

ARGUMENT-FUNCTION  
MISMATCHES IN  
MANDARIN CHINESE:  
A LEXICAL MAPPING  
ACCOUNT

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## ABSTRACT

This paper seeks to account for the argument-function mismatches observed in two types of verbs in Mandarin Chinese: resultative compound verbs and verbs of consumption. The account is formulated within a simplified *Lexical Mapping Theory* (LMT), incorporating a unified mapping principle. Under the simplest and also the strictest interpretation of this mapping principle (or the  $\theta$ -criterion), given a composite role formed by two composing roles, only one composing role is allowed syntactic assignment, the other composing role must be suppressed. Argument-function mismatches are thus due to the competition between composing roles for syntactic function assignment. This LMT account also facilitates a natural explanation of markedness among the competing syntactic structures.

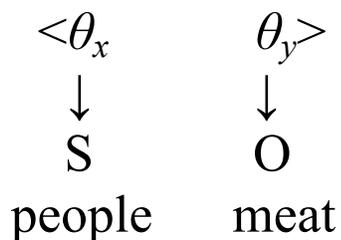
# 1. INTRODUCTION

This paper explores the problem of argument-function linking in two types of verbs in Mandarin.

(I) Verbs of consumption and accommodation:

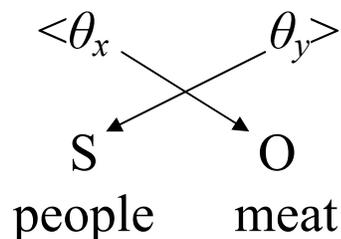
(1) a. 兩個人吃一磅肉

Liang ge ren chi yi bang rou.  
two CL person eat one pound meat  
'Two people eat one pound of meat.'



b. 一磅肉吃兩個人

Yi bang rou chi liang ge ren.  
one pound meat eat two CL person  
'One pound of meat feeds two people.'



(II) A resultative compound verb may allow up to three readings:

(2) 張三追累了李四

Zhangsan zhui-lei-le        Lisi.

John        chase-tired-ASP Lee

a. 'John chased Lee and made Lee tired.'

b. \*'Lee chased John and John got tired.'

c. 'John chased Lee and got tired.'

d. 'Lee chased John and was made tired  
(by John).'

Any syntactic theory aiming at characterizing UG should not leave the syntactic assignment of argument roles to lexical idiosyncrasies.

This paper adopts the view in Lexical-Functional Grammar (LFG) that each argument role is linked to a unique grammatical function subcategorized-for by a predicator, and thus not directly linked to a syntactic position. The initial mapping analysis offered in Her (1997) is further developed and extended, within a revised and simplified lexical mapping theory (LMT), a sub-theory in LFG which constrains the syntactic assignment of argument roles.

## 2. RESULTATIVE ARGUMENT-FUNCTION MISMATCHES

Resultative compounding is a productive word-formation process in Chinese morphology, where two verbs merge, the first denoting the causing action or event and the second indicating the resulting state or event (e.g., Lin 1990, Y. Li 1990). The merging of the two argument structures of (transitive)  $V_{\text{caus}}$  and (intransitive)  $V_{\text{res}}$  produces two outcomes. The single role of  $V_{\text{res}}$  may form a composite role by merging with either of the two roles of  $V_{\text{caus}}$ .

$$(3) \quad V_{\text{caus}} \langle \theta_x \theta_y \rangle + V_{\text{res}} \langle \theta_z \rangle \rightarrow$$

- (i)  $V_{\text{caus}}-V_{\text{res}} \langle \theta_x \quad \theta_y-\theta_z \rangle$
- (ii)  $V_{\text{caus}}-V_{\text{res}} \langle \theta_x-\theta_z \quad \theta_y \rangle$

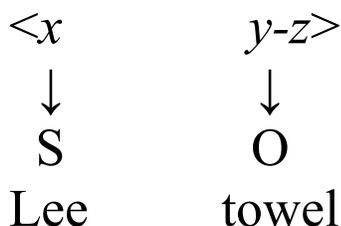
One thus might predict two types of compounds, but interestingly three types of argument-function linking may obtain. Note that certain resultative compounds are also causative.

(4) 李四扭乾了毛巾 (causative)

Lisi niu-gan-le maojin.

Lee wring-dry-ASP towel

‘Lee wrung the towel dry.’

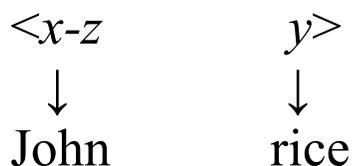


(5) 張三吃厭了這種米 (non-causative)

Zhangsan chi-yan-le zhe zhong mi

John eat-tired-of-asp this kind rice

‘John’s gotten tired of eating this rice.’

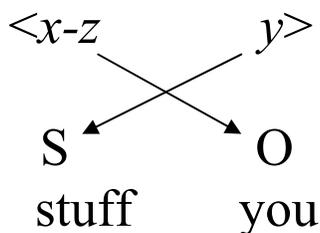


(6) 這種東西會吃死你 (causative)

Zhe zhong dongxi hui chi-si ni.

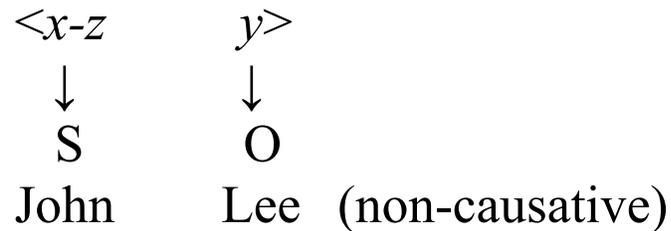
this kind stuff will eat-dead you

‘Eating this kind of stuff will kill you.’

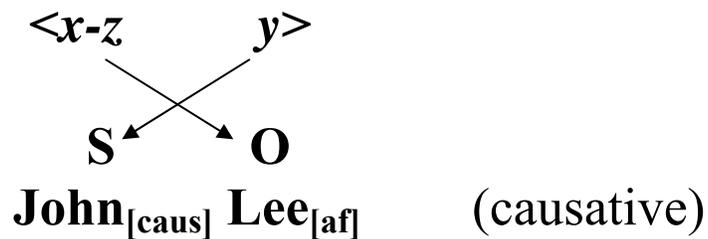




c. 'John chased Lee and (John) got tired.'



d. 'Lee chased John and was made tired (by John).'



The discussion in the following two sections aims to achieve the most revealing account as to how the argument-function mappings and causativity assignment arise in these sentences.

### 3. THE CAUSATIVE HIERARCHY ACCOUNT (Li 1995, 1999)

(8) C-role Assignment Conditions:

a. The argument in the subject position receives Cause from a resultative compound only if it does not receive a theta role from  $V_{res}$ .

b. The argument in the object position receives Affectee from a resultative compound if it receives a theta role at least from  $V_{res}$ .

(9) Well-formedness Condition on Mapping Argument Structure to Syntax

Theta roles can be assigned contrary to the thematic hierarchy if the arguments receiving them are assigned c-roles in ways compatible with the causative hierarchy.

## Comments:

1. This account is observationally adequate.
2. Nonetheless, two roles are allowed linking to one syntactic argument, violation  $\theta$ -criterion.
3. The conditions on c-role assignments are stipulations that do not follow from any independently-motivated principle within the framework adopted.
4. The causative hierarchy as an additional theoretical construct complicates the grammar.
5. Causativity, or the lack of it, as one of the most important properties distinguishing the proto-agent from the proto-patient (Dowty 1991), should ideally be integrated into the argument structures generated by the resultative compounding.
6. Li's causativity account fails to account for the apparent subject-object inversion in simple (non-resultative) consumption verbs, where causativity does not arise at all as an issue.

## 4. A LEXICAL MAPPING ACCOUNT

### 4.1 Lexical Mapping Theory (LMT)

- (10) lexical semantics (e.g., sink <*sinker sunk*>)  
↓  
a- structure (e.g., sink <*agent theme*>)  
↓  
Syntactic structure (e.g., [PRED ‘sink<(SUBJ) (OBJ)>’])

- (11) Thematic Hierarchy:

*ag* > *ben* > *go/exp* > *inst* > *pt/th* > *loc*

- (12) Hierarchy of Argument Functions:

SUBJ(-*r* -*o*) > OBJ(-*r* +*o*)/OBL<sub>θ</sub>(+*r* -*o*) > OBJ<sub>θ</sub>(+*r* +*o*)

This hierarchy is based on a classification in terms of two binary features: [±r] (**thematically restricted**) and [±o] (**objective**). SUBJ has both minus values and OBJ<sub>θ</sub> has both plus values. Minus features are the unmarked values.

- (13) Intrinsic Classification of Argument Roles for Functions (IC):
- a. primary *patient/theme*  $\rightarrow [-r]$
  - b. secondary *patient/theme*  $\rightarrow [+o]$

(14) The Unified Mapping Principle (UMP):  
Each argument role in an a-structure with no higher role available\* is mapped onto the highest compatible function available.

(\*A role is *available* iff it is not linked to a function, and conversely.)

UMP requires a strict one-to-one argument-function linking.

UMP replaces the multiple mapping principles and well-formedness conditions in the conventional formulation of LMT and applies to all syntactic assignments, SUBJ and non-SUBJ roles alike, and consistently links each and every argument role to the most prominent compatible function available.

Illustrations:

(15) The ice melted.

$melt < x > (x = th)$   
IC:  $[-r]$   
-----  
S/O  
UMP: S

(16) The dog barked.

$bark < x > (x = ag)$   
IC: -----  
S/O/...  
UMP: S

(17) The girl kissed the dog.

$kiss < x \quad y > (x = ag, y = pt)$   
IC:  $[-r]$   
-----  
S/O/... S/O  
UMP: S O

(18) Passivization:  $\langle \theta \dots \rangle$   
 $\downarrow$   
 $\emptyset$

(19) The dog was kissed.

	<i>kiss</i>	$\langle x$	$y \rangle$	$(x = ag, y = pt)$
IC:				$[-r]$
Passive:		$\emptyset$		
-----				
UMP:				S/O
				S

## 4.2 *Argument-Function Linking in Resultative Compounds*

(20) Resultative Compounding (1<sup>st</sup> formulation):

$$\begin{aligned}
 &V_{\text{caus}}\langle x y \rangle + V_{\text{res}}\langle z \rangle \rightarrow \\
 &V_{\text{caus}}V_{\text{res}}\langle \alpha \beta \rangle, \langle \alpha \beta \rangle = \text{(i)} \langle x y\text{-}z \rangle \\
 & \qquad \qquad \qquad \qquad \qquad \qquad \text{(ii)} \langle x\text{-}z y \rangle
 \end{aligned}$$

The theory of strict one-to-one linking, or the strict interpretation of the  $\theta$ -criterion, means that in a composite role such as x-y, only one composing role receives syntactic assignment; the other one must be suppressed. Thus, resultative compounding should generate potentially four a-structures. Suppression is indicated by a single cross-out.

(21) Resultative Compounding (2<sup>nd</sup> formulation):

$$\begin{aligned}
 &V_{\text{caus}}\langle x y \rangle + V_{\text{res}}\langle z \rangle \rightarrow \\
 &V_{\text{caus}}V_{\text{res}}\langle \alpha \beta \rangle, \langle \alpha \beta \rangle = \text{(i)} \langle x y\text{-}\bar{z} \rangle \\
 & \qquad \qquad \qquad \qquad \qquad \qquad \text{(ii)} \langle x \bar{y}\text{-}z \rangle \\
 & \qquad \qquad \qquad \qquad \qquad \qquad \text{(iii)} \langle x\text{-}\bar{z} y \rangle \\
 & \qquad \qquad \qquad \qquad \qquad \qquad \text{(iv)} \langle \bar{x}\text{-}z y \rangle
 \end{aligned}$$

(22) Zhangsan zhui-lei-le Lisi.

John chase-tired-ASP Lee

a. 'John chased Lee and made Lee tired.'

i.  $\langle x \quad y-z \rangle (x = ag, y = pt)$

IC  $[-r]$

-----  
S/O/... S/O  
UMP S O  
John Lee

ii.  $\langle x \quad y-z \rangle (x = ag, z = th)$

SC  $[-r]$

-----  
S/O/... S/O  
UMP S O  
John Lee

b.\*'Lee chased John and John got tired.'

$\langle x \quad y-z \rangle$

.  $\langle x \quad y-z \rangle$

\*O \*S

Lee John

c. 'John chased Lee and (John) got tired.'

iii.	$\langle x-z$	$y \rangle$	$(x = ag, y = pt)$
	SC	$[-r]$	
-----			
	S/O/...	S/O	
UMP	S	O	
	John	Lee	

d. 'Lee chased John and was made tired.'

iv.	$\langle x-z$	$y \rangle$	$(y = pt, z = th)$
	SC	$[+o]$	$[-r]$
-----			
	O/OBJ <sub>θ</sub>	S/O	
UMP	O	S	
	Lee	John	

### 4.3 Causativity in Resultative Compounds

(31) Resultative Compounding (3<sup>rd</sup> formulation):

$$\begin{aligned} V_{\text{caus}} \langle x \ y \rangle + V_{\text{res}} \langle z \rangle &\rightarrow V_{\text{caus}} V_{\text{res}} \langle \alpha \ \beta \rangle, \\ \langle \alpha \ \beta \rangle &= \text{(i) } \langle x \ y\text{-}z \rangle \\ &\quad \text{(ii) } \langle x[\text{caus}] \ y\text{-}z[\text{af}] \rangle \\ &\quad \text{(iii) } \langle x\text{-}z \ y \rangle \\ &\quad \text{(iv) } \langle x\text{-}z[\text{af}] \ y[\text{caus}] \rangle \end{aligned}$$

Causativity Assignment:

Assign [af] to (unsuppressed)  $\theta_z$  and  
[caus] to the opposing role

(32) Zhangsān zhūi-lei-le      Lisi.  
        John      chase-tired-ASP Lee

a. ‘John chased Lee and made Lee tired.’

i.            <  $x$              $y-z$  >  
                S            O  
                John      Lee

ii.           <  $x$ [caus]     $y-z$ [af] > (causative)  
                S            O  
                John      Lee

c. ‘John chased Lee and (John) got tired.’

iii.          <  $x-z$              $y$  > (non-causative)  
                S            O  
                John      Lee

d. ‘Lee chased John and was made tired.’

iv.          <  $x-z$ [af]       $y$ [caus] > (causative)  
                O            S  
                Lee      John

## 5. MISMATCHES IN CONSUMPTION VERBS

(33) (Revised) Thematic Hierarchy:

*ag > ben > go/exp > inst > pt/th > loc/dom*

(34) Domain-addition operation:

$V\langle x\ y\rangle, x = ag \ \& \ y = th \rightarrow$

i.  $\langle \cancel{x}\text{-}z \ y\rangle$

ii.  $\langle x\text{-}z \ y\rangle, z = dom_{[+o]}$

Again, either  $x$  or  $y$  in the composite role in the composite role  $x\text{-}y$  must be suppressed to preserve strict one-to-one linking imposed by UMP, or the  $\theta$ -criterion.

(35) Yi bang rou chi liang ge ren.  
 one pound meat eat two CL person  
 ‘One pound of meat feeds two people.’

i.	$\langle x-z$	$y \rangle$	$(y=th, z=dom)$
IC	[+o]	[-r]	
-----			
	O/OBJ <sub>θ</sub>	S/O	
UMP	O	S	

(36) Liang ge ren chi yi bang rou.  
 two CL person eat one pound meat.  
 ‘One pound of meat feeds two people.’

ii.	$\langle x-z$	$y \rangle$	$(x=ag, z=dom)$
IC		[-r]	
-----			
	S/O/...	S/O	
UMP	S	O	

## 7. CONCLUSION

1. Argument-function mismatches in resultative compounds as well as consumption verbs are due to the same competition for syntactic assignment between the two composing roles in a composite role.
2. In cases where the suppression of a more prominent role in the syntactic function assignment of an argument structure, an ‘upset’ occurs, which induces an apparent inversion of argument-function linking.
3. The simplified LMT framework proposed in the paper facilitates a straightforward formalization of this analysis.
4. This account also preserves the thematic hierarchy by assigning causativity to argument roles, rather than to syntactic positions.

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