

A CONSTRUCTIONAL APPROACH TO ARGUMENT REALIZATION OF CHINESE RESULTATIVES*

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1. Introduction

This paper argues for a constructional view of the resultative constructions, specifically the resultative-verb compounds (henceforth RVCs). We claim that the effect of the construction must be taken into account in the realization of arguments, and the realization must be moderated by the linking rules.

This paper is organized as follows: Section 2 provides a brief definition of resultatives in English and Chinese; Section 3 reviews previous works on Chinese resultatives; Section 4 introduces the constructional approach and argument realization; Section 5 proposes the event-frames and linking rules in Chinese RVC constructions; Section 6 discusses the Chinese inverted causative RVC constructions. Section 7 concludes this paper.

2. Defining Resultatives

The resultative constructions¹ cannot be defined solely on syntactic or semantic grounds. A construction is a form-meaning pair and thus both aspects must be taken into account. Since syntactic forms vary cross-linguistically, the resultative is not a universal concept and has to be defined on a language-specific basis. In this section we discuss the relation of resultatives to causatives and how the resultatives disobey the traditional “subcategorization frames” if we only consider the main verb.

2.1. English Resultatives

Semantically, an English resultative construction expresses a complex event composed of an activity subevent and a following result subevent. Syntactically, it has two slightly different forms (1), with examples in (2) from Goldberg and Jackendoff (2004: 563):

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¹ The terms “resultative” and “resultative construction” are used interchangeably in this paper.

- (1) a. NP1 V XP (intransitive)
 b. NP1 V NP2 XP (transitive)
- (2) a. *The pond froze solid.*
 b. *Bill watered the tulips flat.*

However, a sentence like *John killed Marry* expresses the two subevents mentioned above but it does not conform to either form in (1). The depictive sentence *he ate the meat raw* can be fit into (1b) but describes a state of something during the activity instead of following it. Both sentences are not qualified for a resultative construction.

Note also that causation is not necessarily involved in resultatives, though they are closely related. (2a) describes a noncausative relation between the two subevents while (2b) describes a causative one. Thus not all resultatives are causatives, but is it possible that it is the other way around? Are all causatives resultatives?

The answer is “no” when we consider a sentence like *Sylvia jumped the horse over the fence* (Levin 1993: 31). It is a causative expressing Sylvia’s causing the horse to jump over the fence. It is not a resultative because the caused event describes an activity rather than a state. Therefore, the resultatives are in an overlapping distribution with the causatives, neither being a subset of the other.

Another property of the English resultatives is that the postverbal NP is not necessarily the logical object of the main verb. Unlike (2), sentences in (3) violate the subcategorization requirement:

- (3) a. *John ran himself tired.*
 b. *Sue swept the broom to pieces.*

In (3a), the verb *run* is intransitive and should not be followed by an NP; in (3b) the verb *sweep* is transitive but it should be followed by an NP denoting dust-like entities. Note that the result phrases in (3) must be present, otherwise the sentences are unacceptable. These data must be explained in any theoretical framework on resultatives.

2.2. Chinese Resultatives

Semantically, a Chinese resultative construction also expresses a complex event composed of an activity subevent and a following result subevent. Syntactically, the resultative *de* construction and resultative-verb compounds can be used to express this complex event. The resultative *de* links the verb and the result complement as in (4):

- (4) Tamen tiao de hen lei.
 they jump DE very tired
 ‘They jumped till they got very tired.’

The form of an RVC is superficially the same as other verb-complement constructions: all have postverbal elements that describe result, phase, potential,

and so on. Based on formal and semantic behavior, verb-complement compounds can be classified as ordinary complements (e.g. *zou-lei* “walk-tired” and *ku-shi* “cry-wet”), phase complements (e.g. *xie-wan* “write-finish” and *zhao-dao* “find-arrive”), light-verb complements (e.g. *da-po* “hit-broken” and *nong-zang* “do-dirty”), potential complements (e.g. *chi-[de/bu]-qi* “can/can’t afford to eat” and *ji-[de/bu]-de* “can/can’t remember”), intensifying complements (e.g. *lei-si* “exhausted”, *qi-huai* “very angry”), and directional complements. See discussions in Chao (1968). Another verb-complement construction is the so-called putative construction as in *kan-qing* ‘look-light’ “to despise” and *kan-huai* ‘look-bad’ “to consider something as bad”.

Having defined the RVCs from both syntactic and semantic grounds, we now turn to the forms of the RVC construction. Basically, the RVC construction appears in two forms as in (5). Examples are given in (6):

- (5) a. NP1 V-R (intransitive)
 b. NP1 V-R NP2 (transitive)
- (6) a. Tamen tiao lei le.
 they jump tired ASP
 ‘They jumped till they got very tired.’
 b. Ta ku shi le shoupa.
 he/she cry wet ASP hankie
 ‘He/She cried and the hankie got wet.’
 c. Ta xi ganjing le yifu.
 he/she wash clean ASP clothes
 ‘He/She washed the clothes clean.’
 d. Ta chi bao le fan.
 he/she eat full ASP rice
 ‘He/She ate himself full.’
 e. Ta ti po le xiezi.
 he/she kick worn ASP shoes
 ‘He/She kicked (something) and the shoes wore out.’

(6a) patterns with the intransitive form (5a) and contains an intransitive verb *tiao*, the subject *tamen* being the semantic host². (6b)-(6d) pattern with the transitive form (5b). (6b) contains an intransitive verb *ku* with an “object” not subcategorized by it, the object *shoupa* being the semantic host. (6c) and (6d) contain transitive verbs with subcategorized objects, the former having an object host while the latter a subject host. (6e) contains a transitive verb with a non-subcategorized object.

Another widely discussed “inverted causative” resultatives have the same form as the transitive form (5b), but they have interesting argument realizations. Examples are given in (7a) and (7b), both from Cheng and Huang (1994: 203):

² A semantic host in a resultative construction is the NP that gets the property expressed by the result phrase.

- (7) a. Nei bei jiu zui dao le Zhangsan.
 that CL wine drunk fall ASP Zhangsan
 ‘That glass of wine got Zhangsan to be drunk and fall.’
 b. Baozhi kan hua le ta de yanjing.
 newspaper read blurred ASP he DE eye
 ‘The newspaper got his eyes blurred from reading it.’

The grammatical subject in (7a) is not related to the main verb *zui* or the result *dao* in any way, and is usually analyzed as a Causer. The grammatical subject in (7b) can be said to be the logical object (or Patient) of the main verb *kan*, yet in some sense it is also a Causer. This form must be taken into consideration in any works on Chinese resultatives. In this paper I will show that a constructional account best explains the inverted causative resultatives.

3. A Review of Works on Chinese Resultatives

Resultatives in Chinese is a hotly-debated topic. Before presenting my own analysis, two significant works of Chinese RVC: Huang (1988), Li (1990), Cheng and Huang’s (1994), and Li (1995) are briefly reviewed.

3.1. Huang (1988)

Huang (1988) argues for a view that the first verb in a resultative-*de* construction is the main verb. He discusses RVC constructions on a par with resultative-*de* construction, which differ only in that RVC is in V⁰ level (lexical) while resultative-*de* is in V’ level (phrasal). Both constructions can have causative alternations via the addition of an external argument with verb-raising.

Huang’s syntactic approach gives a macroscopic view of the causative alternations and how two different resultative constructions are related. It, however, fails to explain some cases where an added external argument is not allowed. Moreover, the contribution of the argument structures of the component verbs to the RVC and resultative-*de* constructions is not mentioned.

3.2. Li (1990)

Li’s (1990) pivotal work on V-V compounds argues that the argument structure of the compound is determined compositionally from that of each component verb. Under the Generative Grammar framework he proposes the following requirements: i) Theta-identification; ii) Structured theta-grid; iii) Head-feature percolation.

Theta-identification is imperative in order to satisfy the Case theory, since the arguments of both component verbs must compete for the limited case-assigned position in syntax. Also, the theta-role prominence of the head must be strictly maintained in the theta-grid of the compound.

For example, if both the two component verbs have two arguments respectively, the theta-grid of the RVC will have four possibilities in (8). The only possible theta-grid (8a) is illustrated in (9) (from Li 1990: 184):³

- (8) a. <1-1', 2-2'> allowed.
 b. <2-2', 1-1'> not allowed: violating theta-role prominency and head-feature requirement for V1 and V2.
 c. <1-2', 2-1'> not allowed: violating theta-role prominency for V2.
 d. <2-1', 1-2'> not allowed: violating theta-role prominency and head-feature requirement for V1.
- (9) Baoyu xia shu le qi.
 Baoyu play lose asp chess
 'Baoyu played (chess and as a result he) lost it.'

Li claims that the argument structures of the component verbs determine the argument structure of the compound verb. However, his analysis has the following problems.

First, he fails to explain a non-subcategorized object like *xiezi* in (6e). This object is neither the logical subject nor the logical object of the transitive verb *ti*, and there is no way for it to be "identified" with the argument in the result *po*.

A similar problem for his analysis occurs in the inverted causative sentences (7a) and (7b). For (7a), the theta-grid <2, 1-1'> is ruled out by Li's analysis since it violates both theta-role prominency and head-feature requirement. For (7b), the grammatical subject cannot even be derived in Li's analysis, since the theta-grid of the RVC is compositionally derived from the theta-grids of component verbs in his analysis.

Moreover, Li's analysis does not consider the interaction of lexical semantics of the verb/result and the noun phrases that they predicate of. The compatibility of verb/result with the noun phrases determines the semantic host and grammaticality of RVC construction.

3.3. Cheng and Huang (1994)

From the verb-class point of view, Cheng and Huang (1994) (henceforth C&H) argue that "the argument structure of a compound is essentially a composition of the event structure rather than the transitivity properties, of its component parts..." (C&H, p.187). They consider the RVC construction on a par with a simple verb construction and a phrasal verb construction, arguing that all can be subsumed under two paradigms with two alternations each. The active paradigm performs the unergative/transitive alternation, while the inactive paradigm performs the ergative/causative alternation. They argue that the unergative/transitive alternation involves the event type "activity", while the

³ <1, 2> and <1', 2'> are used to express the structured theta-grids of the main verb and the result. For example, the English verb "kill" has an external argument (the killer) and an internal argument (the killed), expressed by the numbers 1 and 2, respectively.

ergative/causative alternation involves the event type “(change of) state”:
(examples from C&H, pp.188-89)

- (10) a. Zhangsan qi lei le. (unergative)
Zhangsan ride tired asp
'Zhangsan rode himself tired.'
- b. Zhangsan qi lei le liangpi ma. (transitive)
Zhangsan ride tired asp two cl horse
'Zhangsan rode two horses tired.'
- c. Zhangsan qi si le. (ergative)
Zhangsan anger dead asp
'Zhangsan got extremely angry.'
'(Lit.) Zhangsan was angered to death.'
- d. Zhe jian shi zhen qi si Zhangsan le. (causative)
this cl matter really anger dead Zhangsan asp
'This matter really angered Zhangsan.'
'(Lit.) This matter really angered Zhangsan to death.'

They further argue that V1 is the head of an RVC and propose the dichotomy of “Active RVCs” and “Non-Active RVCs” (C&H, pp.198-99) according to the nature of V1. Since V2 is always unaccusative (ergative in their term), they argue, V1 alone determines the behavior of the RVC. Depending on semantics, Active RVCs can be further grouped into unergative RVC, transitive RVC, and mixed RVC.

They also observe that the alternations based on verb classes are not always preserved. Some RVC constructions having unergative verbs as V1 can occur in both unergative/transitive alternation as well as ergative/causative alternation: ((11b) and (11c) are from C&H, p.190)

- (11) a. Ta ku xing le. (unergative)
hecry awake asp
'He cried and awoke.'
- b. Ta ku xing le xiaohai. (transitive)
hecry awake asp child
'He cried (and made) the child awake.'
- c. (Meng li de) nei jian shi ku xing le ta. (causative)
dream in de that cl matter cry awake asp he
'The episode (in the dream) made him cry (himself) awake.'

They argue that the (11b) and (11c) exhibit ergative/causative alternation (with V1 assigning a Causee/Experiencer role instead of an Agent). Thus, the same verb *ku* behaves differently in different circumstances. The alternation in (11) also suggests that the four-way alternation as exemplified in (10) is not appropriate for RVC constructions, though it might be appropriate for simple verb constructions.

The problem in their analysis is related to their claim that V1 is the head and thus responsible for RVC behavior. While they provide lots of supporting

evidence for the V1-as-head view, it is equally important to observe the influence of V2 in determining the behavior of RVCs. As we will see in this paper, both V1 and V2 are crucial in shaping the RVC distribution.

3.4. Li (1995)

The inverted causative phenomenon similar to (7a) and (7b) is observed in Li (1995). He first argues against a movement derivation of the inverted causatives. Then he proposes causative roles (Cause and Affectee) in parallel with traditional thematic roles⁴ and argues that the inverted causatives can be best explained if thematic roles are assigned randomly before causative roles are assigned according to certain conditions. The causative hierarchy can override the thematic hierarchy.

This proposal provides a plausible analysis of the inverted causatives, yet a sentence like (6e), where the nonsubcategorized object *xiezi* is not properly licensed, is left unexplained.

4. Theoretical Frameworks

This section presents theoretical frameworks related to the study in this paper. First, a brief introduction to the constructional approach is given. Then the lexical-semantic model of Boas's (2003) event-frame is introduced. Argument realization, the mapping from the lexicon to the grammar, is discussed along with Boas's linking rules.

4.1. A Constructional Approach

Traditionally, the study of natural languages holds a modular view: grammar and lexicon are distinct modules of language. While the grammar contains all the regularities that are predictable by "rules", the lexicon is a collection of idiosyncrasies to be listed as lexical items, which are often equaled to words. The Principle of Compositionality as initially proposed by Gottlob Frege bridges grammar with lexicon, stating that the meaning of a complex expression is determined by the meanings of its parts and the ways used to combine them.

This view is challenged and modified in various studies about constructions. A construction is a form-meaning pairing which can be as short as words or phrases, e.g. *let alone* in Fillmore et al. (1988), or as long as sentences, e.g. ditransitives and resultatives. Constructions contain either constants or variables. The elements in the *let alone* construction are solely constants (*substantive*); those in ditransitives and resultatives are solely variables (*schematic*). Some constructions are mixtures of both, e.g. the *V-ing NP away* construction (Jackendoff 1997) and the *What's X doing Y?* construction (Kay and Fillmore 1999). Construction Grammar blurs the distinction between grammar and lexicon. The example illustrates how Construction Grammar excels the traditional view (Robert Munsch, Andrew's Loose Tooth, cited in Goldberg 2003: 220):

⁴ This "tiered" model is similar to the distinction of thematic tier and action tier in Jackendoff (1990, Ch. 7).

(12) *He sneezed his tooth right across town.*

Since the surface form of a sentence is “projected” from the argument structure of the main verb in that sentence, we expect to find intransitive use in (12). The caused-motion sense here cannot be derived from the verb *sneeze* alone, unless we stipulate an additional, ad hoc sense for the intransitive *sneeze*, making it polysemous. As we have found many such examples, it is more reasonable and economical if we accept the idea that construction itself contributes to meaning and has its own argument structure. The surface form of (12) is the result of composition of verbal argument structure and constructional argument structure. This approach keeps simple the argument structure of a verb, and explains productivity found among similar patterns.

Idiomatic expressions are a topic not taken seriously in the traditional view of grammar. They are not (fully) predictable in their syntactic behavior and meaning. If we expand the notion of a lexicon to include not only words, but also idioms and other unpredictable constructions, then The Principle of Compositionality can be maintained. In other words, the lexicon (or, more precisely, constructi-con) contains constructions of various scales.

4.2. Event-Frames

Whether linguistic knowledge and encyclopedic (real world) knowledge are separable is a controversial topic in linguistics. We follow Boas (2003: 168-173) by assuming that both kinds of knowledge must be part of the lexical semantic information and thus are inseparable. Lexical information is enough for ordinary expressions such as *he ran*, yet resultative expressions such as *he ran his shoes threadbare* requires world knowledge of running: the coordination of limbs, the wearing of shoes, and so on. Collocational restrictions can be accounted for if encyclopedic information is incorporated.

To express both on-stage and off-stage information, Boas (2003: 168) suggests using an event-frame “to denote an abstract event or scene from the beginning to its end.” Typical on-stage event participants are Agent (Ag) and Patient (Pt), and the off-stage event participant is notated W which stands for world knowledge.

Temporal, spatial, and force-dynamic information are also included in an event-frame. Boas uses the labels SOURCE, PATH, and GOAL in a temporal rather than spatial sense to denote the beginning, the middle, and the end state of an event. Since the focus is on resultative constructions, only the GOAL frame is shown.

For example, the event-frame for the intransitive verb *run* and the transitive verb *paint* are shown below (Boas 2003: 190-91), where Ag, W, Pt, p1, p2, and p3 are called “event participants”. The properties of Ag, W, and Pt are called p1, p2, and p3, respectively. Note that since the event-frame is a kind of construction, both the form (event participants) and the meaning (properties of the event participants) are specified.

(13)

GOAL
Ag (p1) (W p2)

Ag: animate object moving legs quickly
 p1: directional PP

(14)

GOAL
Ag (W p2) Pt (p3)

Ag: object covering a surface with paint
 Pt: surface or object exhibiting a surface
 p3: AP or NP denoting a color or a property associated with the prototypical intended end result of applying paint to a surface

The event participants of the event-frames are realized in syntax via the linking rules. We will discuss the nature of linking rules after reviewing the issue of argument realization in the next section.

4.3. Argument Realization

The mapping from lexical semantics to syntax must be constrained by grammar. This mapping must be able to: i) successfully determine the well-formedness of sentences; ii) provide correct interpretation should a sentence be well-formed.

In order to explain the difference in argument realization of bare XP pattern as in (15a) and reflexive pattern as in (15b) in English resultatives, Rappaport Hovav and Levin (2001: 779) propose Argument-per-Subevent Condition: “There must be at least one argument XP in the syntax per subevent in the event structure.”

- (15) a. *The pond froze solid.*
 b. *He ran himself tired.*

They argue that the difference in surface form reflects the difference in event structure. “The bare XP pattern, then, lacks a consistent association of notions of cause and result with verb and XP. In contrast, in the reflexive pattern the verb consistently represents the cause and the XP the result.” (Rappaport Hovav and Levin 2001: 781) Hence, the Argument-per-Subevent Condition correctly predicts the distribution of English bare XP and reflexive resultative patterns since (15a) contains only a simple event, while (15b) contains a complex events composed of two subevents.

This condition, if correct, is at best language-specific, as Chinese does not require (and even exclude) the presence of a distinct reflexive.

- (16) Ta pao lei le (*ziji).
 he/she run tired ASP self
 ‘He/She ran himself/herself tired.’

There is no evidence showing that (16) is distinct from (15b) in event structure. Basically they both specify a running subevent and a becoming-tired subevent. Thus the Argument-per-Subevent Condition makes a wrong prediction for the form in (16).

Goldberg (1995) proposes that not only verbal arguments, but also constructional arguments, are crucial in determining the well-formedness of resultatives. A construction may also inherit properties from another construction. Goldberg and Jackendoff (2004) view resultative constructions as a family of constructions and discuss the relations between the two events involved. They distinguish between the “verbal subevents” and the “constructional subevents”, arguing that the former are the means of the latter, despite that in some noncausative path resultatives, the verbal subevents denote results. For example (Goldberg and Jackendoff 2004: 549, (41a)):

(17) *Willy watered the plants flat.*

This sentence has two subevents⁵. The constructional subevent has three arguments: *Willy* as Agent; *the plants* as Patient; *flat* as Predicate. The verbal subevent has two arguments: *Willy* as Agent; *the plants* as Patient. Both Agent and Patient are shared in the two subevents. The sharing is mandatory in order to fulfill the Full Argument Realization (FAR) in Goldberg and Jackendoff (2004: 547): “All of the arguments obligatorily licensed by the verb and all of the syntactic arguments licensed by the construction must be simultaneously realized in the syntax, sharing syntactic positions if necessary in order to achieve well-formedness.”

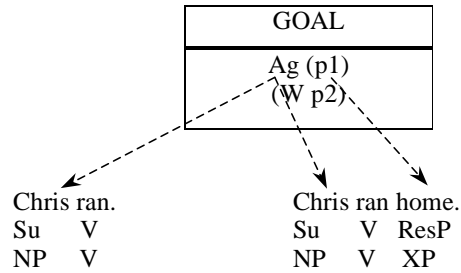
Boas (2003: 190) uses linking rules to map from the event-frames to surface realization. The linking rules are:

- (18) a. Prototypical agents are mapped as NPs to the subject position.
- b. Prototypical patients are mapped as NPs to the postverbal position.
- c. Resultative phrases specifying the prototypical end result state of the prototypical agent are linked to immediate post-verbal position.
- d. Resultative phrases specifying the prototypical end result state of the patient are linked to immediate post-patient position.

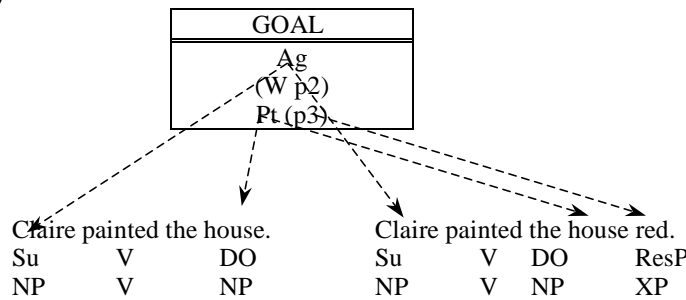
Combined with the event-frames shown in the previous subsection, we can see how the event participants of even-frames are realized in syntax. The line immediately below the sentence marks grammatical relations, and the line in the bottom marks syntactic categories. English resultatives have two forms as in (1a) and (1b): the intransitive [NP V] and transitive [NP V XP]. Examples below with the schemas are from Boas (2003: 191-92).

⁵ Note that the term “subevent” here is used in a difference sense. While Rappaport Hovav and Levin (2001) use the term “subevent” in a temporal sense, Goldberg and Jackendoff (2004) use it to represent a *tier* spanning the complete duration of event. In this sense, subevents can overlap in time.

(19)



(20)



We argue that Chinese RVC constructions can be analyzed in a way similar to Boas (2003). However, the Chinese resultative forms (5a) and (5b) are different from the English resultative forms (1a) and (1b), and the linking rules also differ in some way. We will show in the subsequent sections that this approach gives correct predications of Chinese RVC constructions as well as their interpretations.

5. Argument Realization in Chinese RVC Constructions

This section presents my adaptation of Boas (2003) and shows how the event-frames and linking rules are like in Chinese RVC constructions. We give analyses on how linking rules moderate the mapping from event-frames to the syntactic forms.

5.1. Event-Frames and Linking in Chinese RVC Constructions

The event-frames in Chinese are similar to those in English discussed in Boas (2003). The intransitive event-frame in (21) has an Ag role, identical to its English counterpart (13), whereas the transitive event-frame in (22) is identical to its English counterpart (14) except for the addition of p1 (the property of Ag).

(21) event-frame for Chinese intransitive verbs

GOAL
Ag (p1) (W p2)

(22) event-frame for Chinese transitive verbs

GOAL
Ag (p1) (W p2) Pt (p3)

Though unergatives and unaccusatives have distinct participants (Agent for unergatives and Theme/Experiencer/Causee for unaccusatives), the event-frame in (21) does not distinguish between them. Following the idea of proto-roles (Dowty 1991), it is assumed that there is gradience in the thematic roles. Every role is somewhat proto-agent-like or proto-patient-like. Thus the event-frame of intransitives does not make an unaccusativity distinction.

Compare (22) with its English counterpart (13), (22) has an additional participant p1. This reflects the fact that in an English transitive resultative RVC construction, the semantic host is always the object, while in a Chinese transitive RVC construction, the semantic host can be either the subject or the object.

Adapted from Boas (2003), we propose that required event participants in the event-frames must be linked to surface elements and that every surface element get linked *at least once* from verbal and/or constructional event participants in order for it to be properly interpreted. Thus we have the following linking rules:

- (23) a. Each required event participants in the event-frames must be realized in the surface form.
 b. Each surface element must get linked *at least once* from the event participants.

5.2. How Linking Works in Chinese RVC?

Consider the examples in (6), repeated here as (24) for convenience:

- (24) a. Tamen tiao lei le.
 they jump tired ASP
 ‘They jumped till they got very tired.’
 b. Ta ku shi le shoupa.
 he/she cry wet ASP hankie
 ‘He/She cried and the hankie got wet.’
 c. Ta xi ganjing le yifu.
 he/she wash clean ASP clothes
 ‘He/She washed the clothes clean.’
 d. Ta chi bao le fan.
 he/she eat full ASP rice
 ‘He/She ate himself full.’

- e. Ta ti po le xiezi.
 he/she kick worn ASP shoes
 ‘He/She kicked (something) and the shoes wore out.’

(24a) and (24b) contain intransitive verbs, and thus have an event-frame like (21). We express the linking in a somewhat different way from that of Boas (2003). Consider (25a) and (25b), where the tables show the sentence, the form, and the event participants in lines. The semantic host is marked by a box.

(25a)

	<i>Tamen</i>	<i>tiao lei</i>	<i>le.</i>
Syntactic form	NP	V	R
Event participant	<u>Ag</u>		p1

(25b)

	<i>Ta</i>	<i>ku</i>	<i>shi</i>	<i>le</i>	<i>shoupa.</i>
Syntactic form	NP	V	R		NP
Event participant	Ag		p2	<u>W</u>	

We see in (25a) that there are two event participants: Ag and p1. As Ag is obligatory and p1 is optional (expressed by the parentheses), the linking rules are satisfied in (25a). In (25b), there are three event participants: Ag, W, and p2. Ag is obligatory while W and p2 are optional (W and p2 are enclosed in a pair of parenthesis and thus must appear at the same time). It is also obvious that the linking rules are satisfied.

In (25a), it is the Ag that got tired, and in (25b) it is the W that got wet. Note also that selectional restriction also takes part in the linking. In (25b), the Ag participant in an event-frame for *ku* must be human (or at least animate), thus the possibility is rule out that *shoupa* gets linked from Ag.

(24c) and (24d) contain transitive verbs, and the linking is illustrated in (25c) and (25d). Both sentences must realize all obligatory event participants as in (22).

(25c)

	<i>Ta</i>	<i>xi</i>	<i>ganjing</i>	<i>le</i>	<i>yifu.</i>
Syntactic form	NP	V	R		NP
Event participant	Ag		p3		<u>Pt</u>

(25d)

	<i>Ta</i>	<i>chi</i>	<i>bao</i>	<i>le</i>	<i>fan.</i>
Syntactic form	NP	V	R		NP
Event participant	<u>Ag</u>		p1		Pt

The linking of (24e) is shown below as (25e). It seems that the obligatory event participant Pt is not realized in surface form, yet the sentence is grammatical.

(25e)

	<i>Ta</i>	<i>ti</i>	<i>po</i>	<i>le</i>	<i>xiezi.</i>
Syntactic form	NP	V	R		NP
Event participant	Ag		p2		<u>W</u>

In a resultative construction, the result is usually unpredictable and highlighted. It is the focus in terms of information structure and has higher prominence than other parts of a sentence.

Goldberg (2005) discusses the omission of transitive verb objects under low discourse prominence. “[O]mission is possible when the patient argument is not *topical* (or *focal*) in the discourse, and the action is particularly *emphasized*” (Goldberg 2000, cited in Goldberg (2005: 29)) For example ((20a) and (20b) from Goldberg 2005: 29):

- (26) a. *The chef-in-training chopped and diced all afternoon.*
 b. *Tigers only kill at night.*

Thus our linking rules must take into account the influence of information structure. We stipulate that “the event participant Pt of the main verb, with low discourse prominence, is not necessarily realized in RVC construction.”

Keeping this in mind, we can also explain the following sentences of the form [NP1 V-R] which contains transitive verbs.

- (27) a. *Zhangsan chi bao le.*
 Zhangsan eat full asp
 ‘Zhangsan ate himself full.’
 b. *Zhangsan he zui le.*
 Zhangsan drink drunk asp
 ‘Zhangsan drank and got drunk.’
 c. *Zhangsan xie lei le.*
 Zhangsan write tired asp
 ‘Zhangsan wrote (something) and got tired.’

So far we have not illustrated the linking of an unaccusative intransitive verb. The intransitive event-frame ignores the unergative/unaccusative distinction, as (21) shows. The following is an example of unaccusatives.

- (28) *Zhangsan zui dao le.*
 Zhangsan drunk fall asp
 ‘Zhangsan got drunk and fell down.’

	<i>Zhangsan</i>	<i>zui</i>	<i>dao</i>	<i>le.</i>
Syntactic form	NP		V	R
Event participant	<u>Ag</u>			p1

6. The Inverted Causative RVC Constructions

This section shows how the inverted causative RVC constructions can be incorporated in our framework. First, an additional layer of “constructional

participants” is needed to account for the causative nature of the sentences. Then we present the complexity involved in the inverted causatives and propose that a semantic constraint exists on the property of the external Causer.

6.1. Analyzing the Inverted Causatives

Now we turn to the analysis of inverted causatives. The inverted causatives (7) are repeated here as (29). The linking of (29a) and (29b) are shown in (30a) and (30b).

- (29) a. *Nei bei jiu zui dao le Zhangsan.*
 that CL wine drunk fall ASP Zhangsan
 ‘That glass of wine got Zhangsan to be drunk and fall.’
 b. *Baozhi kan hua le ta de yanjing.*
 newspaper read blurred ASP he DE eye
 ‘The newspaper got his eyes blurred from reading it.’

(30a)

	<i>Nei-bei-jiu</i>	<i>zui</i>	<i>dao</i>	<i>le</i>	<i>Zhangsan.</i>
Syntactic form	NP	V	R		NP
Event participant	??		p1		<u>Ag</u>

(30b)

	<i>Baozhi</i>	<i>kan</i>	<i>hua</i>	<i>le</i>	<i>ta-de-yanjing.</i>
Syntactic form	NP	V	R		NP
Event participant	Pt		p1		<u>Ag</u>

In (30a), the grammatical subject is not an argument of the main verb or the result. However, this sentence is well-formed. Though all obligatory event participants are linked in surface form, the grammatical subject is not linked and cannot be interpreted, violating linking rule (23b). In (30b), although linking rules are satisfied, the grammatical subject is not only a Patient of the reading event: it is also the Causer of someone’s eyes becoming blurred. Here I suggest that the construction itself contributes a Causer participant that must be combined with the (verbal) event participant. The distinction of verbal/constructional participants is parallel to the distinction of verbal/constructional arguments in Goldberg (1995) and Goldberg and Jackendoff (2004).

The augmented tables of linking are shown below:

(31a)

	<i>Nei-bei-jiu</i>	<i>zui</i>	<i>dao</i>	<i>le</i>	<i>Zhangsan.</i>
Syntactic form	NP	V	R		NP
Event participant	??		p1		<u>Ag</u>
Const participant	CAUSER				

(31b)

	<i>Baozhi</i>	<i>kan</i>	<i>hua</i>	<i>le</i>	<i>ta-de-yanjing.</i>
Syntactic form	NP		V	R	NP
Event participant	Pt			p1	Ag
Const participant	CAUSER				

The occurrence of the Causer participant must be conditioned. Not all grammatical subjects receive the Causer role. The examples in the previous section do not require (and neither do they allow) the presence of a Causer role. (32) describes this condition.

- (32) a. The Causer participant is active only when the thematic prominence of NP1 is lower than that of NP2 (if any) in the event participant tier.
 b. The thematic prominence is in this order: Ag > Pt > W.

Therefore, the Causer is activated only in (31a) and (31b): In (31a), the question marks indicate the absence of an event participant. In (31b), the Pt is lower in thematic prominence than Ag. Both activate the Causer participant as expected.

6.2. Complexity in the Inverted Causatives

There are situations when an added external Causer is not allowed in an inverted causative resultative construction. Compare (33a) and (33b), and (33c) and (33d):

- (33) a. *Nei bei jiu zui dao le Zhangsan. (=7a)*
 that CL wine drunk fall asp Zhangsan
 ‘That glass of wine got Zhangsan to be drunk and fall.’
 b. **Lisi zui dao le Zhangsan.*
 Lisi drunk fall asp Zhangsan
 Intended: ‘Lisi made Zhangsan drunk and fall.’
 c. *Nei duan lu pao lei le Zhangsan.*
 that cl road run tired asp Zhangsan
 ‘That road made Zhangsan tired by his running on it.’
 d. **Lisi pao lei le Zhangsan.*
 Lisi run tired asp Zhangsan
 Intended: ‘Lisi made Zhangsan tried by forcing him to run and get tired.’

(33a) and (33b) contain the unaccusative verb *zui*, and (33c) and (33d) contain the unergative verb *pao*. The examples show that the possibility of adding an external Causer is not conditioned by verb classes but by the nature of causation.

In (33a), the events of getting drunk and getting fallen are closely related to the wine. In (33c), the events of running and getting tired are closely related to the road. Both the wine and the road do not directly take part in the events specified by the verbs, but they are crucial in bringing about those events.

Contrarily, the guy named *Lisi* in (33b) and (33d) is the external instigator in the events, but he does not take part in the events himself. He only forces the events to happen by solicitation or commands. The ungrammatical (33b) and

(33d) suggest that the inverted causative RVC constructions require a kind of *direct, non-agentive, Causer*.

Sentences in (33) can be paraphrased by using the causative verb *shi* “to make” as in (34). It seems that *shi*-causative RVC constructions have wider distribution than inverted causative RVC constructions.

- (34) a. Nei bei jiu shi Zhangsan zui dao le.
 that CL wine make Zhangsan drunk fall asp
 ‘That glass of wine got Zhangsan to be drunk and fall.’
- b. Lisi shi Zhangsan zui dao le.
 Lisi make Zhangsan drunk fall asp
 ‘Lisi made Zhangsan drunk and fall.’
- c. Nei duan lu shi Zhangsan pao lei le.
 that cl road make Zhangsan run tired asp
 ‘That road made Zhangsan tired by his running on it.’
- d. Lisi shi Zhangsan pao lei le.
 Lisi make Zhangsan run tired asp
 ‘Lisi made Zhangsan tried by forcing him to run and get tired.’

(33) and (34) show that a derivational analysis of inverted causatives from *shi*-causatives is not tenable. While the Causer in the inverted causatives must be direct and non-agentive, that in the *shi*-causatives can be direct and non-agentive, or indirect and agentive. This difference cannot be explained structurally, and must be encoded in the semantics of the individual constructions.

To summarize, the inverted causative RVC construction contributes a *direct, non-agentive Causer* to the grammatical subject position. The sentence becomes ill-formed if this requirement is not met.

7. Conclusion

This paper discusses Chinese RVC constructions from a constructional point of view. We show the importance of off-stage (world) knowledge in understanding resultatives and how this knowledge is incorporated in the event-frames, lexical-semantic specification of verbs. Semantic compatibility must be observed when an event participant is linked to a surface element. We also propose and refine the linking rules which moderate the linking.

The inverted causative resultatives activate the presence of a Causer. Our proposal here thus conforms to the thematic hierarchy. Baker’s (1988: 46) Uniformity of Theta Assignment Hypothesis (UTAH) states that NPs bearing identical semantic roles to a verb have to be realized in the same syntactic relation to that verb. Basically, the idea is that in active sentences, the grammatical subjects have higher thematic hierarchy than the grammatical objects and oblique complements. CAUSE ranks highest, followed by Agent and Patient. Suggesting a CAUSE role in the examples above thus gives the grammatical subject a highest rank in thematic hierarchy.

The constructional approach observes the equal significance of form and meaning (semantic, pragmatic, or informational). The discussion of Chinese RVC constructions in this paper illustrates how constructions at various scales interact with one another and how they together shape the language.

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