]]) (Ohori 2001). However, to account for how arguments are linked to syntax in Mandarin SVCs, I shall simplify the logical structure for Mandarin SVCs as involving a **do'** predicate and a state predicate with the modifier PURPOSE (abbreviated as PURP).

states that when two macroroles refer to the same entity in logical structure, only the macrorole in a higher hierarchy is syntactically expressed.

- (43) The Macrorole Prominence Hierarchy for Mandarin SVCs  
 $Actor_1 > Actor_2 > Undergoer_1 > Undergoer_2$

Note that the Macrorole Prominence Hierarchy for Mandarin SVCs in (43) is different from the Macrorole Prominence Hierarchy for Mandarin RVCs in (20). In the former, the Undergoer<sub>1</sub> is higher than the Undergoer<sub>2</sub>, while in the latter, the Undergoer<sub>2</sub> is higher than the Undergoer<sub>1</sub>. Why is there such contrast? It is suggested that the macrorole participating in the endpoint will be placed in a higher hierarchy. In Mandarin RVCs, the Undergoer<sub>2</sub> is considered as the endpoint participant because the event is completed when the Undergoer<sub>2</sub> of V<sub>2</sub> denoting the result takes place, whereas in Mandarin SVCs, the Undergoer<sub>1</sub> is conceived of as an endpoint participant because when the action denoted by V<sub>2</sub> takes place, the action denoted by V<sub>1</sub> is completed. Since the beginning of the second event implies the completion of the first event, the Undergoer<sub>1</sub> denoted by V<sub>1</sub> is thus thought of as an endpoint participant.<sup>18</sup>

From the observation of the surface forms in different types of Mandarin SVCs in Table 4, the constructional schema for Mandarin SVCs is suggested as in (44).

- (44) Constructional schema for Mandarin RVCs  
PSA V<sub>1</sub> OBJ-NP gei+OBJ-NP V<sub>2</sub> OBJ-NP<sup>19</sup>

The constructional schema in (44) has shown that there are four different positions for linking the arguments of SVCs to syntax: (a) the PSA position, (b) the position immediately following the first verb, (c) the position immediately following the word

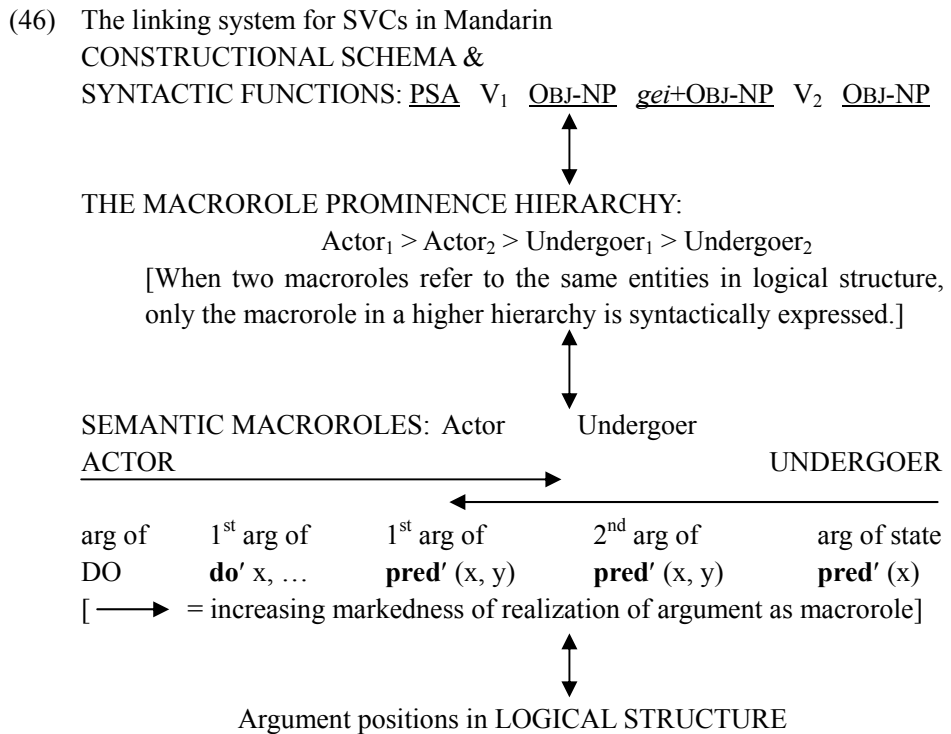
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<sup>18</sup> My analysis of the Undergoer participating in the endpoint complies with Dowty's (1991) proto-role approach. That is, the Undergoer contributing more properties for the Patient Proto-Role will be placed in a higher hierarchy. According to Dowty (1991:572), the Patient Proto-role has the following properties: (a) undergoes change of state, (b) incremental theme, (c) causally affected by another participant, (d) stationary relative to movement of another participant, and (e) does not exist independently of the event, or not at all. Because the Undergoer<sub>2</sub> in Mandarin RVCs and the Undergoer<sub>1</sub> in Mandarin SVCs involve more properties of the Patient Proto-Role, they are placed in a higher hierarchy. As for the similarities and differences between RRG's macroroles and Dowty's proto-roles, the reader can see Levin & Rappaport Hovav (2005:65-68) for a detailed discussion.

<sup>19</sup> Like the word *ba* and the first copied verb in the Verb-copying structure when associated with Mandarin RVCs, *gei* is suggested to function as a macrorole marker when associated with Mandarin SVCs.

*gei*, and (d) the position immediately following the second verb. The linking principles, as proposed in (45) account for how the arguments in Mandarin SVCs are linked to syntax. The linking system for Mandarin SVCs is suggested as in (46).

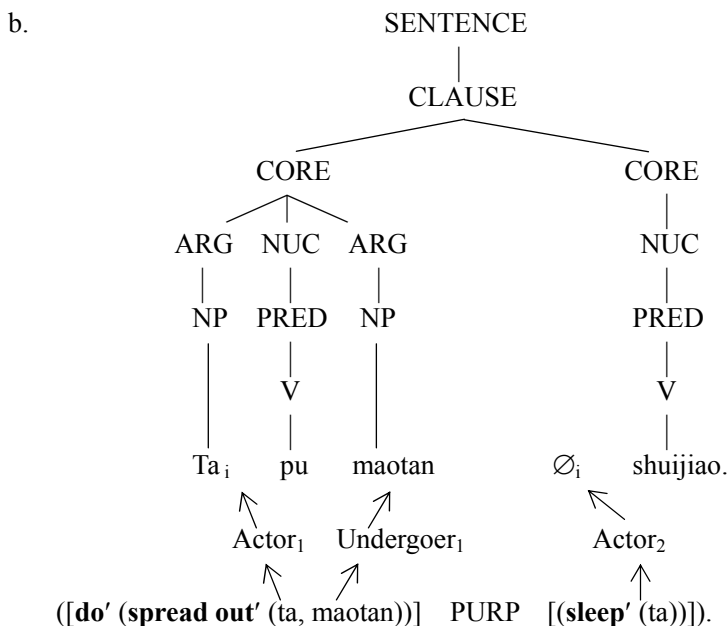
- (45) The Linking Principles for SVCs in Mandarin  
 Principle A: Actor<sub>1</sub> is linked to the PSA position.  
 Principle B: Undergoer<sub>1</sub> is linked to the position immediately following the first verb.  
 Principle C: Actor<sub>2</sub> is linked to the position immediately following the word *gei*.  
 Principle D: Undergoer<sub>2</sub> is linked to the position immediately following the second verb.



The SVCs in Mandarin involve a core juncture, in which a single clause has multiple cores. To account for how arguments are linked to syntax in the SVC of Type I, as given in (47a), the logical structure is constituted and the variables are replaced with referring expressions. The first argument of V<sub>1</sub> (i.e. *ta* 'he') is selected as Actor<sub>1</sub>, the second argument of V<sub>1</sub> (i.e. *maotan* 'blanket') is selected as Undergoer<sub>1</sub>, while the argument of V<sub>2</sub> (i.e. *ta* 'he') is selected as Actor<sub>2</sub>. Since the Actor<sub>1</sub> and the Actor<sub>2</sub> refer

to the same entity, only the Actor<sub>1</sub> is syntactically expressed, following the Macrorole Prominence Hierarchy for Mandarin SVCs in (43). Based on the linking principles proposed in (45), the Actor<sub>1</sub> is linked to the PSA position, whereas the Undergoer<sub>1</sub> is linked to the position immediately following the first verb. The structure for (47a) is given in (47b).

- (47) a. Ta pu maotan shuijiao.  
 he spread out blanket sleep  
 'He spread out the blanket in order to sleep.'

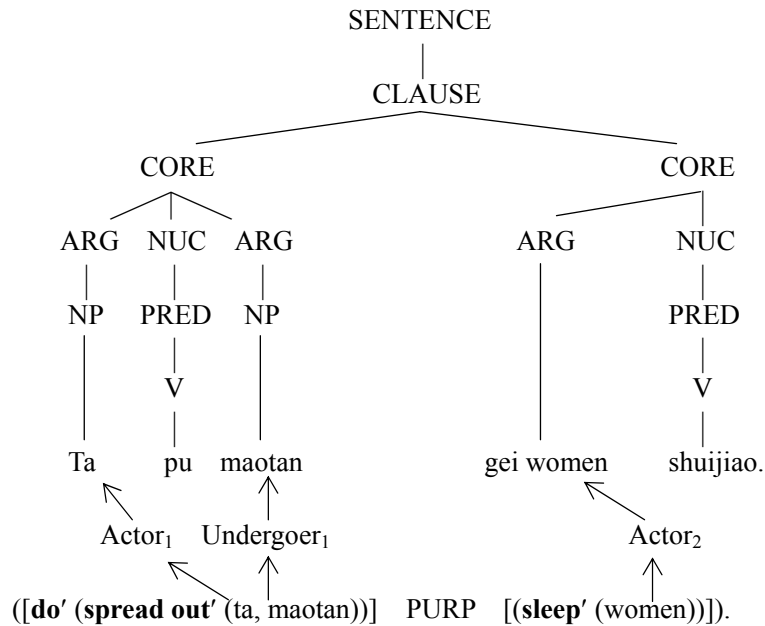


However, if the Actor<sub>1</sub> and the Actor<sub>2</sub> do not refer to the same entity in SVCs of Type II, as in (48a), then both of these two macroroles are syntactically expressed: the Actor<sub>1</sub> is linked to the PSA position, while the Actor<sub>2</sub> is linked to the position immediately following the word *gei*. In addition, the Undergoer<sub>1</sub> is linked to the position immediately following the first verb. The structure for (48a) is given in (48b).

- (48) a. Ta pu maotan gei women shuijiao.  
 he spread out blanket GEI we sleep  
 'He spread out the blanket for us to sleep.'



b.



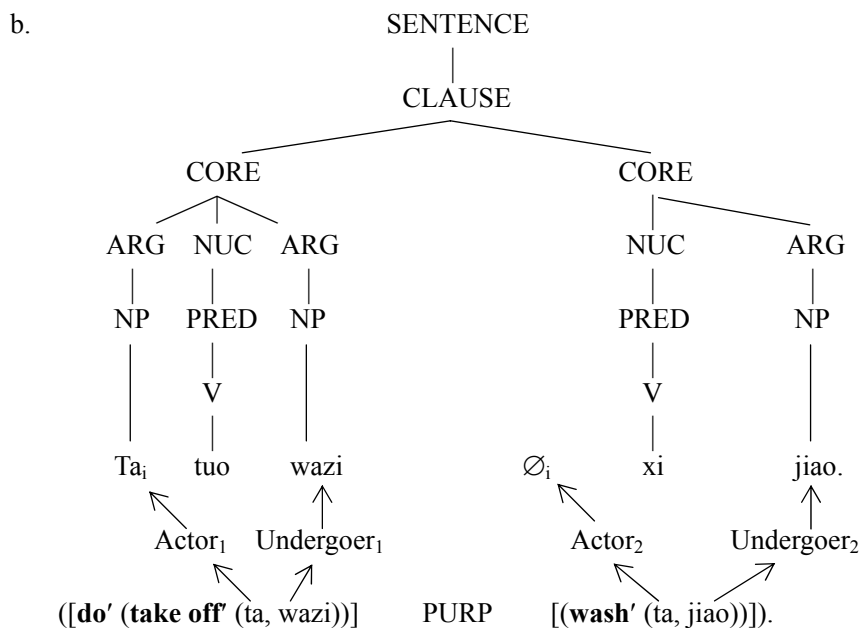
The SVC of Type III, as given in (49) is composed of two transitive verbs. In this type of SVC, the first argument of  $V_1$  (i.e. *ta* 'he'), selected as Actor<sub>1</sub>, is identical with the first argument of  $V_2$ , selected as Actor<sub>2</sub>, whereas the second argument of  $V_1$  (i.e. *jiu* 'wine'), selected as Undergoer<sub>1</sub>, is identical with the second argument of  $V_2$ , selected as Undergoer<sub>2</sub>. According to the Macrorole Prominence Hierarchy for Mandarin SVCs (i.e. Actor<sub>1</sub> > Actor<sub>2</sub> > Undergoer<sub>1</sub> > Undergoer<sub>2</sub>), the Actor<sub>2</sub> and the Undergoer<sub>2</sub> are not realized in the syntax. Following the linking principles in (45), the Actor<sub>1</sub> is linked to the PSA position, while the Undergoer<sub>2</sub> is linked to the position immediately following the second verb. However, if the Actor<sub>1</sub> and the Actor<sub>2</sub> do not refer to the same entity, as in the SVC of Type IV, as given in (50), then the Actor<sub>2</sub> will be linked to the position immediately following the word *gei*.

- (49) Ta    dao    jiu    he.  
       he    pour   wine   drink  
       'He poured wine to drink.'
- (50) Ta    dao    jiu    gei    women   he.  
       he    pour   wine   GEI   we    drink  
       'He poured wine for us to drink.'

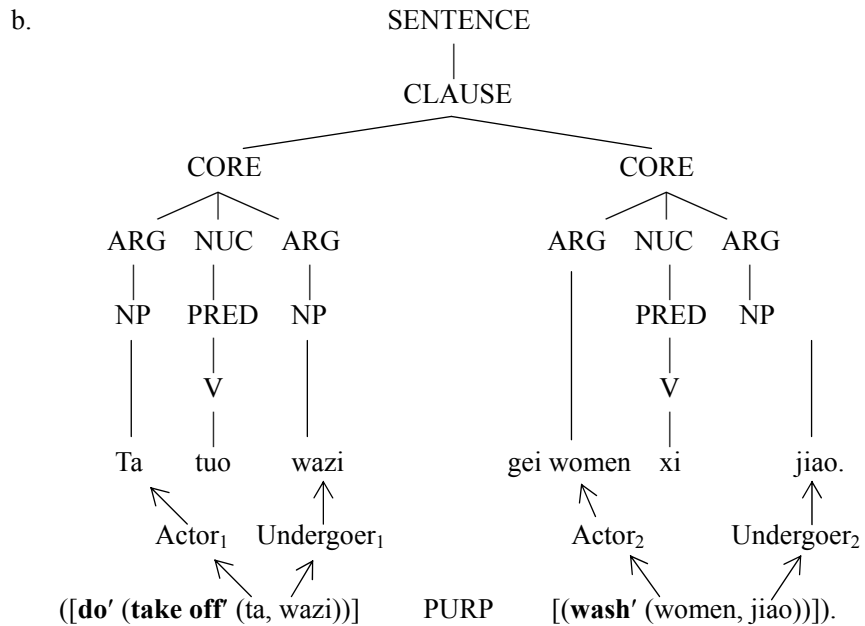
Like the SVC of Type V, as given in (51a), the SVC of Type VI, as given in (52a)

can be composed of two transitive verbs, thus involving four arguments. The arguments in this type of SVCs are selected as the Actor<sub>1</sub>, the Undergoer<sub>1</sub>, the Actor<sub>2</sub>, and the Undergoer<sub>2</sub>, respectively. Because none of the macroroles refer to the same entity, all of these will be realized in syntax. Following the linking principles in (45), the Actor<sub>1</sub> (i.e. *ta* ‘he’) is linked to the PSA position; the Undergoer<sub>1</sub> (i.e. *wazi* ‘socks’) is linked to the position immediately following the first verb; the Actor<sub>2</sub> (i.e. *women* ‘we’) is linked to the position immediately following the word *gei*, while the Undergoer<sub>2</sub> (i.e. *jiao* ‘feet’) is linked to the position immediately following the second verb, as the structure in (52b) shows. However, if Actor<sub>2</sub> is identical with Actor<sub>1</sub>, as in the SVC of Type V, it will not be overtly expressed in the syntax, as the structure in (51b) shows.

- (51) a. Ta tuo wazi xi jiao.  
 he take off socks wash feet  
 ‘He took off his socks to wash his feet.’



- (52) a. Ta tuo wazi gei women xi jiao.  
 He take off socks GEI we wash feet  
 ‘He took off his socks for us to wash his feet.’



### 4.3 Summary

In §4, I have proposed the linking principles and the Macrorole Prominence Hierarchy to account for how arguments are linked to syntax in Mandarin SVCs systematically within the framework of RRG. It has been shown that the Macrorole Prominence Hierarchies in RVCs and SVCs are different: In the former, Undergoer<sub>2</sub> is higher than Undergoer<sub>1</sub> whereas in the latter, Undergoer<sub>1</sub> is higher than Undergoer<sub>2</sub> in the role hierarchy.

### 5. Conclusion

This paper has accounted for the complex grammatical phenomena in Mandarin RVCs and SVCs when they are associated with the *ba*-construction, the Verb-copying construction, or the *gei*-construction, in terms of the linking algorithm in RRG. It has been shown that the words such as *ba*, the copied verb, and *gei* are analyzed as macrorole markers. In addition, it has proposed that the semantic macrorole of Undergoer should be divided into Undergoer<sub>1</sub> (the macrorole undergoes the action) and Undergoer<sub>2</sub> (the macrorole participates in the endpoint of the causal chain), and that when there are two identical macroroles in a logical structure, the macrorole in a higher hierarchy is syntactically expressed while the other is not syntactically realized according to The

Macrorole Prominence Hierarchy in question.

The study of this research has shown that in Mandarin RVCs, Actor<sub>1</sub> is linked to the PSA position, Undergoer<sub>1</sub> is linked to the position immediately following a copied verb, while Undergoer<sub>2</sub> is linked to the position immediately following the word *ba*. However, in Mandarin SVCs, Actor<sub>1</sub> is linked to the PSA position, the Undergoer<sub>1</sub> is linked to the position immediately following the first verb, Actor<sub>2</sub> is linked to the position immediately following the word *gei*, whereas Undergoer<sub>2</sub> is linked to the position immediately following the second verb.

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[Received 2 January 2006; revised 15 June 2006; accepted 1 August 2006]

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## 從角色指稱語法看漢語連續動詞的 語意與句法連結

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本文以角色指稱語法 (Role and Reference Grammar) 來探討漢語的結果動詞結構與連動結構，旨在了解名詞論元如何與句法相連結。參考許多語言學家如 van Voorst (1988)、Dowty (1991)、van Hout (1993)、Tenny (1994)、Croft (1998)、Rosen (1996, 1999)、Van Valin & LaPolla (1997:128) 及 Chang (2003) 的意見之後，本文認為主要決定論元如何及何處與句法連結的是參與者角色，而非論旨角色。為了能夠有系統地解釋漢語結果動詞結構與連動結構中複雜的語法現象，本文提出二個主要觀點：(1) 承受者的多元角色 (Undergoer Macrorole) 應該進一步區分為動作的承受者與終點的承受者兩種；(2) 根據「多元角色顯著層級」原則 (Macrorole Prominence Hierarchies)，當邏輯結構出現兩個完全相同的論元，其中一個論元會在句法上呈現出來，而另一個則滿足了約束原則而不出現在句法上 (Chang 2003)。漢語中結果動詞結構的角色層級為：行動者<sub>1</sub>>行動者<sub>2</sub>>承受者<sub>2</sub>>承受者<sub>1</sub>；而漢語的連動結構中的角色層級則為：行動者<sub>1</sub>>行動者<sub>2</sub>>承受者<sub>1</sub>>承受者<sub>2</sub>。

關鍵詞：論元連結，句法與語意介面，連續動詞，結果動詞，角色指稱語法，把字句，動詞重複結構，漢語