A Review on the Analyses of Resultative Constructions in English and Chinese

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Abstract

This paper reviews central issues on resultative constructions in English and Chinese and their analyses within different theoretical frameworks. For English resultatives, the issue of how postverbal elements are licensed has been examined mainly from two approaches: syntactic and semantic. Syntactic analyses adopt either binary branching or ternary branching to account for the semantic relationship between the matrix verb and the postverbal elements. Semantic discussions start with Vendler's (1967) classification of verb types and assume event structure templates. Resultative constructions are allowed as long as the matrix verb can be 'measured out' or 'augmented'. For Chinese resultative constructions (mostly resultative verb compound (RVC)), five issues have been discussed: types of RVCs, alternations among the RVCs, head of RVCs, syntactic structure of RVCs, and Interpretation of RVCs.

1. Introduction

Resultative constructions across languages are used to indicate the result of an action described by the main verb. They occupy an important place in current linguistic theory, because they provide insights into the nature of relationship between compositional and conceptual semantics and syntax. This review will focus on the central issues in discussions on English and Chinese resultative constructions and see how these issues

are accounted for within different theoretical frameworks.

2. English Resultatives

Generally speaking, there are two types of resultatives in English based on the transitivity of the matrix verb, as shown in (1) and (2):

(1) Transitive resultatives
The gardener **watered** the tulips *flat*.
The grocer **ground** the coffee beans *into a fine powder*.
They **painted** their house *a hideous shade of green*.

(2) Intransitive resultatives
The joggers **ran** their Nikes *threadbare*.
The kids **laughed** themselves *into frenzy*.
He **sneezed** his handkerchief *completely soggy*.

The resultative phrases (in italics) describe the resultant state of the postverbal NP: the argument of the verb, that is caused by the action denoted by the verb (in bold). The central issue in these constructions is to find out the factors that license the two postverbal constituents: the postverbal NP and the resultative phrase.

Currently, there are three major approaches to this issue: a syntactic account, a semantic account, and an account based on syntax-semantics interface. Due to the limited space, we would review the first two approaches. Those who are interested in the third approach can refer to Alsina (1996) and Tomioka (2006).

2.1 Syntactic Approaches

There have been two major competing syntactic accounts of English resultatives: Binary Small Clause analysis (Kayne, 1985; Hoekstra, 1988) and Ternary binary analysis (Carrier & Randall,

1992).

2.1.1 Binary Small Clause Analysis

The concept of Small Clause (SC) was first coined by Williams (1975) to describe a small set of constructions containing gerunds and participle constrictions. It is also discussed in Chomsky (1981) and Stowell (1981, 1983). The structure of a SC is shown in (3):

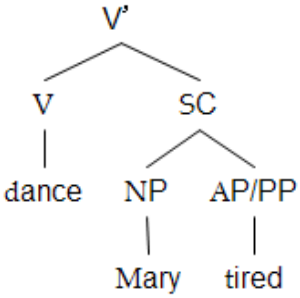
(3) V [$_{SC}$ NP XP], where X ∈ {A, N, P, V} (NP: SC subject, XP: SC predicate)
e.g. a. XP is an AP
We consider [$_{SC}$ Mary **intelligent**].
b. XP is an NP
They painted [$_{SC}$ their house **a hideous shade of green**].
c. XP is an NP
The grocer ground [$_{SC}$ the coffee beans **into a fine powder**].
d. XP is a PP
Mary saw [$_{SC}$ Patrick **eat the cake**].

The semantic predication relation between the two postverbal elements is encoded syntactically in terms of a pair of sister constituents, namely a SC. In this connection, resultative constructions (examples in (3)) are a subtype of secondary predication constructions (most often with APs, NPs, PPs as the SC predicates) that should be analyzed as sentential constituents at the syntactic level which is smaller than a clause.

Hoekstra (1988) proposes that since postverbal NPs occur with verbs that do not usually take an object and they do not exhibit any sensible semantic relationship with the matrix verb. He concludes that postverbal NP is not an argument of the verb

and that transitive and intransitive resultatives should be analyzed along the same line. In other words, a resultative construction like 'Jim danced Mary tired' possesses the following structure:

(4)



As the structure suggests, the SC subject (postverbal NP) does not receive a theta-role from the matrix verb. Within the complement SC, the SC predicate (AP/PP) theta-marks the overt SC subject. Therefore, this structure exhibits strong semantic relation between postverbal NP and the result predicate. However, the assumption that there is no semantic relation between the matrix verb and the postverbal NP fails to explain the fact that postverbal NP in transitive resultatives are actually subcategorized by the matrix verb. In order to make the structure still valid, Hoekstra argued that transitive verbs get detransitivized in resultative constructions so that the postverbal NP is the subject of the SC rather than the direct object of the matrix verb. But this proposal could not override the fact that the postverbal NP is still the object of the matrix verb in a transitive resultative. Hoekstra attributes interpreting the postverbal NPs as direct objects of the matrix verb to a purely pragmatic phenomenon.

This analysis taking the postverbal NP and the resultative phrase as a syntactic constituent exhibits several problems. First, the so-called 'detransitivization rule' is weak both theoretically and empirically. In theory, for this rule to work for verbs like *paint*, it must contain an additional rule that operates

over the matrix verb's argument structure in the syntax. Also, the existence of such a rule is not supported by any empirical data.

Second, this account fails to explain the selection of postverbal NP shown in (5):

(5) The gardener watered the tulips /? the apple tree/*the football flat.

The proposed detransitivization rule prohibits the postverbal NP from functioning as its direct object. However, transitive resultative constructions semantically select for the postverbal NP. The transitive verbs exhibit the same semantic restrictions in resultative constructions as they do in non-resultative sentences. Therefore, Carrier & Randall (1992) concluded that transitive verbs in resultative constructions have not become detransitivized.

Third, according to the SC structure, the resultative phrase theta-marks the postverbal NP because the two elements are in a subject-predicate relationship. However, how to capture the distribution of resultative phrases of the sentences in (6) seems to be questionable:

(6) John painted the house [green/ *old/*expensive].

Interestingly, 'old' and 'expensive' are proper predicates for 'the house' in non-resultative sentences as in (7):

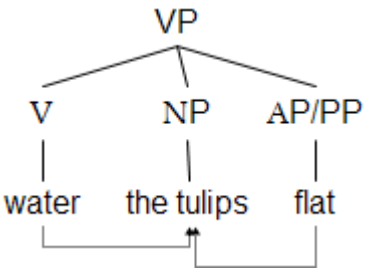
(7) The house is old / expensive.

This problem might be due to Hoekstra's allowing the matrix verb to assign only one theta role to the entire SC without specifying the exact status of the theta-role.

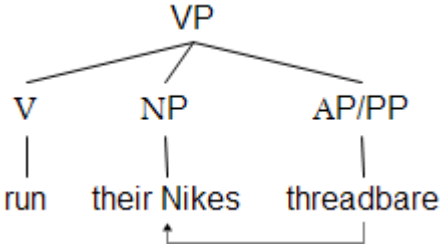
2.1.2 Ternary Branching Analysis

Carrier and Randall (1992) (henceforth C&R) abandon the binarity in syntactic projections. They propose that the matrix verb, the postverbal NP and the result phrase are sisters within a ternary-branching VP (Randall, 1982; Rothstein, 1985; Simpson, 1983). Therefore, both transitive and intransitive resultative constructions share the same structure. But they are different in theta-role assignment, as shown in (8):

(8) a. transitive matrix verb



b. intransitive matrix verb



In (8a), postverbal NPs of transitive verbs are internal arguments of the matrix verb, so they receive two theta-roles in the resultative construction: one from matrix verb and the other from the resultative phrase. This case reflects a revised theta-criterion that an XP can be assigned more than one theta-roles as long as each theta role is assigned by a different head. In (8b), postverbal NPs of intransitive verbs are not internal arguments of their matrix verbs, so they receive only one theta-role to the postverbal NP, namely from the resultative phrase. Also, the status of resultative phrases AP/PP is clear in this account: potentially an argument of the matrix verb.

This ternary structure taking matrix verb, postverbal NP and resultative phrase as a whole constituent provides a more convincing explanation for the semantic selections among these elements. However, it still has problems. First, theoretically, according to Den Dikken and Hoekstra (1994), C&R's proposal is not tenable because it weakens the Theta Criterion, abandons the Binary Branching Principles, and does not represent the subject-predicate relation in terms of a clausal structure. Second, C&R claim that the postverbal NP is only selected for in transitive resultatives. But, in fact, there is a selection restriction imposed by the verb in intransitive resultative constructions as well, such as (11):

(11) The joggers ran their Nikes /? their shirts / *their headbands threadbare.

2.1.3 Summary

There are still other attempts along the line of syntactic operations, such as one based on Predication Theory (Williams, 1983; Bowers, 1997), Predicate Linking (Rothstein, 1985), Resultatives as Degree Modifiers (Napoli, 1992), and a Light Verb Analysis (Larson, 1988; Radford, 2004). However, none of syntactic approaches has successfully entertained all the facts about resultative constructions, which might suggest that a purely syntactic approach might not be able to account for resultative constructions. In other words, resultative constructions can be argued that inherently they do not follow syntactic operations only. Other factors could play a role in their derivations.

2.2 Event Structure and Lexical Semantics Approaches

Analyses from the perspective of semantics discuss the role of event structure and lexical semantics for the licensing of resultative constructions. Accounts in this line assume that

resultative constructions exhibit a complex event structure consisting of a causing event and a caused event. Resultative constructions are licensed in cases in which the aspectual properties of the matrix verb are compatible with both the aspectual properties of the resultative phrase and the postverbal NP such that they fit into a complex aspectual event structure template.

2.2.1 Tenny (1994): Aspectual Interface Hypothesis

Tenny (1994), adopting Vendler's (1967) classification of verb types according to their eventuality, first incorporates aspectual verb classes as an explanatory mechanism for the licensing of argument at the syntactic level. She assumes that the intersection between syntax and lexical semantics is basically an aspectual one and characterizes the aspect as the central notion for linguistic theories of linking and argument realization. She proposes Aspectual Interface Hypothesis (AIH):

> The universal principles of mapping between the thematic structure and syntactic argument structure are governed by aspectual properties. Constraints on the aspectual properties associated with direct internal arguments, indirect internal arguments and external arguments in syntactic structure constrain the kinds of event participants that can occupy these positions. Only the aspectual part of thematic structure is visible to the universal linking principles. (1994, p. 2)

She argues that the mapping between syntax and semantics is sensitive to aspectual properties such as 'delimitedness' and 'measuring-out'. Delimitedness refers to "the property of an event's having a distinct, definite and inherent endpoint in time" (1994, p. 4). Measuring-out refers to "the ability of a verb's direct internal argument to delimit an event" (1994, p. 4).

Therefore, it is the aspectual role MEASURE that names an event participant that measures out the event, providing a scale along which the event goes over time until the endpoint on that scale.

Following Tenny's proposal, resultative constructions require a MEASURE role to be licensed because they "serve the semantic function of introducing a temporal endpoint and measuring-out to the event" (1994, p. 152). In other words, resultative constructions can be explained as "an operation solely over aspectual role is added to an empty aspectual grid" (1994, p. 200). For example:

(9) a. Evelyn wiped the dishes.
Wipe1: aspectual structure [ ]
b. Evelyn wiped the dishes dry.
Wipe2: aspectual structure [MEASURE]

The meaning of 'wipe' is extended through an operation over the aspectual structure of the verb, by adding a MEASUER role to its aspectual structure. In other words, the resultative phrase is licensed because it is able to contribute a MEASURE role to the aspectual grid of the matrix verb.

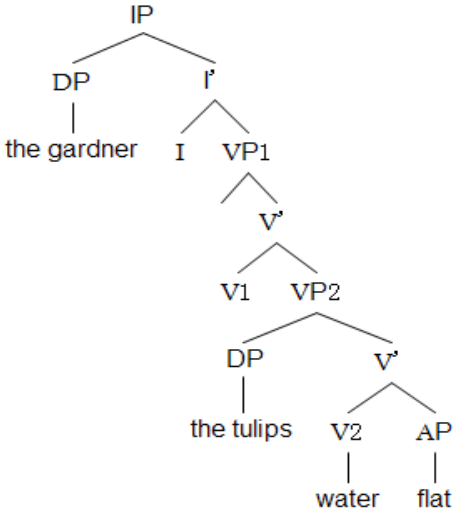
However, Tenny says quite little on how the postverbal NP is licensed. On the contrary, she lays too much emphasis on the aspectual properties of verbs while fails to explain the different senses that are inherent lexical semantics of a verb. For example, *wipe* in (10a) and (10b) are different in meaning and lead to different grammaticality. Thus her proposal is problematic when accounting for the restrictions regarding the type of verb class to which such aspectual operations apply.

(10) a. Evelyn wiped the dishes dry.
b. * Evelyn wiped the dishes red.

2.2.2 Winkler (1997)

Winkler (1997) examines resultative constructions as complex predicates and proposes that matrix verb and resultative phrase form a complex predicate as sisters at D-structure. For example, 'the gardener watered the tulips flat' has the following structure in (11):

(11)



There are three assumptions in Winkler's argument. First, resultative constructions are event compositions that combine an activity or process verb with a resultative phrase. A resultative phrase is a delimiting expression, and the matrix verb belongs to non-delimiting verb. Second, for event composition to work for resultatives, the postverbal NP has to be an 'affected theme' which serves to measure out the event. This theta role is assigned through theta-identification by following Higgenbotham (1985, 1989), namely, the postverbal NP receives a merged theta role after one theta role of the matrix verb and that of the resultative predicate identifies with each other. Therefore, in following two sentences, 'chicken' is not an affected theme, and this makes the (12a) unacceptable:

(12) a. *Martha eats chickens fat.
b. Martha eats herself fat.

Third, resultative predicates must be interpreted as stage-level predicates defined as the states "which can be changed by being acted upon" and are "represented as functions from processes to transitions" (1997, p. 339). This rules out the ungrammatical sentence in (13):

(13) a. * Martha owns chickens fat.
b. Martha feeds chickens fat.

Feed is a process verb consisting of two subevents, whereas *own* is a stative verb consisting of only one event. *Fat*, is able to delimit the process and give the sentence a resultative interpretation. For *own,* there is no event structure that can be delimited, since it is a stative verb with only a single event.

Winkler's account takes into consideration three elements in a resultative construction: the matrix verb, the postverbal NP, and the resultative phrase, however, it is not immune to problems. First, her account only requires that the matrix verb belong to the general class of process verbs and the resultative phrase is a stage-level predicate. But it turns out to be insufficient. The sentences containing process verbs and stage-level resultative predicates are still ungrammatical:

(14) a. * Martha cooked chicken fat.
b. ??The gardener washed the tulips tall.
c. ??Mary watered the nails flat.

This suggests that her account is unable to constrain the class of process verbs that can be used as matrix verbs in a resultative construction. In other words, it indicates that semantics of elements involved should be considered.

The second problem concerns the licensing of postverbal NPs. She does not explain how theta roles can be used to rule out postverbal NPs which render resultative sentences

unacceptable, as shown in (15):

(15) a. The gardener watered the tulips flat.
b. *The gardener watered the old oak flat.
c. *The gardener watered the fence flat.

All three postverbal NPs are affected themes in total accordance with Winkler's idea. But, only 'tulip' is allowed as an acceptable one. Then, these sentences illustrate that there are certain pragmatic restrictions on the postverbal NPs that could be used in a resultative construction.

2.2.3 Rappaport Hovav and Levin (1998, 2001)

Rappaport, Hovav and Levin (1998, 2001) (henceforth R H and L) argue that event structure plays a central role as the interface between lexicon and syntax. They assume that UG contains a certain number of 'event structure templates':

(16) Activity: [x ACT <MANNER>]
State: [x <STATE>]
Achievement: [BECOME [x <STATE>]]
Accomplishment: [[x ACT <MANNER>] CAUSE [BECOME [y <STATE>]]] or [x CAUSE [BECOME [y <STATE>]]]

For example, the result verb *break* is an accomplishment that exhibits a complex event structure consisting of a causing event (typically an activity) and the change of state it brings about (typically an achievement).

The proposed event structure templates are basic ones and can undergo argumentation to become complex event structures. In other words, "the event structure templates may be freely augmented up to other templates in the basic inventory of event structure templates" (Rappaport, Hovav & Levin, 1998, p. 111). A complex event structure produced by augmentation

should also satisfy the well-formedness condition on argument realization which requires that "there must be an argument XP in the syntax for each structure participant in the event structure" and "each argument XP in the syntax must be associated with an identified sub-event in the event structure" (1998, p. 113).

Based on the above assumptions, R H and L summarize the role of event structure and event structure augmentation in the licensing of resultative constructions: because the template associated with a verb like *break* cannot be augmented further, no other achieved state or location can be added to a sentence with *break*, even with the normal direct object. Thus the properties that distinguish the verb *break* from the verb *sweep* can be accounted for through the interaction of their event structure representation, the operation of Template Augmentation, and the well-formedness conditions.

But it seems that event structure templates alone are not able to embrace all the relevant linguistic facts. Take *break* for example.

(17) a. Dawn broke the egg into the bowl.
b. Chris broke the branch off the tree
c. Claire broke the door open.

Break is associated with accomplishment event structures in the event structure templates: Accomplishment: [[x ACT <MANNER>] CAUSE [BECOME [y <STATE>]]]. According to R H and L, the event structure template of *break* cannot be further augmented since it is there is no other one that it can enter so as to form a complex event structure. Therefore, it can not include an achieved state or location. Apparently, the grammaticality of the above sentences proves this to be false. It seems that the lexical semantic information of the verb also restricts the type of resultative phrases. This means that the distribution of resultative phrases is not only due to the event structure

template but also to its lexical semantics.

2.2.4 Summary

Semantic approaches to resultatives emphasize too much on the notion of event structure and aspectuality in licensing resultative constructions. They argue that resultatives are allowed as long as the matrix verb can be 'measured out' or 'augmented'. However, they all neglect the importance of a more detailed description of a verb's idiosyncratic meaning.

3. Chinese Resultatives

As a typologically different language from English, Chinese has two forms of resultative constructions: the V-V resultative verb compound (RVC) and the V-de VP resultative phrase. Most analyses focus on the issues in RVCs. Generally speaking, there are five issues on Chinese RVCs, namely, types of RVCs, alternations among the RVCs, head of RVCs, syntactic structure of RVCs, and Interpretation of RVCs. In the following, these issues will be examined one by one.

3.1 Types of RVCs

According to Cheng and Huang (1994), RVCs can be treated on a par with simple monomorphemic verbs. They classify predicates into different classes on the basis of their difference in argument structure, which may be characterized in two dimensions: aspectuality and transitivity. Aspectuality means the event types that a given predicate denotes (following Vendler's (1967) classification: activity, accomplishment, achievement, state). On the other hand, transitivity (transitive or intransitive) refers to the number of arguments with a predicate. Therefore, these two dimensions define four basic types of simple verbs: unergative, transitive, ergative, and causative, as shown in (18):

(18)
a. Unergative: intransitive & activity
e.g. 张三唱了很久。
Zhangsan chang-le hen jiu
Zhangsan sing-PERF very long
'Zhangsan sang for a long time.'
b. Transitive: transitive & activity
e.g. 张三唱了这首歌
Zhangsan chang-le zhe-shou ge
Zhangsan sing-PERF this-CL song
'Zhangsan sang this song.'
c. Ergative: intransitive & state
e.g. 张三吓了一跳。
Zhangsan xia-le yi-tiao
Zhangsan frighten-PERF one jump
'Zhangsan got frightened.'
d. Causative: transitive & state
e.g. 李四吓张三一跳。
Lisi xia Zhangsan yi-tiao
Lisi frighten Zhangsan one jump
'Lisi frightened Zhangsan.'

For (18a) and (18b), the transitivity alternation manifests itself in presence or absence of an internal argument (Theme or Patient). For (18c) and (18d): the transitivity alternation manifests itself in presence or absence of a Causer, and if present, appears as an external argument.

This mechanism works fine for RVCs, as in (19):

(19) a. Unergative: intransitive & activity
e.g. 张三骑累了。
Zhangsan qi-lei-le
Zhangsan ride-tired-PERF
'Zhangsan rode himself tired.'

b. Transitive: transitive & activity
e.g. 张三骑累了两匹马。
Zhangsan qi-lei-le liang-pi ma
Zhangsan ride-tired-PERF two-CL horse
'Zhangsan rode two horses tired.'
c. Ergative: intransitive & state
e.g. 张三气死了。
Zhangsan qi-si-le
Zhangsan anger-dead-PERF
'Zhangsna got extremely angry.'
d. Causative: transitive & state
e.g. 这件事真气死了张三。
Zhe-jian shi zhen qi-si Zhangsan le
This-CL matter really anger-dead Zhangsan PERF
'This matter really angered Zhangsan to death.'

(19a) and (19b) exhibit the unergative-transitive alternation. (19c) and (19d) exhibit the ergative-causative alternation. Also, in the unergative-transitive pair, V1 denotes an activity and the subject is an Agent. In ergative-causative pair, V1 denotes a state or change of state and its subject is a Theme or an Experiencer.

3.2 Alternations Among the RVCs

Cheng and Huang (1994) argue that RVCs have an underlying complex event structure in which the event denoted by V1 takes the event denoted by V2 as its complement. There are majorly two types: active RVC and non-active RVC. Active RVCs, with the structure in (20), refer to the unergative and transitive RVCs which obligatorily take an Agent and optionally select a Theme or Patient:

(20) [$_{RVC}$ V1$_{Active}$ [V2 $_{State/Change\text{-}of\text{-}state}$]]

If there is only theta role assigned by the RVC, it is the Agent

and the RVC is unergative. If there are two theta roles to be assigned, they are Agent and Theme and the RVC is transitive.

Non-active RVCs, with the structure in (21), refer to ergative and causative RVCs which obligatorily take a Theme or Experiencer/Causee as an internal argument and optionally selects an external argument:

(21) [$_{\text{RVC}}$ V1$_{\text{Non-active}}$ [V2 $_{\text{State/Change-of-state}}$]]

Follow Unaccuastive Hypothesis (Perlmutter, 1978; Burzio, 1986), if there is only one theta role to be assigned, it is Theme/Experiencer/Causee and the RVC is ergative. If there are two theta roles, they are Causer and Theme/Experiencer/Causee and the RVC is causative.

3.3 Head of an RVC

As argued by Cheng and Huang (1994), headness of RVCs is not a semantic or conceptual issue, but a syntactic issue. If this is a semantic or conceptual issue, there seems to be some evidence that V1 often appears to serve an adverbial function in the composition of a compound's meaning, and V2 seems to be the center of predicate, illustrated in '踢开(kick-open)，推开(push-open)，拉开(pull-open)，吹开(blow-open)，切开(cut-open)' whose first verbs denote the different manner of how the action denoted by the second verb comes about. Then, the second verb element is the head. However, this proposal can be rejected as easily as it is established, as in '踢倒(kick-fallen)，踢破(kick-broken)，踢下(kick-down)，踢平(kick-flat)，踢飞(kick-flew)' whose first verbs bring about different resultative states denoted by the second element. In this case, the first element becomes the head. Therefore, the notion of head is a syntactic one, and only syntactically relevant considerations may decide which element is the head.

Li (1990) and Cheng and Huang (1994) both agree that V1 in Chinese resultative verb compounds is the head, but their arguments follow different reasonings. Based on Li's identification account for theta role assignment in Chinese RVCs, he discovers that the external argument of V1 must be expressed as the external argument of the whole compound, but the same requirement does not hold of argument of V2. This observation is then taken as the evidence to indicate the headhood of V1, with the premise that certain relevant features of the head are obligatory by following the principle of head feature percolation. But there are some exceptions to Li's observation which might undermine the validity of his argument. First, in causative RVCs, the subject is not associated with V1 at all. This external argument of the compound is from neither V1 nor V2, but is a Causer added from outside. Second, principle of head feature percolation does not work convincingly in Chinese RVCs. If it does, we could easily predict that the transitivity of RVCs should follow their head. In fact, as observed by Huang and Lin (1992), there are cases in which transitivity of RVC does not follow from the transivity of either V1 or V2. For example, the following RVCs are all transitive but the transitivity of their V1s varies:

(22) a. V1 is transitive and the RVC is transitive
e.g. 我骑累了两匹马。
Wo qi-lei-le liang-pi ma
I ride-tired-PERF two-CL horse
'I rode two horses tired.'
b. V1 is intransitive and the RVC is transitive
e.g. 她哭湿了手帕。
Ta ku-shi-le shou-pa
She cry-wet-PERF handkerchief
'She cried and as a result the handkerchief got wet.'

c. V1 is di-transitive but neither object is expressed
e.g. 他（送礼）送酸了腿。
Ta song-suan-le tui
He give-sore-ASP leg
'He gave (gifts to other people until) his legs got sore.'

Then, Chinese RVCs may not necessarily follow the principle of head feature percolation which is assumed as one of the cornerstones of Li's analysis. This in turn could weaken the conclusion on V1 as the head.

Cheng and Huang (1994) argue from the perspective of aspectual and event types (see 3.2). They observe that in all RVCs, V2 is usually ergative, denoting state or a change of state. This holds for four types of RVCs. Then they conclude that V2 is a constant and does not contribute to a difference in the event types of RVCs. In contrast, if V1 is active, the entire compound is a unergative or transitive. And If V1 is stative or non-active, the entire RVC is ergative or causative. They conclude that although the transitivity of V1 does not determine the transitivity of an RVC, its aspectual properties do determine those of an RVC. In this sense, V1 is the head of the resultative compound.

3.4 Syntactic Structure of Resultatives

Generally speaking, there are two major conjectures on syntactic structure of Chinese resultative constructions. Sybesma (1999) proposes the existence of a projection which indicates that a range denoted by the first verb is closed off by the second verb. Huang, Li and Li (2009) work within the framework of light verb and posit.

3.4.1 Sybesma (1999)

Working within the framework of Hoekstra (1988) and Simpson (1983), Sybesma (1999) considers Chinese resultative constructions on par with their English counterparts. Though Chinese has two forms, they can be captured as a typical either-movement-or-insertion situation. For example:

(23) a. 张三哭得手绢湿了。
Zhangsan ku-de shoujuan shi-le
Zhangsan cry-DE handkerchief wet-PERF
'Zhangsan cried and as a result the handkerchief got wet.'
b. 张三哭湿了手绢。
Zhangsan ku-shi-le shoujuan
Zhangsan cry-wet-PERF handkerchief
'Zhangsan cried and as a result the handkerchief got wet.'

In (23a), V2 is in its original place and a particle *de* in inserted. And in (23b) V2 moves up and joins with V1 to form this compound.

Since the result predicate is usually used to "to turn a non-telic predication into a telic one, by specifying the state which terminates the event", he argues that Chinese resultatives contain a projection, ExtP (Extent Phrase), intervening between the matrix clause and the result denoting part of the sentence. The structure of the two sentences in (23) is represented here in (24):

(24) 张三 [$_{VP}$ 哭 [$_{ExtP}$ Ext^0 [$_{SC}$ 手绢湿了]]]。

He also assumes that it is either movement or insertion, not neither and not both. Movement is default. But when *de* is present, no movement is allowed. Only when movement is

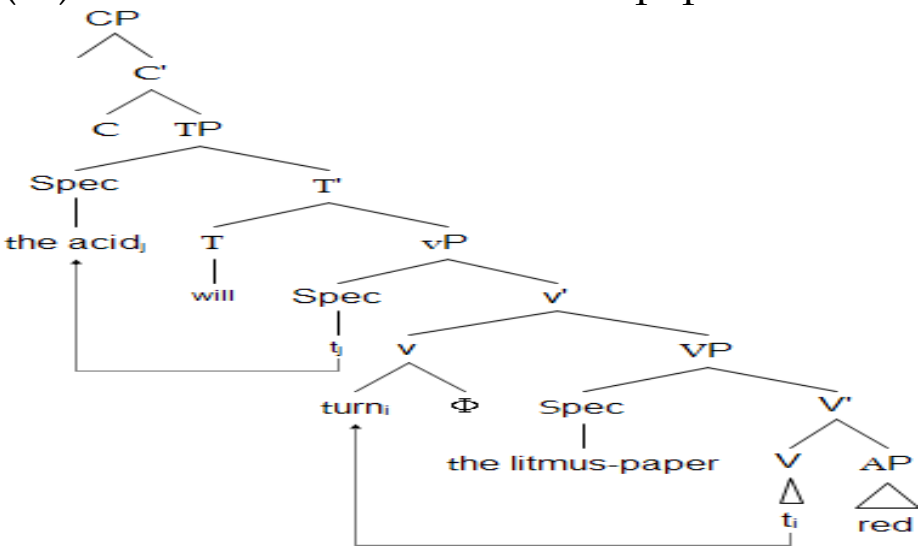
barred, we insert a dummy. These assumptions are all compatible with economy principle.

To sum up, Mandarin resultatives involve a projection between the matrix predicate and the result denoting phrase. The head of projection is to be phonologically filled and this can be done by wither movement of materials already present in the structure, more particularly, the predicate of the embedded result denoting small clause, or by inserting a dummy, in this case, the element of *de*.

3.4.2 Huang, Li & Li (2009)

Within the framework of Larson (1988), an English resultative construction can be analyzed as in following structure:

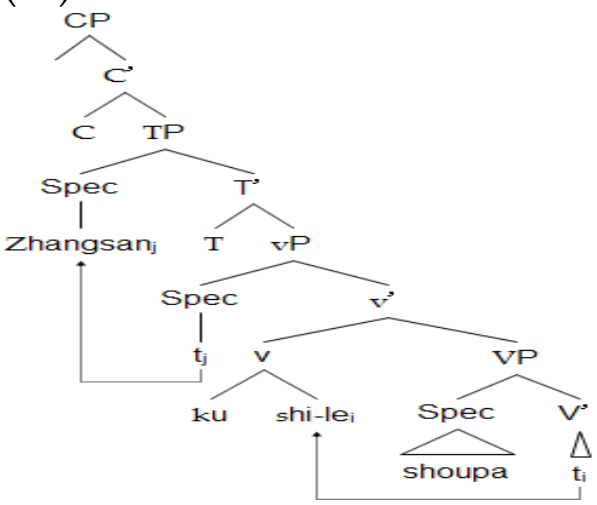
(25) The acid will turn the litmus-paper red.



The verb 'turn' originates in the head V position of VP, with DP 'the litmus-paper' as its subject and the adjective 'red' as its complement (the litmus-paper will turn red); 'turn' then raises to adjoin to a strong causative light verb Φ heading vP; the subject of this light verb DP 'the acid' in turn raises from spec-vP to spec-TP, and the resulting TP merges with a null declarative complementizer.

Huang, Li and Li (2009) assume that Chinese resultatives have a parallel structure. For example, (23b) is derived by the following structure:

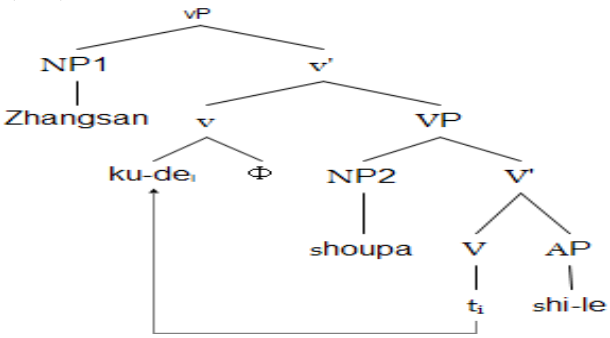
(26)



The two verb elements, *ku* and *shi*, are based generated as the outer VP shell and inner VP core, respectively. Then, the inner VP head, V2 (*shi*), moves up to join with the outer vP head to form the compound and together assign a theta role to the NP based generated in the Spec of inner VP.

'DE' is considered as an affix in nature and attaches to the first verb, thus a sentence like (23a) is generated through the following structure:

(27)



3.5 Interpretation of a Resultative Construction

Chinese resultative compounds are notoriously famous for

their multiple interpretations. Two different lines of argument are found in the literature. Li's (1990) attempt is to compute the argument structure of RVCs by reference to transitivity properties of each component. Cheng's (1997) analysis adopts Hale and Keyser (1993) that theta roles are generated in the lexicon through Lexical Relational Structures. Huang, Li and Li (2009), extending the discussion along this line further, take into consideration that Chinese is more thematical liberal and propose a revised version of thematic theory that could explain English and Chinese equally well.

3.5.1 Li (1990)

Li (1990) is the first attempt to account for argument structure of RVC on the basis of argument structure of their component verbs. By assuming a structured theta-grid, theta-identification and head-feature percolation, Li proposes that, in a resultative compound consisting of V1 and V2, there would be a theta-role identification process: theta roles of V1 identified with those of V2 to produce 'merged theta roles' to be assigned to syntactic arguments. Whether theta roles of V1 and V2 are to be identified depends on number of syntactic arguments available which are in turn constrained by Case theory.

Though working fine with most Chinese resultative compounds, it still is incapable of explaining several facts. First, Li (1990) is unable to explain the fact that the referentiality/definiteness of the object NP eliminates the ambiguity of the resultative reading.

(28) 宝玉骑累了马。
Baoyu qi-lei-le ma.
Baoyu ride-tired-PERF horse
a. Baoyu rides horses and as a result Baoyu gets tired.
b. Baoyu rides horses and as a result horses get tired.

(29) 宝玉骑累了那匹马。
Baoyu qi-lei-le na-pi ma.
Baoyu ride-tired-PERF that-CL horse
a. * Baoyu tides that horse and as a result Baoyu gets tired.
b. Baoyu rides that horse and as a result that horse gets tired.

Secondly, if theta-identification is obligatory when the members of the compound verb have more theta-roles than the available syntactic arguments, it would rule out the compound in (30) which is by all means acceptable:

(30) 他踢破了他的球鞋。
ta ti-po-le ta-de qiuxie.
He kick-break-ASP his sneaker
He kicked-broke his sneaker (because he played soccer every day).

Thirdly, in Li (1990), the 'merged theta roles' are assigned strictly following head-feature percolation, which would rule out the compound in (31):

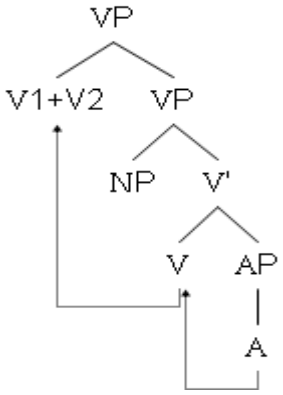
(31) 论文写老了他。
lunwen xie-lao-le ta
Thesis write-old-PERF he
'He writes a thesis and as a result he gets old.'

3.5.2 Cheng (1997)

Without considering too much about the difference between Chinese and English, Cheng (1997) renders almost directly the framework in Hale and Keyser (1991) (henceforth H&K) (later developed in H&K (1993)) into the argument structure of Chinese resultative compounds. She focuses the analysis on the problems in Li (1990).

Following H&K (1991), Cheng considers that all the resultative compounds with V1 and V2 have a similar LRS involving the same process of syntactic movement, as shown in (32):

(32)



V2 is derived from a lexical adjective and incorporates into an abstract V and then moves up to join V1 to form the resultative compound. Cheng further argues that V2 is predicated of the inner NP in the LRS and the external argument is not specified in the l-syntax. Based on the LRS of the compound, the inner NP (subject) will surface as the sentence object in s-syntax. The participants of the event denoted by V1 could be possible candidates for the inner NP (subject).

Cheng's assumption of a variable which represents one of the participants of the event denoted by the matrix verb at the position of inner NP provides reasonable explanation for the problems. However, there are two points that are not as convincing as others.

First, according to Cheng (1997), only (28b) is possible since the object NP 'ma' (horse) is the only one which can be logical of being tired of. In order to explain the unexpected (28a), she treats 'qi-lei-ma' (ride-tired-horse) as a complex verb, with the object NP incorporated to the verb after 'lei' (tired) has incorporated into the verb 'qi' (ride) and move up together to the upper V. in other words, the object NP 'ma' (horse) is a part

of the whole verbal complex. To me, it seems a post hoc device to accommodate the fact here without much explanatory power. There is no obvious mechanism that determines when this incorporation of the object NP into the verb takes place.

Second, Cheng's assumption can only work out (a) and (c) of the three possible meaning conveyed in the (33):

(33) 张三追累了李四。
Zhangsan zhui-lei-le Lisi.
Zhangsan chase-tired-PERF Lisi
a. 'Zhangsan chased Lisi and Lisi became tired.'
b. 'Zhangsan chased Lisi and Zhangsan became tired.'
c. 'Lisi chased Zhangsan and Lisi became tired.'
d. * 'Lisi chased Zhangsan and Zhangsan became tired.'

This might indicate Cheng's assumptions are not comprehensive enough to accommodate all the fact.

Though it was a promising trial that convinced us of the role of lexicon in Chinese resultative compounds, the problems are by no means satisfactorily entertained. What leads to this inability might be the fact that Cheng (1997) simply implements the mechanism observed in English lexical verbs into the Chinese context.

3.5.3 Huang, Li & Li (2009)

3.5.3.1 The Theory

Huang, Li and Li (2009) argues for a theory possible to account for the linguistic variation within the same framework as Hale and Keyser (1993). First, they explain the origins of theta roles as in (34) (Huang, Li & Li, 2009, p. 62):

(34) a. A lexical root conceptualizes a set of events *e* and contains the information on all the participants of *e*.

b. A lexical verb V is composed of the lexical root and a small number of light verbs which indicate the event types of *e*.
c. Only the information on those participants of *e* which bears directly on the nature of event type sifts through light verbs, and remains accessible to syntax.

Theta roles originate as the participants of events denoted by the lexical root. But not all the participants could be realized as theta roles and are selected by types of light verbs which lexical roots can combine with.

Second, the way how a lexical root is combined with light verbs is formulated. Here lies the difference between Chinese and English in their argument structure of verbs.

(35) V {(√), [Lv1, √], [Lv2, √], [Lv2 [Lv1, √]]}, where the option of V=√ is available in Chinese (Huang, Li & Li, 2009, p. 62).

There are two types of light verbs involved: light verb 1(Lv1) and light verb 2 (Lv2). Lv1 expresses the event of 'entering a state'. The participant is thus interpreted as Theme. Lv2 manifests an event of 'bringing about a dynamic event' or 'bringing about a relation'. The relevant participant is interpreted as Agent as the external argument. Those intrinsic participants of a dynamic event, state, or relation may optionally or obligatorily realized, which is determined by the lexical root.

What accounts for the 'thematic liberality' in Chinese verbs is the option of lexical root that is only possible to Chinese verbs. In other words, Chinese verbs could choose to appear in the root form in s-syntax. Huang, Li and Li (2009) further argue, in this case, "whatever semantic relations the lexical root encodes between the event and its participants are not subject to the theta-criterion" (p. 68). NPs with the expected theta roles that

could satisfy the Full Interpretation will be allowed as syntactic arguments through the mechanism of X'-structure and Case Filter.

3.5.3.2 Analysis of 'Zhangsan zhui-lei-le Lisi' as an Example

The sentence 'Zhangsan zhui-lei-le Lisi' is notoriously famous for its ambiguity shown in (33). As a start, it is suggested that Chinese verbs could take light verbs in the lexicon, one of the options in (35). Combination with different types of light verbs would produce different argument structures. Also, we would like to consider resultative compounds as a whole, an idea explained in Cheng and Huang (1994).

For the compound 'zhui-lei', we suppose that it takes light verbs in the lexicon and the light verb with a semantic denotation of DO and the one of CAUSE is available given the nature of the compound. The participants of the event of 'zhui-lei' are 'Zhangsan' and 'Lisi'.

3.5.3.2.1 'Zhui-lei' Combines with DO

The light verb DO implicates an Agent. The semantic meaning of the compound will be that the Agent (chaser) chases the chasee and as a result the Agent gets tired. Then come two possibilities. First, 'Zhangsan' is the Agent (chaser) and 'Lisi' is the Theme (chasee). The semantic meaning indicates that the Agent is also the one that gets tired. According to Thematic Hierarchy, Agent role is assigned to a more prominent position. In other words, 'Zhangsan' as the Agent should be in the subject position. Also, 'Zhangsan' as the Theme who gets tired is in the object position. However, this violates theta criterion, which requires that every NP can receive only one theta role. As a result, 'Lisi' is assigned to the object position to get object Case in order to be visible for being Theme of the event of 'chasing' (chaser). Finally, we have the form 'Zhangsan

zhui-lei-le Lisi' with the meaning 'Zhangsan chased Lisi and Zhangsan became tired' (33b).

The other possibility is that 'Lisi' is the Agent (chaser) and 'Zhangsan' is the Theme (chasee). By running the same process indicated in the first possibility, we come to this form 'Lisi zhui-lei-le Zhangsan' with the meaning 'Lisi chased Zhangsan and Lisi became tired' (33c). But this is not the form we expected in (33). But an extra thought on information of the sentence is worth our great attention. If we consider 'Zhangsan' as a piece of new information, and 'Lisi' as a piece of known information, there will be a motivation for this sentence to adopt a different presentation. In other words, new information 'Zhangsan' can be topicalized, and know information 'Lisi' will be postponed. This operation has independent evidence from the topic-comment structure of Chinese sentences, in which topic is predicated by comment. Another source of evidence is that we do treat it a topic-comment structure because we often need to make an intuitive stop after 'Zhangsan', which indicates its status as a topic. Then, (33c) is legitimately produced.

3.5.3.2.2 'Zhui-lei' Combines with CAUSE

The light verb DO implicates a Causer. The semantic meaning of the compound will be that Causer (chaser) chases the chasee (Theme) and as a result the chasee gets tired.

Similarly, there are two options. First, 'Zhangsan' is the Causer (chaser) and 'Lisi' is the chasee (Theme). According to Thematic Hierarchy, the Causer will be assigned to a more prominent position. Then, 'Zhangsan' as the Causer is in the subject position and 'Lisi' as the Theme is in the object position. At last, we would arrive at the form of 'Zhangsan zhui-lei-le Lisi' with the meaning 'Zhangsan chased Lisi and Lisi became tired' (33a).

The second option is that 'Lisi' is the Causer (chaser) and 'Zhangsan' is the chasee (Theme). The same operation in the first option produces a form of 'Lisi zhui-lei-le Zhangsan' with the meaning 'Lisi chased Zhangsan and Zhangsan became tired' (33d). Then the question will be: why this form cannot be transformed into 'Zhangsan zhui-lei-le Lisi' with the meaning unchanged? The answer mainly lies in whether there is an independent motivation for such a transform. We assume that the information structure provides reason to change sentence structures if appropriate as indicated in the process deriving the meaning of (33c). The situation is different from that in (33c). Causer is often considered as a piece of new information, therefore it is not appropriate to postpone it into a position which often holds a piece of known information. In other words, the form 'Lisi zhui-lei-le Zhangsan' with the meaning (33d) cannot be transformed into the 'Zhangsan zhui-lei-le Lisi'. That is why (33d) is an unacceptable meaning from the form 'Zhangsan zhui-lei-le Lisi'.

3.6 Summary

Chinese RVCs, treated as monomorphemic verbs, are classified into four types according to aspectuality and transitivity: unergative, transitive, ergative, and causative. These four types may fall into two kinds based on the event denoted by V1: active RVC and non-active RVC. Active RVCs include unergative and transitive RVCs, and non-active RVCs include ergative and causative RVCs. In all the four types of RVCs, V1 is believed to be the head of the compound. As for their syntactic structures, it is seen as either-movement-or-insertion situation in which there exists a projection, ExtP (Extent Phrase), intervening between the matrix clause and the result denoting part of the sentence. The other more widely accepted proposal follows VP shell analysis. Interpretation of Chinese RVCs is more problematic and has always been the center of

discussion. One approach by Li (1990) attempts to compute the argument structure of the compound out of the those of its components. The other approach by Cheng (1997) hopes to analyse Chinese RVCs in the similar way of how their English counterparts are explained using lexical relational structures. Huang, Li and Li (2009), based on the observation that Chinese verbs are more thematically liberal than English ones, take a step further to propose a theory which renders a more convincing explanations on how the interpretation of RVCs is derived.

4. Conclusion

As has been reviewed, though each approach offers explanations which could cover most cases, there are always cases that fall out of the reach of the proposal. This may suggest that resultative constructions involve the interplay of syntax and semantics, and probably pragmatics. Therefore, it would be a great challenge to discover how these factors interface with each other.

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