

Linking agentive objects in Mandarin Chinese*

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Abstract

This paper is concerned with the problem of argument-function mismatch observed in the apparent subject-object inversion in Chinese consumption verbs, e.g., *chi* ‘eat’ and *he* ‘drink’, and accommodation verbs, e.g., *zhu* ‘live’ and *shui* ‘sleep’. These verbs seem to allow the linking of <agent-SUBJ theme-OBJ> as well as <agent-OBJ theme-SUBJ>, but only when the agent is also the semantic role denoting the measure or extent of the action. The account offered is formulated within LFG’s lexical mapping theory. Under the simplest and also the strictest interpretation of the one-to-one argument-function mapping principle (or the θ -criterion), a composite role such as *ag-ext* receives syntactic assignment via one composing role only. One-to-one linking thus entails the suppression of the other composing role. Apparent subject-object inversion occurs when the more prominent agent role is suppressed and thus allows the less prominent extent role to dictate the linking of the entire *ag-ext* composite role. This LMT account also potentially facilitates a natural explanation of markedness among the competing syntactic structures.

Keywords

inversion, argument-function mismatch, mapping, linking, argument realization, LMT, suppression, θ -criterion, extent

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1. Introduction: The Linking Problem

This paper deals with a construction in Chinese which allows agent to be linked to object and patient linked to subject, a linking pattern that has often been considered to be ill-formed cross-linguistically. For example, Lasnik and Uriagereka (2005: 6) state:

..as far as is known there is no hypothetical verb in any language whose subject is a patient and whose direct object is agent.

The paper is organized into five sections. A theory on linking, formulated within LFG (Kaplan and Bresnan 1982, Bresnan 2001) and known as the lexical mapping theory (LMT), will be presented in section 2. Section 3 then discusses the core problem to be dealt with in the paper: the apparent subject-object inversion observed in consumption verbs and accommodation verbs in Chinese. An example follows.

- (1) a. Tamen si ge ren zuo zhe zhang zuozi.
 they four CL person sit this CL table
 ‘Those four people sit at this table.’
- b. Zhe zhang zuozi zuo tamen si ge ren.
 this CL table sit they four CL person
 ‘This table sits them four people.’

The apparently inversed linking of <agent-OBJ, theme-SUBJ> in (1b) poses a challenge to current linking theories. In section 4, an account will be offered within the mapping theory developed in section 2, after a review of an LMT account of a similar problem in Chinese resultative compound verbs. It will be demonstrated that the strict one-to-one mapping forces the suppression of a composing role in a composite role, which is formed morphologically by merging two distinct roles and that the competition for syntactic assignment between the two composing roles creates the apparent subject-object inversion. Section 5 concludes the paper.

2. Lexical mapping Theory

LFG poses an argument structure (a-structure), which links the lexical semantic structure and the syntactic structure, which consists of two parallel planes of syntactic representation: constituent structure (c-structure) and functional structure (f-structure). The c-structure encodes the categorical hierarchies, usually represented as tree configurations. The f-structure, formally a feature structure, is the central locus of grammatical information. The lexical mapping theory (LMT) is the UG component that constrains the linking between a-structure roles and f-structure functions.

LMT also assumes a universal hierarchical organization of a-structure arguments, thus a thematic hierarchy, as shown in (2). And, by convention, roles in the a-structure are listed in a descending order accordingly, for example <ag th>. The most prominent role in the a-structure, or the logical subject, is known as $\hat{\theta}$, pronounced ‘theta-hat’.

- (2) Thematic Hierarchy:
 ag > ben > go/exp > inst > pt/th > loc

Grammatical functions (GFs) that are subcategorized for, also known as argument functions (AFs), including SUBJ, OBJ, OBL_{θ} (oblique functions), and OBJ_{θ} (secondary objects), are likewise ranked for syntactic prominence. The syntactic hierarchy in (3) is formally due to a classification of AFs with two binary features: $[\pm r]$ (whether an AF is restricted to having a thematic role) and $[\pm o]$ (whether an AF is objective, and thus a complement of a transitive predicate).

- (3) Markedness Hierarchy of Argument Functions:
 $SUBJ_{(-r -o)} > OBJ_{(-r +o)}/OBL_{\theta(+r -o)} > OBJ_{\theta(+r +o)}$

LFG maintains a universal scheme of classification of a-structure roles (Bresnan and Kanerva 1989) and a unified mapping principle (UMP) (Her 1999, 2003).

- (4) Intrinsic Morphosyntactic Classification of Argument Roles (IC):
 $\theta, \theta = pat/th$
 $[-r]$

- (5) Default Morphosyntactic Classification of Argument Roles (DC):
 $\theta, \theta \neq \hat{\theta}$
 $[+r]$

- (6) Unified Mapping Principle (UMP):
 Map each role in a-structure with no higher role available* onto the highest AF that is both available and compatible⁺.¹
 *A role is available if it is not linked to an AF, and conversely.
 +A role and an AF are compatible if they contain no conflicting feature.

The generalization in (4) can be viewed as an implementation of the unaccusative hypothesis, initially proposed by Perlmutter (1978).² The elsewhere condition in (5) captures the generalization that a non-logical subject, non-patientlike role is typically assigned a thematically restricted oblique function. The UMP in (6) reflects two generalizations. First, a more prominent role favors a more prominent AF; second, each role *consistently* favors the most prominent AF possible. Finally, note that the UMP also incorporates the θ -Criterion in that a one-to-one linking is strictly required.

3. APPARENT SUBJECT-OBJECT INVERSION

The core problem that this paper aims to solve involves an apparent subject-object inversion observed in consumption verbs, e.g., *chi* ‘eat’, *he* ‘drink’, and *chou* ‘smoke’, and accommodation verbs, e.g., *zhu* ‘live’, *zuo* ‘sit’, and *shui* ‘sleep’, in Chinese.

3.1 Consumption Verbs

The verb *chi* ‘eat’ will be used as an example of consumption verbs. Its canonical transitive construction is shown in (7a), where the linking of $\langle ag\text{-}SUBJ\ th\text{-}OBJ \rangle$ and the SVO

¹ Mapping is thus strictly declarative. Conceptually, however, mapping proceeds from left to right; in other words, mapping starts from the most prominent role (Her 2007: 229).

² The Unaccusative Hypothesis was first proposed in RG: “Certain intransitive clauses have an initial 2 but no initial 1” (Perlmutter 1978: 160). Initial 2 is the object, and initial 1 the subject.

word order are as expected, and the inverted linking of <ag-OBJ *th*-SUBJ> in (7b) is ill-formed, also as expected. This is still true when the theme object is a quantifier phrase (QP) and thus also denotes measure or extent of the eating, as in (8).

- (7) a. Lisi chi rou.
Lee eat meat
'Lee eats meat.'
- b. *Rou chi Lisi.
- (8) a. Lisi chi (zhe) yi guo rou.
Lee eat this one pot meat
'Lee eats (this) one pot of meat.'
- b. *Zhe yi guo rou chi Lisi.
c. *Yi guo rou chi Lisi.

However, it has been observed that if the agent is a QP, subject-object inversion can occur, as in (9a-b). The inverted linking in (9b) thus appears to violate the thematic hierarchy and presents a non-isomorphy problem. Note that this inversion is irrespective of the theme being a QP or NP, as in (10).

- (9) a. Liang ge ren chi yi bang rou.
two CL person eat one pound meat
i. 'Two people eat one pound of meat.'
ii. 'One pound of meat feeds/serves two people.'
- b. Yi bang rou chi liang ge ren.
one pound meat eat two CL person
'One pound of meat feeds/serves two people.'
- (10) a. Liang ge ren chi zhe wan rou.
two CL person eat this bowl meat
i. 'Two people eat this bowl of meat.'
ii. 'This bowl of meat feeds/serves two people.'
- b. Zhe wan rou chi liang ge ren.
this bowl meat eat two CL person
'This bowl of meat feeds/serves two people.'

It is thus clear that the verb *chi* in (9b) and (10b) takes on an additional semantic role of 'measure' or 'extent', besides agent and theme. This is precisely the possible role of 'extent' Dowty (1991: 554) refers to, and is similar to the role of 'range' discussed in Teng (1975: 95) and the role of 'domain' proposed in Huang (1993: 372-374) and Her (2003). The more widely used term of 'extent' will be adopted here. Dowty (1991: 554) illustrates this role with examples like the following:

- (11) a. I walked a mile.
b. I swam 30 meters.
c. I slept twelve hours.

- (12) a. This weighs five pounds.
 b. The piano measures 6'5".
 c. It took me an hour to grade the papers.
 d. The book cost me \$5.

Dowty (1991) points out the difficulty in the distinction between adjuncts and arguments. The measure or extent phrases in (11) are usually considered adjuncts,³ and as such do not receive a theta role from the verb. However, the extent phrases in (12) are subcategorized for, and thus assigned the extent role, by the verb.

In Chinese, subject-object inversion occurs only when the agent takes on an additional extent role. (13b) is ill-formed because the agent denoted by the pronoun or the full NP cannot afford a measure or extent reading. With the addition of a QP *liang ge ren* 'two people' in (14), the extent reading is available and subject-object inversion is allowed.

- (13) a. Tamen/Zhangsan han Lisi chi zhe guo rou.
 They / John and Lee eat this pot meat
 'They/John and Lee eat this pot of meat.'
 b. *Zhe guo rou chi tamen/Zhangsan han Lisi.
- (14) a. Tamen/Zhangsan han Lisi liang ge ren chi zhe guo rou.
 They / John and Lee two CL person eat this pot meat
 'They/John and Lee two people eat this pot of meat.'
 b. Zhe guo rou chi tamen/Zhangsan han Lisi liang ge ren.
 this pot meat eat they / John and Lee two CL person
 'This pot of meat feeds/serves them/John and Lee two people.'

Note that the object in the inversed (14b) still denotes the actor of the action *chi*, thus the eater, despite the addition of the extent reading.

3.2 Accommodation Verbs

This inversion applies to accommodation verbs as well. The particular sense which the term 'accommodation verbs' refers to in this paper is the provision of space or time needed for a certain activity, for example sleeping, sitting, standing, or dancing. The verb *shui* 'sleep' will be used as the example because of the exact English translation of the inverted sentence, as in (15).

- (15) a. Si ge ren shui zhe jian xiaowu.
 four CL person sleep this CL cabin
 i. 'Four people use this cabin for sleeping.'
 ii. 'This cabin sleeps four people.'
 b. Zhe jian xiaowu shui si ge ren.
 this CL cabin sleep four CL person
 'This cabin sleeps four people.'

³ This is debatable, I believe, even for English and is certainly not true for every other language. For example, Sybesma (1999) argues that in Chinese all postverbal bare nominals, including frequentatives and durations, are complements.

However, note that *shui* ‘sleep’ is also a locative inversion verb, as in (16), which should not be confused with the subject-object inversion in (15). Unlike the subject-object inversion verb, the locative inversion verb does not require the inverted subject to be a measure or extent. Thus, the well-formed inversion in (17), where the inverted subject does not have the extent reading, is due to locative inversion, not subject-object inversion.⁴

- (16) a. Si ge ren shui zai zhe jian xiaowu-li.
four CL person sleep at this CL cabin-inside
‘Four people are sleeping in the cabin.’
- b. Zhe jian xiaowu-li shui si ge ren.
this CL cabin-inside sleep four CL person
‘In the cabin sleeps four people.’
- (17) a. Zhangsan han Lisi shui zai zhe jian xiaowu-li.
John and Lee sleep at this CL cabin-inside
‘John and Lee are sleeping in the cabin.’
- b. Zhe jian xiaowu-li shui-zhe Zhangsan han Lisi.
this CL cabin-inside sleep-ASP John and Lee
‘In the cabin is sleeping John and Lee.’

What this demonstrates is that, while the locative inversion verb requires an a-structure of precisely *<th loc>* (e.g., Bresnan 1994, Her 2006), the accommodation verb in subject-object inversion, like consumption verbs, requires an a-structure of *<ag th>*. Syntactic tests with the *ba* construction (18a), the *bei* construction (18b), the *hao* ‘good’ middle construction (18c), relativization (18d), and topicalization (18e) all confirm the seeming locative is in fact a typical theme.

- (18) a. Zhangsan ba zhe zhang tatami shui-le.
John BA this CL straw-mat sleep-ASP
‘John has used this straw mat for sleeping.’
- b. Zhe zhang tatami bei (Zhangsan) shui-le.
this CL straw-mat BEI John sleep-ASP
‘This straw mat has been slept on (by John).’
- c. Zhe zhang tatami hen hao-shui.
this CL straw-mat very good-sleep
‘This straw mat is very comfortable to sleep on.’
- d. Wo xihuan ta shui de zhe zhang tatami.
I like he sleep DE this CL straw-mat
‘I like the straw mat that he uses for sleeping.’

⁴ As noted in Bresnan (1994) and Huang and Her (1998), due to the information structure and the shift of focus to the inverted subject, locative inversion does not normally occur with an inverted pronominal.

- e. Zhe zhang tatami, ni shui.
 this CL straw-mat you sleep
 ‘This straw mat, you use it for sleeping.’

However, the problem is not all *<ag th>* verbs undergo inversion. Verbs allowed this construction are far more restricted. We will turn to this issue now.

3.4 A Morpholexical Operation

Ren (2005) gives quite an extensive description and informal analysis of various non-patient objects in Mandarin. For the subject-object inversion discussed here, she suggests an underlying bi-clausal structure on the inversion construction, where a silent counterpart of *gei* ‘give’ heads the matrix clause, as in (19a), thus a light verb construction similar to that of (19b). However, a *vp*-stacking movement analysis requires evidence such as the multiple adverbial positions shown in (19b-c).

- (19) a. Zhe zhang zuozi e tamen si ge ren zuo.
 this CL table they four CL person sit
 ‘This table sits them four people.’
 b. John *-ed* e the ball roll down the hill.
 c. John *gently* rolled the ball down the hill.
 d. John rolled the ball *gently* down the hill.

A syntactically derived construction thus must exhibit some robustness in syntactic behavior and a considerable degree of productivity. The inversion verbs do not fit either criterion. As we have demonstrated, the inversion construction is highly restricted in its syntactic behavior. Furthermore, the verbs allowed in the inversion construction, though unified under a-structure *<ag th>*, are highly unproductive. First of all, subject-object inversion verbs seem to be monosyllabic. This kind of phonological constraint is characteristic of morphological operations, not syntactic derivation. Also, a precise semantic characterization of the verbs allowed in the construction seems elusive. Ren (2005: 16) observes that inversion verbs must denote an action at the completion of which the theme is to be occupied or possessed. This narrows down the kind of *<ag th>* verbs allowed considerably and also nicely unifies verbs of accommodation and verbs of consumption. However, this is still an *overgeneralization* as many exceptions can be identified.

When you buy something, you end up possessing it, but *mai* ‘buy’ is not allowed, nor is any of the following: *shou* ‘receive’, *jie* ‘borrow’, *na* ‘take’, *qu* ‘take’, *tou* ‘steal’, *qiang* ‘rob’, *de* ‘obtain’, *you* ‘have’, *bao* ‘hug, embrace’, and *zhan* ‘occupy’. The two verbs *chi* ‘eat’ and *tun* ‘swallow’ are fairly close in meaning, and something swallowed is certainly occupied, but *tun* allows no inversion between the swallower and the swallowee, nor do *yan* ‘swallow’, *yao* ‘bite’, *chang* ‘taste’, *tian* ‘lick’, and *jiao* ‘chew’. Ren’s generalization also *undergenerates*. Take *xi* ‘wash’ for example. The ill-formed (20b) is accounted for, because at the completion of washing, possession is not entailed. However, the well-formed (21b) is a surprise. The soap after washing is gone, not possessed or occupied.

- (20) a. Liang ge ren xi zhe tiao maotan.
two CL person wash this CL blanket
'Two people wash this blanket.'
- b. *Zhe tiao maotan xi liang ge ren.⁵
this CL blanket wash two CL person
- (21) a. Shi ge ren xi zhe kuai feizao.
ten CL person wash this block soap
'Ten people use this block of soap to wash themselves.'
- b. Zhe kuai feizao xi shi ge ren.
this block soap wash ten CL person
'A block of soap accommodates the washing by ten people.'

All these idiosyncrasies in syntactic behavior and arbitrary gaps in lexical generalization all point to a morpholexical solution, not a syntactic one. A morpholexical operation is proposed in (22) to account for the additional extent role bound with the existing agent role.

- (22) Extent-addition morpholexical operation:
 $V_a \langle x \ y \rangle^*, x = ag \ \& \ y = th, \rightarrow V_a \langle x-z \ y \rangle, z = ext$

* V_a denotes an action at the completion of which x is to be possessed or occupied by y .

The verb class of V_a in (22) is understood to have many gaps and allow certain exceptions. In terms of linking, both $\langle ag-ext-SUBJ \ th-OBJ \rangle$ or $\langle ag-ext-OBJ \ th-SUBJ \rangle$ are well-formed.

4. A Lexical Mapping Account

The first issue that has to be resolved in linking the inversion verbs is how to incorporate the extent role into the existing thematic hierarchy. Huang (1993) proposes that extent ('domain' in his term) be one of the least prominent roles in the thematic hierarchy.

- (23) Revised Thematic Hierarchy:
 $ag > ben > go/exp > inst > pt/th > loc/ext$

The extent role indeed shares none of the characteristics of the agent, and, like the locative, it is predicated of the theme and also entails the terminus point of the action. Huang further proposes that this role be assigned IC [+o] in Chinese to account for its objecthood. However, I will assume the strongest position and assume that the [+o] assignment for the extent role is an IC, and thus universal. The remaining problem is the precise linking mechanism of the a-structure of inversion verbs, summarized in (24) below.

⁵ This sentence is good only in the sense of (21b), where the blanket is the thing used for washing, not the thing being washed.

- (24) a. Liang ge ren chi yi bang rou.
 two CL person eat one pound meat
 i. ‘Two people eat one pound of meat.’
 $\langle x \quad y \rangle$ ($x = ag, y = th, z = ext$)
 $\downarrow \quad \downarrow$
 S O
 people meat
- ii. ‘One pound of meat feeds/serves two people.’
 $\langle x-z \quad y \rangle$ ($x = ag, y = th, z = ext$)
 $\downarrow \quad \downarrow$
 S O
 people meat
- b. Yi bang rou chi liang ge ren.
 one pound meat eat two CL person
 ‘One pound of meat feeds/serves two people.’
 $\langle x-z \quad y \rangle$ ($x = ag, y = th, z = ext$)
 $\swarrow \quad \searrow$
 S O
 people meat

The issue with the a-structure $\langle ag-ext \ th \rangle$ is two-fold. First, how exactly is a composite role, formed by two composing roles, linked to a single syntactic function? Second, why does inversion occur? We will demonstrate that once the first question is satisfactorily answered, the answer to the second question simply falls out.

4.1 Strict One-to-One Linking and Suppression

Given the strictly one-to-one linking required by the UMP or the θ -Criterion, an explanation is needed as to technically why it is well-formed to link a composite role, formed by two distinct thematic roles, such as $ag-ext$, to a single syntactic argument. One solution is to relax this restriction, for example the Relativized θ -Criterion proposed in Carrier and Randall (1992).

(25) Relativized θ -Criterion (Carrier and Randall 1992: 180)

An XP chain can be associated with at most one argument position in any given AS (argument structure). Each AS position must be satisfied by one and only one XP chain in the syntax. (*Parentheses added*)

This thus allows an XP to bear two roles if each is assigned by a different head. However, it is of course preferred if the more constrained strict one-to-one linking is maintained. Her (2004) contends that the enforcement of strict one-to-one linking simply entails the suppression of one of the composing roles in the composite role. Logically then, the suppression of a composing role in linking a composite role is motivated as well as constrained by the one-to-one linking required by the mapping principle or the θ -Criterion. The suppression, or absorption as it is called within GB, of the highest role, or the logical subject, in the passivization operation is universally accepted. Suppression is also required in constructions such as middle and tough. As a universally independently motivated notion, suppression as part of linking composite roles thus in no way complicates the grammar.

Since suppression only blocks a role from surfacing as a syntactic *argument*, a suppressed role may still surface as a syntactic *adjunct*. For instance, in a passive sentence, the suppressed external role may still be identified with, and thus semantically linked to, a *by*-adjunct phrase, as in (26a) (Bresnan 1994: 81), or a so-called ‘subject-oriented adverb’, as in (26b). Even though in the middle construction neither option is allowed, as shown in (27), the fact remains that the suppressed role is still implicit. The car does not drive itself in (27a-c); nor did the treasure bury itself in (26a-c).

- (26) a. The treasure was buried (by the pirates).
 b. The treasure was buried (intentionally).

c. Baozang bei mai-le.
 treasure BEI bury-ASP
 ‘The treasure was buried.’

- (27) a. The car drives well (*by the salesman).
 b. The car drives well (*intentionally).

c. Zhe liang che hen hao-kai.
 This CL car very good-drive
 ‘The car drives well.’

Thus, when a composing role in a composite role is suppressed, it is simply not relevant in relation to the linking of the composite role, which depends entirely on the unsuppressed composing role. However, the fact that a suppressed composing role is bound with the expressed composing role predicts that syntactically the suppressed role can never split away from its bound partner and surface in a separate form, be it an adjunct or a ‘subject-oriented’ adverb. Thus, the fact that the inverted agent in (28), now the object, does not allow any ‘subject-oriented’ adverbs or manner adverbs clearly indicates that the agent role is in fact suppressed and the linking of the composite role *ag-ext* is determined solely on the basis of the extent role.

- (28) a. yi bang rou (**guyi*/**gaogaoxingxing-de*) chi liang ge ren.
 one pound meat intentionally/happily eat two CL person

b. Yi zhang zuozi (**guyi*/**gaogaoxingxing-de*) zuo si ge ren.⁶
 one CL table intentionally/happily sit four CL person

This drastic reduction in volitionality, and thus agentivity, also serves as evidence that the agent is suppressed. The restrictions in this regard are thus rather similar to, and yet more principled than, those of the middle construction. The suppression entailed by strict one-to-one linking is thus well-motivated and well-constrained. Note also this concept is not tied to the LFG framework at all, and is in fact applicable in derivational as well as lexicalist frameworks.

Before applying the strict one-to-one linking and the suppression it entails to subject-object inversion verbs, let’s look at another case of composite roles where one-to-one linking and suppression satisfactorily account for the inversion construction.

⁶ If this sentence is acceptable at all, it is an external agent available from the discourse context that *guyi* ‘intentionally’ refers to, not *si ge ren* ‘four people’.

4.2 Resultative Inversion

A resultative compound exhibits an intriguing pattern of linking. As first comprehensively documented by Li (1995), a verb such as *zui-lei* ‘chase-tired’ allows up to three readings and two of the readings are clearly causative.

- (29) Zhangsan zhui-lei-le Lisi.
 John chase-tired-ASP Lee
 a. ‘John chased Lee and made Lee tired.’ (causative)
 b.*‘Lee chased John and John got tired.’
 c. ‘John chased Lee and (John) got tired.’ (non-causative)
 d. ‘Lee chased John and was made tired.’ (causative)

Her (2004, 2007), dissatisfied with the violation of the θ -Criterion by Li’s (1995, 1999) account, offers an alternative within LFG’s LMT, where strict one-to-one linking and suppression in fact predict that resultative compounding should generate potentially four well-formed a-structures. Following Li (1995), V_{caus} refers to the causing verb and V_{res} the result verb. The resultative compounding process that merges a transitive V_{caus} and an intransitive V_{res} is summarized in (30).

(30) Resultative Compounding

$$V_{\text{caus}}\langle x y \rangle + V_{\text{res}}\langle z \rangle \rightarrow V_{\text{caus}}V_{\text{res}}\langle \alpha \beta \rangle^*, \text{ where } \langle \alpha \beta \rangle = \begin{array}{l} \text{(i) } \langle x y \text{-}\bar{z} \rangle \\ \text{(ii) } \langle x[\text{caus}] \text{ } \bar{y}\text{-}z[\text{af}] \rangle \\ \text{(iii) } \langle x\text{-}\bar{z} y \rangle \\ \text{(iv) } \langle \bar{x}\text{-}z[\text{af}] y[\text{caus}] \rangle \end{array}$$

(*The role containing an unsuppressed θ_z receives [af], and the other role [af])

With suppression taken into account, linking is straightforward. As shown in (31a), the causative reading is due to (30ii). However, it is also predicted that a non-causative reading of (31a’), due to (30i), is available. However, given the presence of causativity in (31a), the absence of causativity in (31a’) is overridden, logically. The reading in (31b) is impossible as neither of the two compatible a-structures, (30i) and (30ii), produces it. The reading of (31c) is due to the non-causative (30iii). The causativity and apparent inverted linking in (31d), due to (30iv), is also predictable due to a well-established principle: the causer is more prominent than the affectee (Dowty 1991). Note that suppression is indicated by a single cross-out.

- (31) Zhangsan zhui-lei-le Lisi.
 John chase-tired-ASP Lee
- a. ‘John chased Lee and made Lee tired.’ (causative)
 $\langle x[\text{caus}] \text{ } \bar{y}\text{-}z[\text{af}] \rangle \quad (x = ag, z = th)$
 S O
 John Lee
- a’ ‘John chased Lee and Lee got tired.’ (non-causative)
 $\langle x \quad y\text{-}\bar{z} \rangle \quad (x = ag, y = th)$
 S O
 John Lee

- b. *‘Lee chased John and John got tired.’ (non-existent)
- | | | |
|-------------|-------------|----------------------|
| < x | $y-z$ > | ($x = ag, y = th$) |
| < $x[caus]$ | $y-z[af]$ > | ($x = ag, z = th$) |
| *O | *S | |
| Lee | John | |
- c. ‘John chased Lee and (John) got tired.’ (non-causative)
- | | | |
|---------|-------|----------------------|
| < $x-z$ | y > | ($x = ag, y = th$) |
| S | O | |
| John | Lee | |
- d. ‘Lee chased John and was made tired.’ (causative)
- | | | |
|-------------|-------------|----------------------|
| < $x-z[af]$ | $y[caus]$ > | ($y = th, z = th$) |
| O | S | ($[caus] > [af]$) |
| Lee | John | |

4.3 Subject-Object Inversion

We now move on to examine the linking in the subject-object inversion verbs under the same assumptions of one-to-one linking and suppression. Argument-function mapping is illustrated in detail within the LMT presented in section 2.

- (32) a. Tamen liang ge ren chi yi bang rou.
 they two CL person eat one pound meat
 i. ‘Those two people eat one pound of meat.’
- | | | | |
|-------|------------------|---------------|----------------------|
| | <i>chi</i> < x | y > | ($x = ag, y = th$) |
| IC: | | [- <i>r</i>] | |
| DC: | | | |
| ----- | | | |
| | S/O/... | S/O | |
| UMP: | S | O | |
- ii. ‘One pound of meat feeds/serves them two people.’
- | | | | |
|-------|--------------------|---------------|-------------------------------|
| | <i>chi</i> < $x-z$ | y > | ($x = ag, y = th, z = ext$) |
| IC: | | [- <i>r</i>] | |
| DC: | | | |
| ----- | | | |
| | S/O/... | S/O | |
| UMP: | S | O | |
- b. Yi bang rou chi tamen liang ge ren.
 one pound meat eat they two CL person
 ‘One pound of meat feeds/serves them two people.’
- | | | | |
|-------|------------------------------------|---------------|-------------------------------|
| | <i>chi</i> < $x-z$ | y > | ($x = ag, y = th, z = ext$) |
| IC: | [+ <i>o</i>] | [- <i>r</i>] | |
| DC: | [+ <i>r</i>] | | |
| ----- | | | |
| | OBJ _{θ} | S/O | |
| UMP: | OBJ _{θ} | S | |

Again, the linking of <*ag*-SUBJ *th*-OBJ> in the basic transitive reading of (32a(i)) is mundane; the real issue is why inversion occurs between (32a(ii)) and (32b). The answer virtually falls out under the assumption of strict one-to-one linking. Within the composite role *ag-ext*, two possibilities arise in linking. If the extent role is suppressed, the linking is again mundane, much like that of a typical transitive verb. When the agent role is suppressed, the composite role is then syntactically assigned solely based on the extent role. An apparent inversion occurs. This inversion is only apparent because, technically, the agent role is not syntactically assigned to the object at all; it is suppressed from syntactic assignment all together. However, the semantic content associated with a suppressed role is still implicitly available. In the case of a composite role, the suppressed composing role is inherently bound with its partner and thus always finds an implicit semantic connection with it. Therefore, even though (32a(ii)) and (32b) have inverted linking, their semantic content remains the same. However, crucially, given agent's overt linking in the former but its suppression in the latter, only the former can be modified by a 'subject-oriented' adverb, as shown in (33a-b).

- (33) a. Tamen liang ge ren *guyi* chi yi bang rou.
 they two CL person intentionally eat one pound meat
 i. 'Those two people intentionally eat one pound of meat.'
 ii. 'By their_i intention, one pound of meat feeds/serves
 them two people_i.'
- b. Yi bang rou (**guyi*) chi tamen liang ge ren.
 one pound meat intentionally eat they two CL person

Finally, note that this LMT account assigns the inverted subject in (32b) to the restricted function of OBJ_θ, rather than the unrestricted OBJ. There is some evidence for that. As demonstrated earlier, the inverted agent is indeed objectlike in that it also appears in the *ba*-construction. However, a typical OBJ in Chinese also allows a counterpart *bei*-construction, while an OBJ_θ does not.

- (34) a. Zhangsan gei-le Lisi zhe ben shu.
 John give-ASP Lee this CL book
 'John gave Lee this book.'
- b. Zhe ben shu bei (Zhangsan) gei-le Lisi.
 this CL book BEI John give-ASP Lee
 'This book was given to Lee (by John).'
- c. *Lisi bei (Zhangsan) gei-le zhe ben shu.
 Lee BEI John give-ASP this CL book
 'Lee was given this book (by John).'
- d. *Liang ge ren bei yi bang rou chi.
 two CL person BEI one pound meat eat
 'One pound of meat is fed to two people.' (intended meaning)

In (34b), the OBJ *zhe ben shu* 'this book' does passivize, but the indirect object in (34c), which an OBJ_θ restricted to the theme role, does not. Likewise, the fact that the inverted agent does not passivize, as shown in (34d), would suggest that it is more likely an OBJ_θ, rather

than a full-fledged OBJ. Also, a typical OBJ allows extraction, while an indirect or secondary object does not, as shown in (35) and (36) respectively.

- (35) a. Zhe zhong rou, Zhangsan chi.
 this kind meat John eat
 ‘This kind of meat, John eats.’
- b. Zhangsan chi de zhe zhong rou.
 John eat REL this kind meat
 ‘The kind of meat that John eats.’
- (36) a. *Lisi, Zhangsan gei-le zhe ben shu.
 Lee John give-ASP this CL book
 ‘Lee, John gave this book to.’
- b. *Zhangsan gei-le zhe ben shu de ren.
 John give-ASP this CL book REL person
 ‘The person that John gave this book to.’

The behavior of the inverted subject in topicalization and relativization, as in (37a-b), is similar to that of an OBJ_θ in (36a-b), not OBJ in (35a-b). Its status as an OBJ_θ thus seems reasonable.

- (37) a. *Si ge ren, zhe zhang chuang shui.
 four CL person this CL bed sleep
 ‘*Four people, the bed sleeps.’
- b. *Zhe zhang chuang shui de si ge ren.
 this CL bed sleep REL four CL person
 ‘*The four people the bed sleeps.’

5. Conclusion

Unlike the genuine agentive objects reported in certain languages, e.g., Navajo (Hale 1973), Balinese (Arka 2004), and Tagalog (Kroeger 1993), the inversion discussed in this paper involves an *agent-extent* composite role, rather than a straightforward agent role. Under the simplest and also the strictest interpretation of the argument-function mapping principle (or the *θ*-criterion), a composite role, formed by two composing roles, receives syntactic assignment via one composing role only; the second composing role is thus suppressed. Inversion occurs only when the extent role wins out in linking and thus forces the suppression of the agent role. Thus, this subject-object inversion is only apparent, as technically the agent role is not syntactically realized at all. The account is formalized in the linking theory within LFG, known as the lexical mapping theory. This lexical mapping account also facilitates a natural explanation of markedness among the competing syntactic structures. The inverted structure is marked because the most prominent agent role not only loses its independence in linking, it is suppressed to allow linking by the least prominent extent role.

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