Abstract

Mandarin Resultative Verb Compounds: Where Syntax, Semantics, and Pragmatics Meet

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This dissertation undertakes two major tasks. First, it offers a lexical-semantic account of Mandarin resultative verb compounds (RVCs) within the event structure model of argument representation and argument realization developed on the basis of Levin & Rappaport Hovav's work (particularly Levin 1999 and Rappaport Hovav & Levin 1998). On this account, RVCs are formed through a lexical rule. The complex thematic relations expressed by RVCs, which are clearly reflected in the ambiguity of some sentences containing an RVC, result from different interactions of the individual thematic relation expressed by each component of the compound and the composite thematic relation expressed by the whole compound, and from the different ways of realizing the Causer and the Causee.

Second, the dissertation places the study of Mandarin RVCs in a larger context and examines four aspects of Mandarin RVCs from a crosslinguistic perspective, namely the subject-oriented reading (when the causing predicate is unergative or transitive), the "*scare* reading," the occurrence in the inchoative frame of a causative alternation, and the use of a stative causing predicate. It shows that all these phenomena are crosslinguistically marked and thus typologically significant. It argues that the differences among English, French,

German, Japanese, Korean, Mandarin, Romanian, and Swedish with respect to the first three phenomena fall out of the difference in the way the resultative is formed (namely, compound resultatives vs. non-compound resultatives), the headedness of the compound (and the degree of topic prominence of the language).

The lexical-semantic account proposed is of theoretical significance in at least three respects. First, lexical (and syntactic) rules, like ordinary lexical items, are language memory bank items, although they themselves are not lexical items. As a result, there is no need to list the outputs of the rules in the lexicon or in the language memory bank. In turn, it does not necessarily lead to polysemy when the same verb is used in different syntactic frames. Second, both simple event roles licensed by simple events and complex event roles licensed by complex events should be recognized. Finally, the division of labor should be maintained, syntax should be made simpler, and the complete isomorphism between syntax and semantics should be abandoned.

Mandarin Resultative Verb Compounds: Where Syntax, Semantics, and Pragmatics Meet

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Abbreviations

(Inclusive of Abbreviations Used in the Examples from the Literature)

ACC=accusative

ASP=aspect marker

BA=Mandarin *ba*-construction marker

BEI=Mandarin passive marker

BVC= bound verb cognate

CAUS=causative marker

CL=classifier

CLS=clause

COMP=complementizer

DAT=dative

DCL=declarative

DE=Mandarin *de*-extent construction marker

DEC=declarative

DEF=definite

DOR=Direct Object Restriction

FACT=factative

FEM=feminine

FUT=future tense

GEN=genitive

GUO=Mandarin experiential aspect marker

INCH=inchoative

IND=indicative

INTR=intransitive

LE=Mandarin perfective marker

LMB=Language Memory Bank

LMBI=Language Memory Bank Item

MM=modifier marker

NEUT=neuter

NOM=nominative

PART=participle

PASS=passive

PAST=past tense

PERF=perfective

PL=plural

PRES=present tense

PROG=progressive

PST=past tense

RVC=resultative verb compound

SFP=sentence final particle

SG=singular

TOP=topic marker

TR=transitive

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Chapter 1. Introduction

One of the important areas of syntax-semantics interface studies is argument structure and argument realization. At the forefront of this area of study is the resultative construction.

The study of resultatives, as illustrated in (1), is interesting and significant for at least three reasons. First and foremost, the result phrase, which is underlined in (1), can be predicated of a subcategorized argument of the matrix verb, as in (1a). However, it can also be predicated of a nonsubcategorized argument of the matrix verb, no matter whether the overt object is realized as a "fake reflexive," as in (1b), or as a regular NP, as in (1c) and (1d). As the overt objects in (1b-d) are not subcategorized for by the main verbs involved, they challenge the hypothesis that a grammatical level of representation, usually called argument structure, is deterministically projected based on the lexical semantics of the main verb.[1]

(1) a. The horse dragged the logs smooth. (Jackendoff 1990: 226)
b. John shouted himself hoarse. (Cruse 1973: 21)
c. The joggers ran the pavement thin. (Randall 1982: 86)
d. Erin painted the brush to pieces. (Boas 2003: 154)

Second, an account of the resultative has a bearing on the division of labor between syntax and semantics and on the degree of isomorphism of these two domains. A typical transitive resultative is composed of two predications. As far as English resultatives like (1a) are concerned, the object and the result phrase form a secondary predication whereas the subject, the main verb, and the object form a primary predication. The question is whether the two predications should be clearly represented at an abstract level of syntax or should just be considered semantic in nature.

[1] Grimshaw (1990), Levin & Rappaport Hovav (1991, 1995) and Rapoport (1990) are among those who support the view that argument structure, among others, is determined by the lexical properties of predicates; Alsina (1996), Goldberg (1995), and Goldberg & Jackendoff (2004) are among those who argue against this view.

Third, the study of resultatives also bears on what constitutes the lexicon. Traditionally, the lexicon is characterized as "an appendix of the grammar" and "a list of basic irregularities" (Bloomfield 1933: 274). However, if a rule can be formulated to account for the formation of the resultative, then what is the status of this rule? Should it be regarded as a "lexical item" in the lexicon as Jackendoff (2002) argues?

With the above three questions in mind, I focus the present study on Mandarin resultative verb compounds (RVCs), which, as will be seen shortly, allow more readings than English resultatives. The present study argues against a syntactic derivational account of RVCs and for a lexical-semantic account. The central theses of this lexical-semantic account are: (i) for a complex causative event expressed by a resultative, both the event roles licensed by the components of the resultative and the higher-level event roles of Causer and Causee need to be recognized, and (ii) complex (and causative) semantics does not entail complex syntax, and syntax should be made "simpler."

In addition to offering and arguing for a lexical-semantic account of Mandarin RVCs, the present work also places the study of Mandarin RVCs in a crosslinguistic context, in which the following phenomena are examined: the subject-oriented reading (when the causing predicate is unergative or transitive), the "*scare* reading" (to be explained later in this chapter), the occurrence in the inchoative frame of a causative alternation, and the use of a stative causing predicate. It argues that the differences among English, French, German, Japanese, Korean, Mandarin, Romanian, and Swedish with respect to the first three phenomena fall out of the difference in the way the resultative is formed (namely, compound resultatives vs. non-compound resultatives), the headedness of the compound (and the degree of topic prominence of the language).

Although numerous studies have been devoted to resultatives, as evidenced by the long list of references at the end of this dissertation, "[t]here seems to be no universally accepted definition of the resultative construction" (Washio 1997a: 225; cf. also Washio 1997b: 6). However, to set the scene for the cross-linguistic study undertaken in Chapter 4 and for the study of Mandarin RVCs, it is necessary to give a definition of the resultative construction and to give a brief description of the resultative verb compound. These two tasks will be undertaken in turn in sections 1.1 and 1.2. Then, in section 1.3 I briefly outline the other chapters of the dissertation.

1.1 Towards a definition of the resultative construction

Washio (1997a: 225, 1997b: 6) points out that one piece of evidence for the lack of an accepted definition of the resultative construction comes from the fact that "different and conflicting ranges of examples are cited in the literature as 'resultatives.'" Although he only cites several works and does not go into any detail, as far as I can see, the fact mentioned by Washio manifests itself in the following respects. First, there seems to be no consensus as to whether the examples in (2) are resultatives.

(2) a. Robin danced out of the room. (Rappaport Hovav & Levin 2001: 782)
b. Bill rolled out of the room. (Goldberg & Jackendoff 2004: 536)
c. John ran/walked/danced into the room. (Wechsler 1997: 312)
d. The wise men followed the star out of Bethlehem. (Verspoor 1997: 151, Wechsler 1997: 313)

All these examples are regarded as resultatives by the authors cited in (2),[2] presumably because the change of location involved in each sentence is a result of the activity indicated

[2] It should be pointed out that Levin & Rappaport Hovav (1995, 1996) do not consider the examples in (2) to be resultatives. This can be seen in their postulation of the "Direct Object Restriction" (DOR) and their definition of a resultative phrase as "an XP that denotes **the state** achieved by the referent of the NP it is predicated of as a result of the action denoted by the verb in the construction" (Levin & Rappaport Hovav 1995: 34, emphasis

by the main verb. In addition, the same set of examples is used to argue against the "Direct Object Restriction" (DOR) in (3), an observation that is traceable to Simpson 1983, although the term is first used in Levin & Rappaport Hovav 1995.

(3) Direct Object Restriction (Levin & Rappaport Hovav 1995: 34)
[A] resultative phrase may be predicated of the immediately postverbal NP, but may not be predicated of a subject or of an oblique complement.

However, Kratzer (2005: 194, note 11), Yafei Li (1999: 446, note 1), Jimmy Lin (2004: 99), Neeleman & van de Koot (2002: 26, 46-48), Janet Randall (p.c.), and Rothstein (2004: 87-88) all express concern as to the retraction of the DOR and as to the view that the examples in (2) are resultatives. For one thing, as pointed out by Kratzer (2005), Yafei Li (1999), Jimmy Lin (2004), and Rothstein (2004), the apparent resultative phrases in (2) are only acceptable with verbs of motion. Crucially, as mentioned by Yafei Li (1999) and Rothstein (2004), non-directionals cannot license a subject-oriented resultative in English, as shown in (4).

(4) Yafei Li 1999: 146
a. Mary struggled tired. ≠ Mary became tired from struggling.
b. The horse galloped limp. ≠ The horse got limp from jumping.

For another, as pointed out by Jimmy Lin (2004), the examples in (2) cannot be paraphrased in a causative way, a paraphrase typical of resultatives. For example, it is improper to interpret (2a) as "Robin caused herself to be out of the room by dancing." Moreover, as pointed out by Janet Randall (p.c.) (cf. also Carrier & Randall 1997), examples like those in (2) do not meet the "Extent Condition" that to license a resultative, the activity has to be

added). However, in Rappaport Hovav & Levin 2001, they change their original view. This change is reflected in their new definition of a resultative phrase as "an XP denoting **a state or location** that holds of the referent of an NP in the construction as a result of the action denoted by its verb" (p. 766, emphasis added).

performed "to such an extent" that it causes the result to come about.[3] For instance, (2a) cannot be paraphrased as "Robin danced to such an extent that she was out of the room."

The second set of examples which are not universally accepted as resultatives are given in (5).

(5) Levin & Rappaport Hovav 1995: 39
   a. The river froze solid.
   b. The bottle broke open.

Simpson (1983), Levin & Rappaport Hovav (1995) and Goldberg & Jackendoff (2004) view examples like those in (5) as resultatives, as becoming solid in (5a), for example, indeed results from freezing. However, according to Pustejovsky (1991b: 76), these examples "involve the addition of emphatic (or manner) adjunct phrases" and are not true resultatives, because the apparent resultative phrase only further specifies the result state expressed by the matrix verb.[4] This is supported by the fact that, as shown in (6), the adding of the "resultative phrase" does not change the eventuality of the sentence. That is, both (6a) and (6b) are achievements.[5]

(6) Pustejovsky 1991b: 76
   a. The river froze in 20 minutes.
   b. The river froze solid in 20 minutes.

[3] According to Carrier and Randall (1997), the extent interpretation can be satisfied in the following ways: duration (as in (i)), iteration (as in (ii)), and intensity (as in (iii)).
(i) The laundress ironed her arm sore.
(ii) He bounced the tennis ball threadbare.
(iii) A single gust of wind blew that tree bare.

[4] The further specification feature of the postverbal phrases in (5) is also pointed out by Levin & Rappaport Hovav (1995: 59) themselves.

[5] Vendler (1957) classifies verbs into four types: states, activities, achievements and accomplishments. States (e.g. ***love*** in *He loves linguistics*) describe situations which involve no internal structure or participant property change. Activities (e.g. ***run*** in *He ran toward the school*) express an ongoing event which has internal change and duration, but has no necessary temporal endpoint. The internal change in an activity is embodied by the fact that during the span of time each subsequent temporal unit is associated with a different instance of the property of a participant. Achievements (e.g. ***reach*** in *He reached the top of the hill*) are events which have no duration and have an instantaneous culmination or endpoint. Accomplishments (e.g. ***build*** in *He built a house last year*) are events which have duration and a necessary temporal endpoint. See Dowty 1979 for more discussion of this classification.

Carrier & Randall (1997) and Rapoport (1999; cf. also 1993b: 181, note 4) go a step further and argue that not only the intransitives in (6) but also the transitives in (7) are "pseudo-resultatives" (for Carrier and Randall) or "false resultatives" (for Rapoport), because like in (6), the apparent resultative phrase in (7) just modifies or further specifies the state already denoted by the verb. Moreover, for Carrier & Randall (1997), the examples in (7) are not true resultatives for one more reason; that is, they do not meet the Extent Condition.

(7) Carrier & Randall 1997
   a. Mick painted it black.
   b. She broke the stick into six more or less equal pieces.

Finally, different views have also been put forward as to whether sentences like (8), which involve a PP, are resultatives.

(8) a. Gawain stabbed him to death. (Rapoport 1993b: 181, note 4)
   b. Frank sneezed the tissue off the table. (Goldberg 1995: 152)

Most researchers working on resultatives (inter alia, Kaufmann & Wunderlich 1998; Lødrup 2000; Napoli 1992, 1999; Simpson 1983; and Washio 1999) regard examples like (8) as resultatives, as the tissue's being off the table is a result of Frank's sneezing in (8b), for example. However, Rapoport (1993b: 181) maintains that (8a) is not a true resultative because for her "the PP modifies the action of the verb, and not the NP's resulting state." As for examples like (8b), Goldberg (1995) analyzes them as belonging to a separate construction, namely the "Caused-Motion Construction," though it appears that she changes her view in Goldberg & Jackendoff 2004.

The three respects discussed above clearly show that researchers have different views regarding what constitutes a resultative. However, for our purposes of discussing Mandarin resultative verb compounds and more importantly of investigating resultatives from a

crosslinguistic perspective, it is necessary to give a definition of the resultative construction. Otherwise, no meaningful comparison can be made.

To serve the above purposes, in this study I tentatively define the resultative construction as follows.

(9) Definition of the Resultative Construction
A resultative is a complex predicate composed of two free components in a single clause, with the eventuality denoted by one component causing a change in a certain entity as a result, a change that is denoted by the other component, but not entailed by the causing component.

On this definition, for a sentence to be considered a resultative, it has to meet the following conditions. First, there must be a complex predicate which is composed of two **free** components. By "free," I mean that each component involved must be a free morpheme, on the assumption that "morpheme" is a meaningful and important term in linguistics. This condition rules out cases where the resultative meaning is expressed with a suffix. Second, as far as overt syntax is concerned, the two free components must be in a **single** clause.[6] Third, there must a **causative** relation between what is denoted by the first component and that denoted by the second component.[7] Given this condition, examples like (2) will not be considered to be resultatives in this study. Fourth, there must be a **change** of state or location

[6] By this condition, I exclude the *de*-extent construction in Mandarin from my study of resultatives, as the construction clearly involves a separate "extent clause." For example, in (i) the use of the aspect marker *-le* shows the existence of such an extent clause, which is arguably formed by the part after *-de* and *-de* itself.

(i) Zhangsan xue-de toufa dou diao-le xuduo.
Zhangsan study-DE hair even fall.off-PERF many
'Zhangsan studied so hard that it even caused much of his hair to fall off.'

[7] The causative relation established between the two components of a resultative must be direct, as exemplified by (i) and (ii) below.

(i) John wiped the table clean.

(ii) Na-ge youmo gushi xiao-wan-le Zhangsan-de yao.
that-CL humor story laugh-bend-PERF Zhangsan-GEN waist
'That humorous story caused Zhangsan's waist to bend as a result of Zhangsan's laughing.'

Wipe … clean in (i) expresses direct causation (see Shibatani 1973, 1976b), because it is John's wiping the table that directly caused the table to become clean. Likewise, *xiao-wan* 'laugh-bend' in (ii), an example of Mandarin resultative verb compounds, also conveys direct causation, because it is Zhangsan's laughing that directly

in a certain entity and the change must not be something entailed by the causing component. Based on this condition, this study analyzes examples like those in (5) as true resultatives. This is because although *break* entails a change of state, being or becoming open in (5b), for example, is not entailed by *break*. Finally, the change must be brought out as a **result** of the eventuality denoted by the causing component.

The significance of the definition in (9) lies not only in serving as a guide as to what to compare when doing a crosslinguistic study of resultatives, but also in unifying different phenomena analyzed as resultatives in the literature. It follows from this definition that the examples in (1), (5), (7) and (8), in contrast to the examples in (2), form a natural class because a causative relation is established in the former cases, but not in the latter.

1.2 Introduction to Mandarin resultative verb compounds (RVCs)

With the definition of the resultative construction in mind, let's turn to the focus of the present study, Mandarin RVCs. In this introduction, I will first give a new definition of the resultative verb compound, and then describe and discuss some aspects of Mandarin RVCs.

1.2.1 Towards a new definition of RVCs

A resultative verb compound is usually defined as a compound composed of two parts, with the first part describing an action and the second part denoting the result of the action. Such a definition is given, for example, by Charles Li & Thompson (1981: 54), Jimmy Lin (2004: 90), John Lu (1977: 282), Ross (1990: 61), Thompson (1973: 361) and Tsao (1990: 84).

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caused Zhangsan's waist to bend. Note that this is true even thought in this case it is the humorous story that caused Zhangsan to laugh and indirectly caused Zhangsan's waist to bend.

Two issues related to this definition need to be discussed. First, although these authors use "compound" in their definition, many examples cited are in fact not compounds, at least not compounds based on the standard definition of a compound as a word made up of two or more free forms (cf. Bloomfield 1933: 227, Starosta et al. 1998: 347). Therefore, along with examples like those in (10), which are true compounds, examples like those in (11) are often cited as RVCs as well.[8]

(10) a. xi-ganjing (wash-clean)
b. ku-hong (cry-red)

(11) a. mai-dao (buy-arrive) 'manage to buy (something)'
b. zou-kai (walk-open) 'walk away'

The examples in (10) are true compounds because the two components of each example are free elements. For example, as shown in (12), each of the two elements in (10a) can be used as a word by itself, and each component has the same meaning as when it is used separately.

(12) a. Zhangsan **xi-ganjing**-le yifu.
Zhangsan wash-clean-PERF clothes
'Zhangsan washed his clothes clean.'
b. Zhangsan **xi**-le yifu.
Zhangsan wash-PERF clothes
'Zhangsan washed his clothes.'
c. Yifu **ganjing**-le.
clothes clean-PERF
'The clothes became clean.'

However, the same cannot be said of the examples in (11). For instance, as shown in (13), although each of the two elements in (11a) can be used as a word by itself, the second

[8] As pointed out by Larry Horn (p.c.), the examples in (10) are analogous to "compound" "clause-union" causatives like (i) and those in (11) to affixal clause-union causatives like (ii).
(i) Il a fait partir son amie. (French)
he has made leave his friend
'He made his friend leave.' (Kayne 1975: 203; glosses and translation added)
(ii) Taroo-ga Ziroo-o tomar-ase-ta. (Japanese)
Taro-NOM Jiro-ACC stop-CAUS-PAST
'Taro made Jiro stop.' (Adapted from Shibatani 1976b: 18)

component has a different meaning when used separately than that when used with *mai* 'buy.' Although I employed the same literal translation for both uses, *dao* in (13a) and that in (13c) have different meanings. Specifically, *dao* expresses 'achievement after making efforts' in (13a), but it means 'arrive' in (13c). Crucially, when *dao* is used as a word by itself, it can never express the same meaning as when it is used with a verb indicating activity.[9] Based on this, I conclude that *dao* in (11a) is not a free morpheme, but a bound element—presumably a derivational suffix.[10]

(13) a. Zhangsan **mai-dao**-le na-ben shu.
Zhangsan buy-arrive-PERF that-CL book
'Zhangsan managed to buy that book.'
b. Zhangsan **mai**-le na-ben shu.
Zhangsan buy-PERF that-CL book
'Zhangsan bought that book.'
c. Zhangsan **dao**-le.
Zhangsan arrive-PERF
'Zhangsan arrived.'

Second, as pointed out by Huei-Ling Lin (1998: 14), the definition of an RVC as a compound composed of an action component and a result component fails to classify the RVCs in (14) as resultative verb compounds (cf. also Cheng & Huang 1994: 194).

(14) a. Zhangsan **lei-wan**-le yao.
Zhangsan tired-bend-PERF waist
'As a result of Zhangsan's being tired, his waist became bent.'
b. Zhangsan **e-bing**-le.
Zhangsan hungry-sick-PERF
'As a result of Zhangsan's being hungry, he became sick.'

[9] Note that in this respect the examples in (11) are different than lexicalized compounds, which are usually not fully compositional, but each component of which normally has the same meaning as when it is used separately. For example, although "left-wing" in *left-wing politicians* does not refer to the left wing of a bird, "wing" in *left-wing politicians* arguably has the same meaning as the one in *the left wing of the bird.*

[10] The derivational suffix status of *dao* is also partly reflected in its productivity. In addition to *mai-dao* ('manage to buy') in (11a), there are *kan-dao* 'look-ACHIEVEMENT' ('see'), *ting-dao* 'listen-ACHIEVEMENT' ('hear'), *zhai-dao* 'pick.up-ACHIEVEMENT' ('manage to pick up'), *zhua-dao* 'get.hold.of-ACHIEVEMENT' ('manage to get hold of'), etc. In this respect, *dao* is also different than any component of a lexicalized compound in that the latter does not show such productivity. This, in turn, suggests that examples like *mai-dao* in (11a) are not lexicalized compounds.

In each example of (14), the first component of the compound is a stative verb.[11, 12] The stative status of the first element of *lei-wan* in (14a), for example, can be established by the fact that, as shown in (15), *lei* cannot occur with the progressive marker *zai*, while a verb whose meaning has an activity component can occur freely with *zai*.

(15) a. *Zhangsan zai **lei**.
Zhangsan PROG tired
Intended: 'Zhangsan is in the continuous state of being tired.'
b. Zhangsan zai **pao**.
Zhangsan PROG run
'Zhangsan's running.'

Recognizing the problem with the usual definition of RVCs and with the examples cited under RVCs, I redefine Mandarin RVCs as compounds composed of two free verbal components, with the second component denoting a change which is caused by and results from, but is not entailed by the eventuality expressed by the first component (cf. Huei-Ling Lin 1998: 14-15). Based on this new definition, not only the examples in (10) but also the parts in bold in (14) are RVCs.

As is clear from our new definition of Mandarin RVCs and our definition of the resultative construction given earlier, Mandarin RVCs are resultatives. Further, given our

[11] It should be pointed out that Huei-Ling Lin (1998) does not regard the first element of *e-bing* in (14b) as a simple stative verb. According to her, the stative verb *e* 'be hungry' has been used as an achievement verb in *e-bing*. However, semantically *e-bing* means "become sick after a period of being hungry," not "become sick as a result of becoming hungry." Based on this, I conclude that *e* in *e-bing* is stative. More generally, as will be seen more clearly in section 1.2.2.1, Lin's view that in Mandarin RVCs "V1 is … restricted to activity and achievement-denoting verbs" (1998: 19) does not hold.

[12] Jimmy Lin (2004) discusses examples similar to (14b) and concludes that such examples are just "spurious verbal compounds" (p. 96) on the grounds that these "double-state verb compounds … do not describe a complex bi-eventive structure consisting of a causing activity and a result state" (p. 119). While it is true that such compounds do not have a causing "activity," they do involve a causing state. Furthermore, the resulting state is not entailed by the state denoted by the causing component; thus, it is arguable that these compounds do involve a complex bi-eventive structure.

definition of the resultative verb compound, I will exclude examples like those in (11) (which are not compounds) as well as those in (16) from my study of Mandarin RVCs.[13]

(16) a. Zhangsan **zhuomo-tou**-le na-ge wenti.
Zhangsan ponder-through-PERF that-CL question
'Zhangsan has thought through that question.'
b. Zhangsan **wa-qian**-le na-ge keng.
Zhangsan dig-shallow-PERF that-CL pit
'Zhangsan dug that pit too shallow.'
c. Zhangsan **zou-jin**-le jiaoshi.
Zhangsan walk-enter-PERF classroom
'Zhangsan walked into the classroom.'

(16a) is excluded because the second element in *zhuomo-tou* modifies the first element rather than indicating a change in an entity as a result of the action expressed by the very first element. (16b) is ruled out on the grounds that what the second element in *wa-qian* expresses is more a deviation from what is expected than a result. (16c) is excluded because there appears to be no causative relation between the two eventualities expressed by *zou* 'walk' and *jin* 'enter' respectively.

Before moving on to discuss some properties of RVCs, we need to examine the status of two sets of examples. The first set is illustrated in (17).

(17) a. Zhangsan **zou-lei**-le.
Zhangsan walk-tired-PERF
'Zhangsan walked himself tired.'
b. Zhangsan **chi-bao**-le fan.
Zhangsan eat-full-PERF meal
'Zhangsan ate himself full.'

[13] Notice that while *wa-qian* 'dig-shallow' in (16b) expresses a deviation from what is expected, *wa-shen* 'dig-deep' in (i) is ambiguous in that it can express both a resultative meaning and a deviation from expectation, although the former interpretation is more salient than the latter.
(i) Zhangsan **wa-shen**-le na-ge keng.
Zhangsan dig-deep-PERF that-CL pit
a. 'Zhangsan dug that pit deep.'
b. 'Zhangsan dug that pit too deep.'

Gu (1992: 35) maintains that the example in (17b) does not involve causativity. If her view were true, this example should not be considered an RVC or a resultative, given that our definition of both requires a causing relation between the two eventualities denoted by the two free components. However, subject-oriented RVCs in (17), just like the object-oriented RVC in (18), do express a causative relation.

(18) Zhangsan **xi-ganjing**-le yifu.
Zhangsan wash-clean-PERF clothes
'Zhangsan washed his clothes clean.'

This is evidenced by the fact that (17a) and (17b) can be paraphrased as "Zhangsan's walking caused Zhangsan himself to become tired" and "Zhangsan's eating caused Zhangsan himself to become full" respectively. Given this, I consider examples like (17) to be cases involving an RVC and to be resultatives.

Compared with the examples in (17), the status of the second set of examples, as illustrated in (19), is more dubious.

(19) a. Zhangsan **du-dong**-le na-shou shi.
Zhangsan read-understand-PERF that-CL poem
'Zhangsan read that poem and as a result he understood it.'
b. Zhangsan **xia-ying**-le na-pan qi.
Zhangsan play-win-PERF that-CL chess
'Zhangsan played that game of chess and as a result he won it.'

When mentioning examples like those in (19), almost all the references on Mandarin RVCs I consulted consider them to involve a resultative verb compound without argumentation. However, Jimmy Lin (2004) does not regard the parts in bold in (19) as true RVCs. Instead, he views them as forming another class of "spurious verb compounds" (cf. note 12 of this chapter) for three reasons. First, according to him, these compounds are not resultative in nature and it is inappropriate to paraphrase such sentences by using "as a result." For example, on his view "Zhangsan played the chess game and he won it as a result" is a bad

paraphrase of (19b), which Lin would think simply means "Zhangsan won that chess game." Second, in contrast to the examples of RVCs we have discussed so far, the subject and the object in (19b) as well as in (19a) are semantic arguments of both components of the compound. Finally, the relation between the two eventualities denoted by V1 and V2 "is not causal in nature, but rather simply one of temporal precedence" (Lin 2004: 97).

My own stand on this issue is that I fully agree with Lin's observation that the subject and the object involved in these compounds are semantic arguments of both verbal components. However, I think that the examples in (19) do have a resultative interpretation. Moreover, the two eventualities denoted by the two components of the compound do express a causative relation. For example, (19a) can be paraphrased as "Zhangsan caused himself to understand the poem by reading it." Finally, the relation between the two components of the compounds in (19) is not simply one of temporal precedence. In fact, the temporal precedence relation is even not the primary relation expressed by the compounds. In this respect, the relation involved in (19) is quite different than the one expressed by a serial verb construction in (20), which does primarily involve a relation of temporal precedence (and a purpose).

(20) Zhangsan xiang mai ben shu kan.
Zhangsan want buy CL book read
'Zhangsan wants to buy and read a book.'

Based on these observations, I consider examples like those in (19) to be true RVCs in this study and thus maintain my argument that Mandarin resultative verb compounds are resultatives.

1.2.2 Aspects of RVCs

After redefining Mandarin RVCs and discussing some controversial cases, I will now describe and discuss some issues concerning RVCs that are relevant to the current work.

1.2.2.1 Properties of the two components

The first aspect to be examined concerns the properties of V1 and V2 of an RVC. As discussed earlier, both stative predicates and verbs which have an activity component can function as V1 in Mandarin. This fact is worth investigating because crosslinguistically it is unusual for a stative predicate to function as the causing component of a resultative. More discussion of this issue will be reserved for section 4.4.

As for the second slot of an RVC, Jen-i Li (1994: 352) claims that only achievement verbs can fill that position. However, in the Chinese literature on RVCs,[14] the majority of the common words used as the second component of an RVC are considered adjectives because these words can be used as adjectives when used separately. This is reflected in several lists of the common words used in the second slot of an RVC (for specific lists, see Zhen Ma & Lu 1997: 3-4, Lingling Wang 2001: 80-83, and Xia 2001: 173). The implicit assumption is that if the word in the second slot is an adjective when used separately, then it is still an adjective in an RVC. This assumption is related to how one approaches the different uses of the same form in Mandarin. For example, *ganjing* in (21a) is an adjective because it modifies

[14] In the Chinese literature, RVCs are discussed under a variety of rubrics, e.g. **dong-bu-ge jushi** 'verb-complement-frame construction' (e.g. Linding Li 1980), **dong-jie jiegou** 'verb-result construction' (e.g. Lingling Wang 2001), **dong-jie shi** 'verb-result construction' (e.g. Xiwen Ma 1987; Hongqi Wang 1995, 1996), **shi-cheng shi** 'cause-result construction' (e.g. Li Wang 1951), **shu-bu jiegou** 'predicate-complement construction' (e.g. Jianming Lu 1992), **shu-jie shi** 'predicate-result construction' (e.g. Guo 1995, Xiaorong Li 1994, and Yuan 2001) and **V-R jiegou** 'V-R construction' (Xia 2001). These terms are usually used without a definition. Very often different ranges of examples are cited under different names, and sometimes even under the same name. However, as far as I can tell, true RVCs by our definition form the core of the examples that are cited under the different rubrics.

a noun. As shown in (21b) and (21c), the same form can be used as a predicate. To complicate the matter, *ganjing* in (21b) seems to be stative, as it can be modified by *hen* 'very,' a degree adverb; on the other hand, when the perfective marker *-le* is added to *ganjing* in (21c), the predicate comes to have an inchoative interpretation. In the latter, the whole predicate is not stative, as it is incompatible with *hen* 'very, very much.'[15]

(21) a. yi-ge hen **ganjing**-de fangjian
one-CL very clean-MM room
'one clean room'
b. Zhe-ge fangjian hen **ganjing**.
this-CL room very clean
'This room is very clean.'
c. Fangjian (*hen) **ganjing**-le.
room very clean-PERF
'The room became clean.'

The question is whether the three instances of *ganjing* in (21a-21c) are of the same category or not. For those who think that the majority of the words used as the second component of an RVC are adjectives, all the three instances of *ganjing* in (21) involve the same word of the same category. I argue that this analysis is on the right track and that it is not the case that only achievement verbs can fill the second slot of an RVC. The main reason for this is that an analysis that considers the three instances of *ganjing* in (21) to be of the same category would be much simpler than an alternative analysis that treats them differently—*ganjing* in (21a) as an adjective and the other two instances as a verb. This is in turn due to the fact that virtually all independently established adjectives can be used like *ganjing* in (21b) and (21c). As a result, treating the different uses of words like *ganjing* as

[15] Note that although *ganjing* 'clean' in (i) is followed by *-le* and modified by *hen* 'very,' *-le* here is not a perfective marker but a sentence final particle. As shown in (21c), when *-le* is attached to an adjective and used as a perfective marker, the sentence has an inchoative interpretation. However, (i) does not have an inchoative meaning; it describes a state.

(i) Na-ge fangjian yijing hen ganjing-le.
that-CL room already very clean-SFP
'The room is already very clean.'

having different lexical categories unnecessarily complicates Chinese grammar. This is especially true when there is no independent evidence that *ganjing* is a verb in (21b) and (21c). Although one might assume that only verbs can be followed with *-le* and thus analyze *ganjing* in (21c) as a verb, this is just an auxiliary assumption that cannot be independently justified. Furthermore, adopting the view that *ganjing* in (21a) and (21c) is an adjective would in fact give rise to a simpler description of the use of the perfective marker *-le*. That is, the aspect marker *-le* can only be attached to words bearing the [+V] feature. As both verbs and adjectives bear this feature (Chomsky 1970), it is not surprising that both adjectives like *ganjing* and verbs like *xi* 'wash' can be used with *-le*, as evidenced by (21c) above and (22) below.

(22) Zhangsan yijing xi-le yifu.
Zhangsan already wash-PERF clothes
'Zhangsan have already washed the clothes.'

Related to the issue of the category of *ganjing* in (21), it is worth pointing out that Gu (1992: 95-99) holds the view that *ganjing* in (21b) and the one in (21c) are different in category, with the former being a "noneventive stative verb" and the latter an achievement verb. She bases this on the assumption that "noneventive stative verbs" are incompatible with aspect markers.[16] However, as I have just argued above, the three examples in (21) involve the same *ganjing*, namely an adjective. Furthermore, just as the analysis of *ganjing* in (21c) as an adjective is consistent with the view that both adjectives and verbs bear the [+V] feature and can be used with aspect markers, the analysis of *ganjing* in (21b) as an adjective

[16] There is evidence that Gu's (1992: 95) assumption that "noneventual stative verbs are aspectless" and cannot be used with aspect markers is incorrect. *Ai* 'love,' for example, is a stative verb according to Gu, but as shown in (i) it can be used with *-guo*, an experiential aspect marker.
(i) Zhangsan ai-guo na-ge nühair.
Zhangsan love-GUO that-CL girl
'Zhangsan once loved that girl.'

is consistent with the view that an element can be used as a predicate without resorting to an auxiliary verb in Chinese as long as it bear the [+V] feature. As for the difference in meaning between (21b) and (21c), the inchoative reading of (21c), on my view, results from the aspectual marker *-le*.

Based on the above discussion, I conclude that the three instances of *ganjing* in (21) are of the same category and that they are all adjectives. It follows from this that *ganjing* in (12a), repeated as (23) below, is an adjective, and that the inchoative meaning comes from the use of *-le* and the compositional meaning of the resultative verb compound.[17] Therefore, the majority of words used in the second slot of an RVC are adjectives, not stative verbs or achievement verbs as claimed by Jen-i Li (1994).[18]

(23) Zhangsan **xi-ganjing**-le yifu.
Zhangsan wash-clean-PERF clothes
'Zhangsan washed his clothes clean.'

While the majority of the words used in the V2 slot are adjectives, there are indeed some achievement V2s. We have seen such an example, namely *ying* in *xia-ying* (play-win), in (19b). Moreover, as pointed out by Gu (1992: 89-90) (see also Huei-Ling Lin 1998: 28-29), there are apparently several unergative verbs (e.g. *pao* 'run,' *zou* 'walk,' *ku* 'cry,' and *xiao* 'laugh') that can be used in the V2 slot. However, on a closer examination, it turns out that these verbs are achievements when used in the V2 slot, although when used separately, they can function both as an activity verb and as an achievement verb. For example, *pao* in *xia-pao* (frighten-run.away) in (24a) is telic, meaning "run away, escape, flee," not "run."

[17] The status of *ganjing* as an adjective in (23) is further supported by crosslinguistic evidence. For example, it is commonly assumed that English *clean* in *John washed his clothes clean* is still an adjective, although analogously to (23), *clean* in the sentence does have an inchoative interpretation as a result of the meaning of the resultative construction.

[18] Although in the rest of the dissertation, I will continue to use V1 and V2 to refer to the first and the second component of an RVC, it should be kept in mind that "V" is intended to mean elements bearing the [+V] feature, which include adjectives as well as verbs.

However, when used separately, it can have two different uses. As shown in (24b), when it is followed by *-le* alone and when there is no further context, *pao* means 'escape, run away,' but as shown in (24c), *pao* means "run" when followed by *-le* and a durational phrase.[19]

(24) a. Zhangsan xia-pao-le Lisi.
Zhangsan frighten-run.away-PERF Lisi
'Zhangsan frightened Lisi away.'
b. Zhangsan pao-le.
Zhangsan escape-PERF
'Zhangsan escaped.'
c. Zhangsan pao-le san-ge xiaoshi.
Zhangsan run-PERF three-CL hour
'Zhangsan ran for three hours.'

This dual behavior of *pao* forms a stark contrast to the behavior of *pa* 'crawl' in (25) and *tiao* 'jump' in (26), which are unergative verbs. (25) and (26) show that the adding of *-le* to an unergative verb can never lead to an inchoative interpretation.

(25) a. Zhangsan pa-le.
Zhangsan crawl-PERF
'Zhangsan (has) crawled.'
b. Zhangsan pa-le san-ge xiaoshi.
Zhangsan crawl-PERF three-CL hour
'Zhangsan crawled for three hours.'

(26) a. Zhangsan tiao-le.
Zhangsan jump-PERF
'Zhangsan (has) jumped.'
b. Zhangsan tiao-le san fenzhong.
Zhangsan jump-PERF three minute
'Zhangsan jumped for three minutes.'

[19] Note that in a specific context, (24b) can also mean "Zhangsan has run." For example, a coach asked each team member to run three tracks, and required that one member start to run right after another member completed his or her task. Suppose that Lisi was expected to run after Zhangsan and that he did not move at all after Zhangsan finished his running. In this case, the coach might remind Lisi with (i).

(i) Zhangsan pao-le, xianzai gai ni-le.
Zhangsan run-PERF now should you-SFP
'Zhangsan has run, and now it's your turn.'

Likewise, the behavior of *pao* also forms a clear contrast to the behavior of *si* 'die' in (27), which is an achievement verb. (27) demonstrates that an achievement like *si* is incompatible with a durational phrase on the intended interpretation.

(27) a. Zhangsan si-le.
Zhangsan die-PERF
'Zhangsan died.'
b. *Zhangsan si-le san-ge xiaoshi.
Zhangsan die-PERF three-CL hour
Intended: 'Zhangsan's beginning to be in the state of death took three hours.'

Based on this, we can safely conclude that there are two uses of *pao*, one being unergative and the other being unaccusative, and that only the unaccusative or achievement *pao* can fill the V2 slot of an RVC.

In sum, the V1 of an RVC is either a stative verb or a verb whose meaning has an activity component, and the V2 is either an adjective or an achievement verb.

1.2.2.2 Thematic relations

The second aspect of RVCs to be discussed concerns the complex thematic relations expressed. As shown in (28), when an RVC is used in a sentence, its surface subject is normally the Agent of V1 and the surface object typically the Patient of V2. Furthermore, (28b) shows that an RVC allows an object even though both V1 and V2 involve a single argument.

(28) a. Zhangsan ca-ganjing-le zhuozi.
Zhangsan wipe-clean-PERF table
'Zhangsan wiped the table clean.'
b. Zhangsan ku-shi-le shoujuan.
Zhangsan cry-wet-PERF handkerchief
'Zhangsan cried the handkerchief wet.'

Although apparently the 'table' in (28a) is an internal argument of V1, (29) shows that the surface object is not necessarily an internal argument of a transitive V1, as the sentence means "Zhangsan cut (something) with a knife and the knife became blunt as a result of the cutting."

(29) Zhangsan qie-dun-le dao.
Zhangsan cut-blunt-PERF knife
'Zhangsan cut (something) with the knife, and as a result the knife became blunt.'

To make the situation more complicated, although normally the subject of a transitive RVC is interpreted as the Agent of V1, the examples in (30) show that this is not always the case.

(30) a. Na-bao yifu xi-zhong-le Zhangsan-de shou.
that-CL clothes wash-swollen-PERF Zhangsan-GEN hand
'(Zhangsan washed that bundle of clothes) and that bundle of clothes caused Zhangsan's hands to become swollen.'
b. Na-duan lu zou-lei-le Zhangsan.
that-CL road walk-tired-PERF Zhangsan
'(Zhangsan walked on that stretch of road) and that stretch of road caused Zhangsan to become tired.'

Similarly, although the object of an RVC is typically interpreted as the Patient of V2, (31) shows that this is not always the case, either. In fact, (31) has a subject-oriented reading.

(31) Zhangsan kan-lei-le shu.
Zhangsan read-tired-PERF book
'Zhangsan read books and as a result he became tired.'

Presumably because of the existence of sentences like (28a), (30), and (31), some sentences with RVCs are ambiguous. For example, (32) exhibits a three-way ambiguity: an ordinary object-oriented reading (a), a subject-oriented reading (b), and a "*scare* reading" (c).[20] I call

[20] To be exact, not all native speakers of Mandarin can get the second reading. And without a proper context, most speakers I checked with found it difficult to get the third reading. As far as I can tell, the first phenomenon is due to the fact that some speakers consistently disallow the subject-oriented reading associated with any transitive use of an RVC, and the second phenomenon is rather due to context because the third reading is allowed when placed in an appropriate context. Furthermore, for speakers who accept all the three readings, the first reading is easiest to get and the third one is hardest to obtain.

the third interpretation a "*scare* reading" because on this interpretation the RVC involved functions like a lexical causative such as *scare* in (33).

(32) Zhangsan zhui-lei-le Lisi.
Zhangsan chase-tired-PERF Lisi
(a) 'Zhangsan chased Lisi and as a result Lisi got tired.'
(b) 'Zhangsan chased Lisi and as a result Zhangsan got tired.'
(c) '(Lisi chased Zhangsan) and Zhangsan caused Lisi to become tired.'

(33) The tiger scared the child.

On this interpretation, the RVC *zhui-lei* 'chase-tired,' like *scare*, allows for a reading that some property rather than some action of the Causer argument causes a change in the Causee.[21] For example, on the third reading of (32), it is very likely that Zhangsan's stamina and endurance ultimately lead to Lisi's becoming tired. Furthermore, on the *scare* reading, the resultative meaning is subordinate to the causative meaning. This can be seen more clearly from (34), where the semantic argument of *xiao* 'laugh" is even not realized as a syntactic argument of the whole RVC.

(34) Na-ge youmo gushi xiao-wan-le Zhangsan-de yao.
that-CL humor story laugh-bend-PERF Zhangsan-GEN waist
'That humorous story caused Zhangsan's waist to bend as a result of Zhangsan's laughing.'

The final stroke in drawing this complicated thematic picture comes from the fact that, as shown in (35), the surface subject of an intransitive RVC is always interpreted as the Patient of V2, regardless of whether it can also be interpreted as the Agent of V1. Moreover, (35c) shows that the V2 of an RVC can be predicated of the surface subject without resorting to a "fake reflexive," which is required in the English counterpart of the sentence.

[21] Such a causative relation is analogous to Shuanfan Huang's (1974) "factive causative," which in contrast to "event causative," "requires that the cause be interpretable as a fact or fact-like entity, e.g. idea, notion, thought, motion or proposal, etc." (p. 360).

(35) a. Zhuozi ca-ganjing-le.
table wipe-clean-PERF
Literally: 'The table wiped clean.' → 'The table was wiped clean.'
b. Shoujuan ku-shi-le.
handkerchief cry-wet-PERF
Literally: 'The handkerchief cried wet.' → 'The handkerchief got wet from crying.'
c. Zhangsan zou-lei-le.
Zhangsan walk-tired-PERF
'Zhangsan walked himself tired.'
d. Zhangsan chi-bao-le.
Zhangsan eat-full-PERF
'Zhangsan ate himself full.'

1.2.2.3 Types

This subsection discusses another aspect of Mandarin RVCs, namely their types. RVCs are often classified into several types (cf. inter alia, Chang 2003; Cheng & Huang 1994; Gu 1992; Huei-Ling Lin 1998; Sybesma 1991, 1999). Drawing on the insights of earlier works, particularly Cheng & Huang 1994, this study classifies RVCs into five types, namely unergative, deep unaccusative, surface unaccusative, canonical transitive, and non-canonical transitive. (36-40) illustrate all these types.

(36) Zhangsan qi-lei-le. (unergative)
Zhangsan ride-tired-PERF
'Zhangsan rode himself tired.'

(37) Zhangsan lei-bing-le. (deep unaccusative)
Zhangsan tired-sick-PERF
'Zhangsan's being in the state of tiredness caused him to become sick.'

(38) Na-shan men ti-po-le. (surface unaccusative)
that-CL door kick-broken-PERF
'The door was kicked and as a result it became broken.'

(39) Zhangsan ti-po-le na-shan men. (canonical transitive)
Zhangsan kick-broken-PERF that-CL door
'Zhangsan kicked the door and the door became broken.'

(40) Fanzhong-de Nonghuor lei-bing-le Zhangsan. (non-canonical transitive)
heavy-MM farm.work tired-sick-PERF Zhangsan
'The heavy farm work caused Zhangsan to become sick, as a result of his being in the state of tiredness.'

As shown by (36), an unergative RVC involves an intransitive frame and its subject is semantically the doer of the action expressed by V1. (37) and (38) show that like unergative RVCs, deep unaccusative RVCs and surface unaccusative RVCs also involve an intransitive frame. However, the subject of the latter two types of RVCs is semantically a patient of V1. Deep unaccusative RVCs and surface unaccusative RVCs differ in that the former involve an unaccusative V1 and the latter does not. As the names suggest and as (39-40) illustrate, both canonical transitive RVCs and non-canonical transitive RVCs involve a transitive frame. However, the former type is called "canonical" because the subject of this type of RVC is semantically an actor of the action expressed by V1, which is a common association as far as the argument realization of resultatives is concerned. The latter type is called "non-canonical" because in this case either the subject is not a semantic argument of V1 (as seen in (40) above) or it is a patient of V1, as shown by (41) below. As seen from (40) and (41), non-canonical transitive RVCs involve the *scare* reading.

(41) Na-ben houhou-de shu kan-hua-le Zhangsan-de yanjing
that-CL thick-MM book read-dim-PERF Zhangsan-GEN eye
'The thick book caused Zhangsan's eyes to become dim-sighted as a result of Zhangsan's reading the book.'

It should be pointed out that, just as a verb may have both a transitive and an intransitive use, it is possible for the same RVC to belong to different types. For example, (38) and (39) show that the same RVC, *ti-po* (kick-broken) in this case, is a surface unaccusative RVC in (38) and a canonical transitive RVC in (39). For another example, *zhui-*

lei (chase-tired) in (32) is a canonical transitive RVC on the first two readings and a non-canonical transitive RVC on the third reading. In fact, as noticed by Cheng & Huang (1994: 190), it is quite common for the same RVC with an activity-denoting V1 to have both a canonical transitive and a non-canonical transitive use.

If an RVC may have different uses, then can it have all the possible uses? The answer is "No." For example, it is impossible for an RVC to have both the unergative and the deep unaccusative use. Recall that all intransitive RVCs are subject-oriented on the surface (cf. the examples in (35)), and note that both the unergative use and the deep unaccusative use require that the subject be a semantic argument of both V1 and V2. As the argument of V2 has to be satisfied anyway, whether an RVC has an unergative use, a deep unaccusative use or both is determined by V1. However, because it is not possible for a V1 to be an activity and a stative verb at the same time, it is impossible to have an RVC which has both an unergative and a deep unaccusative use.

Although it is impossible for an RVC to have all the possible uses, what uses an RVC can have is not random, and has much to do with the features of V1.[22] For example, if V1 is transitive, then the RVC cannot have a deep unaccusative use because this use requires V1 to be an unaccusative verb. However, in this case, the RVC can have a canonical transitive use and one of the other intransitive uses.[23]

[22] As will be seen shortly, this fact prompts Cheng & Huang (1994) and Huei-Ling Lin (1998) to analyze V1 as the head of an RVC.
[23] More discussion of the possible uses of an RVC will be given in section 3.2.3.

1.2.2.4 Headedness

The final aspect concerns the headedness of Mandarin RVCs. There has been a lot of discussion in the literature as to whether RVCs have a head. Concerning the headedness of RVCs, there are four logical possibilities and each of them has been proposed in the literature.

The first logical possibility is that V1 is the head. This possibility is assumed by Yafei Li (1990, 1993, 1995, 1999), Ross (1990) and Uehara et al. (2001), argued for by Cheng & C.-T. James Huang (1994) and Huei-Ling Lin (1998), and maintained by Lingling Wang (2001). Cheng & Huang (1994: 194) (cf. also Lin 1998: 36), for example, argue that V1 is the head on the grounds that V1 rather than V2 determines the event type of the whole compound. According to them, when V1 is "active," the compound as a whole is either unergative or transitive (i.e. our "canonical transitive"); when V2 is "stative," the entire compound is either ergative (i.e. our "unaccusative") or causative (i.e. our "non-canonical transitive"). In this regard, Cheng & Huang implicitly assume that the unergative and canonical transitive types of RVCs are active and the unaccusative and non-canonical transitive types are stative.

There are two problems with Cheng & Huang's view. First, as Cheng & Huang (1994: 190) themselves notice, it is common for an RVC with an active V1 to have both a canonical transitive and a non-canonical transitive use.[24] As they implicitly assume that the former use

[24] According to Jim Huang (p.c.), when the V1 of an RVC like *kan-hua* 'read-dim' in (41) is transitive, the *scare* reading of the RVC is derived by moving a transitive RVC to combine with a "zero CAUSE morpheme." Therefore, among the different types of RVCs, the non-canonical transitive type exemplified by (41) is derived. Because of this, Jim Huang held that the use of an RVC with an active V1 in both the canonical transitive and non-canonical transitive frames does not count as evidence against the view of Cheng & Huang (1994).
However, even if the derivational analysis of a non-canonical transitive RVC with a transitive V1 is correct, the non-canonical transitive use of an RVC involving a transitive V1 still poses a problem for Cheng & Huang's view. This is because according to Cheng & Huang, the non-canonical transitive use of an RVC with a stative V1 is determined by the fact that the event type of V1 in this case is stative. Crucially, on the view of Cheng &

is active and the latter stative, this poses a serious problem to their view that the event type of V1 determines the event type of the entire RVC. The second problem with Cheng & Huang's view is that their reliance on the notion of "event type" to decide the matter of headedness seems to go against their idea that "the notion of a head is a structural and not a conceptual notion" (1994: 191). This is because event type is primarily a semantic rather than a structural notion, even though it has effects on sentence structure and could even be syntacticized within a certain framework.

The second logical possibility regarding the headedness of RVCs is that V2 is the head. In the literature, a number of researchers (e.g. Tai 2003: 308, Hongqi Wang 1995: 145, and Yong 1997: 9) claim that V2 is the semantic focus of an RVC, and thus is the head. Or in Tai's words, V2 functions as the "center of predication" and V1 like a manner adverb.[25] However, the evidence for this claim is conceptual rather than empirical. In fact, as pointed out by Cheng and Huang (1994: 192), the claim seems not to hold even on the conceptual level. This is because in addition to *ti-kai* 'kick-open,' *tui-kai* 'push-open,' and *la-kai* 'pull-open,' which may suggest that V2 is the center of predication of an RVC, there are examples like *ti-kai* 'kick-open,' *ti-dao* 'kick-fall,' and *ti-bian* 'kick-flat,' which may indicate that V1 is the semantic focus.

The only empirical evidence for the V2-as-head claim is given by Linding Li (1984), who, however, does not explicitly state that V2 is the semantic focus of the entire compound.

Huang (1994) and C.-T James Huang (1992), the non-canonical transitive use in this case is also derived, though in a different way; that is, it is derived by adding an external argument to a (deep) unaccusative RVC. Therefore, Cheng & Huang do intend the event type of the V1 of an RVC to determine both the non-derived and "derived" types to which this RVC can belong. In turn, the fact that Cheng & Huang assume non-canonical transitive RVCs to be **stative** and the fact that an RVC with an **active** V1 can be used in the non-canonical transitive frame together pose a serious problem for Cheng & Huang's view that the event type of the V1 of an RVC determines the event type of the whole compound.

[25] Related to this, Talmy (1985: 127-129, 2000: 153) maintains that the resulting subevent of a resultative is the main event and the causing subevent is a subordinate event.

Li's evidence comes from the distributional facts of the two components of an RVC. He observes that V1, but not V2, can be omitted. For example, given the use of an RVC *ku-hong* 'cry-red' in (42a), the V2 of the RVC cannot be omitted, but the V1 can, as shown in (42b) and (42c). This is reminiscent of our earlier observation that the surface subject of an intransitive RVC is always interpreted as the Patient of V2, regardless of whether it can also be interpreted as a semantic argument of V1.

(42) a. Zhangsan-de yanjing ku-hong-le.
Zhangsan-GEN eye cry-red-PERF
'Zhangsan's eyes were cried red.'
b. *Zhangsan-de yanjing ku-le.
Zhangsan-GEN eye cry-PERF
Intended: 'Zhangsan's eyes cried.'
c. Zhangsan-de yanjing hong-le.
Zhangsan-GEN eye red-PERF
'Zhangsan's eyes became red.'

The third possibility concerning the headedness of an RVC is that both V1 and V2 are heads, a position argued for by Gu (1992).[26] Gu (1992) argues against the view that V1 is the head of an RVC and points out that both V1 and V2 contribute to the argument structure of the compound. For example, in (43) below, V1 contributes the Causer argument *Zhangsan*; in (42a) above, V2 contributes the Causee argument *Zhangsan-de yanjing* 'Zhangsan's eyes.'

(43) Zhangsan ca-liang-le jingzi.
Zhangsan wipe-shiny-PERF mirror
'Zhangsan wiped the mirror shiny.'

Although Gu's (1992) view is essentially right, I think it is more proper to state that the argument of V2 has to be realized in the overt syntax (see (35) and (42a)) although V1 may contribute to the argument structure of the entire compound in certain uses of an RVC. For

[26] In this respect, note that Baker & Stewart (1999) propose a bi-headed analysis of the serial verb construction, an analysis also implied by the syntactic structure given to this construction by Baker (1989). However, Déchaine (1993) argues that different types of serial verb constructions differ as to which verb is the head (for information about different types of serial verb constructions, see also Stewart 2001). Moreover, Zubizarreta &

example, in (42a), what is overtly realized is a semantic argument of V2, not an argument of V1.

The fourth possibility is that RVCs have no head. This is the position held by Chu-Ren Huang & Fu-Wen Lin (1992). The main evidence for Huang & Lin's position comes from the fact that, as shown by the range of examples in section 1.2.2.2, the transitivity of an RVC is not determined by V1 or V2. Furthermore, Huang & Lin argue that the "event structure" of the entire RVC is a composite of the event structures of V1 and V2. Based on these, they conclude that RVCs in Mandarin "involve composite instead of headed structures" (1992: 91). However, as pointed out by Cheng & C.-T. James Huang (1994: 217-218), Chu-Ren Huang & Lin are not entirely consistent in their view that RVCs are headless. In fact, Huang & Lin argue that to allow for the subject-oriented reading with respect to transitive sentences like (31), repeated below as (44), the compound involved has to be headed by V2.

(44) Zhangsan kan-lei-le shu.
Zhangsan read-tired-PERF book
'Zhangsan read books and as a result he became tired.'

I agree with Cheng & Huang (1994) that Huang & Lin's (1992) idea is unattractive because they have to treat the compound in (45) below as headless when the sentence has an object-oriented reading, the (a) reading, and to treat the same compound as headed by V2 when the sentence has a subject-oriented reading, the (b) reading.

(45) Zhangsan zhui-lei-le Lisi.
Zhangsan chase-tired-PERF Lisi
a. 'Zhangsan chased Lisi and Lisi got tired.'
b. 'Zhangsan chased Lisi and Zhangsan got tired.'

Oh (2007), in discussing Korean serial verb constructions, make a distinction between morpho-syntactic head and semantic head, with the latter varying according to the type of the serial verb construction.

Furthermore, I do not think that Huang & Lin (1992) present any good reason for treating RVCs like the one in (44) as headed by V2. In fact, arguably the RVC in (44) is headless, just like other RVCs.

What can be seen from this brief discussion of the four possibilities concerning the headedness of RVCs is that different researchers use different criteria in deciding on this issue. However, no matter whether the criterion adopted is semantic or structural, I do not see any convincing empirical evidence for regarding either V1 or V2 as the head of RVCs, and the same holds of the double-head claim.

In this study, I would argue for the headlessness position from the point of view of argument realization. The main evidence for this view comes from the fact that as seen from section 1.2.2.2 and from (46-50) below, there are different ways of realizing the Causer and Causee arguments licensed by Mandarin RVCs. For example, in (46) the Causer argument is realized by *Zhangsan*, which is semantically also the external argument of V1 *xi* 'wash'; the Causee argument is realized by *yifu* 'clothes,' which is semantically also the single argument of V2 *ganjing* 'clean' and the internal argument of V1. For another example, in (48) the Causer argument is realized by *na-bao yifu* 'that bundle of clothes,' which is the internal argument of V1; the Causee argument is realized by *Zhangsan*, which is semantically the external argument of V1 and the single argument of V2.

(46) Zhangsan xi-ganjing-le yifu.
Zhangsan wash-clean-PERF clothes
'Zhangsan washed his clothes clean.'

(47) Zhangsan qie-dun-le dao.
Zhangsan cut-blunt-PERF knife
'Zhangsan cut (something) with the knife, and as a result the knife became blunt.'

(48) Na-bao yifu xi-lei-le Zhangsan.
that-CL clothes wash-tired-PERF Zhangsan
'(Zhangsan washed that bundle of clothes) and the clothes got Zhangsan tired.'

(49) Na-kuai paigu kan-dun-le san-ba dao.
that-CL sparerib cut-blunt-PERF three-CL knife
'That sparerib got three knives blunt as a result of the cutting (by some specific person).'

(50) Na-ge youmo gushi xiao-wan-le Zhangsan-de yao.
that-CL humor story laugh-bend-PERF Zhangsan-GEN waist
'That humorous story caused Zhangsan's waist to bend as a result of his laughing.'

On the assumption that the way the arguments of the head of an RVC are realized in the overt syntax should be maintained on the compound level (cf. Yafei Li 1990, 1995), the fact that the Causer and Causee arguments can be realized in different ways in Mandarin argues against any claim that Mandarin RVCs have a head. Take (48) as an example. The fact that the external argument of the V1 of the RVC in this sentence is realized in the overt object position of the compound causes a problem for the claim that V1 is the head. This is because when *xi* 'wash' is used alone, its external argument is realized in the subject position of an active sentence, as shown in (51). Moreover, the fact that the single argument of V2 is realized in the overt object position of the compound poses a problem for the claim that V2 is the head of the compound, because when V2 is used alone, its single argument must be realized in the overt subject position, as shown in (52).

(51) Zhangsan **xi**-le na-bao yifu.
Zhangsan wash-PERF that-bundle clothes
'Zhangsan washed that bundle of clothes.'

(52) Zhangsan **lei**-le.
Zhangsan tired-PERF
'Zhangsan got tired.'

In addition, the existence of sentences like (48) also challenges the claim that Mandarin RVCs are double-headed because after all, neither the realization of the external argument of V1 nor the realization of the single argument of V2 is maintained on the compound level. Therefore, the fact that sentences like (48) are grammatical provides a strong argument for the headlessness of Mandarin RVCs.

Note that the "head feature percolation" assumption adopted here is independently motivated and supported by crosslinguistic evidence. To start, as will be seen in Chapter 4, there is evidence that Japanese RVCs are head-final. Moreover, as shown in (53), Japanese does not allow sentences analogous to Mandarin examples like (48). In addition, the sentence in (54) only allows the first reading. Finally, as shown in (55) and (56) respectively, the single argument of *tsukareru* 'get tired' and *akiru* 'get bored' is realized in subject position when such verbs are used alone and are not part of a compound.

(53) *Sorerano fuku-ga John-o arai-tsukare-ta.
those clothes-NOM John-ACC wash-get.tired-PAST
Intended: 'John washed those clothes and the clothes got John tired.'

(54) John-ga Bill-o oi-aki-ta.
John-NOM Bill-ACC chase-get.bored-PAST
(a) 'John chased Bill and as a result John became bored.'
(b) *'John chased Bill and as a result Bill became bored.'

(55) John-ga tsukare-ta.
John-NOM get.tired-PAST
'John got tired.'

(56) John-ga aki-ta.
John-NOM get.bored-PAST
'John got bored.'

Given the right-headedness of Japanese RVCs, these facts provide strong support for the head feature percolation condition. That is, (53) is ungrammatical in Japanese because in this case the single argument of V2, the head of the compound, is realized in the object position

of the whole sentence, thus violating the head feature percolation condition. For the same reason, the second reading of (54) is ruled out. As for the first reading of (54), it is allowed because in this case the single argument of V2 is realized in the subject position of the whole sentence, thus obeying the head feature percolation condition. Therefore, there is strong evidence from Japanese RVCs that the head feature percolation condition is needed.

In addition, there is also evidence for the head feature percolation condition from Japanese V-V compounds which are not RVCs. For example, the fact that (57) is grammatical is because the V2 (i.e. the head) of the compound involved is transitive and the way its arguments are realized in the overt syntax is maintained on the compound level.

(57) John-ga soup-o [suupu-o] **huki-kobosi**-ta.
John-NOM soup-ACC boil.over (**INTR**)-spill (**TR**)-PAST
'The soup boiled over and John spilled it.' (Nishiyama 1998: 193)

Crucially, note that in this example, V1 is intransitive and its single argument is realized as the object of the sentence. As shown in (58), when V1 is used alone, its single argument should be expressed in the subject position.

(58) Suupu-ga **huki**-ta.
soup-NOM boil.over (**INTR**)-PAST
'The soup boiled over.'

This shows that the way the argument(s) of the non-head component of a compound are realized in the syntax need not be maintained on the compound level. In turn, it suggests that the grammaticality of (57) is due to the fact that the argument realization related to V2 (the head) rather than V1 (the non-head) is preserved on the compound level.

Given that the head feature percolation condition is independently motivated, I take the grammaticality of sentences like (48-50) in Mandarin to be crucial evidence for the headlessness of Mandarin RVCs.

It is worth pointing out that the conclusion that Mandarin RVCs are headless is consistent with Shuanfan Huang's (1998: 261) view that "Chinese is essentially a headless language." Although Huang's argument is made on the basis of the fact that neither the first nor the second element of a compound in Mandarin "prevails in the determination of the category type of a compound" (Huang 1998: 270) (and thus it is possible that a specific type of compound is left-headed or right-headed), our conclusion that RVCs are headless is consistent with Huang's overall assessment as to the headedness of Mandarin compounds.

1.3 Research questions and roadmap

Although a number of studies of RVCs have been conducted, there are some issues which either have not been given a good answer or have not been discussed in the literature at all. First and foremost, the issue concerning whether RVCs are lexically or syntactically formed is far from being settled. Second, although it has been frequently pointed out that some sentences with RVCs are ambiguous (cf. the example in (32)), as far as I know, no one has given an account of why one reading is easier to obtain than another. Third, although there are discussions of the relation among event structure, argument structure and syntactic structure, this relation needs to be better understood to give a more satisfactory account of RVCs. Finally, the significance of Mandarin resultatives in the typology of resultatives has not been systematically examined.

This dissertation is intended to address the above issues, and is organized as follows. In Chapter 2, I review previous accounts and point out problems with each proposal. In particular, I show that it is problematic to propose that resultative verb compounds are formed through complex syntactic representations and derivations.

Then in Chapter 3, I give a lexical-semantic account of RVCs and argue that this account is empirically more desirable than the syntactic accounts, especially with regard to accounting for the ambiguity phenomenon. I argue that the ambiguity falls out of the interaction of the two roles ("Causer" and "Causee") licensed by the event structure of an RVC and the event roles licensed by the two components of an RVC. I show that my analysis can give a principled account of why it is easier to get one reading than another. In addition, I demonstrate the important role pragmatics plays with respect to the interpretation of sentences containing an RVC.

In Chapter 4, I place Mandarin resultatives in a crosslinguistic context. I examine the significance of the stative causing event, the subject-oriented reading, the *scare* reading, and the surface unaccusative frame exhibited with respect to Mandarin RVCs, and give an account of why all these phenomena are crosslinguistically rare. I argue that the differences among English, French, German, Japanese, Korean, Mandarin, Romanian and Swedish with regards to the latter three phenomena fall out of the difference in the way the resultatives are formed, in the headedness of the compound resultatives, and in the degree of topic prominence of these languages.

Finally, in Chapter 5 I summarize the main points of the dissertation and discuss some theoretical and typological implications of this study. Particularly, I point out that this work has important implications for a theory of argument realization and for the architecture of grammar.

Chapter 2. A Critical Survey of Previous Accounts

Previous accounts of Mandarin RVCs fall into three groups. In the first group, all RVCs are viewed as lexically formed. Among this group are Chang 2003, Chao 1968, Cheng & C.-T. James Huang 1994, Cheng et al. 1997, Gu 1992, Chu-Ren Huang & Lin 1992, Charles Li & Thompson 1981, Ross 1990, Thompson 1973 and Yafei Li 1990, 1993, 1995, 1998, 1999.[1] In the second group, all RVCs are analyzed as syntactically derived, regardless of whether their compound nature is recognized or not. Among this group are Gao 1997, Jimmy Lin 2004, John Lu 1977, Sybesma 1991, 1999, Lingling Wang 2001, and Zou 1994.[2] Finally, in the third group, some types of RVCs are analyzed as lexically formed and the other types are regarded as syntactically derived. A representative of this group is Huei-Ling Lin 1998.

In the following subsections, I will examine some representative proposals in each group. More specifically, I will discuss three lexical accounts (Chang 2003; Yafei Li 1990, 1993, 1995, 1998, 1999; Thompson 1973), three syntactic accounts (Jimmy Lin 2004; Sybesma 1991, 1999; Zou 1994), and one mixed account (Huei-Ling Lin 1998). Moreover, wherever possible, I discuss whether each account to be examined can successfully explain the three-way ambiguity in (1), the varying degree of difficulty in obtaining the different readings, and the unacceptability of the fourth reading, as doing so can serve a dual purpose of summarizing the account and laying the basis for later discussion.

[1] It should be pointed out that viewing RVCs as lexically formed does not entail that all the frames in which an RVC can occur are analyzed by these authors as base-generated.

[2] C.-T. James Huang 1992 can be said to belong to this group as well, although he focuses the paper on the *de*-extent construction rather than on RVCs.

(1) Zhangsan zhui-lei-le Lisi.
Zhangsan chase-tired-PERF Lisi.
(a) 'Zhangsan chased Lisi and as a result Lisi got tired.' (easiest)
(b) 'Zhangsan chased Lisi and as a result Zhangsan got tired.'
(c) 'Lisi chased Zhangsan and Zhangsan got Lisi tired.' (hardest)
(d) *'Lisi chased Zhangsan and Zhangsan got himself tired.'

2.1 Lexical accounts

2.1.1 Thompson's lexical account

The first lexical account I will discuss is Thompson 1973. Thompson argues against a two-sentence transformational analysis of Mandarin RVCs, by which V2 and the NP of which it is predicated form one clause, and V1 and the NP of which it is predicated, if any, form another clause. She presents two main pieces of evidence against such an analysis. First, RVCs behave like a single verb. In particular, as shown in (2), RVCs do not allow aspect markers to intervene between V1 and V2.[3]

[3] As Larry Horn pointed out to me, around the same time as Thompson's (1973) analysis, arguments of similar vein were made for "clause-union" analyses of causatives like "*faire* + infinitive" in French. As far as French causatives are concerned, the preventing of a negative or an object clitic from occurring between *faire* and the infinitive verb is often cited as evidence for a monoclausal analysis of French *faire*-causatives (see Aissen 1974, Horn 1978, and Kayne 1975). For example, unlike a bi-clausal sentence in (ia), which allows a negative to modify the lower clause, the *faire*-causative does not permit the same negative to occur in between and modify the infinitive verb alone, as shown in (ib).

(i) Horn 1978: 198 (with glosses added)
a. Il m'a forcé à (ne pas) venir.
he me.CLITIC-has forced to not step come
'He forced me (not) to come.'
b. Il m'a fait (?*ne pas) venir.
he me.CLITIC-has made not step come
'He made me (?not) come.'

Similarly, as shown in (iia), *le/la*—an object clitic in French that generally attaches to the beginning of a VP that "underlyingly" dominates it (as illustrated in (iii))—cannot appear between *faire* and the infinitive verb. Instead, it must cliticize onto *faire*, as shown in (iib) (or more exactly, in this case the object clitic attaches to a tense-bearing auxiliary verb *avoir*, which corresponds to English *have*).

(ii) Horn 1978: 199 (with glosses added)
a. *J'ai fait le manger à Jean.
I-have made it.CLITIC eat to Jean
Intended: 'I had Jean eat it [the cake].'
b. Je l'ai fait manger à Jean.
I it.CLITIC-have made eat to Jean
'I had Jean eat it [the cake].'

(2) a. Zhangsan tui-kai-**le** men.
Zhangsan push-open-PERF door
'Zhangsan pushed the door open.'
b. *Zhangsan tui-**le**-kai men.
Zhangsan push-PERF-open door
Intended: 'Zhangsan pushed the door open.'

Second, there are RVCs that cannot be transformationally derived. For example, although the sentence formed with *pao-kai* in (3a) is grammatically and semantically well-formed, the sentence formed by *xiao mao* 'small cat' and *kai* 'open,' the resultative ending of *pao-kai* 'run away,' does not make any sense, as shown in (3b).[4]

(3) Thompson 1973: 363
a. Xiao-mao pao-kai le.
small-cat run-open ASP
'The small cat ran away.'
b. *Xiao mao kai le.
small cat open ASP

Given these facts, Thompson argues that RVCs are best regarded as being formed by a small set of lexical rules. She proposes nine rules, with three of them given in (4) for purposes of illustration and with all the other six rules being of the same kind as the rule in (4c).

(iii)Horn 1978: 198 (with glosses added)
a. Je veux/peux le manger.
I want.to/can it.CLITIC eat
'I want to/can eat it [the cake].'
b. *Je le veux/peux manger.
I it.CLITIC want.to/can eat
Intended: 'I want to/can eat it [the cake].'

[4] Two things need to be mentioned here. First, tones are omitted when Thompson's examples are given. Second, many examples discussed in Thompson 1973 are not true compounds. For example, on my definition of the resultative verb compound, *pao-kai* 'run away' is not a true RVC (see section 1.2.1 for discussion of similar examples). In fact, when *kai* is used with a verb to form another verb, it can be a resultative suffix or a resultative verb. In *pao-kai*, *kai* functions as a resultative suffix meaning 'away,' a meaning different than that when it is used separately. By the standard definition of compound, *pao-kai* is not a compound, and therefore not a true resultative verb compound. When *kai* is used as a resultative verb, it means 'open,' 'boil' (when describing water), or 'bloom' (when referring to flowers). For example, in *tui-kai* 'push-open' (see example (2a)), *kai* functions as a resultative verb because in this case it has one of the meanings conveyed when *kai* is used separately. Therefore, *tui-kai* is a true RVC.

(4) Thompson 1973: 369-373

a. V + V → $[V - V]_{RV}$
   action intransitive action

b. V + V → $[V - V]_{RV}$
   motion direction

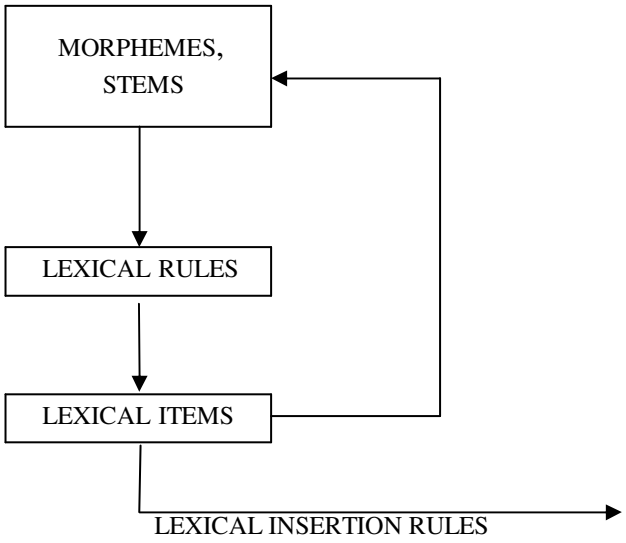
c. V + *-kai* 'away, separate' → $[V\text{-}kai]_{RV}$

According to Thompson, (4a) is the most general rule for creating RVCs. By this rule, an action verb and an intransitive verb form a new action verb, with the former component preceding the latter. An example created by this rule would be *da-sui* 'strike-be in pieces.' Rule (4b) says that RVCs can be created by putting together a motion verb like *na* 'take' and a directional "suffix" like *-chulai* 'come out.' As for the rule in (4c), compared with the other two rules in (4), it is less general, as the second element of the compound formed is more specific. An example created by this rule is *pao-kai* in (3a).

I think that Thompson's approach to RVCs is on the right track, but there are two problems with her analysis. First and foremost, as pointed out by Lu (1977: 280), Thompson's lexical rule account will complicate the lexicon. This is because Thompson assumes that the lexicon has the structure in (5). Given this organization, the lexicon consists of not only morphemes and stems, but also lexical items created by lexical rules. As lexical items produced by lexical rules as a whole are numerous, if not unlimited, the result is an enormous lexicon. Conceptually, this is not a welcome result.[5]

[5] This problem would not arise if the lexical items generated by the rules were not listed in the lexicon.

(5) Thompson 1973: 369



Second, as pointed out earlier (see note 4 of this chapter), a large number of examples cited as RVCs by Thompson are in fact not compounds, if the standard definition of compound and our definition of resultative verb compound (see section 1.2.1) are adopted. Most of the lexical rules proposed by her actually deal with these examples. However, given that the resultative elements in these examples function as suffixes, no lexical rules need to be proposed to account for them. What is needed is just specification of the conditions on the use of these suffixes.

2.1.2 Yafei Li's lexical-semantic account

In this and the next subsection, I will discuss two lexical-semantic accounts in turn, one by Yafei Li (1990, 1993, 1995, 1998, 1999) and the other by Chang (2003). I call these two accounts "lexical-semantic accounts" because both regard RVCs as being formed in the lexicon on the one hand and attach great importance to the use of thematic roles or event roles on the other.

Yafei Li discusses Mandarin RVCs in five important papers (1990, 1993, 1995, 1998, 1999). However, his 1993 paper is intended to account for the difference between Mandarin and Japanese RVCs, his 1998 paper concerns the difference between Mandarin RVCs and the Mandarin *de*-extent construction, and his 1999 paper is mainly about the difference between Mandarin RVCs and the *de*-extent construction on the one hand and the difference between Mandarin RVCs and the English resultative construction on the other. Due to this, I will focus my discussion on Li's 1990 and 1995 papers, as both are exclusively devoted to an account of Mandarin RVCs and they together give a full picture of the account.

Li (1990) makes three important assumptions in accounting for Mandarin RVCs, namely theta-identification, a structured theta-grid, and head feature percolation. Theta-identification is a mechanism of linking two theta-roles together and assigning them to a single argument.[6] Furthermore, Li assumes that the theta-roles assigned by a verb form a structured theta-grid on the basis of "theta-role prominency." That is, the theta-roles assigned have different degree of prominency, with the most prominent theta-role put in the first position in the theta-grid and assigned last and the least prominent role placed in the last position in the theta-grid and assigned first. For example, Li (1990: 179) proposes the following theta-grid for *give*.

(6) give <1, 2, 3>

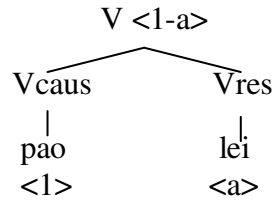
[6] This idea originates in Higginbotham 1985, where theta-identification is argued to be a mode of thematic discharge, in addition to theta-marking and theta-binding. This mechanism is originally proposed to work in syntax under government. Li seems to extend it to the lexicon, although he does not make any explicit remarks on this extension.

In addition, Li assumes a version of head feature percolation. According to him, V1 is the head of an RVC, and "the theta-role prominency of the head must be strictly maintained in the theta-grid of the compound" (Li 1990: 181).

By making the above assumptions, Li (1990) intends to give a successful account of the complex thematic relations expressed by RVCs and of the fact that RVCs often provide more theta-roles than overt NP arguments. This attempt is largely successful as it accounts for the majority of the thematic relations expressed by RVCs. For example, for the RVC in (7), Li (1990: 183) provides the analysis in (8).[7]

(7) Baoyu pao-lei-le.
Baoyu run-tired-ASP
'Baoyu got tired because of running.' (Li 1990: 182)

(8)



In (8), the theta-role assigned by V1 or Vcaus is identified with the theta-role assigned by V2 or Vres (as indicated by "-"), and the coindexed theta-roles (<1-a>) are assigned to the same argument. As a result, we get the reading that the same entity ran and got tired.

For another example, with the assumptions adopted, Li successfully accounts for the first two readings in (1), repeated below as (9), and rules out the fourth reading (cf. Li's (1995) discussion of the readings related to the example *Taotao zhui-lei-le Youyou le* on

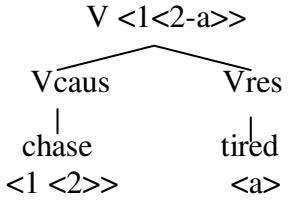
[7] In Li 1990, the theta-roles assigned by V1 are indicated by numerals and those assigned by V2 are symbolized by numerals with a prime. In his 1995 paper, Li makes several technical changes. First, Vcaus and Vres are used to refer to V1 and V2 respectively. Second, the theta-roles assigned by Vcaus are indicated by numerals, but those assigned by Vres are symbolized by small letters. Finally, Li (1995) uses nested angled brackets to represent the structured theta-grid, with one pair of angled brackets for the most prominent theta role, two pairs of angled brackets for the next prominent theta role, etc. For ease of exposition, from now on I will adapt the examples from Li's 1990 paper so as to make them conform to the format adopted in his later work.

p. 256 and p. 257, in which *Taotao* and *Youyou* are equivalent to *Zhangsan* and *Lisi* in (9), respectively.)

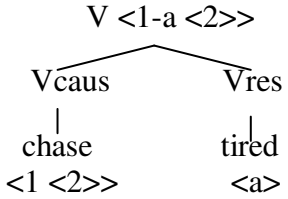
(9) Zhangsan zhui-lei-le Lisi.
Zhangsan chase-tired-PERF Lisi.
(a) 'Zhangsan chased Lisi and as a result Lisi got tired.' (easiest)
(b) 'Zhangsan chased Lisi and as a result Zhangsan got tired.'
(c) 'Lisi chased Zhangsan and Zhangsan got Lisi tired.' (hardest)
(d) *'Lisi chased Zhangsan and Zhangsan got himself tired.'

In the (9a) reading, which is represented in (10) below, the internal argument of V1 or Vcaus is identified with the single argument of V2 or Vres, so we get the object-oriented reading. In the (9b) reading, which is represented in (11), the external argument of Vcaus is identified with the single argument of Vres, which yields the subject-oriented reading.

(10) Representation for the (9a) reading (Li 1995: 256)

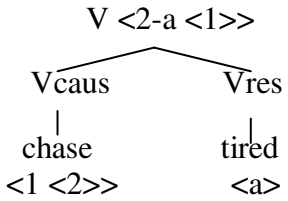


(11) Representation for the (9b) reading (Li 1995: 256)



Furthermore, the fourth reading of (9), which is represented in (12) below, is ruled out because it violates the head feature percolation condition proposed by Yafei Li.

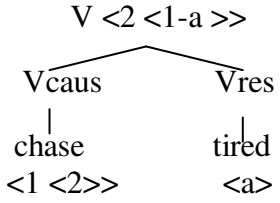
(12) Representation for the (9d) reading



In (12), "1" refers to the theta-role assigned to *Lisi*, and "2," "a," and "2-a" refer to the theta-role(s) assigned to *Zhangsan*. However, in this case, the theta-role prominency of the "head" *zhui* is not maintained, as the most prominent theta-role (i.e. "1") assigned by *zhui* fails to be the most prominent role of the compound.

However, as far as (9) is concerned, there is one problem with Li's (1990) account. That is, the assumption made by Li (1990) incorrectly rules out the third reading, which is represented in (13). In (13), "1," "a," and "1-a" refer to the theta-role(s) assigned to *Lisi*, and "2" refers to the theta-role assigned to *Zhangsan*. As in the case of (12), the representation in (13) violates the head feature percolation condition because the most prominent theta-role (i.e. "1") assigned by *zhui* fails to be the most prominent role of the compound. As a result, (13) is incorrectly ruled out.

(13) Representation for the (9c) reading



Vcaus	Vres
chase	tired
<1 <2>>	<a>

Li (1995) himself recognizes this problem. In an attempt to solving it, he proposes the "causative hierarchy," which resembles Grimshaw's (1990) "aspectual hierarchy." He assumes that "in addition to the theta-roles assigned by lexical words and regulated by the thematic hierarchy, there are two causative roles (c-roles), Cause and Affectee, that arguments acquire when they are associated in a particular way with two causally related predicates" (1995: 265). According to Li, the two causative roles are assigned on the basis of the following conditions.

(14) Conditions on the assignment of Cause and Affectee (Li 1995: 267-268)[8]
   a. The argument in the subject position receives the c-role Cause from a resultative compound only if it does not receive a theta role from Vres.
   b. The argument in the object position receives the c-role Affectee from a resultative compound if it receives a theta role at least from Vres.

Moreover, Li assumes that when the causative hierarchy applies, the thematic hierarchy can be overridden.

Returning to (9), let's see how Li's (1995) further assumption and the assumptions made in the 1990 paper can account for the different readings. First, on the (9a) reading (cf. the representation in (10)), the argument in the subject position does not receive a theta-role from Vres, and thus it can receive the Cause role. The argument in the object position does receive a theta-role from Vres, and therefore it can receive the Affectee role. As in this case the causative hierarchy is maintained and the other assumptions are not violated, the account correctly predicts that this reading is good. Second, on the (9b) reading (cf. the representation in (11)), the argument in the subject position does receive a theta-role from Vres, and the argument in the object position fails to receive a theta-role from Vres. As a result, neither Cause nor Affectee is assigned, and the causative hierarchy does not apply. However, since the head feature percolation condition is obeyed in this case, this reading is correctly predicted to be good. Third, on the (9c) reading (cf. the representation in (13)), the argument in the subject position does not receive a theta-role from Vres, and as a result it can receive the Cause role. The argument in the object position does receive a theta-role from Vres, and thus it can receive the Affectee role. As in this case the causative hierarchy is maintained, the third reading is predicted to be good, although the thematic hierarchy with respect to the head

[8] Cf. also Li 1998: 293, 306-307; 1999: 455.

(i.e. V1) of the compound is violated.[9] As (9) shows, this prediction is borne out. Finally, on the (9d) reading (cf. the representation in (12)), the argument in the subject position receives a theta-role from Vres, and no Cause role can be assigned. The argument in the object position does not receive a theta-role from Vres, and no Affectee role can be assigned, either. Therefore, the causative hierarchy fails to apply here. However, as discussed earlier, this reading violates the thematic hierarchy related to the head of the compound, and it is correctly predicted to be bad.[10]

Although Li's (1990, 1995) proposal can account for part of the ambiguity phenomenon found in RVCs and a number of other data, it has the following problems.[11] First, there are data that Li's account fails to explain. For one thing, as pointed out by Chu-Ren Huang & Lin (1992: 95) and Zou (1994: 278), Li's proposal fails to account for examples like (15).

(15) Zhangsan kan-dun-le dao.
Zhangsan cut-blunt-PERF knife
Literally: 'Zhangsan cut the knife blunt.'

In (15), the internal argument of V1 *kan* 'cut' is not realized at all. This is shown by the fact that the sentence can not mean "Zhangsan cut the knife and as a result the knife became blunt," but "Zhangsan cut (something) with a knife and as a result the knife became blunt." This is inconsistent with Li's underlying assumption that θ-roles have to be exhaustively assigned and identified. For another, Li's analysis fails to account for cases of three overt arguments as in (16), because on Li's assumption an RVC can assign theta-roles to no more

[9] As pointed out by Larry Horn (p.c.), this seems like a case for Optimality Theory, where even the optimal candidate is allowed to violate lower-ranking constraints, as long as higher-ranking ones are satisfied.
[10] Note that for Li's theory to work, he in fact has to make an auxiliary assumption that the thematic hierarchy has to be obeyed when the causative hierarchy does not apply, in addition to his assumption that the thematic hierarchy can be violated if the causative hierarchy applies and is maintained.
[11] I say "part of the ambiguity phenomenon," because, as will be seen shortly, Li's analysis does not give a successful account of why one reading is easier to get than another.

than two arguments (1990: 183). The fact that there are three arguments in (16) and the sentence is grammatical poses a problem to Li's account.

(16) Zhangsan jiao-hui-le Lisi na-shou ge.
Zhangsan teach-know-PERF Lisi that-CL song
'Zhangsan taught Lisi that song, and as a result Lisi learned it.'

The second problem with Li's analysis concerns the conditions on the assignment of causative roles. For one thing, the conditions are stipulative. For another, based on the conditions proposed, subject-oriented sentences like (7) (repeated as (17)) and the (9b) reading (repeated as (18)) do not involve causative relations, because in these cases the subject argument receives a theta-role from Vres, and therefore cannot be assigned the Cause role. This, however, is counterintuitive, because in (17) it is Baoyu's running that got him tired, and in (18) it is Zhangsan's chasing Lisi that got Zhangsan tired. Based on this, *Baoyu* in (17) and *Zhangsan* in (18) arguably receive the "Cause" role, although it is true that in this case it is the running event and the chasing event that serve as the cause for Baoyu's and Zhangsan's becoming tired.

(17) Baoyu pao-lei-le.
Baoyu run-tired-ASP
'Baoyu got tired because of running.' (Li 1990: 182)

(18) Zhangsan zhui-lei-le Lisi.
Zhangsan chase-tired-PERF Lisi.
'Zhangsan chased Lisi and as a result Zhangsan got tired.'

The third problem is that Li (1995: 269-270; cf. also 1999: 484) assumes random theta-role assignment. For one thing, this method of theta-role assignment cannot account for the varying degree of difficulty in obtaining the first three readings of (9). For another, it entails the possibility that for an unambiguous sentence like (19), the human parser may pursue all the other three possible ways of theta-identification (i.e. <1-a <2>>; <2 <1-a>>; <2-a <1>>)

before it gets the correct interpretation, on which the internal argument of V1 is "identified with" the single argument of V2 (<1 <2-a>>).

(19) Zhangsan xi-ganjing-le yifu.
Zhangsan wash-clean-PERF clothes
'Zhangsan washed his clothes clean.'

This manner of processing implies an inefficient parser. However, as far as (19) is concerned, this is counterintuitive, as the sentence is quite easy to process.[12]

Finally, the notion "theta-identification" seems misleading because what is really involved is not theta-identification, but argument sharing. For example, in (19), *yifu* 'clothes" seems to receive two **distinct** theta-roles (one from V1 and the other from V2). The two theta-roles are in no sense identified, or united into one theta-role. Rather, the internal argument of V1 and the single argument of V2 are realized by the same NP *yifu*. Therefore, I think that "argument sharing" is a better term to describe the very important mechanism used by Li.

2.1.3 Chang's lexical-semantic account

Chang (2003) presents a lexical-semantic account by resorting to event roles, event structure representations, and the mapping from event structure representation to syntax. First, in the spirit of Van Valin & LaPolla 1997, Chang assumes the following event structures for Vendler's (1957) four aspectual categories (see note 5 of Chapter 1).

(20) Event structure for different aspectual categories (Chang 2003: 327)
a. State:
predicate' (x) or (x, y)
b. Achievement:
[BECOME **predicate'** (x) or (x, y)]

[12] I plan to conduct experiments in the near future to test the intuition utilized here.

c. Activity:
[**do'** (**predicate'** (x) or (x, y))]
d. Accomplishment:
([**do'** (**predicate'** (x) or (x, y))] CAUSE [BECOME (**predicate'** (y) or (z))])

The parts in boldface and with a prime are constants, the components in uppercase are "modifiers of the predicate in the event structure" (Chang 2003: 327), and the elements in normal typeface are variables.

Furthermore, Chang holds that there are three event roles, "Initiator," "Target of activity," and "Locus of affect," and that they form a hierarchy. He defines the three roles as in (21) and proposes the hierarchy in (22).

(21) Definition of event roles (Chang 2003: 330)
a. Initiator: an entity that is involved in the initiation or bringing about of an object.
b. Target of activity: an entity that undergoes an action.
c. Locus of affect: an entity that is involved in the endpoint or resulting state.

(22) Hierarchy of event roles (Chang 2003: 335)
Initiator > Locus of affect > Target of activity

According to Chang, when two NP arguments in an event structure representation refer to the same entity and only one of them is syntactically expressed, it is the argument with an event role higher in the hierarchy that is syntactically expressed.

Finally, Chang proposes the following linking rules to account for the mapping from event structure representation to syntax.

(23) a. Linking rule 1 (Chang 2003: 332)
The NP argument with the Initiator role is linked to the subject position.
b. Linking rule 2 (Chang 2003: 333)
The NP argument with the Locus of affect role is linked to the position immediately following the second verb.
c. Linking rule 3 (Chang 2003: 333)
The NP argument with the Locus of affect role is linked to the position immediately following the word *ba*.

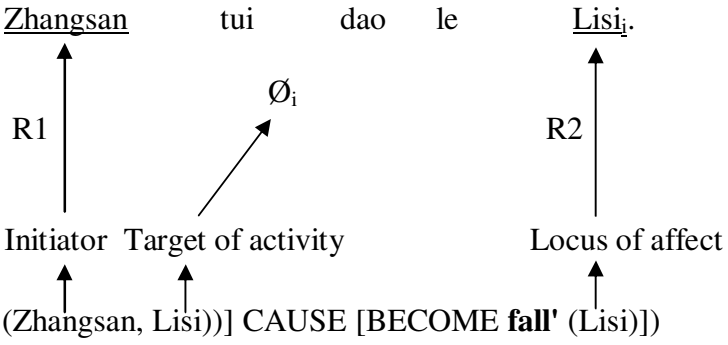
d. Linking rule 4 (Chang 2003: 334)
The NP argument with the Target of activity role is linked to the position immediately following a copied verb.

e. Linking rule 5 (The passivization operation in Chinese) (Chang 2003: 344)
(i) Locus of affect ⇨ subject
(ii) Initiator ⇨ object of *bei* or omission

To illustrate, let's first consider Chang's (2003: 338) account of the sentence in (24a).

(24) a. Zhangsan tui dao le Lisi.
Zhangsan push fall LE Lisi
'Zhangsan pushed Lisi and as a result Lisi fell.'

b.



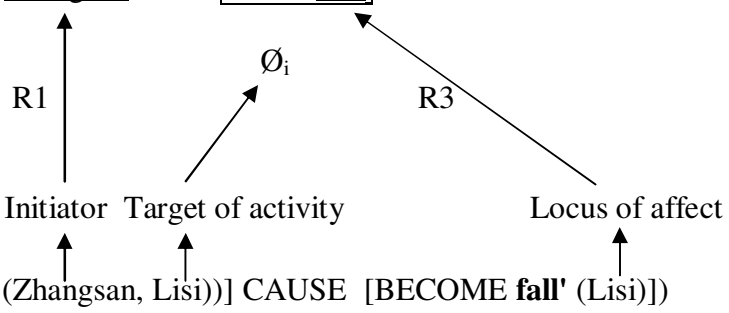
([**do'** (**push'** (Zhangsan, Lisi))] CAUSE [BECOME **fall'** (Lisi)])

The event structure representation in (24b) involves all the three event roles. The Initiator role refers to *Zhangsan*, and the Target of activity role and the Locus of affect role both refer to *Lisi*. By Linking Rule 1 (R1), the Initiator *Zhangsan* is realized as the subject of the sentence, and by Linking Rule 2 (R2), the Locus of affect *Lisi* is realized as the object of the sentence. Although the Target of activity role and the Locus of affect role refer to the same entity, the former is not syntactically expressed because it is lower in the event role hierarchy than the latter. As a result, the Target of activity role "is bound to the NP argument with the Locus of affect role" (Chang 2003: 338).

Next, (25) illustrates the use of Linking Rule 3 in the *ba*-construction.

(25) Chang 2003: 338-339
a. Zhangsan ba Lisi tui dao le.
Zhangsan BA Lisi push fall LE
'Zhangsan pushed Lisi and as a result Lisi fell.'

b. Zhangsan ba $Lisi_i$ tui dao le.



([**do'** (**push'** (Zhangsan, Lisi))] CAUSE [BECOME **fall'** (Lisi)])

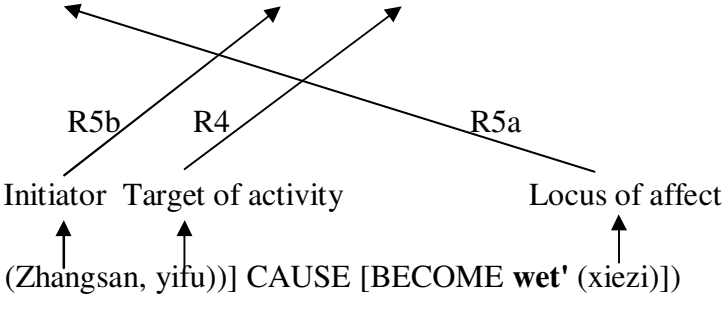
Except for the difference in word order and the use of a different linking rule, (25) is the same as (24).

Finally, (26) illustrates the use of the fourth and the fifth linking rule as it embodies both the verb-copying construction and the passive construction marked by *bei*. By Linking Rule 5a, the Initiator argument *Zhangsan* is realized as the object of *bei*, and by Linking Rule 5b, the Locus of affect argument *xiezi* 'shoe' is realized as the subject of the sentence. In addition, by Linking Rule 4, the Target of activity argument *yifu* 'clothes' is realized as the object of the first verb of the verb-copying construction.

(26) Verb-copying construction + *Bei*-construction (Chang 2003: 346)

a. Xiezi bei Zhangsan xi yifu xi shi le.
shoes BEI Zhangsan wash clothes wash wet LE
'The shoes' getting wet results from Zhangsan's washing clothes.'

b. Xiezi bei Zhangsan xi yifu xi shi le.



([**do'** (**wash'** (Zhangsan, yifu))] CAUSE [BECOME **wet'** (xiezi)])

Although Chang correctly stresses the importance of event roles and linking in accounting for RVCs, there are several problems with his proposal. The first problem is that he fails to make a distinction between general rules and construction-specific rules. In fact,

the first two rules in (23) seem to be general rules and the other three rules are all construction-specific rules. This distinction is necessary because, to account for examples like (26), Chang has to assume that when both construction-specific rules and more general rules apply, the former are ranked over the latter, and the application of the former prevents the application of the latter. In other words, Chang needs to assume that general linking rules are used under a kind of "elsewhere condition" (see Kiparsky 1973 for the original formulation of this condition). This is because if no such assumption were made, nothing would prevent the application of the first two rules in (23). The application, however, would lead not to the form in (26a), but to an active sentence *Zhangsan xi-shi-le xiezi* 'Zhangsan washed his shoes wet.'

The second problem concerns Chang's event role hierarchy. The hierarchy is proposed to account for those cases where two arguments refer to the same entity. Recall that Chang assumes that when this occurs, the argument with a higher event role is syntactically realized, and the one with a lower event role is not syntactically expressed. This assumption seems rather unnatural given that in (24), for example, *Lisi* is interpreted not only as the semantic argument of *dao* 'fall,' but also as the semantic argument of *tui* 'push.' Therefore, it seems more natural to say that both the argument of *dao* and the external argument of *tui* are realized, but realized by the same NP.

The third problem is that given Chang's definition of the three event roles, it is not clear how to analyze sentences like (27) below.

(27) Zhangsan e-bing-le.
Zhangsan hungry-sick-PERF
'As a result of Zhangsan's being hungry, he became sick.'

The crucial question here is whether *Zhangsan* in the sentence bears both the Initiator role and the Locus of affect role, or bears the latter role alone. On the one hand, if it bears the Locus of affect role alone, *Zhangsan* should be realized as the (surface) object of the sentence. However, this is inconsistent with the fact that *Zhangsan* is realized as the surface subject in (27). On the other hand, if *Zhangsan* bore both the Initiator role and the Locus of affect role, Chang's event role hierarchy and Linking Rule 1 would give rise to the correct form in (27). Crucially, however, it seems that *Zhangsan* does not count as an Initiator by Chang's definition in (21), since the entity denoted is not "an entity that is involved in the **initiation or bringing about of an object**" (emphasis added). Therefore, sentences like (27) pose a challenge to Chang's account, particularly his definition of event roles.

Finally, as Chang implicitly assumes a monostratal representation of syntax, examples like (28) below also pose a problem to his account, particularly his formulation of the linking rules.

(28) Zhuozi ca-ganjing-le.
table wipe-clean-PERF
'The table was wiped clean.'

Clearly, *zhuozi* 'table' in (28) bears the Locus of affect role. Linking Rule 2 predicts that it should be realized as the surface object of the sentence. This prediction, however, is not borne out, given that *zhuozi* in (28) is in subject position. To account for examples like this, at least the second linking rule needs to be reformulated.[13]

[13] Related to (28) is the issue of event structure representation. All the examples discussed in Chang 2003 are given a complex event structure representation in the form of (20d). However, Chang does not discuss examples like (28), and it is not clear which event structure representation he will assign to such sentences, as the Initiator in this case is not overtly expressed.

2.2 Syntactic accounts

After examining three lexical accounts of RVCs, we now turn to three accounts which view all RVCs as syntactically derived. The three accounts to be discussed in turn are Sybesma's small clause account, Zou's syntactic account, and Jimmy Lin's event-syntactic account.

2.2.1 Sybesma's small clause account

In the spirit of Hoekstra (1988), Sybesma (1991, 1993, 1999) proposes a small clause account of Mandarin RVCs, which he calls "cluster resultatives." According to him, RVCs are of three types: transitive, intransitive (or "ergative"), and causative, although "intransitive" is often used to mean "unergative," which is opposed to "ergative" or "unaccusative." These types are illustrated in (29-31) and their generic structures are given in (32), in which "SC" means "small clause."

(29) Transitive RVCs
Zhangsan ku-**shi**-le **shoujuan**.
Zhangsan cry-wet-PERF handkerchief
'Zhangsan cried the handkerchief wet.'

(30) Intransitive or ergative RVCs
a. **Zhangsan** ku-**lei**-le.
Zhangsan cry-tired-PERF
'Zhangsan cried himself tired.'
b. **Shoujuan** ku-**shi**-le.
handkerchief cry-wet-PERF
'The handkerchief was cried wet.'

(31) Causative RVCs
Na-jian shi ku-**lei**-le **Zhangsan**.
that-CL matter cry-tired-PERF Zhangsan
'That matter got Zhangsan tried from crying.'

(32) Sybesma 1999: 96

a. Transitive result structure
NP [$_{VP}$ V [$_{XP}$ le [$_{SC}$ NP YP]]]

b. Intransitive result structures
e [$_{VP}$ V [$_{XP}$ le [$_{SC}$ NP YP]]]

c. Causative resultatives
NP CAUS [$_{VP}$ V [$_{XP}$ le [$_{SC}$ NP YP]]]

Given the representations in (32), the examples in (29), (30) and (31) thus have the following D-structures respectively.

(33) a. Structure of (29)
Zhangsan [$_{VP}$ ku [$_{XP}$ le [$_{SC}$ **shoujuan shi**]]]

b. Structure of (30)
e [$_{VP}$ ku [$_{XP}$ le [$_{SC}$ **Zhangsan lei**]]]
e [$_{VP}$ ku [$_{XP}$ le [$_{SC}$ **shoujuan shi**]]]

c. Structure of (31)
Zhe-jian shi CAUS [$_{VP}$ ku [$_{XP}$ le [$_{SC}$ **Zhangsan lei**]]]

The structures in (32) and (33) show that regardless of the type of an RVC, V2 and the surface subject (when the RVC is intransitive) or the surface object (when the RVC is transitive) form a small clause at the D-structure. The two components of the small clause are indicated with boldface in (29-31) and (33). The structures in (32-33) also show that causative RVCs differ from the other two types in that they have an abstract CAUSP projection headed by CAUS. In addition, (32-33) indicate that all intransitive RVCs have an "ergative" or unaccusative D-structure. Sybesma (1991, 1999) adduces two pieces of evidence for this position. First, as shown in (34), only unaccusative verbs in Mandarin allow a postverbal subject. Sybesma observes that intransitive RVCs allow subject postposing as well. One of the examples given by him is (35) below, which shows that *ku-lei* 'cry-tired' allows its subject to be placed after the verb. This suggests that the intransitive *ku-lei* in (30a) is unaccusative.

(34) a. Cun-li si-le yi-tou niu.
village-inside die-PERF one-CL cow
'A cow died in that village.'
b. *di-shang pa-le yi-tiao she.
ground-on crawl-PERF one-CL snake
Intended: 'A snake crawled on the ground.'

(35) Ku-lei-le bu shao ren.[14]
cry-tired-LE not few people
'Many people cried themselves tired.' (Sybesma 1999: 43)

The second piece of evidence is that intransitive RVCs can be causativized. For example, according to Sybesma, (31) is formed by embedding *ku-lei* in (30a) under a higher CAUS predicate. He reasons that only unaccusative verbs allow such embedding, and thus the grammaticality of (31) shows that *ku-lei* in (30a) is unaccusative.

Sybesma (1993, 1999) also discusses the ambiguity phenomenon in sentences like (36) below.[15]

(36) Baoyu qi-lei-le nei-pi ma.
Baoyu ride-tired-LE that-CL horse
(a) 'Baoyu rode—the horse got tired as a result.'
(b) 'Baoyu rode—Baoyu got tired as a result.' (Sybesma 1999: 50; cf. 1993: 129)

To account for the ambiguity in (36), Sybesma proposes that *lei* 'tired' in the (a) reading is a one-place predicate, and *lei* in the (b) reading is a two-place predicate. According to him, (36) has the structure in (37a) on the object-oriented reading, but has the structure in (37b) on the subject-oriented reading.

[14] Sybesma (1999) cites (35) as grammatical. However, without any preverbal elements, particularly a locative phrase, the sentence sounds a bit odd. To me, (i) is more natural than (35).
(i) Zai Zhangsan-de zangli-shang ku-lei-le bu shao ren.
at Zhangsan-GEN funeral-top cry-tired-PERF not few people
'At Zhangsan's funeral many people cried themselves to exhaustion.'

[15] (36) does not have the *scare* reading because this reading requires *Baoyu* to be interpreted as the internal argument of V1 *qi* 'ride,' a requirement that cannot be met for semantic and pragmatic reasons. Furthermore, although Sybesma does not discuss the ambiguity with respect to *zhui-lei* 'chase-tired,' it is clear that he must give the third reading of (1) a structure similar to the one for (31).

(37) a. Baoyu qi [nei-pi ma lei]
Baoyu ride that-CL horse tired
b. qi [Baoyu lei nei-pi ma]
ride Baoyu tired that-CL horse

The former structure is the same as that for a transitive RVC. In this structure, *lei* 'tired' is predicated of *nei-pi ma* 'that horse,' so we get the object-oriented reading. The structure of (37b), however, is the same as that for an intransitive RVC. In this case, *qi* 'ride' is an unaccusative verb, *Baoyu* is the external argument of *lei*, and *nei-pi ma* is its internal argument. According to Sybesma, *lei* in (37b) means something similar to English *tired of*, and as a result *Baoyu lei nei-pi ma* means "Baoyu is/was tired of the horse."[16] Furthermore, given that *Baoyu* in (37b) is part of the complement of *qi*, Sybesma (1999: 58; cf. 1993: 140) concludes that the Direct Object Restriction on resultatives (see section 1.1), which he calls "Simpson's Law" (cf. Simpson 1983), is "strictly abided by in Chinese" and "does *not* have to be parameterized" (emphasis original).

There are two problems with Sybesma's account. First, there is no syntactic evidence that V2 and the subject of which it is predicated form a small clause or any syntactic constituent. For example, there is no syntactic evidence that *shi* 'wet' and *shoujuan* 'handkerchief" in (29), repeated below as (38), form a constituent with the perfective marker *-le* being outside of this constituent.[17]

(38) Zhangsan ku-**shi**-le **shoujuan**.
Zhangsan cry-wet-PERF handkerchief
'Zhangsan cried the handkerchief wet.'

[16] Note that although *Baoyu is/was tired of the horse* is a grammatical string in English, neither *Baoyu lei nei-pi ma* nor *Baoyu lei-le nei-pi ma* is grammatical in Mandarin. This is because in Modern Chinese, except for the frozen form *lei-ren* (tired-person) 'make one tired, be tiring,' *lei* cannot be used transitively. As a result, *Baoyu lei nei-pi ma* cannot be said to mean the same as English *Baoyu is/was tried of the horse*.
[17] See Neeleman & van de Koot (2002: 6) and Rothstein (2004: 61-62) for evidence from English that the result phrase and the phrase of which it is predicated do not form a constituent.

The second problem with Sybesma's account concerns his explanation of the ambiguity phenomenon found with RVCs. Recall that he explains the ambiguity in (36) by proposing that there are two *lei*'s 'tired' (one being a one-place predicate and the other a two-place predicate) and two *qi*'s 'ride' (one being transitive and the other unaccusative). However, he does not provide any evidence for his claim that there are two different *qi*'s. As for *lei*, Sybesma provides the example in (39) (with translation added) to show that although there is judgment variability, as indicated by him with the "%" symbol, it is at least possible to use *lei* as a two-place predicate. However, all the speakers I consulted with found (39) bad. In fact, even if (39) were grammatical, *lei* in (39) is arguably a one-place predicate. As shown in (40), *dui nei-pi ma* is optional, which suggests its adjunct status. If so, *wo* is the only argument of *lei* in (39). Therefore, Sybesma's account of ambiguity in some sentences containing an RVC is not convincing.

(39) %Wo dui nei-pi ma lei-le.
I towards that-CL horse tired-LE
'I've become tired of the horse.' (Sybesma 1993: 138; 1999: 56)

(40) Wo lei-le.
I tired-PERF
'I've become tired.'

2.2.2 Zou's account

The second syntactic account to be examined is Zou's (1994) analysis.[18] According to Zou, the V1 and V2 of an RVC each project an independent VP. Assuming the VP-internal

[18] Zou himself calls his account a "lexical-syntactic" analysis because it draws insights from Hale & Keyser's (1993) work. However, the account is syntactic in nature because Zou analyzes all RVCs as being syntactically formed.

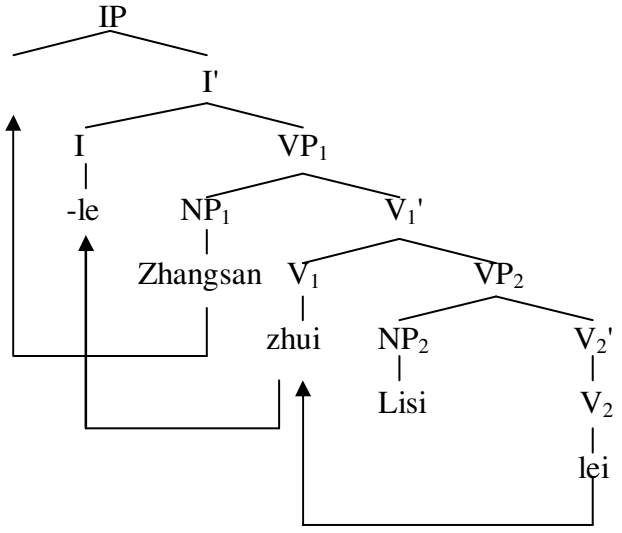
subject hypothesis, he proposes the structures in (42) for the three readings in (1), repeated below as (41).

(41) Zhangsan zhui-lei-le Lisi.
Zhangsan chase-tired-PERF Lisi.
(a) 'Zhangsan chased Lisi and as a result Lisi got tired.' (easiest)
(b) 'Zhangsan chased Lisi and as a result Zhangsan got tired.'
(c) 'Lisi chased Zhangsan and Zhangsan got Lisi tired.' (hardest)
(d) *'Lisi chased Zhangsan and Zhangsan got himself tired.'

(42) Zou 1994: 279[19]
a. [$_{IP}$ [$_{I}$ -le] [$_{VP1}$ [$_{NP1}$ Zhangsan] [$_{V'1}$ [$_{V1}$ zhui] [$_{VP2}$ [$_{NP2}$ Lisi] [$_{V'2}$ [$_{V2}$ lei]]]]]]
b. [$_{IP}$ [$_{I}$ -le] [$_{VP1}$ [$_{NP1}$ Zhangsan] [$_{V'1}$ [$_{V1}$ lei] [$_{VP2}$ [$_{NP2}$ pro] [$_{V'2}$ [V2 zhui] [$_{NP3}$ Lisi]]]]]]
c. [$_{CP}$ [$_{IP}$ [$_{I}$ –le] [$_{VP1}$ [$_{NP1}$ Lisi] [$_{V'1}$ [$_{V1}$ lei] [$_{VP2}$ [$_{NP2}$ pro] [$_{V'2}$ [$_{V2}$ zhui] [$_{NP3}$ Zhangsan]]]]]]]

Zou holds that the surface structure in (41) is derived through verb-raising and NP-movement. To get (41) from (42a), *lei* incorporates into *zhui* and the two together form a V-V compound *zhui-lei*. Then this compound raises to I and combines with *-le*. Finally, Zhangsan moves to the Spec of IP to get Case from I through Spec-Head agreement. This derivation is shown in the tree diagram in (43).

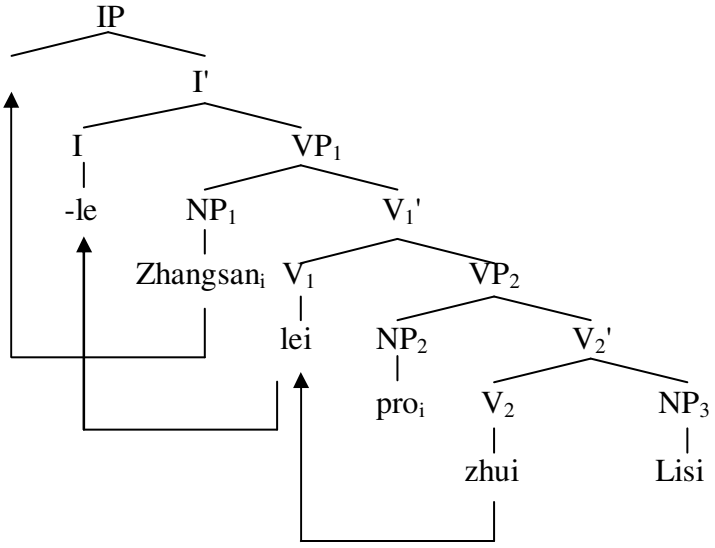
(43) Tree diagram for the (41a) reading (cf. (42a))



[19] Zou uses "CP" to mean Causative Phrase.

To derive (41) from (42b), *zhui* first raises to combine with *lei*. Then the resulted *zhui-lei* raises to combine with *-le*. Finally, *Zhangsan* moves to Spec,IP to get Case. The whole process is shown in (44).[20]

(44) Tree diagram for the (41b) reading (cf. (42b))

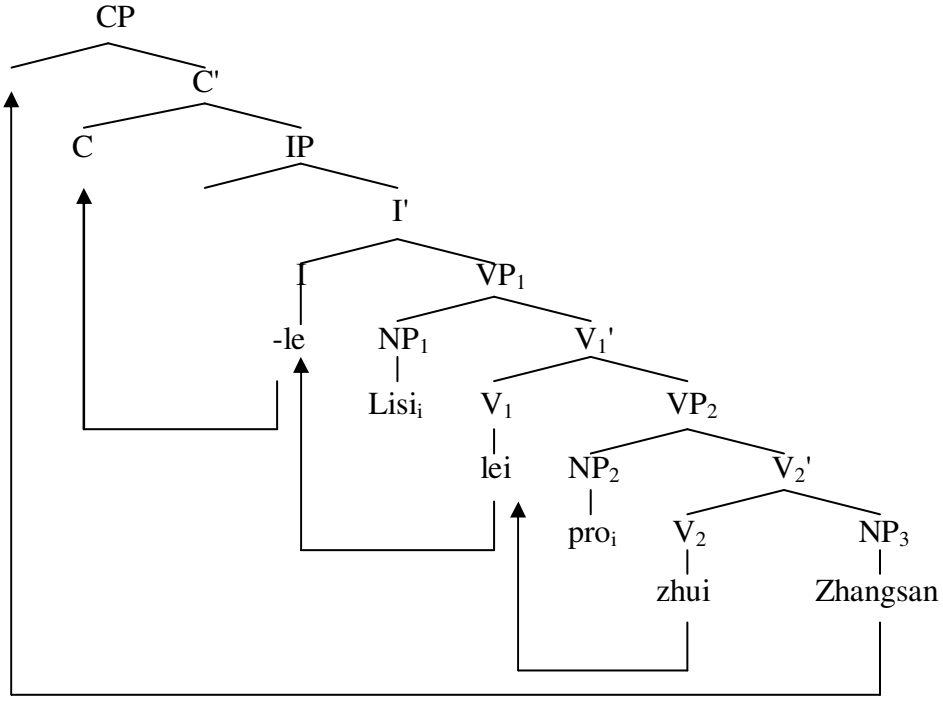


Finally, to get (41) from (42c), *zhui* incorporates into *lei*, and the resulted *zhui-lei* raises to I and combines with *-le*. Then *zhui-lei-le* further raises to the head of the Causative Phrase (CP) to support the abstract causative head. Finally, *Zhangsan* moves to Spec,CP.[21] The whole derivation is shown in (45) below.

[20] Zou does not explicitly discuss how to get, from the representation in (44), the interpretation that it is Zhangsan rather than Lisi that got tired from chasing. Likewise, he is not explicit about how to get, from the structure in (45) below, the interpretation that it is Lisi that got tired. Apparently, Zou assumes that the NP of which *lei* is predicated must c-command *lei*. In (44), *Zhangsan* c-commands *lei*, so we get the interpretation that Zhangsan got tired. In (45), *lei* is c-commanded by *Lisi,* which gives rise to the interpretation "Lisi got tired."

[21] According to Zou (1994: 284), this movement is driven by the requirement of "checking" between the head and the specifier of the Causative Phrase (CP). As C—the head of CP—has the feature [+CAUSE] and "the Causer *Zhangsan*" shares this feature, *Zhangsan* has to move to Spec,CP so as to be checked in the checking domain of C.

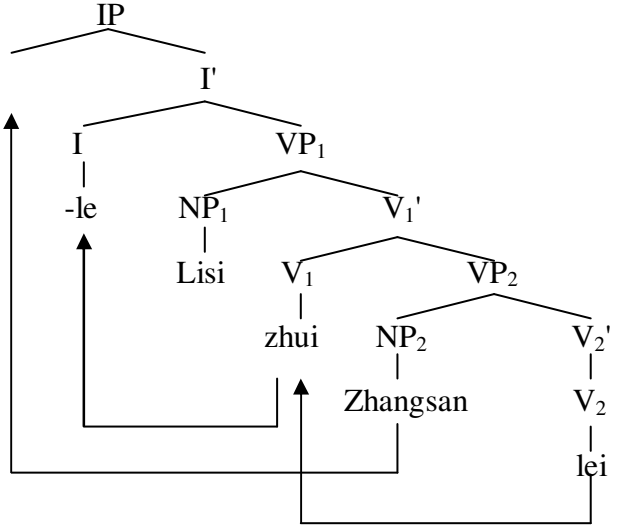
(45) Tree diagram for the (41c) reading (cf. (42c))



In addition to giving an account of the three good readings of (41), Zou also offers an explanation of why the fourth reading is bad. He proposes that this reading has the structure in (46). For ease of processing, I replace this structure with a tree diagram in (47).

(46) Zou 1994: 284
*[$_{IP}$ Zhangsan$_i$ [$_I$ zhui$_j$-lei$_k$-le] [$_{VP1}$ [$_{NP1}$ Lisi] [$_{V'1}$ [$_{V1}$ t$_j$] [$_{VP2}$ t$_i$] $_{V'2}$ [$_{V2}$ t$_k$]]]]]]

(47) Tree diagram for the (41d) reading



According to Zou (1994: 284), the fourth reading is bad because, to get this reading from the structure in (47), *Zhangsan* has to move to the Spec position of IP by crossing *Lisi*. This movement, however, would violate Rizzi's (1990) Relativized Minimality Condition,[22] because *Lisi* is "a typical potential governor" for the trace of *Zhangsan*. Therefore, the fourth reading of (41) is ruled out.

There are two main problems with Zou's account. First, the four different structures proposed in accounting for the ambiguity in (41) are *ad hoc* in nature. For example, there is no evidence that *zhui* is in V_1 position on the (41a) reading and in V_2 position on the (41b) reading. Likewise, there is no evidence that *lei* is in the V_2 position on the (41a) reading and in the V_1 position on the (41b) reading. For another example, on Zou's account, *Lisi* and *lei* form a constituent on the (41a) reading whereas *Lisi* and *zhui* form a constituent on the (41b) reading. However, as pointed out earlier with respect to Sybesma's account, there is no evidence that the result element and the NP of which it is predicated form a constituent, no matter what this constituent is called. Therefore, there is no evidence that *Lisi* and *lei* form a constituent on the (41a) reading. As far as I can tell, neither is there any evidence that *Lisi* and *zhui* form a constituent on the (41b) reading or any other reading.

Zou might argue that all the four different structures proposed are D-structures, and thus they may diverge from their S-structure. Further, failure to meet constituency tests, for example, does not rule out the possibility that some constituency is formed at D-structure. I certainly agree that D-structure is an abstract representation. However, it is precisely because

[22] The Condition goes as follows:
(i) Relativized Mimimality (Rizzi 1990: 7)
X α-governs Y only if there is no Z such that
(a) Z is a typical potential α-governor for Y,
(b) Z c-commands Y and does not c-command X.

of its abstract nature and its unfalsifiability that one should be careful in using it. Most linguists would agree that language is abstract to some extent. However, any abstraction in linguistic analysis should still have an empirical basis. It is not difficult to propose an abstract complex D-structure to explain some linguistic fact(s). The crucial question is whether there is any good evidence that motivates this D-structure. As far as Zou's four structures related to the ambiguity in (41) are concerned, Zou uses D-structure on an *ad hoc* basis. Different D-structures are proposed simply to get the different good readings and to rule out the bad reading. Crucially, however, there is no syntactic evidence for the D-structures proposed.

The second main problem with Zou's account is that the way he rules out the fourth reading of (41) also incorrectly rules out the third reading. Recall that Zou excludes the fourth reading by resorting to Rizzi's Relativized Minimality Condition. However, to get the third reading of (41), *Zhangsan* in (45) has to cross *Lisi* to arrive at the landing site Spec,CP. By Zou's logic, this will violate Rizzi's Relativized Minimality Condition because *Lisi* is a potential governor of the trace of *Zhangsan*. Therefore, the third reading will in fact be incorrectly ruled out by the same condition.[23]

2.2.3 Jimmy Lin's event-syntactic account

The third syntactic account to be discussed is Jimmy Lin's (2004) "event-syntactic" account. I use "event-syntactic" to refer to Lin's account because the central claim made by Lin is that "event structure *is* syntactic structure" (2004: 29, emphasis original). According to Lin (2004: 47; cf. 2004: 48, 53, 178), "[a]rgument structure can be reduced to event

[23] In addition to the two main problems mentioned, there is also a problem with Zou's representation of the fourth reading of (41). That is, as the third reading and the fourth reading are of the same nature, it seems unreasonable to propose a Causative Phrase for only one of them, namely the third reading.

structure," and "event structure is represented syntactically." Therefore, "argument structure, syntactic structure, and event structure would all be the same" (Lin 2004: 29).

On Lin's view, event structure is a decompositional representation of events based on three syntactically encoded conceptual primitives or "verbalizing heads." These three primitives are licensors of events representing activity, inchoativity and stativity, and they are denoted by υ_{Do}, υ_{δ}, υ_{BE} respectively. In addition to these three primitives or functional elements, Lin also posits two "categoryless" ontological types of "verbal roots," namely states and activities, which are denoted by ${}^{s}\sqrt{}$ and ${}^{a}\sqrt{}$ respectively.[24] "Verbal roots serve as event modifiers that elaborate on the basic eventive readings introduced by the verbalizing heads" (Lin 2004: 32). Both verbalizing heads and verbal roots are basic components of event structure. Their combination gives rise to verb meanings. Furthermore, the construction of meaning or the process of event composition is constrained by independently-motivated principles of syntax such as control and movement.

Furthermore, Lin makes the following assumptions. First, the external argument is licensed by the head of a voice phrase (VOICEP), and then it moves up to the Specifier position of a tense phrase (TP), a projection which is left out by Lin in the trees to be examined below. Second, it is possible for aspectual projections to intervene between TP and VOICEP.

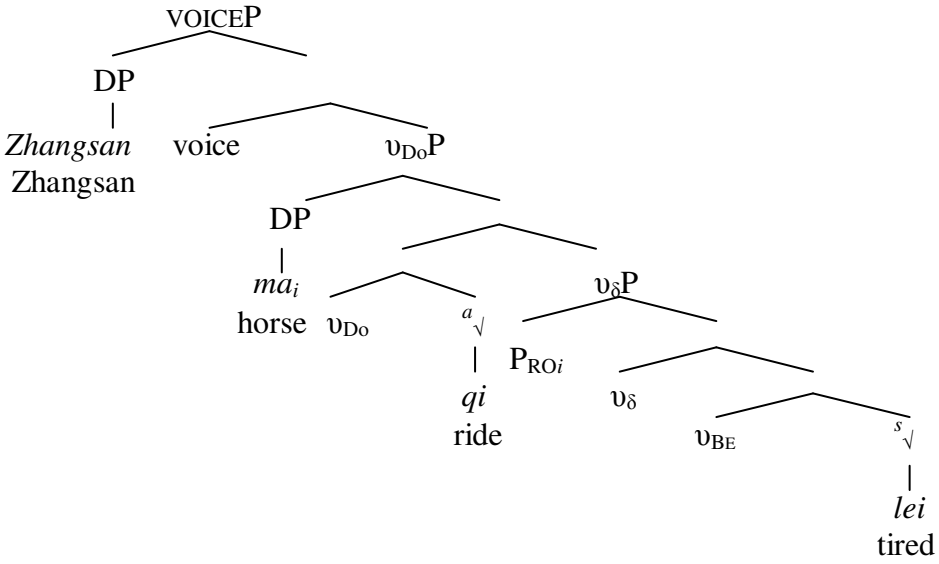
[24]According to Lin, verbal roots in themselves are categoryless and they gain their verbal status by association with a verbalizing head.

Couched in the framework summarized above, Lin 2004 gives an event-syntactic account of Mandarin RVCs. Because Lin analyzes the ambiguity phenomenon found with RVCs, I will focus my discussion on this aspect of his account. First of all, Lin discusses the ambiguity in (48).[25]

(48) Zhangsan qi lei le ma
Zhangsan ride tired LE horse
'Zhangsan rode the horse, and …'
(a) 'the horse got tired as a result.'
(b) 'Zhangsan got tired as a result.' (Lin 2004: 113)

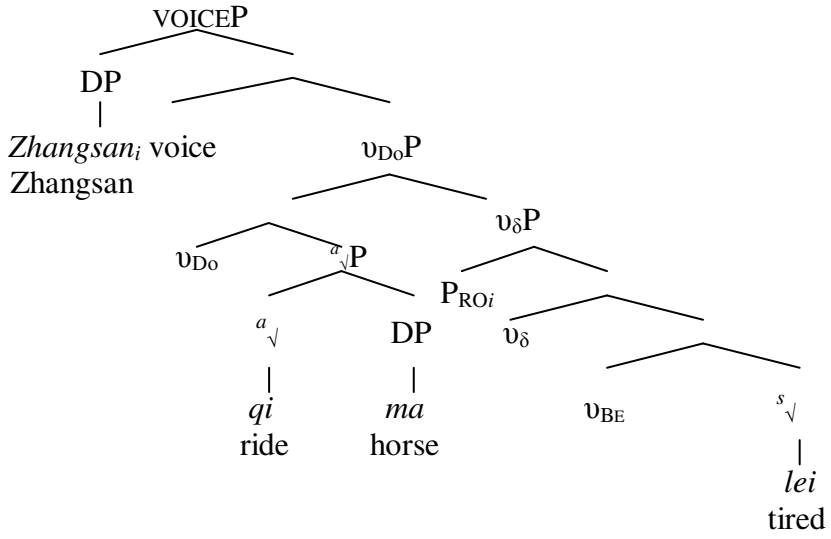
(48) has two readings, with the first being object-oriented and the second subject-oriented. For these two different readings, Lin proposes the following different structures.

(49) Representation for the (48a) reading (Lin 2004: 115)



[25] Tones in the examples and tree diagrams cited from Lin 2004 are omitted.

(50) Representation for the (48b) reading (Lin 2004: 115)



In (49), the nearest controller of *lei* 'tired' is *ma* 'horse,' and this gives rise to the object-oriented reading. However, in (50), the closest controller of *lei* is *Zhangsan*, which gives rise to the subject-oriented reading.

Note that *ma* 'horse' is placed in two different positions in (49) and (50). According to Lin, there are three classes of direct objects which are licensed by different elements. In the case of causative change of state verbs, their objects are structurally licensed by υ_{δ}. In the case of verbs denoting activities with affected arguments, their objects are structurally licensed by υ_{Do}. And in the case of verbs denoting pure activities, their objects are idiosyncratically licensed by an activity root. In the object-oriented reading shown in (49), *ma* is an affected argument, so it is placed in Spec,υ_{Do}P. However, in the subject-oriented reading shown in (50), *ma* is not an affected argument and the verb involved is not a change of state verb, so *ma* is idiosyncratically licensed by the activity root. In this case, *ma* is too embedded to c-command the PRO, so the subject-oriented reading is achieved.

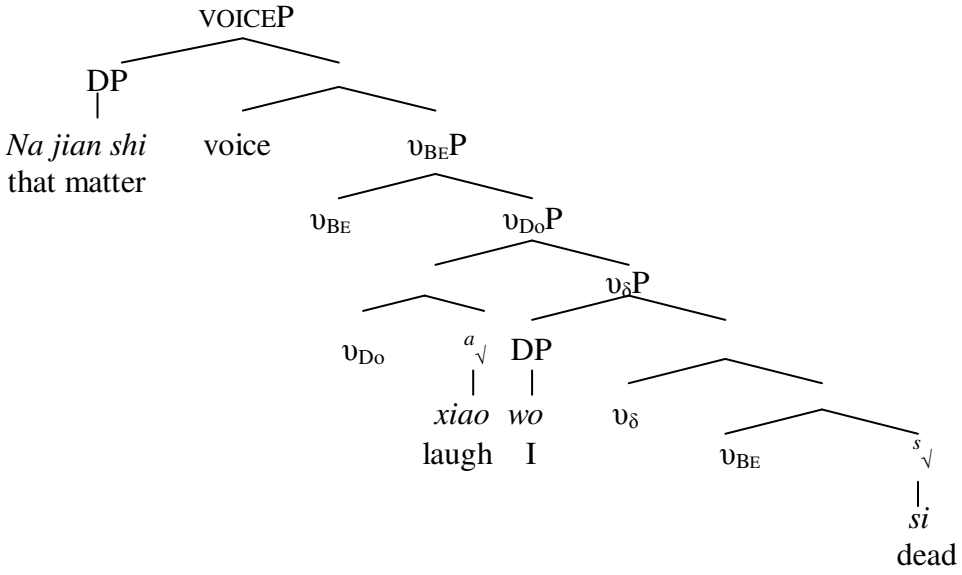
In addition to giving an analysis of (48), Lin (2004) also discusses the three-way ambiguity in (51), which is analogous to the example in (41).

(51) Wo zhui lei le huli
I chase tired LE fox
(i) 'I chased the fox, and the fox got tied as a result.'
(ii) 'I chased the fox, and I got tired as a result.'
(iii) 'The fox chased me, and [the] fox got tired as a result.'
(iv) *'The fox chased me, and I got tired as a result.' (Lin 2004: 140)

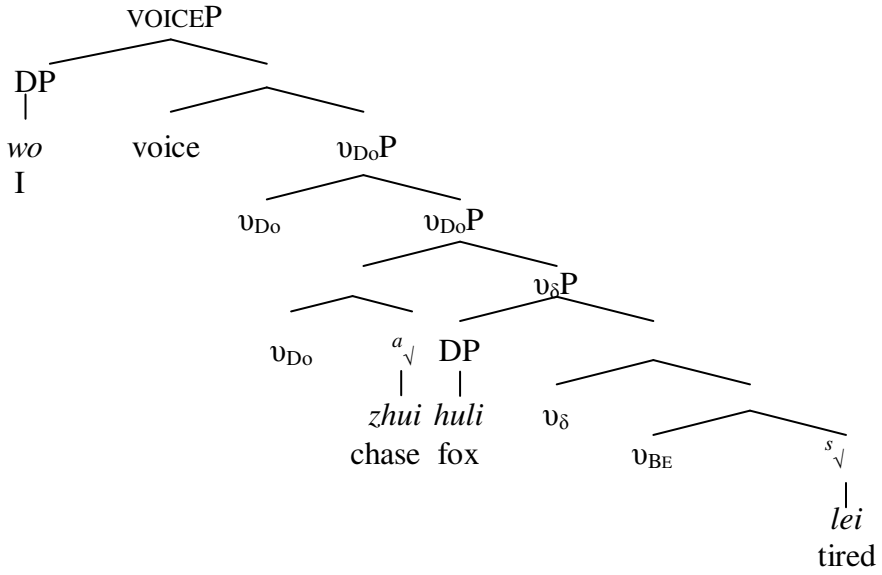
The first two readings are similar to those found with the example in (48). As for the third reading, although Lin does not give a structure, he does mention that it will have a similar structure to the one in (53), which is proposed for (52), except that the outermost verbalizing head is not a υ_{BE}, but a υ_{Do}. For ease of discussion, I present the structure for the (51iii) reading in (54) below on the basis of Lin's proposal.

(52) Na jian shi xiao si le wo.
that CL matter laugh dead LE I
'That matter caused me to laugh to death.' (Lin 2004: 135)

(53) Structure for (52)



(54) Structure for the (51iii) reading



The outermost verbalizing head in (54) is a υ_{Do} because, according to Lin (2004: 140), the third reading of (51) is best paraphrased as "'Something I did (e.g., running away) caused the fox to become tired from chasing me.'" Lin further points out that the structure in (54) also rules out the fourth reading because, on the "non-agentive, causative interpretation," the 'fox,' not a PRO, is in the subject position of the result phrase.

Appealing as Lin's account appears, it has at least four problems. First, the simplicity of Lin's account is just apparent. Lin (2004: 29, 152) claims that his hypothesis that event structure, argument structure and syntactic structure are all the same would dramatically simplify a theory of argument structure.[26] In particular, there would be no need for a distinct lexical semantic representation and a linking theory. However, what Lin overlooks is that by proposing a syntactic structure composed of conceptual primitives and verbal roots, one or

[26] Given the tree diagrams examined, if his claim that event structure is syntactic structure is to be maintained at all, Lin's "syntactic structure" can only be "D-structure," an abstract level of representation. Given that Lin views event composition as construction of meaning, and regards syntactic structure as composed of conceptual primitives and verbal roots, what Lin calls "syntactic structure" is simply semantic structure, and his syntactic trees are simply semantic trees.

more derivations may be involved to get the "S-structure." In fact, in some cases the derivation can be very complex. For example, although Lin does not discuss much about how to get (48) from the structure in (49) and (50), it is clear from his discussion of some other examples that the lowest verbalizing head υ_{BE} has to undergo successive movement through υ_{δ}, υ_{Do}, and voice up to Aspect, which is omitted by Lin in (49) and (50). In the movement, the verbal roots are "pied-piped along" (Lin 2004: 116). Furthermore, *Zhangsan* has to move up to the Specifier position of TP, which is omitted by Lin as well. This example shows that the complexity of language with respect to syntax and semantics does not go away by adopting Lin's framework and in fact it just reveals itself in different ways. Therefore, Lin's account is much more complex than it appears.[27]

Second, Lin's conflation of event structure and syntactic structure is an unattractive move. From a theoretic point of view, this conflation will put too much explanatory burden on syntax, and as a result makes the syntax extremely complicated. From the perspective of language acquisition, Lin's proposal entails that syntax is very difficult to acquire. This, however, is inconsistent with the fact that the syntax of a language, particularly its basic order, is acquired very early and fairly easily. Furthermore, from an empirical point of view, Lin's hypothesis that event structure is syntactic structure leads to unreasonable results. For example, by this hypothesis, Lin (2004: 35-36) proposes that *John swept the floor* has two different "syntactic structures" because, according to Lin, the sentence is ambiguous. On one reading, John's sweeping the floor is purely an activity; on the other reading, John's sweeping the floor brings about a change in the floor. Lin (2004: 35) holds that "[t]hese two readings arise from a syntactic ambiguity." On the former reading, *the floor* is

[27] Cf. also the complex derivation for *John broke the window* in Lin 2004: 45-46.

idiosyncratically licensed by the activity root; on the latter reading, *the floor* is structurally licensed by υ_{Do}. This reasoning and conclusion, however, is not reasonable to me because, crucially, there is no evidence that the sentence *John swept the floor* is **structurally** ambiguous.[28] For another example, Lin (2004: 71) proposes that *John read the poem* and *Mary ate the cake* have different "syntactic structures" on the basis of the fact that the poem is not affected by the former activity, but the cake is affected by the latter action. However, although there is a difference between a poem-reading event and a cake-eating event, there is no evidence that the two sentences under comparison are **syntactically** different. Therefore, I do not think that it is an attractive idea to encode the semantic difference in "syntax," or to propose different structures based on this difference.[29]

On a more general level, there is a major mismatch between event structure and overt syntactic structure, and this fact itself casts doubt on the claim that event structure is syntactic structure. For example, a sentence like *John broke the window* has a simple syntactic structure, although it has a complex event structure. For another example, *John shouted, which made his throat hoarse*, *John shouted and as a result his throat became hoarse* and *John shouted his throat hoarse* arguably involve the same event structure, but they clearly have different syntactic structures. While one can propose a different level of "syntactic structure" as Lin does to maintain isomorphism between event structure and syntactic

[28] In fact, as Larry Horn (p.c.) pointed out to me, there is evidence from "identity of sense" test (see Zwicky & Sadock 1975) that *John swept the floor* does not involve ambiguity. With respect to this test, there is a stark contrast between *John swept the floor* and a truly ambiguous sentence like *John saw her duck*. That is, *John saw her duck, and so did Mary* does not allow any crossed readings. For example, this sentence cannot mean "John saw her duck, the swimming bird, and Mary saw her plunge under water." In contrast, *John swept the floor, and so did Mary* does allow crossed non-matching understandings. For example, this sentence can mean "John swept the floor, which brought about a change in the floor, and Mary swept the floor, which did not result in a change." This shows that unlike *duck* in *John saw her duck*, *sweep* in *John swept the floor* is not ambiguous.

[29] Cf. also Lin's (2004: 109-110) proposal of two "syntactic structures" for *Zhangsan kan-le shu* [Zhangsan cut-PERF tree] 'Zhangsan cut the trees.'

structure, this proposal is unattractive for the reasons mentioned in the preceding paragraph and for the reason that the mismatch between event structure and overt syntactic structure makes the proposal not well-motivated.

The third problem with Lin's account is that it is not clear how Lin's analysis of the ambiguity phenomenon found with Mandarin RVCs can account for why the first reading of (51) is easier to get than the second reading.

Finally, Lin's proposal that the outermost verbalizing head in (54) is a υ_{Do} is not well-motivated. This is because he incorrectly claims that the third reading of (51) is best paraphrased as "'Something I did (e.g., running away) caused the fox to become tired from chasing me.'" In fact, what is characteristic of the *scare* reading of (51) is that the argument in the subject position, not the action performed by the entity denoted by the NP in the subject position, is interpreted as the Causer of the result. Given this, I think it is more reasonable to propose that the outermost verbalizing head in (54) is a υ_{BE}, not a υ_{Do}.

2.3 Huei-Ling Lin's lexical-syntactic account

After discussing three lexical accounts and three syntactic accounts, we will examine in this section a mixed account, namely Huei-Ling Lin's (1996, 1998) lexical-syntactic account. Lin treats RVCs as compounds, which are, by definition, words formed in the lexicon. However, she proposes that some types of RVCs are derived in the syntax. More specifically, she argues that (i) object-oriented RVCs (e.g. the (55a) reading) are derived syntactically through verb-movement and incorporation, (ii) subject-oriented RVCs (e.g. the (55b) reading) are formed in the lexicon and (iii) "causative compounds" (e.g. the (55c) reading) are syntactically derived with an abstract verb CAUS.

(55) Zhangsan zhui-lei-le Lisi.
Zhangsan chase-tired-PERF Lisi.
(a) 'Zhangsan chased Lisi and as a result Lisi got tired.' (easiest)
(b) 'Zhangsan chased Lisi and as a result Zhangsan got tired.'
(c) 'Lisi chased Zhangsan and Zhangsan got Lisi tired.' (hardest)
(d) *'Lisi chased Zhangsan and Zhangsan got himself tired.'

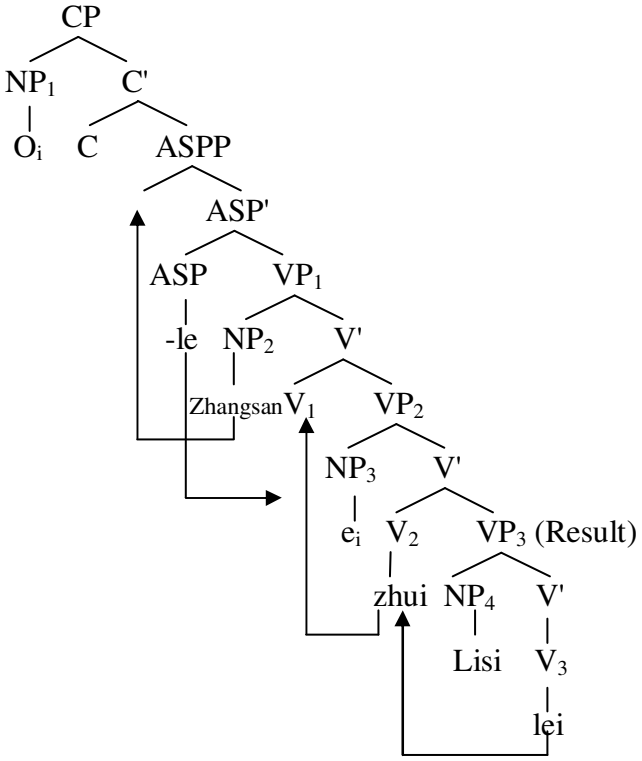
On the assumption that "[b]eing words, instead of phrases, transitive resultative compounds should have the same syntactic behavior as simple transitive verbs, if they are lexically derived as words are" (Lin 1998: 54-55), Lin proposes that object-oriented RVCs must be syntactically derived. This is because, as shown in (56-57), object-oriented RVCs do not show the same behavior as a simple transitive verb as far as object omission is concerned. Crucially, as (56) shows, the object-oriented resultative compounds cannot maintain the object-oriented reading when the object is omitted. Based on this, Lin concludes that object-oriented resultative compounds must be syntactically derived, and she proposes the D-structure in (58) for the (55a) reading.[30]

(56) a. Zhangsan zhui-lei-le Lisi.
Zhangsan chase-tired-PERF Lisi.
'Zhangsan chased Lisi and as a result Lisi got tired.' [= (55a) reading]
b. *Zhangsan zhui-lei-le.
Zhangsan chase-tired-PERF
Intended: 'Zhangsan chased someone into tiredness.'

(57) Adapted from Lin 1996: 198
a. Zhangsan mai-le na-ben shu.
Zhangsan buy-PERF that-CL book
'Zhangsan bought that book.'
b. Zhangsan mai-le.
Zhangsan buy-PERF
'Zhangsan bought (it).'

[30] In (58) and in all the tree diagrams proposed by Lin, IP is represented as ASPP because, according to her, "the only overt inflectional category [in Chinese] is aspect" (Lin 1998: 98). Moreover, although Lin originally uses "ZS" and "LS" in some of the tree diagrams to mean "Zhangsan" and "Lisi" respectively, I have replaced "ZS" with "Zhangsan" and "LS" with "Lisi" in all the tree diagrams cited from Lin's work to avoid confusion.

(58) D-structure for the (55a) reading (Lin 1998: 141)



The structure in (58) is obviously complex, but Lin points out that it has been simplified in one respect. That is, because *lei* 'tired' is unaccusative (or "ergative" in Lin's terms), its only argument (*Lisi* in this case) is base-generated in the complement position of the verb, and then moved to the subject position of the result clause at the "S-structure" to receive Case. To get the surface word order in (55) from (58), Lin proposes the following operations in addition to the movement of *Lisi*, which is not shown in (58). First, the lower verb *lei* 'tired' has to be incorporated into the higher verb *zhui* 'chase' to allow the aspect marker *-le* to be suffixed to it. Second, the aspect marker *-le* lowers to V_1. Third, *Zhangsan* in NP_2 has to move to the Spec of ASPP to get Case.

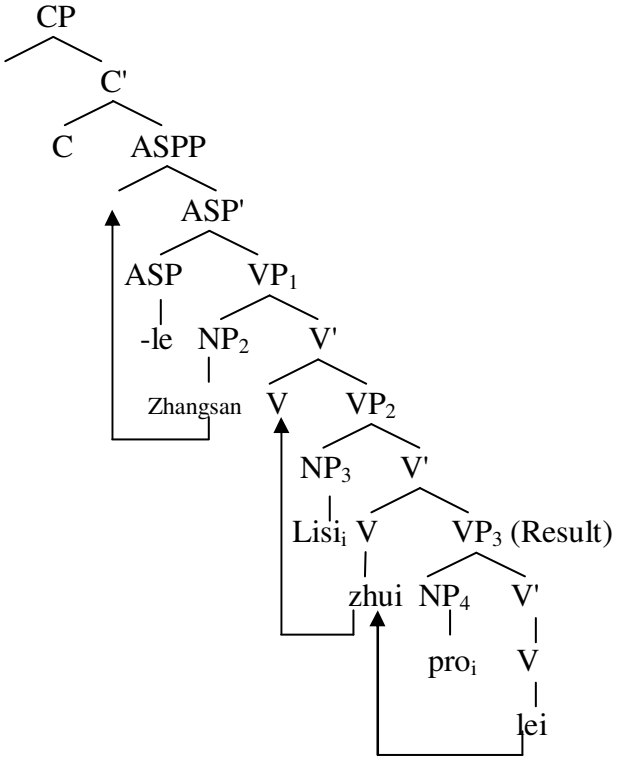
In (58), NP_3 "is occupied by a null topic bound variable, which has to be bound outside the domain of its operator in NP_1" (Lin 1998: 119). According to Lin, what binds the variable in NP_3 position is the discourse topic, which is null and occurs outside the domain of the

operator. Therefore, what the D-structure in (58) represents is the reading that Zhangsan chased somebody or something and as a result Lisi got tired. The chasee, which is syntactically a variable, is only pragmatically identified as *Lisi* for the following reason. Pragmatically, it is only possible that the one who gets tired (*Lisi* in this case) is either the chaser or the chasee. As *Zhangsan* has been specified to be the chaser, *Lisi* must be understood as chasee.

Lin further says that four combinations of lexical NPs and empty categories in (58) are possible. One of them is the one represented by the tree above. That is, the direct object is null but the embedded subject is lexical. Lin states that another combination occurs when "the direct object in NP_3 position is a lexical NP, say *Lisi*, while the embedded subject in NP_4 position is an empty pronominal *pro*, which is controlled by the nearest c-commanding NP *Lisi*" (1998: 121). This combination is shown in (59).[31]

[31] The other two combinations are as follows. In one of them, both the direct object (NP_3) and the embedded subject are lexical, which gives rise to an ungrammatical string like **Zhangsan zhui-lei-le Lisi Lisi* [Zhangsan chase-tired-PERF Lisi Lisi]. In the other, both the object and the embedded subject are null, which results in *Zhangsan zhui-lei-le* [Zhangsan chase-tired-PERF].

(59) Lin 1998: 121 (cf. Lin 1996: 196)



Before we move on to describe Lin's account of subject-oriented RVCs, it needs to be pointed out that, according to Lin (1998: 117), *zhui* 'chase' in the object-oriented *zhui-lei* 'chase-tired' has the argument structure <Agent, Patient, Result>. That is, *zhui* in this case assigns not only the Agent and the Patient roles as when it is used separately, but also a theta-role "Result."

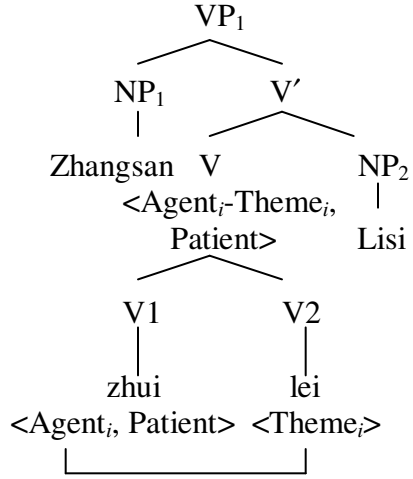
In contrast to object-oriented RVCs, subject-oriented RVCs do allow object omission as a simple transitive verb does, as shown by (60) and (61). Mainly on the basis of this, Lin draws the conclusion that subject-oriented RVCs are lexically formed.[32] And she proposes the representation in (62) for the (55b) reading.

[32] Lin (1998: 159-163) further argues that subject-oriented RVCs call for a lexical account because of the lexical idiosyncrasies and arbitrary gaps found with their formation and use. However, I think there are explanations and natural classes for these so-called "idiosyncrasies" and "arbitrary gaps," and I will return to this issue in section 3.2.4.

(60) a. Zhangsan zhui-lei-le Lisi.
Zhangsan chase-tired-PERF Lisi.
'Zhangsan chased Lisi and as a result Zhangsan got tired.' [= (55b) reading]
b. Zhangsan zhui-lei-le.
Zhangsan chase-tired-PERF
'Zhangsan chased (somebody) and as a result Zhangsan got tired.'

(61) Adapted from Lin 1996: 198
a. Zhangsan mai-le na-ben shu.
Zhangsan buy-PERF that-CL book
'Zhangsan bought that book.'
b. Zhangsan mai-le.
Zhangsan buy-PERF
'Zhangsan bought (it).'

(62) Representation for the (55b) reading (Lin 1998: 171)[33]

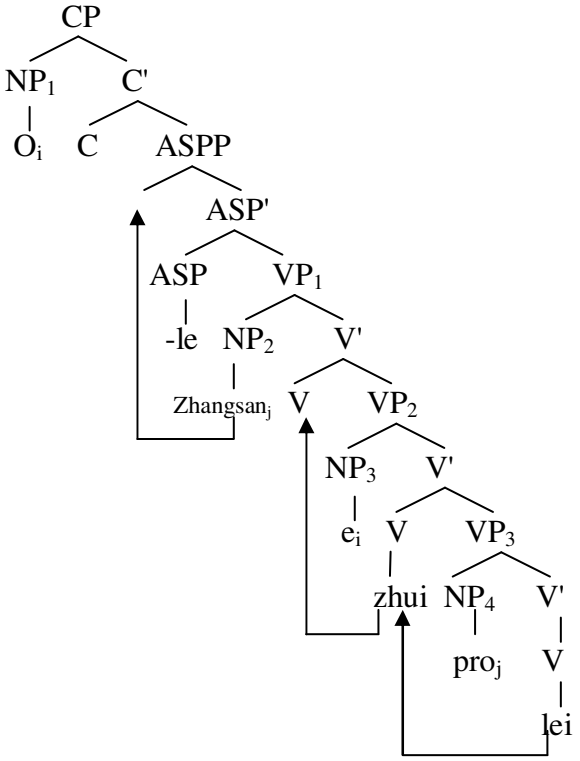


The representation in (62) involves "theta-identification" and feature percolation. In this representation, the "Theme" argument of *lei* identifies with the Agent role of V1 *zhui*. After theta-identification, the argument structure <Agent$_i$-Theme$_i$, Patient> then percolates to the compound *zhui-lei* and becomes the argument structure of the whole compound. Then the identified Agent$_i$-Theme$_i$ role is assigned to the subject *Zhangsan*, and the "Patient" role is assigned to the object *Lisi*.

[33] It should be pointed out that Lin (1998: 171) in fact shows the derivation of the subject-oriented RVC *kan-lei* 'chop-tired' in *Zhangsan kan-lei-le shu* [Zhangsan cut-tired- PERF tree] 'Zhangsan cut trees and as a result he got tired." In (62) I have kept Lin's derivation for the sentence mentioned and changed *kan-lei* 'chop-tired' to *zhui-lei* 'chase-tired' and changed *shu* 'tree' to *Lisi*. I believe that (62) is an accurate representation of Lin's account of the (55b) reading.

Although *zhui-lei* in the (55b) reading is proposed to be a subject-oriented RVC and argued to be lexically formed, Lin (1998) analyzes *zhui-lei* in (60b) as syntactically derived and as an object-oriented RVC. According to her, "subject-oriented compounds refer only to those with V2 predicated of the matrix subject at D-structure" (Lin 1998: 163). As Lin holds that the D-structure of (60b) is (63), in which the result verb is predicated of the "empty embedded subject," she does not regard *zhui-lei* in (60b) as a subject-oriented RVC, although the compound in the sentence seems to be subject-oriented on the surface.

(63) D-structure of (60b) (Lin 1998: 125)

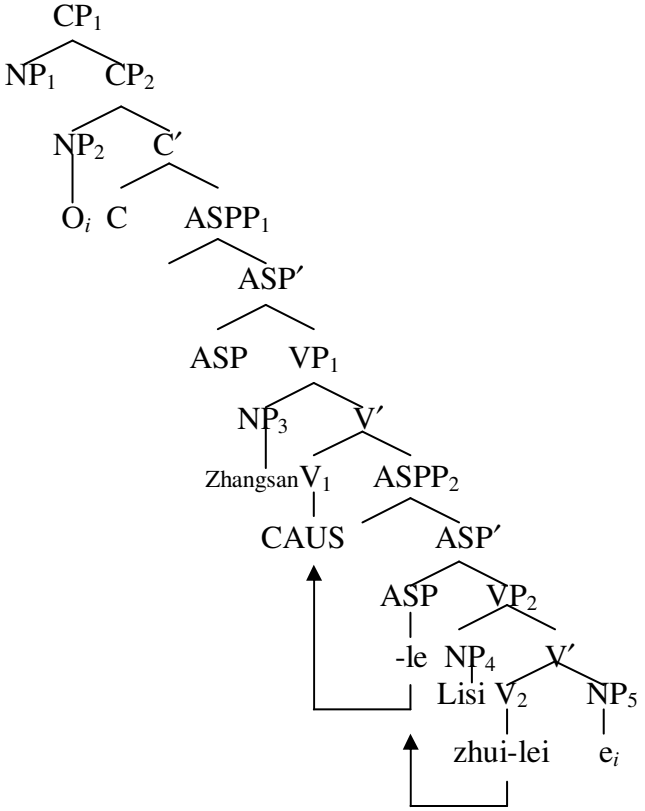


As for "causative compounds" such as *zhui-lei* 'chase-tired' in the (55c) reading, Lin holds that they are syntactically derived and their extra causativity results from a zero morpheme CAUS.[34] According to her, a "causative compound" like *zhui-lei* in the (55c)

[34] To be exact, Lin (1998) distinguishes between two types of "causative compounds." One type contains the zero morpheme CAUS and the other does not. The former type does not contain a causative V1 and the extra causativity results from CAUS, while the latter contains a causative V1, whose causativity is inherited by the

reading is composed of CAUS, *zhui* 'tired,' and *lei* 'tired,' and has CAUS as the head. Its D-structure is as follows.

(64) D-structure for the (55c) reading (Lin 1998: 205)



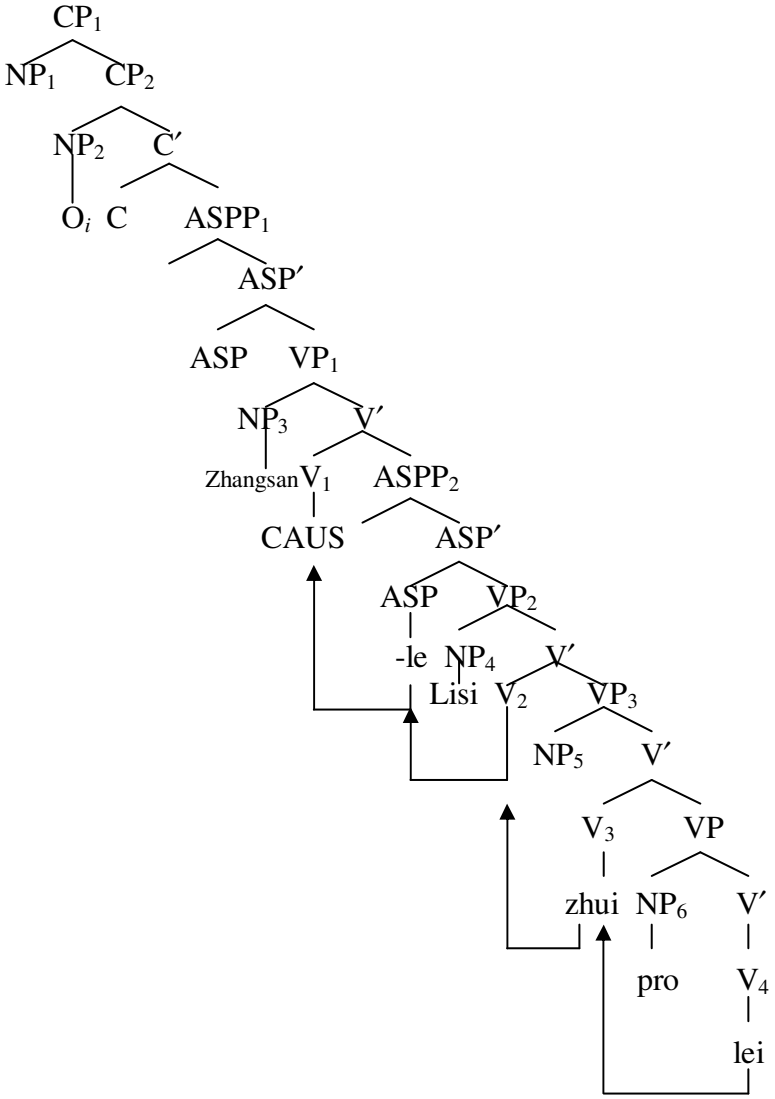
According to Lin (1998: 206), VP_2 in (64) is headed by the lexically derived subject-oriented compound *zhui-lei* because its logical subject is not only the chaser but also the one who got tired. NP_5, the object of *zhui-lei*, is occupied by a null topic-bound variable, which has to be bound outside the domain of its operator in NP_1. What binds the variable in the NP_5 position is the discourse topic, which adjoins to CP and is outside the domain of the operator in the Spec of CP_2. The subject is often the topic when there is no overt topic present. When this occurs, the variable that is bound by the topic must also refer to the subject. That is, the topic, in this case the subject *Zhangsan*, binds the variable in NP_5 and "receives the theta-role

compound. *Zhui-lei*, the focus of our discussion, belongs to the first type, and *qi-si* 'anger-dead' is an example of the other type.

Patient from the compound" (Lin 1998: 207). As a result, the Causer *Zhangsan* "also appears to be the Patient" (ibid.).[35]

So far, we have only shown Lin's account of the readings allowed in (55). To account for the bad reading of (55), Lin (1998) proposes the D-structure in (65).

(65) D-structure for the (55d) reading (Lin 1998: 221)



[35] Lin claims that the structure in (64) yields the interpretation "Zhangsan caused Lisi to get tried from chasing him (i.e. Zhangsan)." However, if the Causer *Zhangsan* also receives the "Patient" role from the compound, it seems that it should be Zhangsan who got tried. In fact, to get the (55c) reading, *Zhangsan* needs to be understood as receiving the Patient role from *zhui* 'chase,' the first component of the compound *zhui-lei* 'chase-tired.'

To get the (55d) reading, *pro* in NP_6 in (65) has to be controlled by the Causer *Zhangsan*. However, the nearest NP which c-commands *pro* is *Lisi* in the NP_4 position. Consequently, *lei* 'tired' cannot be predicated of *Zhangsan* and the (55d) reading thus fails to obtain.

There are some problems with Lin's (1996, 1998) account described above. First, Lin invalidly assumes that for an RVC to be lexically formed, it has to behave in the same way as a simple transitive verb does with respect to, for example, object omission. For one thing, RVCs are complex in the sense that they are made up of two elements, and as a result they may behave differently from simple transitive verbs, no matter where and how they are formed. For another, it is not clear what Lin exactly means by "simple transitive verbs." If this refers to transitive verbs composed of one element, it should be noted that these verbs do not form a homogeneous class. For example, as shown below, when the object of *e* 'starve' in (66a) is omitted, the sentence has to be understood as "Zhangsan starved for three days," not "Lisi or somebody else starved for three days." By Lin's logic, verbs like *e* then do not allow object omission. Recall that subject-oriented RVCs allow object omission and object-oriented RVCs do not. If only verbs like *e* were taken into consideration, the conclusion would seem to be that contra Lin, subject-oriented RVCs are not lexically formed and object-oriented RVCs are, because it is the latter rather than the former that behave as simple transitive verbs like *e*.

(66) a. Zhangsan e-le Lisi san tian.
Zhangsan starve-PERF Lisi three day
'Zhangsan starved Lisi for three days.'
b. *Zhangsan e-le san tian.
Zhangsan hungry-PERF three day
Intended: 'Lisi or somebody else starved for three days.'

Second, Lin does not provide any good evidence that *zhui-lei* in (67a) is lexically formed and *zhui-lei* in (67b) is syntactically derived. The fact that in both cases it is

Zhangsan that chased somebody and it is Zhangsan that got tired strongly suggests that *zhui-lei* in the two sentences should be formed in the same way.

(67) a. Zhangsan zhui-lei-le Lisi.
Zhangsan chase-tired-PERF Lisi.
'Zhangsan chased Lisi and as a result Zhangsan got tired.' [= (55b) reading]
b. Zhangsan zhui-lei-le.
Zhangsan chase-tired-PERF
'Zhangsan chased (somebody) and as a result Zhangsan got tired.'

Third, there is no syntactic evidence for the D-structures proposed for the (a), (c) and (d) readings of (55). Rather, such structures can be said to be *ad hoc* in nature.[36] For example, there is no evidence that *zhui-lei* is generated at the D-structure as a lexically derived subject-oriented compound on the (c) reading of (55), but as two separate words on the (d) reading (as well as on the (a) reading). For another example, there is no syntactic evidence that the (a) reading (i.e. the ordinary object-oriented reading) of (55) involves a single clause while the (c) reading (i.e. the *scare* reading) of the same surface string involves two distinct clauses.

Fourth, it is not clear how Lin's account can explain why the first three readings in (55) are not equally obtainable. In fact, if we adopt Frazier & Rayner's (1982) "Minimal Attachment" Principle, which states that there is a preference for the syntactic analysis that creates the least number of syntactic nodes, Lin's account actually incorrectly predicts that the second reading is easier to obtain than the other two because subject-oriented RVCs are lexically formed on Lin's account and thus have a much simpler syntactic representation than object-oriented RVCs and "causative compounds."

[36] Both Huei-Ling Lin (1998) and Zou (1994) propose stacked VP structures to account for the third reading of (55), but the D-structures proposed by them ((45) by Zou vs. (64) by Lin) are quite different. This fact itself suggests that one should be careful in proposing a distinct D-structure from its corresponding S-structure.

Fifth, the purpose of the structure in (59) is not clear from Lin's account. In particular, if (58) is the D-structure for the (55a) reading, why is *Lisi* base-generated in (59) in the NP_3 position, not in the NP_4 position?

Finally, Lin adopts the unappealing view that verbs like *zhui* 'chase' in object-oriented RVCs like *zhui-lei* 'chase-tired' has a different argument structure than that when it is used separately. The logical conclusion of this analysis is that verbs like *zhui* in this case must have multiple entries. This, however, will make the lexicon unnecessarily enormous and complicated.

2.4 Summary

In this chapter, I reviewed three lexical accounts, three syntactic accounts and one lexical-syntactic account, and pointed out problems with each account. The problems with these accounts can be summarized into several types, and each account suffers one or more of them. The first type of problem is lack of evidence. The lexical-syntactic account and the three syntactic accounts all suffer this problem. For example, there is a lack of any sound basis for Huei-Ling Lin's (1998) proposal that subject-oriented transitive RVCs are lexically formed and object-oriented transitive RVCs are syntactically derived. For another example, there is no evidence for Sybesma's proposal that the V2 of an RVC and the subject of which it is predicated form a constituent.

The second type of problem is that all the analyses which have made an attempt to explain the ambiguity phenomenon found with RVCs fail to give a full and successful account. For one thing, the varying degree of difficulty in getting the different readings of the same sentence with the same RVC does not follow (readily) from the analyses given. For

another, the different D-structures proposed for the different readings by the proponents of a (lexical-) syntactic analysis are either *ad hoc* in nature (Huei-Ling Lin's 1998 account and Zou's 1994 account) or short on evidence (Sybesma's 1993, 1999 accounts; Jimmy Lin's 2004 analysis).

The third type of problem is concerned with unattractive or untenable (theoretical) implications. First, Jimmy Lin's (2004) conflation of event structure and syntactic structure implies strict isomorphism between syntax and semantics. However, this is inconsistent with the fact that semantics is often more complex than syntax and vice versa and that there is a great deal of mismatch between the two. Second, the complex derivation of the surface form from the D-structure(s) inherent in the syntactic accounts and, to a large extent, in the lexical-syntactic account implies that the acquisition of Mandarin RVCs is extremely difficult from a syntactic point of view. However, this is incompatible with the fact that the complexity of RVCs lies not in syntax, but in semantics and the conditions on the combination of the components which make up of an RVC. Finally, Thompson's (1973) assumption of the organization of the lexicon and her lexical-rule account imply, though not entail, an enormous lexicon, which is conceptually undesirable.

The fourth type of problem concerns the formulation of the important mechanism(s) used in an account. For example, we have seen problems with the conditions proposed by Yafei Li (1995) on the assignment of the two causative roles, and the problems with the formulation of the linking rules (particularly Linking Rule 2) proposed by Chang (2003).

The final type of problem is lack of full empirical coverage. For example, it has been shown that the analyses given by Yafei Li (1990, 1995) and Chang (2003) fail to account for certain linguistic facts with respect to RVCs.

As previous analyses of RVCs fall victim to one or more of the problems mentioned above, and since the varying degree of difficulty in obtaining the different readings of an RVC sentence when ambiguity arises has not been given an (explicit) account in the literature, in the following chapter I will propose my own lexical-semantic account, which I will argue is more natural, more comprehensive, more explanatory, and more parsimonious.

Chapter 3. A New Lexical-Semantic Account of Mandarin RVCs

In this chapter, I give my own lexical-semantic account of Mandarin resultative verb compounds within an Event Structure Model, which is based on Rappaport Hovav & Levin's work (particularly Levin 1999 and Rappaport Hovav & Levin 1998). The chapter is organized as follows. Section 3.1 presents the framework and assumptions to be adopted. Section 3.2 offers my lexical-semantic analysis, which accounts for not only the complex thematic relations associated with RVCs, but also the ambiguity found in some sentences containing an RVC. Section 3.3 discusses some theoretical implications of the account, and the final section summarizes the main points made in the chapter.

3.1 Framework and assumptions

The framework to be used is the Event Structure Model (ESM) of argument realization, which is a development of Rappaport Hovav & Levin's ideas. As Levin (1999: 223) points out, "event" has become an important notion in the linguistic representation of meaning.[1] This is reflected in the fact that the representation of the linguistically-relevant component of verb meaning is now often called "event structure" (instead of "lexical semantic representation" or "lexical conceptual representation") because this facet of meaning defines the type of the event expressed by the predicate.

Levin (1999: 229) and Rappaport Hovav & Levin (1998: 107) use what they call "event structure templates" to represent the grammatically-relevant component of verb meaning. Initially, Rappaport Hovav & Levin (1998) propose the following templates:

[1] It may be added that Davidson (1967) introduces an event variable to the logical semantics of "action" sentences, which paves the way for the notion of "event" to play an important role in linguistic research.

(1) Event Structure Templates (Rappaport Hovav & Levin 1998: 108; cf. Van Valin 1990: 224, Van Valin & LaPolla 1997: 102, 109)

a. [x ACT$_{<MANNER>}$] (activity)
b. [x <*STATE*>] (state)
c. [BECOME [x <*STATE*>]] (achievement)
d. [[x ACT$_{<MANNER>}$] CAUSE [BECOME [y <*STATE*>]]] (accomplishment)
e. [x CAUSE [BECOME [y <*STATE*>]]] (accomplishment)

The above event structure templates or predicate decompositions consist of two major types of components, semantic primitives (which are in plain uppercase) and constants (which are in italics and in angle brackets). The constants are of two types, "argument constants" and "modifier constants." Argument constants (e.g. <*STATE*> in (1b)) "appear in the appropriate argument position in the templates," and modifier constants (e.g. $_{<MANNER>}$ in (1a)) "appear as subscripts to the appropriate predicate in the event structure templates" (Rappaport Hovav & Levin 1998: 109). Specific combinations of primitives constitute the structural component of verb meaning, and the constants represent the "core" meaning or the idiosyncratic aspect of verb meaning. In addition to two types of constants, Rappaport Hovav and Levin also make a distinction between "structure participants" and "constant participants." Structure participants are indicated with variables in the templates; they "are licensed by virtue of both the event structure template and the constant" (Rappaport Hovav & Levin 1998: 111) and must be realized in the overt syntax. In contrast, "constant participants" are licensed by the constant alone. For example, although activity verbs like *sweep* in *He swept the floor* involve two participants, in Rappaport Hovav & Levin's view only the first participant is a structure participant and the second participant is just a "constant participant" that is required by the constant alone.

Rappaport Hovav & Levin (1998: 106) point out that the different templates in (1) correspond "roughly" to the aspectual classes of verbs originally proposed by Vendler (1957)

and then developed by Dowty (1979) (see note 5 of Chapter 1). But it is clear from (1) that they intend the first three templates to represent activities, states, and achievements, respectively, and that they use the last two templates to represent accomplishments. However, Levin (1999: 229, 2000: 421) and Rappaport Hovav & Levin (2002: 278) state that their event structure templates are nonaspectually defined. For example, Levin (2000: 424) and Levin & Rappaport Hovav (2004: 478) (cf. also Levin 1999: 231; Levin & Rappaport Hovav 1999: 219, note 2) explicitly say that causativity should be cut loose from accomplishments, which are telic. This is because there are both non-causative accomplishments like *She ran to the store* and atelic causatives like *She cooled the soup for ten minutes*.

Levin (1999: 229, 2000: 424) and Levin & Rappaport Hovav (2004: 480) propose that event structure templates are of two types, simple and complex. Simple event structure templates consist of a single subevent, and complex event structure templates are composed of two subevents, each of which is a well-formed simple event structure template. Based on this distinction, Levin (1999) proposes the following event structure templates:

(2) Event Structure Templates (Levin: 1999: 229-230)

Simple event structure templates:

a. [x $ACT_{<MANNER>}$] (activity)
b. [x <*STATE*>] (state)
c. [BECOME [x <*STATE*>]] (achievement)

Complex event structure template:

d. [[x $ACT_{<MANNER>}$] CAUSE [BECOME [y <*STATE*>]]] (causative)

Compared with (1), the event structure templates in (2) embody three changes. First, the templates are grouped into two types, simple and complex. Second, the event structure template in (1e) is not produced in (2). However, it is not clear whether it is simply withdrawn or whether it is not immediately relevant to the discussion and thus not

mentioned.[2] Finally, "causative" instead of "accomplishment" is used to name the event structure template that has a "CAUSE" component. In fact, Rappaport Hovav & Levin (2001: 775; see also Levin 2000: 424) explicitly state that "complex event structures are causative event structures." According to them (see Levin 2000; Levin & Rappaport Hovav 1999, 2004; Rappaport Hovav & Levin 2001), the criterial property of a complex causative event is the lack of temporal dependence between its two subevents.

The third change above improves Rappaport Hovav & Levin's earlier proposal because it corrects their earlier assumption that all accomplishments are causatives. Concerning the first change, Levin & Rappaport Hovav (2004: 480) point out that the distinction between simple and complex event structure templates is crucial to argument realization via the "Argument-per-Subevent Condition" in (3).

(3) Argument-per-Subevent Condition (Levin & Rappaport Hovav 2004: 481) (see also Levin 2000: 425, Levin & Rappaport Hovav 1999: 202, and Rappaport Hovav & Levin 2001: 779)[3]
There must be at least one argument XP in the syntax per subevent in the event structure.

The Argument-per-Subevent Condition has analogues in the work of van Hout (2000: 414) and Kaufmann & Wunderlich (1998: 29). It is intended to be a principle governing the event-structure-to-syntax mapping so as to ensure that facets of the event structure are preserved in the syntax.

As a consequence of the Argument-per-Subevent Condition, complex causative events denoted, for example, by externally caused change of state verbs like *break* must have at

[2] Levin (1999: 229) does mention that the templates in (2) are "several major event structure templates." From this, it can be inferred that the templates in (2) are not intended to be an exhaustive list.

[3] The Argument-per-Subevent Condition in (3) differs from Levin's (1999: 238) "Structure Participant Condition," which is the same as the first part of Rappaport Hovav & Levin's (1998) "Argument Realization Condition" in (i).

(i) Argument Realization Condition (Rappaport Hovav & Levin 1998: 113)
a. There must be an argument XP in the syntax for each structure participant in the event structure.
b. Each argument XP in the syntax must be associated with an identified subevent in the event structure.

least two arguments and must be always transitive (Levin 1999: 228, Levin & Rappaport Hovav 1999: 202, Rappaport Hovav & Levin 2001: 779). In contrast, simple events denoted, for example, by verbs of surface contact and motion like *sweep* may have their internal argument unexpressed and thus have an intransitive use, as shown in (4).

(4) a. Terry swept the floor.
    b. Terry swept.
    c. *The floor swept. (cf. The floor swept easily.)

The intransitive use of *sweep* in (4b) meets the Argument-per-Subevent Condition because *sweep* has a simple event structure whose structure argument in this case is syntactically realized.

Although the Argument-per-Subevent Condition can account for the intransitive use of *sweep* in (4b), it is apparently in conflict with the fact that *break* can not only be used transitively, but also intransitively, as shown in (5).[4]

(5) a. Terry broke the window.
    b. The window broke.
    c. *Terry broke. (Intended: Terry broke something unspecified.)

The conflict would not arise if *break* in (5a) and in (5b) had different event structures. However, Levin & Rappaport Hovav (1995: 83) and Rappaport Hovav & Levin (1998: 117-118, 2001: 790) hold that they have the same event structure, namely a complex causative event structure in (6) (although Rappaport Hovav & Levin (1998: 117) call the intransitive use a "noncausative" use).

(6) Rappaport Hovav & Levin 1998: 116
    [[x ACT$_{<MANNER>}$] CAUSE [BECOME [y <*BROKEN*>]]]

Given this view, the intransitive use of *break* in (5b) apparently violates the Argument-per-Subevent Condition. To account for this, Rappaport Hovav & Levin (1998: 118) assume that

[4] I use "intransitive(ly)" as a cover term for "unergative(ly)" and "unaccusative(ly)."

the intransitive use involves a zero morpheme (analogous to a reflexive morpheme in the Romance and Slavic languages), which serves to satisfy the Argument-per-Subevent Condition. However, in their other work (e.g. Rappaport Hovav & Levin 2001: 790-791; see also Levin & Rappaport Hovav 1995: 108), they hold that in the intransitive use of *break*, the causing subevent is "lexically bound" and thus "receives no syntactic expression" at all.

I think that Rappaport & Levin's explanations as to the intransitive use of *break* are not satisfactory. If the idea that structure participants are always expressed in the syntax is taken seriously, the fact that most of the externally caused change of state of verbs like *break* have an intransitive use strongly suggests that the argument of the causing subevent is not a structure participant. Furthermore, the fact that the argument of the result subevent has to be overtly expressed in the syntax as shown by the ungrammaticality of (5c) indicates that this argument is a structure participant. In addition, given the fact that (5b), in contrast to (5a), does not entail a causing subevent,[5] I argue that linguistically the intransitive use of *break* does not express a causative event. Therefore, unlike its transitive use, the intransitive use of *break* is not associated with a causative complex event structure template, but with a simple achievement event structure template, in which the participant undergoing a change of state is a structure participant.

If we are right in proposing that the argument of the causing event in (6) is not a structure participant, the transitive *break* should have the event structure in the form of either (7a) or (7b), in both of which the structure participant is underlined and in bold.

[5] The existence of sentences like (i) and (ii) further confirms our idea that the intransitive use of *break* does not entail a causing subevent.
(i) The vase broke on its own.
(ii) The vase just happened to break.

(7) a. [**X** ACT$_{<MANNER>}$] CAUSE [BECOME [**Y** <*BROKEN*>]]]
b. [[X ACT$_{<MANNER>}$ on Y] CAUSE [BECOME [**Y** <*BROKEN*>]]]

I argue that (7b) instead of (7a) is the right event structure for the transitive use of *break* because there is evidence that the acting participant of an activity is not a structure participant. That is, crosslinguistically it is not the case that the acting participant is obligatory in an active sentence. For example, although *sweep* in English only allows its internal argument to be unexpressed as shown by the ungrammaticality of (4c) when no use of an adverb like *easily* is involved to form a middle construction, its counterpart in Mandarin, *sao*, allows the external argument to be unexpressed as well, as shown in (8c).

(8) a. Zhangsan sao-le di le.
Zhangsan sweep-PERF floor SFP
'Zhangsan swept the floor.'
b. Zhangsan sao-le.
Zhangsan sweep-PERF
'Zhangsan swept.'
c. Di sao-le.
floor sweep-PERF
Literally: 'The floor swept.' → 'The floor was swept.'

One may argue that the fact that (8c) is allowed in Mandarin and (4c) is disallowed in English is due to another fact, namely that Mandarin is a topic-prominent language, and English is not (Charles Li & Thompson 1976). Whatever the right explanation for the contrast is, if object elision in (4b) is due to pragmatics as Levin & Rappaport Hovav (1999: 203) argue, pragmatics and context certainly also play a crucial role in the licensing of (8b) and (8c). Therefore, the fact that the external argument of a sweeping action can be unexpressed in a certain context in Mandarin shows that this argument is not a structure argument/participant, but a constant argument/participant. Given that crosslinguistically neither of the two participants of a transitive activity verb is a structure participant, there is

no good reason for including only the acting participant in the event structure template. As a result, the event structure in (7b) is the right representation for the transitive use of *break*.

Although on our account the *break* case does not pose a problem to the Argument-per-Subevent Condition because its two uses in (5a) and (5b) involve two different event structure templates, there is evidence that this condition is incorrect. Specifically, Mandarin resultative verb compounds like *ning-gan* 'wring-dry' entail a causing subevent no matter whether they are used in a transitive frame as in (9a) or in an intransitive frame as in (9b).

(9) a. Zhangsan ning-gan-le yifu.
Zhangsan wring-dry-PERF clothes
'Zhangsan wrung the clothes dry.'
b. Yifu ning-gan-le.
clothes wring-dry-PERF
Literally: 'The clothes wrung dry.' → 'The clothes were wrung dry.'

Therefore, *ning-gan* in (9a) and (9b) should be associated with one and the same event structure template, namely a complex causative template. Given this, the fact that *Zhangsan* can be left unexpressed in (9b) indicates that the Argument-per-Subevent Condition is not correct. Because of this, I will not adopt this condition in the current event structure model. Instead, following Rappaport Hovav & Levin (1998) and Levin (1999), I will simply make a distinction between structure participants and constant participants, and adopt Levin's (1999) Structure Participant Condition in (10) (cf. note 3).

(10) Structure Participant Condition (Levin 1999: 238)
There must be an argument XP in the syntax for each structure participant in the event structure.

The above condition is met in both (9a) and (9b) because on our account only the argument in the second subevent of a complex event is a structure participant and this argument is overtly realized in both uses of *ning-gan* 'wring-dry.'

Based on the above discussions, we can conclude that the distinction between simple and complex event structure templates indeed has consequences for argument expression. However, contrary to Rappaport Hovav & Levin, activities have no structure participant and causative events have one structure participant. Incorporating this idea, I propose that the event structure templates in (2) should have the following form, in which structure participants are underlined and in bold.

(11) Event Structure Templates (Revised)
Simple event structure templates:
a. [x $ACT_{<MANNER>}$ on (y)] (activity)
b. [**x** <*STATE*>] (state)
c. [BECOME [**x** <*STATE*>]] (achievement)
Complex event structure template:
d. [[x $ACT_{<MANNER>}$ on (y)] CAUSE [BECOME [**y** <*STATE*>]]] (causative)

After discussing the distinction between simple and complex event structure templates and its consequences, we now turn to the question of whether there is more than one type of CAUSE component. Recall that Rappaport Hovav & Levin (1998) propose two causative event structure templates and Levin (1999) only lists one. Rappaport Hovav & Levin (1998) do not address the question of why two causative templates are proposed, but Levin (p.c.) informed me that they were not sure whether or not an individual as CAUSE as well as an event as CAUSE was found, and that it is still an empirical issue that needs more research.

However, as far as I can see, there is evidence for a distinction between a causative event which entails a causing subevent and a causative event which does not have such an entailment. This distinction can be seen in the two sentences in (12) below.

(12) a. Tony wiped the table clean.
b. Tony scared John.

Both (12a) and (12b) express a causative event. However, (12a) entails a causing subevent, namely a wiping event. In contrast, (12b) does not entail a causing subevent. In fact, John's

becoming scared can be due to Tony's doing something or to some property of Tony, and in some cases it might be due to both. As this aspect of meaning is context-dependent, it need not be included in the event structure template. Based on this, I propose that *wipe…clean* and *scare* are associated with two different event structure templates, with the former being associated with the event structure template in (13a) and the latter with the one in (13b).

(13) a. [[x ACT$_{<MANNER>}$ on y] CAUSE [BECOME [**y** <*STATE*>]]]
b. [**x** CAUSE [BECOME [**y** <*STATE*>]]]

(13b) is not intended to mean that some individual, or more exactly some property of this individual, acts as the CAUSE component. Rather, it means that an entity is involved in the CAUSE component and that it is up to the context whether it is some property of this entity or some action initiated by it that causes a change of state to happen.

Based on this, I conclude that there is evidence for Rappaport Hovav & Levin's (1998) proposing two distinct templates for causative events, and that if Levin (1999) intended to withdraw the template in (13b), it would be an unwise move. However, even if (13a) and (13b) are regarded as two separate event structure templates, the inventory of event structure templates is still incomplete in four respects. First, as shown in (14), the "ACT" primitive in (13a) may involve just one constant participant.

(14) John cried his eyes red.

This issue, however, has been resolved through the event structure template in (11a) and (11d), in which "y" is put in brackets. Second, there is evidence that the entity which undergoes a change of state is not necessarily the same entity as the one that is the internal argument of the causing subevent. In fact, it can also be the entity that is the external argument of the causing subevent as in (15a), or an entity that is distinct from any argument(s) of the causing subevent as in (15b).

(15) a. Zhangsan zou-lei-le.
Zhangsan walk-tired-PERF
'Zhangsan walked himself tired.'
b. Zhangsan qie-dun-le dao.
Zhangsan cut-blunt-PERF knife
'Zhangsan cut (something) with the knife, and as a result the knife became blunt.'

Third, the second subevent does not necessarily involve a change of state. As shown in (16), it may also be an event denoting a change of location.

(16) He sneezed the napkin off the table.

Finally, there is evidence that the causing component can also be a state, as shown in (17).

(17) Zhangsan **e-bing**-le.
Zhangsan hungry-sick-PERF
'As a result of Zhangsan's being hungry, he became sick.'

To resolve the last three issues, I propose that the inventory of event structure templates should include at least the following ones.

(18) Event Structure Templates (Further Revised)[6]
Simple event structure templates:
a. [x ACT$_{<MANNER>}$ on (y)] (activity)
b. [**x** <*STATE*>] (state)
c. [BECOME [**x** <*STATE*>]] (achievement)
Complex causative event structure templates:
d. [[x ACT$_{<MANNER>}$ on (y)] CAUSE [BECOME [**x**, **y** or **z** <*STATE/ at LOCATION*>]]]
e. [[**x** <*STATE*>] CAUSE [BECOME [**x** or **y** <*STATE*>]]]
f. [**x** CAUSE [BECOME [**y** <*STATE*>]]]

As in (11), the variables which are underlined and in bold in (18) refer to structure participants. The three complex event structure templates are all concerned with causations that involve a change. They indicate that the causing component of a complex causative

[6] The following example shows that the structure participant of the result event in (18e) can be different than the structure participant of the causing eventuality.
(i) Zhangsan bing-huang-le Lisi.
Zhangsan sick-nervous-PERF Lisi
'Zhangsan's being sick got Lisi nervous.'

event does not necessarily involve a causing "subevent" as Levin (1999, 2000) and Levin & Rappaport Hovav (2004) claim. Further, what distinguishes between simple events and complex events is whether a causing component is involved and linguistically relevant.

Given the event structure templates in (18), I assume with Levin (1999: 240-241) and Rappaport Hovav & Levin (1998: 113-114) that linking rules are needed to specify how the participants in the templates are realized in the syntax. Because developing a full theory of linking is beyond the scope of this work, I will concern myself with linking rules that are directly related to an account of resultatives. Recall that by our definition, resultatives are causatives. Therefore, I will only discuss linking with respect to complex event structure templates. Moreover, I assume that there are both general linking rules and construction-specific linking rules, and that when both a construction-specific linking rule and a general linking rule apply, the former applies first and overrides the application of the latter. That is, the general linking rule applies under an "elsewhere condition." In what follows, I am only concerned with general linking rules.

I assume that the causing component of a complex event contributes a Causer argument and the result component contributes a Causee argument. I propose that their realization in the syntax follows the rules in (19) below.

(19) Linking Rules for Complex Causative Events in Active Sentences
   a. The Causer argument is realized in subject position and the Causee argument in object position, when both arguments are overtly expressed by different linguistic expressions.[7]
   b. When the Causer argument and the Causee argument are realized by one and the same linguistic expression, it appears in subject position.
   c. When only the Causee argument is expressed, it is realized in subject position.[8]

[7] Although this rule does not make any predictions as to the argument realization of non-causative psych predicates like *like*, it correctly predicts that for causative psych predicate like *please*, the Causer is realized in subject position and the Causee in object position, as shown in (i). For more discussion of argument realization with respect to lexical doublets like *like* and *please*, see Dowty 1991, especially section 8.3.
(i) His words pleased me.
[8] Rule (19c) is of the same nature as Fillmore's (1968: 33) "Subject Selection Principle."

Evidence for (19a) comes from English transitive change-of-state verbs like *break*. For example, in (20) the Causer *John* is realized in subject position and the Causee *the window* in object position.

(20) John broke the window.

As for (19b-c), there is evidence for them from Japanese resultative verb compounds. For example, *John* in (21), which functions as both Causer and Causee, is realized in subject position. Similarly, the single overt argument in (22), i.e. the Causee argument, is also expressed in subject position.

(21) John-ga hashiri-tsukare-ta.
John-NOM run-get.tired-PAST
'John ran himself tired.'

(22) Coat-ga [cooto-ga] ki-kuzure-ta.
coat-NOM wear-get.out.of.shape-PAST
'The coat was worn and got out of shape.' (Nishiyama 1998: 189)

As a causing event involves a causal chain in which the causing component precedes the result component, I assume that the Causer event role ranks over the Causee event role, and that the causative hierarchy cannot be violated in the syntax. As there is independent evidence from relative clause formation that subject ranks higher than direct object (Keenan & Comrie 1977: 66), (19a) is proposed to maintain the causative hierarchy in the syntax when the Causer and the Causee arguments are overtly realized by different linguistic expressions. In the case of (19b), the causative hierarchy is trivially obeyed as the Causer argument and the Causee argument are realized by the same expression in subject position. Finally, when rule (19c) applies, the Causer argument is left unexpressed and as a result the causative hierarchy only applies vacuously. In this case, the Causee argument is realized in subject position.

To summarize, the basic event structure model I will adopt consists of a distinction between simple and complex event structure templates, a distinction between structure participants and constant participants, and some linking rules.

In addition to this model, I assume a monostratal syntax in this dissertation. Moreover, drawing insights from Jackendoff (2002) and Sadock (1991), I assume that there is a Language Memory Bank (LMB) that stores necessary information for on-line linguistic construction and that is composed of Language Memory Bank Items (LMBI). LMBIs include not only lexical items that are usually assumed to constitute the lexicon, but also affixes, stems and creation rules, whether lexical or syntactic. Although lexical and syntactic rules are LMBIs, their outputs are not necessarily so. LMBIs typically contain some phonological, syntactic and semantic information, although "defective" LMBIs which lack one or more aspects of that information are also possible. Moreover, if an LMBI has different senses, the different senses are considered to be under one and the same LMBI.

Therefore, our notion of "Language Memory Bank" is a superset of the traditional notion of "lexicon," which is roughly a warehouse of idiosyncratic information. Although our conception of the language memory bank is quite similar to Sadock's (1991: 19, 29) and particularly Jackendoff's (1987: 372; 2002: 131, 153-176, 200) conception of the lexicon, it is advantageous over at least Jackendoff's in that it can avoid the undesirable implication that both lexical and syntactic rules are lexical items. Specifically, Jackendoff (2002) views anything linguistic as a lexical item as long as it is stored in long-term memory. For him, even a saga as a whole can be regarded as a lexical item if it gets stored in one's long-term memory. An implication of this view is that syntactic rules as well as lexical rules are lexical items, as they are not something that is constructed online in working memory. From a

traditional perspective, this is a "bizarre" implication. However, our notion "Language Memory Bank" has the advantage that on the one hand, it restricts "lexical item" to items at the word level, thus retaining its traditional use; one the other, it avoids the undesirable implication that syntactic rules are lexical items.

3.2 A new lexical-semantic account

In this section, I propose a lexical-semantic account of Mandarin resultative verb compounds within the event structure model and with the assumption of a language memory bank. I call my account "lexical-semantic" because one the one hand, in the spirit of Thompson 1973, I argue that Mandarin RVCs are formed through a lexical rule; and on the other hand my account stresses the importance of event semantics. In what follows, I will first propose a lexical rule for the formation of RVCs, and discuss the role of pragmatics and encyclopedic knowledge in the formation and use of RVCs. Then I will give an account of the complex thematic relations expressed by sentences containing an RVC within the event structure model by resorting to a two-tier representation. In the next subsection, I discuss the possibility of predicting the event structure templates and syntactic frames with which an RVC can be associated. Subsection 3.2.4 gives an account of the ambiguity phenomenon found with RVCs, and the final subsection compares my own lexical-semantic account with previous proposals.

3.2.1 Lexical-rule formation, co-selection and pragmatics

There are two pieces of evidence that Mandarin RVCs function like single verbs. First, as pointed out by Thompson (1973), RVCs do not allow aspect markers to intervene between

their two components, as shown in (23).[9] Crucially, as shown in (24), aspect markers like *-le* are attached to predicates of word level.

(23) a. Zhangsan ca-ganjing-**le** zhuozi.
Zhangsan wipe-clean-PERF table
'Zhangsan wiped the table clean.'
b. *Zhangsan ca-**le**-ganjing zhuozi.
Zhangsan wipe-PERF-clean table
Intended: 'Zhangsan wiped the table clean.'

(24) Zhangsan budan ca-**le** zhuozi, erqie xi-**le** yifu.
Zhangsan not.only wipe-PERF table but.also wash-PERF clothes
'Zhangsan not only wiped the table, but also washed the clothes.'

Second, as shown in (25a), the result component *ganjing* in *ca-ganjing* 'wipe-clean' can be modified with a degree modifier when used separately. However, the same component cannot be modified in the same way when used in an RVC, as shown in (25b) (cf. (25c)). This shows that *ca-ganjing* as a whole is a word, thus obeying the "Lexical Integrity Principle," which says that "no phrase-level rule may affect a proper subpart of a word" (C.-T. James Huang 1984b: 60; cf. Di Sciullo & Williams 1987: 49).

(25) a. Na-zhang zhuozi hen ganjing.
That-CL table very clean
'That table is very clean.'
b. *Zhangsan ca-hen-ganjing-le na-zhang zhuozi.
Zhangsan wipe-very-clean-PERF that-CL table
Intended: 'Zhangsan wiped that table very clean.'
c. Zhangsan ca-ganjing-le na-zhang zhuozi.
Zhangsan wipe-clean-PERF that-CL table
'Zhangsan wiped that table clean.'

[9] As mentioned in note 3 of Chapter 2, arguments of the same nature were made in the 1970s to support the view that "clause-union causatives" are of a single clause on the surface.

The facts presented above strongly show that RVCs are words, and I take this to be decisive evidence for a lexical rule account of the formation of RVCs.[10] Therefore, in the sprit of Thompson 1973, I propose that RVCs are formed through the following lexical rule.

(26) V1 + V2 → $[V1\text{-}V2]_{RVC}$

Syntax:	Subject $[V1\text{-}V2]_{RVC}$ &
	Subject $[V1\text{-}V2]_{RVC}$ Object
Semantics:	As a result of the eventuality denoted by V1, a change denoted by V2 takes place.

The rule says that RVCs are formed by two "verbal" components, which together express a resultative meaning. Moreover, as far as syntax is concerned, the resulting forms of the rule can occur in both the transitive and the intransitive frame. For example, *kan* 'cut' and *dao* 'fall' can form a well-formed RVC *kan-dao* because a cutting event can cause something to fall. As shown in (27), the resulting RVC can be used both transitively and intransitively.

(27) a. Zhangsan kan-dao-le shu.
Zhangsan cut-fall-PERF tree
'Zhangsan cut down the tree.'

[10] One might use the potential forms of Mandarin RVCs to argue against the proposal that RVCs are words, as the positive and the negative potential form of an RVC are formed by adding *-de-* 'get' and *-bu-* 'not' respectively in between the two components of the RVC. For example, in addition to *ca-ganjing* 'wipe-clean,' there are the positive potential form *ca-de-ganjing* 'be able to wipe clean' and the negative potential form *ca-bu-ganjing* 'be unable to wipe clean.' However, *-de-* and *-bu-* are infixes because there is evidence that *ca-de-ganjing* and *ca-bu-ganjing* themselves are words. That is, *ganjing* in *ca-de-ganjing* and *ca-bu-ganjing*, like in *ca-ganjing*, cannot be modified with a degree modifier like *hen* 'very' and retain the potential meanings, as shown in (i) and (ii). Note that although the string in (ia) is grammatical on the reading that the table was wiped very clean, this interpretation is by no means the potential meaning intended. This shows that the adding of a degree modifier has in fact destroyed the potential meaning expressed by the compound *ca-de-ganjing* in (ib) and led to a complete different structure, namely the *de*-extent construction, as shown in (ic).

(i) a. *Na-zhang zhuozi ca-de-hen-ganjing.
that-CL table wipe-DE-very-clean.
Intended: 'That table can be wiped very clean.'
b. Na-zhang zhuozi ca-de-ganjing.
that-CL table wipe-DE-clean.
'That table can be wiped clean.'
c. Na-zhang zhuozi ca-de hen ganjing.
that-CL table wipe-DE very clean.
'That table was wiped very clean.'

(ii) *Na-zhang zhuozi ca-bu-hen-ganjing.
that-CL table wipe-not-very-clean.
Intended: 'That table cannot be wiped very clean.'

Given that *-de-* and *-bu-* in the potential forms of RVCs are infixes, their intervention between the two components of an RVC does not count as evidence against the proposal that RVCs are words.

b. Shu kan-dao-le.
tree cut-fall-PERF
Literally: 'The tree cut down.' → 'The tree was cut down.'

On the assumption that lexical rules are LMBIs, the lexical rule in (26) is a language memory bank item. However, the outputs of the lexical rule are not LMBIs, and it is not necessary to list them in the lexicon or in the language memory bank. In addition, although a rule itself is not a lexical item, it may contain phonological, syntactic and semantic information as a lexical item usually does. As mentioned above, (26) in fact provides not only the formulation of the lexical rule for forming RVCs, but also information as to the syntax and semantics of the output, though in contrast to an ordinary lexical item, the rule is special in that is has no phonology.

Although the rule allows free combinations of two verbal predicates, only those resulting compounds that express a resultative meaning will be considered to be RVCs. Moreover, whether one verbal predicate can form an RVC with another verbal predicate largely hinges on pragmatics and our world knowledge. *Kan-dao* 'cut-fall' is readily considered to be a good RVC because it is easy to think of a scenario in which someone cuts something and as a result it falls. On the other hand, it would be quite a stretch to say *xi-dun* 'wash-blunt' because much imagination is needed to think of a scene in which somebody washes something and as a result it (or something else) becomes blunt. However, the lexical rule account correctly predicts that in a special context or in a science fiction world such RVCs might be produced. For example, if Zhangsan happens to wash a knife in some water containing some chemical that can cause knives to become blunt, *xi-dun* can be viewed as a good candidate for describing this scene.

Just as the formation of RVCs has to do with our encyclopedic knowledge, whether the use of an RVC in a sentence is good or bad is greatly affected by pragmatics.[11] More exactly, the two components of an RVC and the event participants denoted by the linguistic expression(s) in the subject position (and the object position) co-select each other. For example, while (27a) above is good, (28) is odd because a cutting event normally does not involve air.

(28) #Zhangsan kan-dao-le kongqi.
Zhangsan cut-fall-PERF air
Literally: 'Zhangsan cut the air down.'

Similarly, while (29) is well-formed because it is easy to imagine a situation where someone blows the candle and causes it to fall, (30) is somewhat odd.

(29) Zhangsan chui-dao-le lazhu.
Zhangsan blow-fall-PERF candle
'Zhangsan blew the candle down.'

(30) #Zhangsan chui-dao-le mimi.
Zhangsan blow-fall-PERF secret
Literally: 'Zhangsan blew the secret down.'

The role of pragmatics is also evidenced by the fact that although the participant of the eventuality denoted by V1 is not expressed as the head of the linguistic expression in the subject or object position of a transitive sentence, in most cases it has to be expressed in some way except when a generic statement is made. For example, (31a) below is bad because it is unclear who walked and whose legs became sore. In contrast, (31b) is good because it specifies Zhangsan's legs became sore and it can be inferred that Zhangsan walked; (31c) is

[11] In fact, the issue of what constitutes a well-formed RVC and that of what makes up a well-formed sentence containing an RVC are closely related.

acceptable because it is a generic statement meaning that whoever walks on that stretch of road, his/her legs will become sore.[12]

(31) a. *Na-duan lu zou-suan-le tui.
that-CL road walk-sore-PERF leg
Intended: 'That stretch of road got the legs of some specific person sore as a result of his/her walking on it.'

b. Na-duan lu zou-suan-le Zhangsan-de tui.
that-CL road walk-sore-PERF Zhangsan-GEN leg
'That stretch of road got Zhangsan's legs sore as a result of his walking on it.'

c. Na-duan lu hui zou-suan tui de.
that-CL road can walk-sore leg SFP
Intended: 'That stretch of road can get one's legs sore as a result of his/her walking on it.'

All the above phenomena are not surprising given that one of the metafunctions of language is "experiential" or "ideational," i.e. to represent patterns of experience (Halliday 1994, 2004). We use language to make sense, but to make sense requires what is being talked about to fit with our experience and world knowledge or with a special context.

3.2.2 An event-semantic account of the complex thematic relations

With the formation of RVCs being accounted for, this subsection is devoted to the complex thematic relations associated with RVCs. I show that the complex thematic relations associated with RVCs (see section 1.2.2.2) result from an interaction of the thematic relations expressed by V1 and V2 and the composite thematic relation at a higher level, which refers to the Causer-Causee relation.

Recall that RVCs express complex causative events composed of a causing component and a result component, and that the former component contributes a Causer argument and the latter a Causee argument. Based on the complex event structure templates proposed in

[12] For comments on and examples of the role of pragmatics and world knowledge in the formation and use of the English resultative construction, see, among others, Boas (2003: 10, 2005: 456), Goldberg & Jackendoff

section 3.1, when the causing predicate is an activity or accomplishment, only the Causee argument or more exactly only the participant which undergoes a change of state or location is a structure participant and thus has to be realized in the overt syntax. Therefore, it is logically possible for only the Causee argument to be overtly expressed, although it is common to have both the Causer and the Causee argument realized in the overt syntax. In what follows, I will first discuss the cases where the two arguments are both realized. Moreover, logically speaking, V1 and V2 can be an intransitive, monotransitive, or ditransitive predicate. However, since for most RVCs, V1 is monotransitive or intransitive and V2 is intransitive, we will first restrict our attention to such cases. Now the immediate question is what element is realized as the Causer argument and what element is adopted as the Causee argument, when both these arguments are realized and when V1 is monotransitive or intransitive and V2 is intransitive.

Logically speaking, when V1 is monotransitive or intransitive and V2 is intransitive, the Causer argument can be the external argument of a transitive V1, the internal argument of a transitive V1, the single argument of an intransitive V1, or a participant that is not an argument of V1. As the intransitive V2 denotes a result, its single argument is obligatorily realized as the Causee argument. However, logically, the single argument of V2 can be identified with the external argument of a transitive V1, the internal argument of a transitive V1, or the single argument of an intransitive V1, or it might be distinct from any argument of V1. Such possibilities of realizing the Causer and Causee arguments are summarized in table 3.1.[13]

(2004: 546), Rothstein (2004: 132), Sato (1987: 99), and Wechsler (2005b: 471).

[13] V1 is used as the main reference point for the sake of clarity. In fact, if V2 were used as the main reference point, there would be cases that could not be distinguished. For example, in both (i) and (ii), the single argument of V2 is realized as the Causee; in both cases, the Causer is distinct from the single argument of V2. Therefore,

Table 3.1 Causer and Causee Realization

Causer =	Causee = single argument of intransitive V2 =
1. External argument of transitive V1	a. External argument of transitive V1
2. Internal argument of transitive V1	b. Internal argument of transitive V1
3. Single argument of intransitive V1	c. Single argument of intransitive V1
4. Participant distinct from any argument of V1	d. Participant distinct from any argument of V1

The four possibilities of realizing the Causer argument and the four possibilities of identifying the Causee argument with some other argument lead to sixteen logically possible combinations, which will be discussed in turn. For the sake of explicitness, I will present the thematic relations expressed by V1 and V2, and the causative relation expressed by the compound in two separate tiers, namely an individual thematic tier and a composite thematic tier.[14] I will use Causer and Causee in the composite thematic tier. However, for the individual thematic tier, I use numerals to indicate the theta-roles assigned by V1, and employ small letters to represent the ones assigned by V2. When more than one theta-role is assigned, "1" or "a" stands for the theta-role associated with an external argument, "2" or "b" for the theta-role associated with a direct internal argument, and "3" or "c" for the theta-role associated with an indirect internal argument. In addition to the representation of thematic relations, an event structure is provided for each example. It can be said that the thematic relations represented by the two tiers are richer than the event structure because the latter

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if V2 were used as the main reference point, these two different classes of examples would not be able to be distinguished.

(i) Zhangsan ca-ganjing-le zhuozi.
Zhangsan wipe-clean-PERF table
'Zhangsan wiped the table clean.'

(ii) Zhangsan kan-dun-le dao.
Zhangsan cut-blunt-PERF knife
'Zhangsan cut something with a knife, and as a result the knife became blunt.'

[14] Jackendoff (1987) is probably the first to use tiers to represent thematic relations. As far as previous accounts of Mandarin RVCs are concerned, most lexical-semantic accounts (e.g. Chu-Ren Huang & Lin 1992, Yafei Li 1995) also adopt this method of representation.

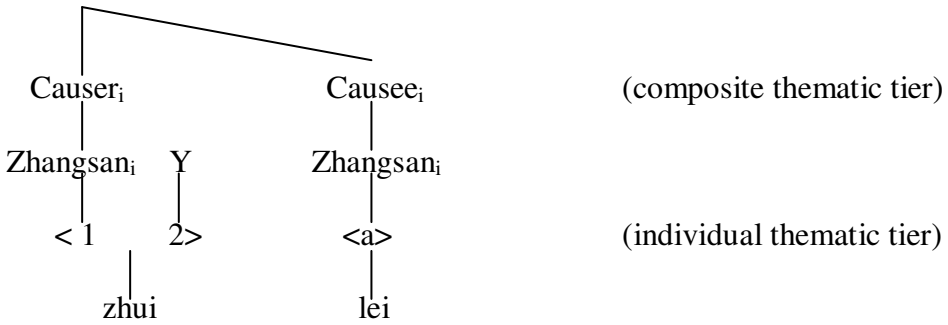
only concerns with the part of meaning that is relevant to argument realization. That is, the event structure concerns with the composite thematic relation rather than with the individual thematic relation, and the two-tier representation is used to explicate the interaction between these two different levels of thematic relations.

Based on table 3.1, let's examine the sixteen logically possible combinations concerning the realization of the Causer and the Causee argument one by one. First, combination 1-a, in which the external argument of a transitive V1 is realized as the Causer argument, and the single argument of V2 is identified with the external argument of V1. This combination is attested and illustrated in (32-33).

(32) a. Zhangsan zhui-lei-le.
Zhangsan chase-tired-PERF
'Zhangsan chased (someone) and became tired."

b. [[ZHANGSAN ACT$_{<CHASE>}$ on Y] CAUSE [BECOME [**ZHANGSAN** <*TIRED*>]]]

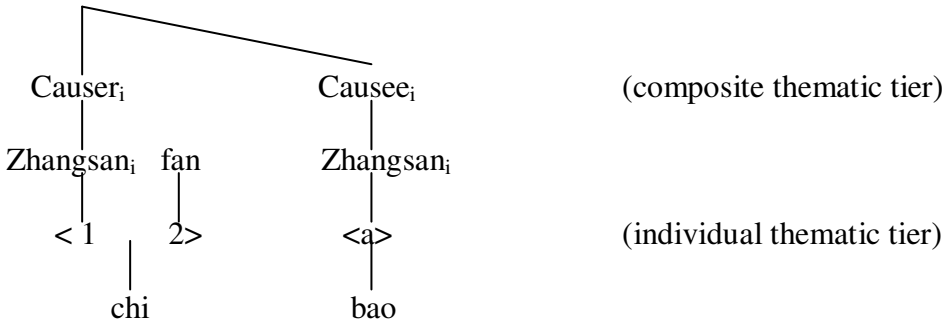
c. Zhangsan zhui-lei-le.



(33) a. Zhangsan chi-bao-le fan
Zhangsan eat-full-PERF meal
'Zhangsan ate himself full."

b. [[ZHANGSAN ACT$_{<EAT>}$ on MEAL] CAUSE [BECOME [**ZHANGSAN** <*FULL*>]]]

c. Zhangsan chi-bao-le fan.



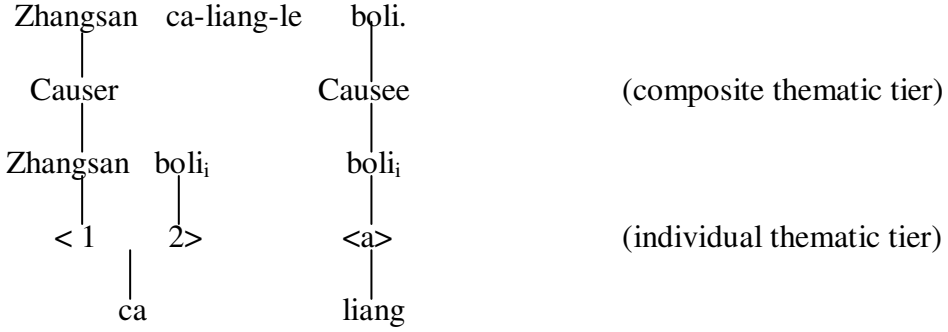
(32) differs from (33) in that the internal argument of V1 is not overtly expressed. However, in both of them, the Causer argument and the Causee argument are realized by the same linguistic expression *Zhangsan*. This expression is realized in subject position as a result of the linking rule in (19b), namely that when the Causer argument and the Causee argument are realized by one and the same linguistic expression, it appears in subject position.

II. Combination 1-b—the external argument of a transitive verb is realized as the Causer, and the single argument of an intransitive V2 is identified with the internal argument of V1. In transitive sentences containing an RVC, this is the most common way of realizing the Causer and the Causee. This combination is illustrated in (34).

(34) a. Zhangsan ca-liang-le boli.
Zhangsan wipe-shiny-PERF glass
'Zhangsan wiped the glass shiny.'

b. [[ZHANGSAN ACT$_{<WIPE>}$ on GLASS] CAUSE [BECOME [**GLASS** <*SHINY*>]]]

c. Zhangsan ca-liang-le boli.



In (34), the Causer argument and the Causee argument are realized in subject position and object position, respectively, as a result of the linking rule in (19a).

III. Combination 1-c. That is, the external argument of a transitive verb is realized as the Causer, and the single argument of an intransitive V2 is identified with the single argument of an intransitive V1. This combination is bad because the realization of the Causer argument requires V1 to be transitive, but the realization of the Causee argument requires V1 to be intransitive.

IV. Combination 1-d, namely that the external argument of V1 is realized as the Causer, and the single argument of V2 is not an argument of V1. This combination is well-formed in Mandarin and (35) illustrates this possibility.

(35) a. Zhangsan qie-dun-le dao.
Zhangsan cut-blunt-PERF knife
'Zhangsan cut (something) with the knife, and as a result the knife became blunt.'

b. [[ZHANGSAN ACT$_{<CUT>}$ on Y] CAUSE [BECOME [**KNIFE** <*BLUNT*>]]]

c.

Zhangsan	qie-dun-le	dao.	
Causer		Causee	(composite thematic tier)
Zhangsan	Y	dao	
< 1	2>	<a>	(individual thematic tier)
qie		dun	

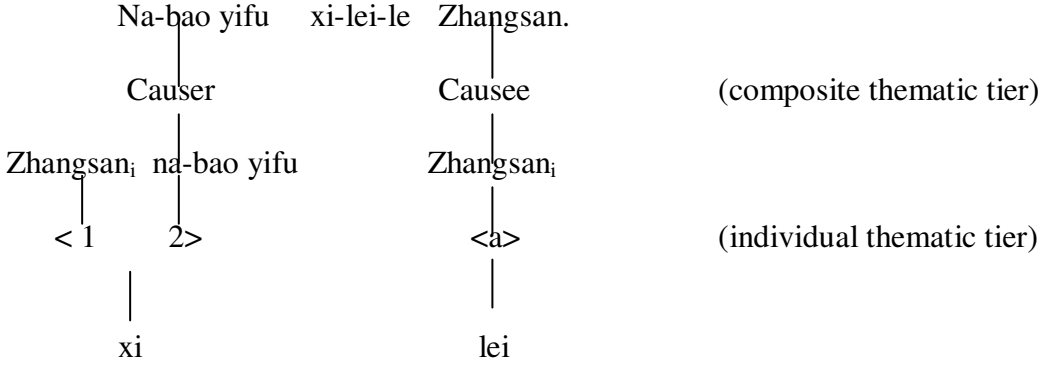
As in (34), the Causer argument and the Causee argument are realized in subject position and object position, respectively, through linking rule (19a).

V. Combination 2-a. In this combination, the internal argument of a transitive V1 is realized as the Causer, and the single argument of V2 is identified with the external argument of V1. This combination is possible in Mandarin, and one example is given in (36).

(36) a. Na-bao yifu xi-lei-le Zhangsan.
that-CL clothes wash-tired-PERF Zhangsan
'(Zhangsan washed that bundle of clothes) and the clothes got Zhangsan tired.'

b. [[**THAT BUNDLE OF CLOTHES**] CAUSE [BECOME [**ZHANGSAN** <*TIRED*>]]]

c.



In contrast to (32-35), where the causative reading is derived from the resultative reading, (36) has the *scare* reading. The *scare* reading results from the fact that the RVC in (36) functions like a lexical causative such as *scare* or *frighten* in terms of meaning and argument realization. In this case, the resultative reading is subordinate to the causative reading (see section 1.2.2.2). In fact, in the event structure given in (36b) and in all the subsequent event structures given for the *scare* reading of sentences containing an RVC, only the part that is most relevant to the realization of the Causer and the Causee argument is included, with the eventuality denoted by the V1 of the RVC being excluded from the representation.[15]

[15] Jim Huang (p.c.) suggested (i) as a fuller event structure representation of (36a), with the eventuality denoted by V1 being incorporated.

(i) Those clothes CAUSE [Zhangsan$_i$ DO$_{<WASH>}$ CAUSE [BECOME [Pro$_i$ <*TIRED*>]]]

However, it seems that what (36a) expresses is not "those clothes caused Zhangsan to wash them,' but rather "Zhangsan washed those clothes, and the clothes caused Zhangsan to become tired." Therefore, I think that (ii) might be a more accurate representation of the meaning of (36a).

(ii) [ZHANGSAN ACT$_{<WASH>}$ on THOSE CLOTHES] & [THOSE CLOTHES CAUSE [BECOME [ZHANGSAN <*TIRED*>]]]

However, there are indeed sentences that have a *scare* reading and involve a semantic structure analogous to (i). For example, (iii) has the interpretation that the humorous story caused Zhangsan to laugh and Zhangsan's laughing caused Zhangsan's waist to bend, and thus involve a semantic structure similar to (i), as shown in (iv).

(iii) Na-ge youmo gushi xiao-wan-le Zhangsan-de yao.
that-CL humor story laugh-bend-PERF Zhangsan-GEN waist
'That humorous story caused Zhangsan's waist to bend as a result of Zhangsan's laughing.'

(iv) [THAT HUMOROUS STORY CAUSE [ZHANGSAN ACT$_{<LAUGH>}$ CAUSE [BECOME [ZHANGSAN'S WAIST <*BENT*>]]]]

VI. Combination 2-b, in which the internal argument of a transitive V1 is realized as the Causer and the single argument of V2 is identified with the internal argument of V1. This combination is bad, however, because from the point of view of event semantics it is impossible for the internal argument of a transitive V1 to serve as both the Causer and the Causee. Although there are sentences like (37) that resemble this combination, they are in fact sentences that have only the Causee expressed in the syntax. Crucially, (37) cannot mean that somebody washed the clothes and the clothes caused themselves to become clean.[16] It seems that for the internal argument of a transitive V1 to be realized as the Causer, a different participant should be realized as the Causee and the sentence should be in transitive form.

(37) Yifu xi-ganjing-le.
clothes wash-clean-PERF
Literally: 'The clothes washed clean.' → 'The clothes were washed clean.'

VII. Combination 2-c, in which the internal argument of a transitive V1 is realized as the Causer and the single argument of V2 is identified with the single argument of an intransitive V1. This combination is ill-formed because the realization of the Causer requires V1 to be transitive and the realization of the Causee requires V1 to be intransitive.

It seems that whether the subject of the sentence can be interpreted as the entity that causes the event denoted by V1 to take place depends on the likelihood that the occurrence of the event is (necessarily) caused by the entity denoted by the subject NP.

[16] It needs to be pointed out that (37) involves an implicit agent. In most cases, the agent that washed the clothes can be evident from a given non-linguistic context. For example, if I knew that my friend's clothes got dirty and if I saw him wash them clean, I might utter (37) to comment on his clothes, even in front of him. However, in other cases, (37) may involve an agent that is unknown to the speaker. For instance, if I saw a basket of dirty clothes on the roadside on my way home and found them already clean fifteen minutes later on my way back to school, I might say (i) (to myself), which is of the same nature and structure as (37).

(i) Zhexie yifu zhemo yihuir jiu xi-ganjing-le.
these clothes such a.while EMPHASIS wash-clean-PERF
'These clothes were washed clean in such a short while.'

The fact that (37) is active, has a Causee subject, and involves an implicit agent makes it look like the middle construction in (ii) and (iii). More discussion about the relation of (37) to middles will be given in section 4.5.

(ii) Zhe zhong yifu hen hao-xi.
this kind clothes very easily-wash
'This kind of clothes washes easily.'

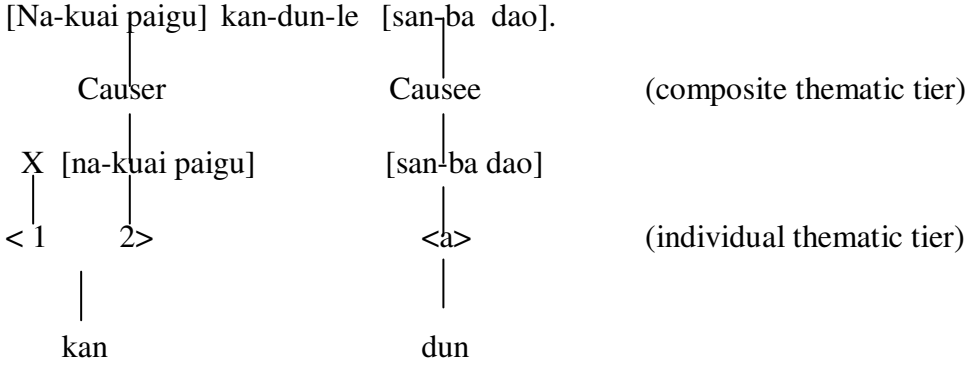
(iii) The cake cuts easily.

VIII. Combination 2-d. In this combination, the internal argument of a transitive V1 is realized as the Causer and the single argument of V2 is not identified with any argument of V1. This way of realizing the Causer and the Causee is illustrated in (38) below, which, like (36), has the *scare* reading.

(38) a. Na-kuai paigu kan-dun-le san-ba dao.
that-CL sparerib cut-blunt-PERF three-CL knife
'That sparerib got three knives blunt as a result of the cutting (by some specific person).'

b. [[**THAT SPARERIB**] CAUSE [BECOME [**THREE KNIVES** <*BLUNT*>]]]

c. [Na-kuai paigu] kan-dun-le [san-ba dao].

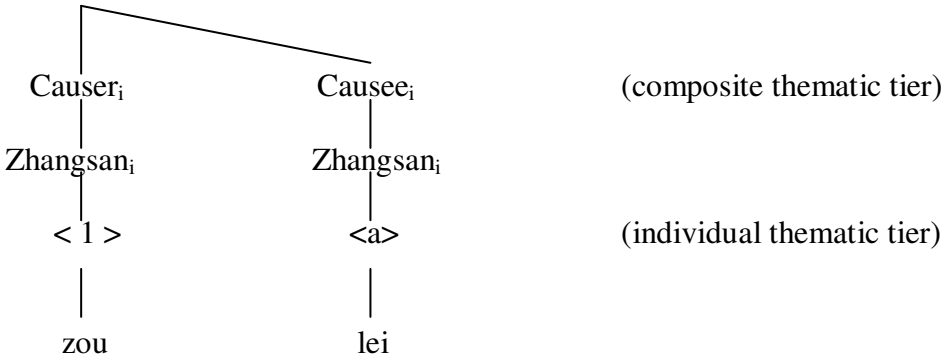


IX. Combination 3-a, namely that the Causer is realized by the single argument of an intransitive V1, and the single argument of V2 is identified with the external argument of a transitive V1. This combination is bad because the realization of the Causer requires V1 to be intransitive and the realization of the Causee requires V1 to be transitive.

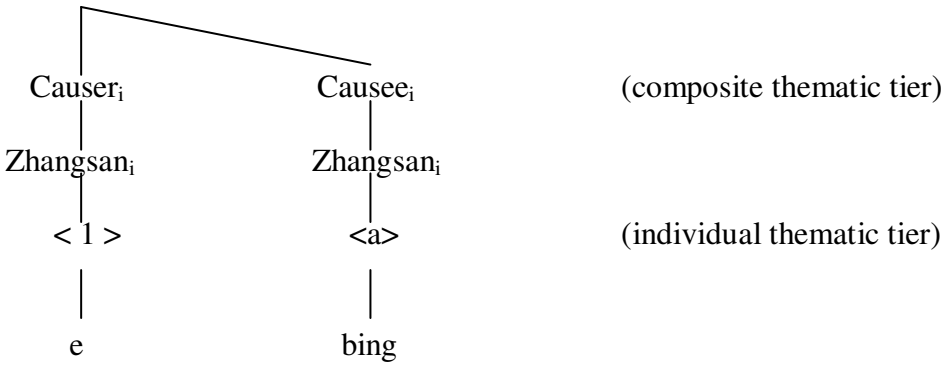
X. Combination 3-b. That is, the single argument of an intransitive V1 is realized as the Causer, and the single argument of V2 is identified with the internal argument of a transitive V1. This combination is ruled out for the same reason that combination 3-a is excluded.

XI. Combination 3-c, namely that the single argument of an intransitive V1 is realized as the Causer and identified with the single argument of V2. This combination is attested in Mandarin and illustrated in (39-40).

(39) a. Zhangsan zou-lei-le.
Zhangsan walk-tired-PERF
'Zhangsan walked himself tired.'
b. [[ZHANGSAN ACT$_{<WALK>}$] CAUSE [BECOME [**ZHANGSAN** <*TIRED*>]]]
c. Zhangsan zou-lei-le.



(40) a. Zhangsan e-bing-le.
Zhangsan hungry-sick-PERF
'Zhangsan became sick as a result of being hungry.'
b. [[**ZHANGSAN** <*HUNGRY*>] CAUSE [BECOME [**ZHANGSAN** <*SICK*>]]]
c. Zhangsan e-bing-le.



Although (39) and (40) are both examples of combination 3-c, they differ in that in the former the causing component involves an activity and in the latter it involves a state. However, in both of them, the Causer and the Causee are realized by one and the same expression, which appears in subject position as a result of the linking rule in (19b).

XII. Combination 3-d. In this combination, the single argument of an intransitive V1 is realized as the Causer, but is distinct from the single argument of V2. This way of realizing the Causer and the Causee is also attested in Mandarin, as shown by (41-42).

(41) a. Zhangsan ku-ya-le sangzi.
Zhangsan cry-hoarse-PERF throat
'Zhangsan cried his throat hoarse.'

b. [[ZHANGSAN ACT$_{<CRY>}$] CAUSE [BECOME [**THROAT** <*HORASE*>]]]

c.

Zhangsan	ku-ya-le	sangzi.	
Causer		Causee	(composite thematic tier)
Zhangsan		sangzi	
< 1 >		<a>	(individual thematic tier)
ku		ya	

(42) a. Zhangsan bing-huang-le Lisi.
Zhangsan sick-nervous-PERF Lisi
'Zhangsan's being sick got Lisi nervous.'

b. [[**ZHANGSAN** <*SICK*>] CAUSE [BECOME [**LISI** <*NERVOUS*>]]]

c.

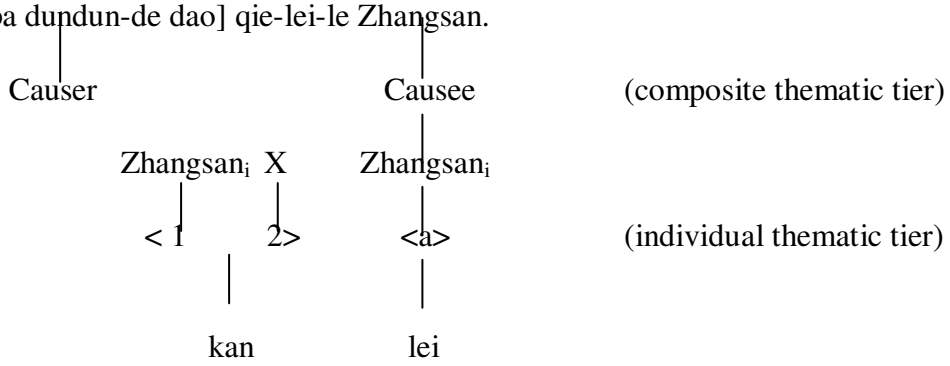
Zhangsan	bing-huang-le	Lisi	
Causer		Causee	(composite thematic tier)
Zhangsan		Lisi	
< 1 >		<a>	(individual thematic tier)
bing		huang	

Like (39) and (40), (41) and (42) involve an activity causing component and a state causing component, respectively. The distinct Causer and Causee are realized in subject and object positions respectively, as a result of the linking rule in (19a).

XIII. Combination 4-a. In this combination, the Causer is not identified with any argument of V1, and the single argument of V2 is identified with the external argument of a transitive V1. Since the external argument of V1 is identified with the single argument of V2,

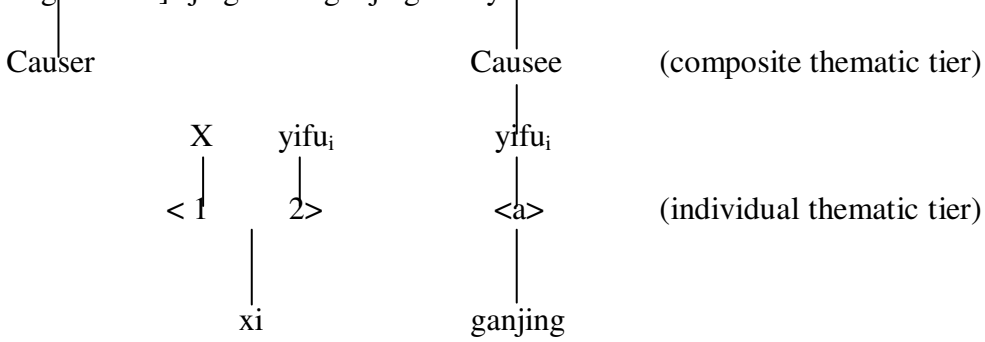
which is realized as the Causee, such a combination leads to a *scare* reading, as illustrated in (43).

(43) a. Na-ba dundun-de dao qie-lei-le Zhangsan.
that-CL blunt-MM knife cut-tired-PERF Zhangsan
'That blunt knife got Zhangsan tired from cutting (something) with it.'
b. [[**THAT BLUNT KNIFE**] CAUSE [BECOME [**ZHANGSAN** <*TIRED*>]]]
c. [Na-ba dundun-de dao] qie-lei-le Zhangsan.



XIV. Combination 4-b, namely that the Causer is not identified with any argument of V1, and the single argument of V2 is identified with the internal argument of a transitive V1. This way of realizing the Causer and the Causee argument is attested in Mandarin, and (44) illustrates this combination.

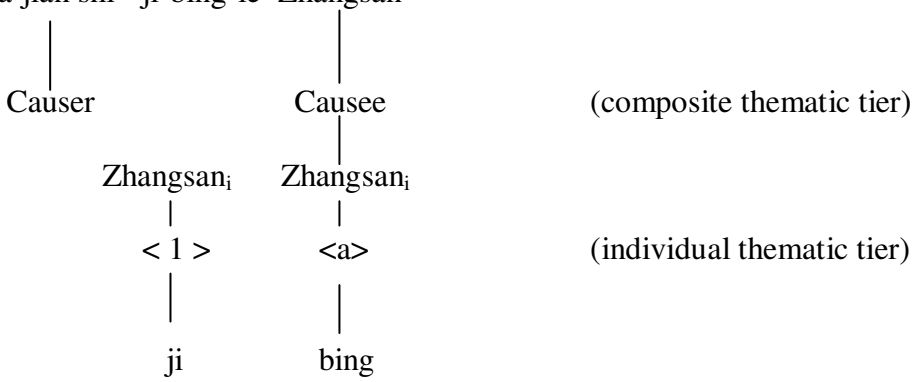
(44) a. Name zang-de shui jingran xi-ganjing-le yifu.
so dirty-MM water unexpectedly wash-clean-PERF clothes
'Unexpectedly, such dirty water washed the clothes clean.'
b. [[**SUCH DIRTY WATER**] CAUSE [BECOME [**THE CLOTHES** <*CLEAN*>]]]
c. [Name zang-de shui] jingran xi-ganjing-le yifu.



XV. Combination 4-c, in which the Causer is realized by a participant distinct from any argument of V1, and the single argument of V2 is identified with the single argument of an

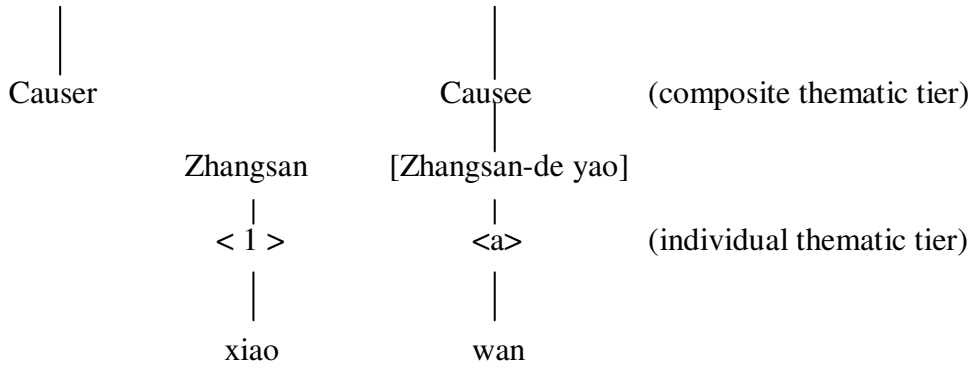
intransitive V1. This combination is illustrated with (45), in which *Zhangsan* is also interpreted as the single argument of *ji* 'worry.'[17]

(45) a. Na-jian shi ji-bing-le Zhangsan.
that-CL matter worry-sick-PERF Zhangsan
'That matter got Zhangsan sick from his worrying.'
b. [[**THAT MATTER**] CAUSE [BECOME [**ZHANGSAN** <*SICK*>]]]
c.



Finally, combination 4-d. In this combination, neither the Causer nor the Causee is identified with any argument of V1. This combination is attested and exemplified in (46), in which *Zhangsan* is also understood as the argument of *xiao* 'laugh.'

(46) a. Na-ge youmo gushi xiao-wan-le Zhangsan-de yao.
that-CL humor story laugh-bend-PERF Zhangsan-GEN waist
'That humorous story got Zhangsan's waist bent as a result of his laughing.'
b. [[**THAT HUMOROUS STORY**] CAUSE [BECOME [**ZHANGSAN'S WAIST** <*BENT*>]]]
c.



[17] As Larry Horn (p.c.) pointed out to me, although English has the idiomatic expression *be worried sick* as in (i), the English counterpart of (45) is not that good, as shown in (ii).
(i) I was worried sick about his safety.
(ii) ?That matter worried Zhangsan sick.

To summarize, among the sixteen potential combinations, one of them, i.e. 2-b, is bad for semantic reasons, four of them—1-c, 2-c, 3-a, 3-b—are illicit because of the conflicting requirements on the transitivity of V1, and all the other eleven combinations are attested. This fact itself shows that the thematic relations expressed by sentences containing an RVC are rich and complex. As we have shown, these complex thematic relations fall out of the different ways of realizing the Causer and identifying the Causee with some other argument, or out of the interaction between the individual thematic tier and the composite thematic tier.

However, the thematic relations expressed by sentences containing an RVC are more complex than what has been presented so far. Note that the above result is obtained by restricting our attention to cases where V1 is monotransitive or intransitive and V2 is intransitive, and by assuming that both the Causer and the Causee are realized in overt syntax, whether by one and the same linguistic expression or by two different expressions. However, based on the complex event structure templates proposed in section 3.1 (which are repeated below for ease of reference), when the causing predicate is an activity or accomplishment, only the Causee argument or more exactly only the participant which undergoes a change of state or location is a structure argument and thus has to be realized in overt syntax. In addition, the V1 of an RVC can be ditransitive and its V2 can be transitive. In what follows, I address these issues in turn.

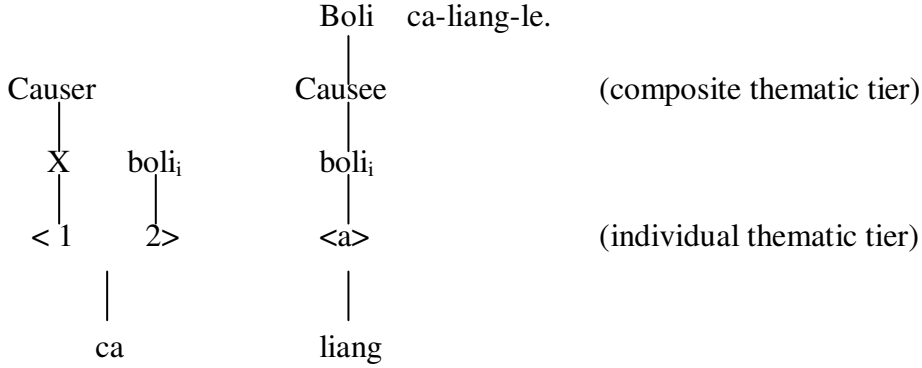
(47) Complex Causative Event Structure Templates:
   a. [[X ACT$_{<MANNER>}$ on (Y)] CAUSE [BECOME [**X**, **Y** or **Z** <*STATE/ at LOCATION*>]]]
   b. [[**X** <*STATE*>] CAUSE [BECOME [**X** or **Y** <*STATE*>]]]
   c. [**X** CAUSE [BECOME [**Y** <*STATE*>]]]

First, the event structure templates in (47a) predict that it is possible that only the Causee argument is overtly expressed when the causing component is an activity or accomplishment. This possibility is realized in Mandarin and it is illustrated by (48) (cf. (34)).

(48) a. Boli ca-liang-le.
glass wipe-shiny-PERF
'The glass was wiped shiny.'

b. [[x ACT$_{<WIPE>}$ on GLASS] CAUSE [BECOME [**GLASS** <*SHINY*>]]]

c.



As argued in section 3.1, (48a) still has the causative representation because it entails a causing subevent. In this example, the Causer argument is left unexpressed, and the Causee argument is expressed in the subject position through the linking rule in (19c).

Next, let's turn to the issue of transitivity of V1 and V2. In addition to the cases where V1 is monotransitive or intransitive and V2 is intransitive, the following cases are also attested in Mandarin: (i) V1 and V2 are both monotransitive, (ii) V1 is ditransitive and V2 is intransitive, and (iii) V1 is ditransitive and V2 is monotransitive. Although in these cases, there are many potential ways of realizing the Causer and Causee, for pragmatic reasons only a few are attested. For example, it is impossible to think of a well-formed example where the internal argument of a monotransitive V1 is realized as the Causer and the external argument of a monotransitive V2 is realized as the Causee because this way of realizing the Causer and the Causee leads to gibberish, as shown in (49).

(49) *Na-shou-shi du-dong-le Zhangsan.
that-CL-poem read-understand-PERF Zhangsan

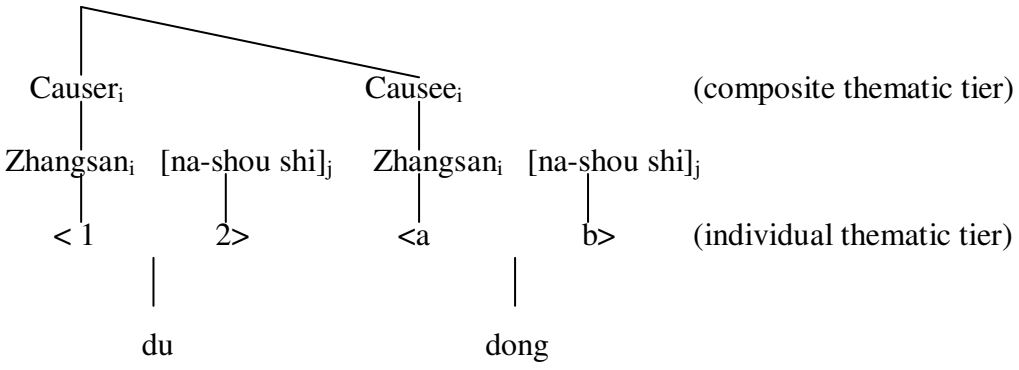
In this example, the internal argument of V1 is realized as the Causer, and the external argument of V1 is identified with the external argument of V2, which is realized as the Causee. This gives rise to the *scare* reading. However, this reading, namely that the poem made Zhangsan understand it, does not make any sense. To save space, I will not discuss more cases like (49). Instead, in what follows, I will just discuss the attested ways of realizing the Causer and Causee when what is involved is not an intransitive V2 with an intransitive or monotransitive V1.

First, as illustrated in (50), when both V1 and V2 are monotransitive, the external argument of V1 is realized as the Causer and the external argument of V2 is realized as the Causee. The Causer and Causee arguments are identified and expressed by one and the same expression in subject position. The internal argument of V1 and that of V2 are identified and realized by one and the same expression in object position.

(50) a. Zhangsan du-dong-le na-shou shi.
Zhangsan read-understand-PERF that-CL poem
'Zhangsan read and understood that poem.'

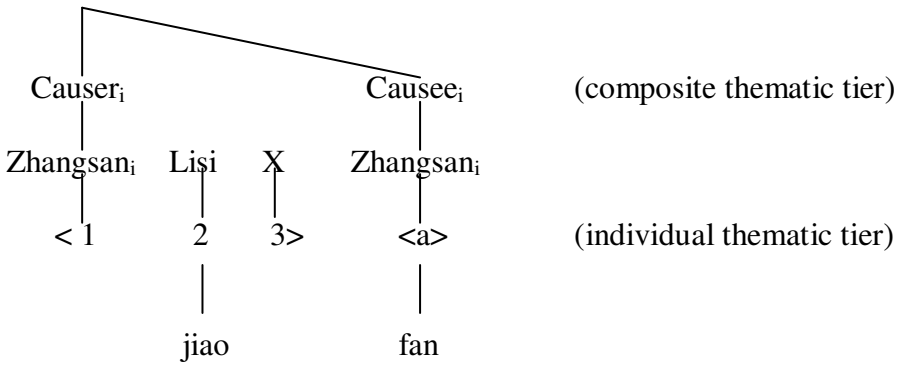
b. [[ZHANGSAN ACT$_{<READ>}$ on THAT POEM] CAUSE [BECOME [**ZHANGSAN** <*UNDERSTAND*>]]]

c. Zhangsan du-dong-le na-shou shi.



Second, when V1 is ditransitive and V2 is intransitive, there are four different ways of realizing the Causer and the Causee. (i): As shown in (51), the external argument of V1 is realized as the Causer, and the single argument of V2 is realized as the Causee and identified with the external argument of V1.

(51) a. Zhangsan jiao-fan-le Lisi.
Zhangsan teach-vexed-PERF Lisi
'Zhangsan taught Lisi and as a result Zhangsan felt vexed.'
b. [[ZHANGSAN ACT$_{<TEACH>}$ on LISI, X] CAUSE [BECOME [**ZHANGSAN** <*VEXED*>]]]
c. Zhangsan jiao-fan-le Lisi.

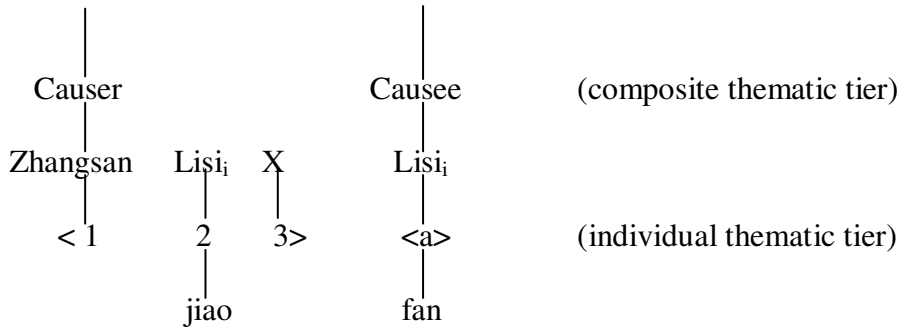


(ii): The external argument of V1 is realized as the Causer, and the single argument of V2 is identified with the direct internal argument of V1.[18] This is illustrated by (52), which has the same form as (51). However, (52) differs from (51) in that the former has the intended object-oriented reading while the latter has the intended subject-oriented reading.

(52) a. Zhangsan jiao-fan-le Lisi.
Zhangsan teach-vexed-PERF Lisi
'Zhangsan taught Lisi and as a result Lisi felt vexed.'
b. [[ZHANGSAN ACT$_{<TEACH>}$ on LISI, X] CAUSE [BECOME [**LISI** <*VEXED*>]]]

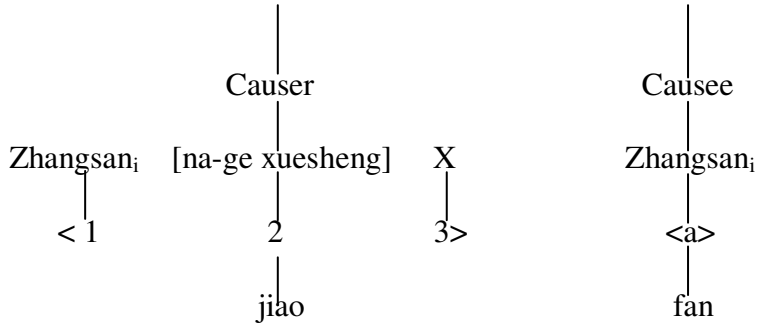
[18] I assume that when all the arguments of a ditransitive verb like *jiao* 'teach' are realized in the syntax without any relation indicators (such as prepositions) being used, the first argument following the verb in an active sentence is the direct internal argument. Given the use of *jiao* in (i) below, I view *Lisi* in the example as the direct internal argument, and the other postverbal argument as the indirect internal argument.
(i) Zhangsan jingchang jiao Lisi yingyu.
Zhangsan often teach Lisi English
'Zhangsan often teaches Lisi English.'

c. Zhangsan jiao-fan-le Lisi.



(iii): As shown in (53), the direct internal argument of a ditransitive V1 is realized as the Causer and the single argument of V2 is identified with the external argument of V1.

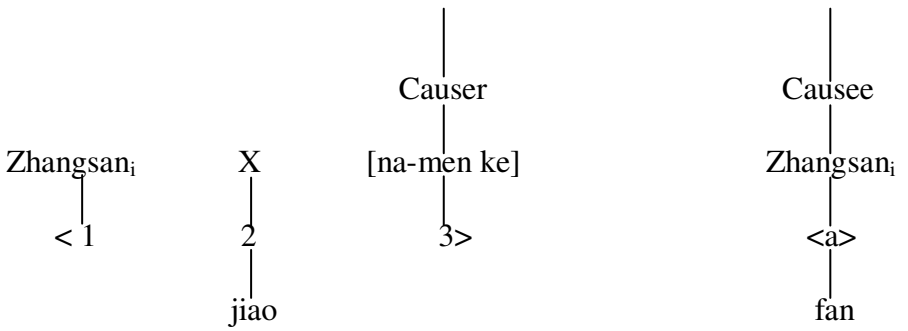
(53) a. Na-ge xuesheng jiao-fan-le Zhangsan.
that-CL student teach-vexed-PERF Zhangsan
'Zhangsan taught that student, and the student got Zhangsan vexed.'
b. [[**THAT STUDENT**] CAUSE [BECOME [**ZHANGSAN** <*VEXED*>]]]
c. [Na-ge xuesheng] jiao-fan-le Zhangsan.



(iv): The indirect internal argument of a ditransitive V1 is realized as the Causer and the single argument of V2 is identified with the external argument of V1. This is exemplified by (54).

(54) a. Na-men ke jiao-fan-le Zhangsan.
that-CL course teach-vexed-PERF Zhangsan
'Zhangsan taught that course, and the course got Zhangsan vexed.'
b. [[**THAT COURSE**] CAUSE [BECOME [**ZHANGSAN** <*VEXED*>]]]

c. [Na-men ke] jiao-fan-le Zhangsan.

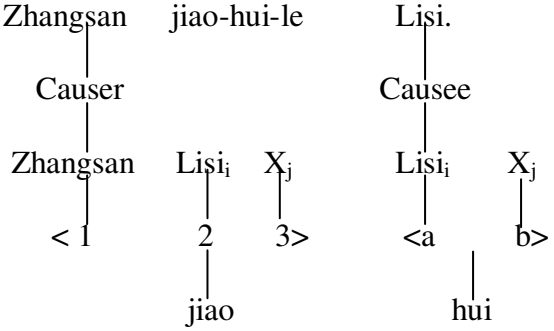


Third, as shown in (55), when V1 is ditransitive and V2 monotransitive, the external argument of V1 is realized as the Causer, and the external argument of V2 is realized as the Causee and identified with the direct internal argument of V1.

(55) a. Zhangsan jiao-hui-le Lisi.
Zhangsan teach-know-PERF Lisi
'Zhangsan taught Lisi (something), and as a result Lisi learned it.'

b. [ZHANGSAN ACT$_{<TEACH>}$ on LISI, X] CAUSE [BECOME [**LISI** <*KNOW*>]]]

c. Zhangsan jiao-hui-le Lisi.

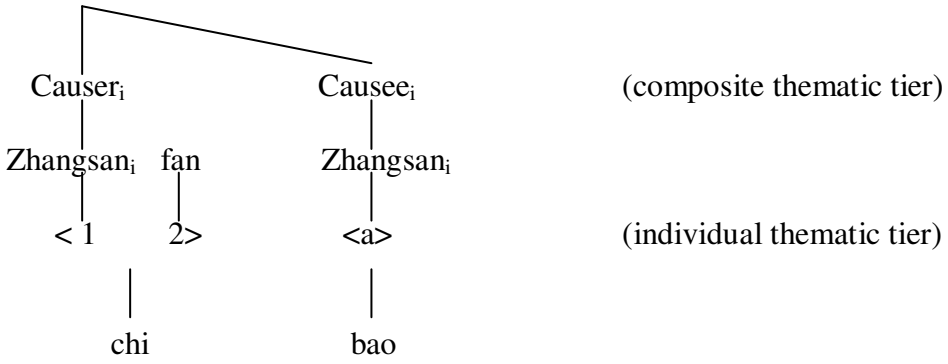


So far, we have given an account of the complex thematic relations expressed by sentences containing RVCs by looking at the ways of realizing the Causer and the Causee. However, there is one thing that we have encountered but have not given due consideration. That is, in some cases, linguistic expressions that are neither associated with the Causer nor with the Causee are used in the canonical direct object position or indirect object position. One such example we have encountered is (33), which is repeated as (56) below.

(56) a. Zhangsan chi-bao-le fan
Zhangsan eat-full-PERF meal
'Zhangsan ate himself full."

b. [[ZHANGSAN ACT$_{<EAT>}$ on MEAL] CAUSE [BECOME [**ZHANGSAN** *<FULL>*]]]

c. Zhangsan chi-bao-le fan.



In this example, the Causer and the Causee are identified and realized in the syntax by one and the same linguistic expression *Zhangsan*. However, the overt expression *fan* 'meal' in the object position is not related to the realization of Causer and Causee.

Thematically speaking, *fan* in (56) is the internal argument of *chi* 'eat.' This might suggest that after the expression of the Causer and the Causee, any argument of V1 that is neither realized as the Causer nor as the Causee can be overtly expressed. This proposal, however, fails to account for examples like (57) below.

(57) *Zhangsan kan-dun-le dao gutou.
Zhangsan cut-blunt-PERF knife bone
Intended: 'Zhangsan cut the bones with the knife and as a result the knife became blunt.'

In (57), the Causee *dao* 'knife' is distinct from any argument of V1. Since *gutou* 'bone,' the internal argument of V1, is neither realized as the Causer nor as the Causee, the above proposal predicts that it can be overtly expressed. This prediction, however, is not borne out.

Then how can we account for cases like (56) and (57)? I argue that an argument of V1 or V2 that is neither realized as the Causer nor as the Causee can be overtly expressed on the condition that it occupies the same position as when V1 or V2 is used separately. On this

proposal, *fan* 'meal' in (56) can be overtly expressed because it occupies the object position of the sentence, the same position as when *chi* 'eat' is used separately, as shown in (58). In contrast, *gutou* 'bone' in (57) cannot be overtly expressed because the direct object position—the position occupied by *gutou* when *kan* 'cut' is used separately, as shown in (59)—has already been filled by *dao* 'knife.'

(58) Zhangsan chi-le fan le.
Zhangsan eat-PERF meal SFP
'Zhangsan ate the meal.'

(59) Zhangsan kan-le gutou.
Zhangsan cut-PERF bone
'Zhangsan cut the bones.'

Further support for our proposal comes from sentences like (60b) (cf. (60a)), which contains a ditransitive V1. On our analysis, (60b) is grammatical because *na-ge wenti* 'that question,' an argument of V1 that is not realized as the Causer or the Causee, is overtly expressed in the same position as when *wen* 'ask' is used separately, as shown in (60c).

(60) a. Zhangsan wen-fan-le.
Zhangsan ask-vexed-PERF
'Zhangsan asked (somebody something) and as a result he felt vexed.'
b. Zhangsan wen-fan-le Lisi na-ge wenti.
Zhangsan ask-vexed-PERF Lisi that-CL question
'Zhangsan asked Lisi that question, and as a result Zhangsan felt vexed.'
c. Zhangsan wen-le Lisi na-ge wenti.
Zhangsan ask-PERF Lisi that-CL question
'Zhangsan asked Lisi that question.'

So far, we have shown that an argument of V1 that is neither realized as the Causer nor as the Causee can be overtly expressed as long as it occupies the same position as when the verb is used separately. (61) shows that the same can be said of an argument of V2.[19] In this

[19] A question arises as to why such a "structure uniformity" needs to be maintained. I believe that this lies in the fact that from a structural point of view, the uniformity facilitates the incorporation of the argument of V1 or V2 that is not realized as the Causer or the Causee to the argument structure of the RVC on the compound level. The uniformity is especially important, given that with respect to an RVC like *wen-fan* 'ask-vexed' in (60b),

example, *Zhangsan* is both the Causer and the Causee. The second NP *yao shuo-de hua* 'the words he wanted to say' is an argument of V2, but not an argument of V1, as shown by (61b) and (61c). As this NP is overtly expressed in (61a) in the same position as when *wang* 'forget' is used separately (as shown in (61c)), our proposal predicts that (61a) should be allowed. The fact (61a) is grammatical shows that this prediction is borne out.[20]

(61) a. Zhangsan qi-wang-le yao shuo-de hua.
Zhangsan anger-forget-PERF want say-MM words
'Zhangsan was so angry that he forgot what he wanted to say.'
b. *Zhangsan qi-le yao shuo-de hua.
Zhangsan anger-PERF want say-MM words
*'Zhangsan angered what he wanted to say.'
c. Zhangsan wang-le yao shuo-de hua.
Zhangsan forget-PERF want say-MM words
'Zhangsan forgot what he wanted to say.'

Note that an argument of V1 or V2 that is neither realized as the Causer nor as the Causee can be overtly expressed only after the Causer and the Causee have been realized in the syntax. For example, (62a) cannot have the intended meaning, even though *paigu* 'sparerib,' an internal argument of V1 that is neither the Causer nor the Causee on the intended interpretation, is realized in the same position as when V1 *kan* 'cut' is used

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complex thematic relations are expressed with a single clause that does not involve additional relation indicators other than word order and the RVC. If this is on the right track, then the ungrammaticality of (57), for example, is ultimately due to the difficulty to incorporate *gutou* 'bone,' when there are no overt relation indicators other than word order and the RVC involved. This is further supported by the fact that *gutou* 'bone' can be used with *dao* 'knife' in a so-called "verb-copying construction" in (i), in which *kan* 'cut' occurs twice, thus making clearer the structural and semantic relations among *Zhangsan*, *gutou*, and *dao*.

(i) Zhangsan **kan** gutou **kan**-dun-le dao.
Zhangsan cut bone cut-blunt-PERF knife
'Zhangsan cut the bone with the knife, and as a result the knife became blunt.'

[20] The grammaticality of (61a) provides counterevidence to a proposal that only an argument of V1 that is neither realized as the Causer nor as the Causee can be overtly expressed. More specifically, (61) argues against the proposal that (57) is bad because the V1 of the compound (i.e. *kan* 'cut') is monotransitive and thus cannot take two objects and that (60b) is good because V1 (i.e. *wen* 'ask') in this case is ditransitive and thus can take two objects. In turn, from the point of view of argument realization, (61a) provides evidence against the view that V1 is the head of an RVC and that only an argument of the head that is not realized as the Causer or the Causee can be overtly expressed.

separately, as shown in (62b). This is because the Causee argument on the intended reading is not overtly realized in the syntax.

(62) a. *Zhangsan kan-dun-le paigu.
Zhangsan cut-blunt-PERF sparerib
Intended: 'Zhangsan cut the sparerib, and as a result something (probably a knife) became blunt.'
b. Zhangsan kan-le paigu.
Zhangsan cut-PERF sparerib
'Zhangsan cut the sparerib.'

Therefore, an argument of V1 or V2 that is not realized as the Causer or the Causee can be overtly expressed on the condition that it is expressed in the same position as when the relevant verb is used separately and that the Causer and the Causee have already been realized in the overt syntax. This further shows the interaction between the individual thematic relation and the composite thematic relation. It demonstrates that ultimately the linguistic realizations of the core grammatical relations of a sentence containing an RVC are contributed by the individual thematic relation as well as by the composite thematic relation. Moreover, the overt realization of the Causer and the Causee as a precondition for an argument of V1 or V2 that is not realized as the Causer or Causee to be overtly expressed provides further support for our distinguishing between the individual thematic relation and the composite thematic relation. On our analysis, this precondition falls out of the fact that as a higher level of thematic relation that is more directly related to argument realization on the compound level, the composite thematic relation instead of the individual thematic relation should be satisfied first.[21]

[21] There is independent evidence for the priority of realizing the higher level of thematic roles like Causer and Causee from the English causative construction formed with *make*, which involves both the causative thematic relation and the thematic relation expressed by the "V" in "NP1 + make + NP2 + V (+ NP3)." The priority of realizing the former relation in the overt syntax is clearly reflected by the active cases that involve a transitive "V." In such cases, the Causer, **not the external argument of the "V,"** is expressed in the subject position (i.e. the position occupied by NP1), and the Causee, **not the internal argument of the "V,"** is realized in the main object position (i.e. the position occupied by NP2), as shown in (i).

To summarize, this subsection has shown that the complex thematic relations expressed by sentences containing an RVC fall out of the interaction of the individual thematic relation and the composite thematic relation, or more specifically out of the various ways of realizing the Causer and the Causee. In addition, the realization of the core grammatical relations follows from the linking rules associated with complex causative events and from the condition on the overt occurrence of an argument of V1 or V2 that is not realized as the Causer or the Causee after the composite thematic relation is satisfied.

3.2.3 Possible event structure templates and syntactic frames of an RVC

Different ways of realizing the Causer and the Causee and the optional filling of an argument of V1 or V2 that is not realized as the Causer or Causee may lead to the same surface transitive or intransitive frame. In fact, the two syntactic frames given for the syntactic information of an RVC in (26), repeated below as (63), are obtained by abstracting away from different transitive frames in (64) and different intransitive frames in (65) (see section 1.2.2.3 for a discussion of the different frames). The question is whether there is any way to predict in which transitive and/or intransitive frame(s) an RVC can occur.

(63) V1 + V2 → $[V1\text{-}V2]_{RVC}$
Syntax: Subject $[V1\text{-}V2]_{RVC}$ &
Subject $[V1\text{-}V2]_{RVC}$ Object
Semantics: As a result of the eventuality denoted by V1, a change denoted by V2 takes place.

(64) a. **Object-oriented canonical transitive frame**
Zhangsan ca-liang-le boli.
Zhangsan wipe-shiny-PERF glass
'Zhangsan wiped the glass shiny.'

(i) John made Mary water the flowers.

b. **Subject-oriented canonical transitive frame**
Zhangsan kan-lei-le shu.
Zhangsan read-tired-PERF book
'Zhangsan read the book and as a result he became tired.'

c. **Non-canonical transitive frame**
Na-bu xiaoshuo xie-bai-le Zhangsan-de toufa.
that-CL novel write-white-PERF Zhangsan-GEN hair
'Zhangsan wrote that novel and the novel got Zhangsan's hair white.'

(65) a. **Unergative frame**
Zhangsan zhui-lei-le.
Zhangsan chase-tired-PERF
'Zhangsan chased (someone), and as a result Zhangsan became tired.'

b. **Deep unaccusative frame**
Zhangsan e-yun-le.
Zhangsan hungry-faint-PERF
'Zhangsan was hungry (for some time) and as a result he fainted.'

c. **Surface unaccusative frame**
Boli ca-liang-le.
glass wipe-shiny-PERF
Literally: 'The glass wiped shiny.' → 'The glass was wiped shiny.'

To make things more concrete, examine the contrast between (66) and (67). These two sets of sentences clearly show that the syntactic frames as well as the event structure templates associated with two different RVCs (*qie-dun* 'cut-blunt' in (66) and *lei-bing* 'tired-sick' in (67)) are not necessarily identical. The question is whether there is any way to predict this difference.

(66) a. Zhangsan qie-dun-le dao. (**Object-oriented canonical transitive frame**)
Zhangsan cut-blunt-PERF knife
'Zhangsan cut (something) with the knife, and as a result the knife became blunt.'
[[X $ACT_{<MANNER>}$ on Y] CAUSE [BECOME [**Z** <*STATE*>]]]

b. Na-kuai rou qie-dun-le san-ba dao. (**Non-canonical transitive frame**)
that-CL meat cut-blunt-PERF three-CL knife
'The meat got three knives blunt as a result of the cutting (by some specific person).'
[**X** CAUSE [BECOME [**Y** <*STATE*>]]]

c. Dao qie-dun-le. (**Surface unaccusative frame**)
knife cut-blunt-PERF
'The knife was used to cut (something) and as a result it became blunt.'
[[X ACT$_{<MANNER>}$ on Y] CAUSE [BECOME [**Z** <*STATE*>]]]

(67) a. Zhangsan lei-bing-le. (**Deep unaccusative frame**)
Zhangsan tired-sick-PERF
'Zhangsan was (constantly) in the state of being tired and as a result he became sick.'
[[**X** <*STATE*>] CAUSE [BECOME [**X** <*STATE*>]]]

b. Fanzhong-de gongzuo lei-bing-le Zhangsan. (**Non-canonical transitive frame**)
heavy-MM work tired-sick-PERF Zhangsan
'The heavy work got Zhangsan sick from his being tired.'
[**X** CAUSE [BECOME [**Y** <*STATE*>]]]

I argue that the answer to the above question lies in the nature of V1.[22] Specifically, whether V1 denotes a state or activity determines the possible event structure templates of an RVC, which in turn determine the possible transitive and/or intransitives frames in which the RVC can occur. As argued earlier, there are three complex event structure templates associated with causative events that involve a resulting change. For ease of reference, they are repeated in (68) and are called T1, T2, and T3, respectively.

(68) Complex Causative Event Structure Templates
a. T1: [[X ACT$_{<MANNER>}$ on (Y)] CAUSE [BECOME [**X**, **Y** or **Z** <*STATE/ at LOCATION*>]]]
b. T2: [[**X** <*STATE*>] CAUSE [BECOME [**X** or **Y** <*STATE*>]]]
c. T3: [**X** CAUSE [BECOME [**Y** <*STATE*>]]]

Recall that the causing component of T1 and T2 involves an activity and a state respectively, and that T3 does not hinge on whether the causing component contains a state or an activity. Given this, we expect that when the V1 of an RVC denotes an activity, it is certain that the RVC will be associated with T1 and it is possible for it to be associated with T3. Whether the latter possibility can be realized is largely a matter of pragmatics. When it is realized, the

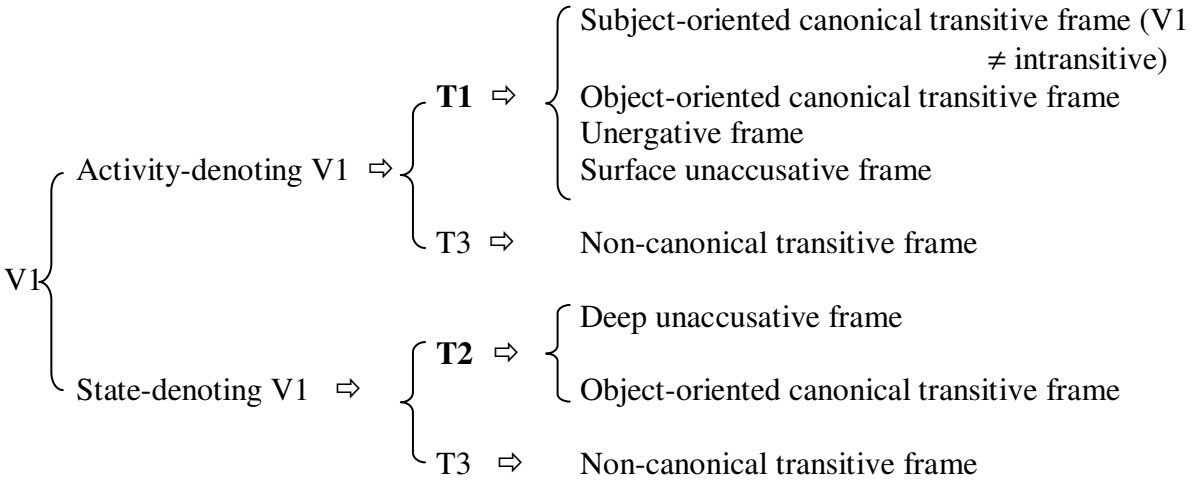
[22] This observation has already been made by Cheng & C.-T. James Huang (1994), who, however, do not discuss the observation to the same degree of thoroughness and do not relate it to different event structure templates.

RVC can occur in the non-canonical transitive frame. In addition, when the event structure template is T1, it is possible for the RVC to be used in the following frames: the subject-oriented canonical transitive frame, the object-oriented canonical transitive frame, the unergative frame and the surface unaccusative frame. Which of these potentialities are ultimately realized depends on the co-selection of V1, V2 and the event participants involved, and on the transitivity of V1. For example, when V1 is intransitive, it is impossible for the RVC to be used in the subject-oriented canonical transitive frame because this frame requires a V1 that involves at least two arguments.

On the other hand, when the V1 of an RVC denotes a state, it is certain that the RVC will be associated with T2 and it is also possible for it to be associated with T3. When the latter possibility is realized, the RVC can be used in the non-canonical transitive frame. Moreover, when the event structure template is T2, the following frames are possible: the deep unaccusative frame and the object-oriented canonical transitive frame. Whether one or both of these possibilities are ultimately realized again depends on the co-selection between V1, V2, and the event participants involved.

The possible event structure templates and syntactic frames associated with an RVC are summarized as (69). T1 and T2 in (69) are in bold so as to show that they are definitely associated with an activity-denoting V1 and a state-denoting V1, respectively. The event structure templates and syntactic frames that are not in bold are just possible templates and frames. Which of these possibilities are eventually realized depends on how V1, V2 and the event participants involved co-select one another, except that the realization of the T3 possibility automatically leads to the attestation of the non-canonical transitive frame.

(69) Possible event structure templates and syntactic frames of an RVC



After establishing the possible event structure templates and syntactic frames associated with an RVC, let's return to the contrast between *qie-dun* 'cut-blunt' in (66) and *lei-bing* 'tired-sick' in (67). As V1 in *qie-dun* denotes an activity, it is definitely associated with T1. This leads to four possible frames: the subject-oriented canonical transitive frame, the object-oriented canonical transitive frame, the unergative frame and the surface unaccusative frame. However, as it is impossible to have an individual who cuts something and causes himself or herself to become blunt, the subject-oriented canonical transitive frame and the unergative frame are eliminated for pragmatic reasons. As it is possible to have a scenario where one cuts X with Y and the cutting causes Y to become blunt, we expect the object-oriented reading and the object-oriented canonical transitive frame associated with it to be good. The use of *qie-dun* in (66a) confirms this. Moreover, since (66a) is object-oriented, it is possible to express the Causee alone. This possibility is realized in (66c), and therefore the surface unaccusative frame is good as well. Finally, since it is well-formed when realizing the internal argument of *qie* 'cut' as the Causer, *qie-dun* can be associated with T3 as well. As a

result, the non-canonical transitive frame is predicted to be good, too. As shown by (66b), this prediction is borne out.

As for *lei-bing* 'tired-sick' in (67), since in this case V1 denotes a state, the whole RVC can undoubtedly be associated with T2. This leads to two potential frames, the deep unaccusative frame and the object-oriented canonical transitive frame. As it is possible for one and the same person to be in the state of being tired and then to become sick as a result, the deep unaccusative frame is predicted to be good, and (67a) bears out this possibility. However, it is difficult to imagine a situation where one's being tired causes someone else to become sick. As a result, the object-oriented canonical transitive frame is predicted to be bad, as shown in (70).

(70) *Zhangsan lei-bing-le Lisi.
Zhangsan tired-sick-PERF Lisi
Intended: 'Zhangsan was tired, and as a result Lisi became sick.'

Finally, as an entity can be said to cause someone to become sick, *lei-bing* can also be associated with T3 and thus the non-canonical transitive frame is correctly predicted to be good, as shown by (67b).

Therefore, our proposal explains the contrast between (66) and (67). We have seen that the nature of V1 predicts the possible event structure templates associated with an RVC. Together with the co-selection among V1, V2 and the event participants, the event structure templates correctly predict the attested frames. Given that the contrast between (66) and (67) can be explained by our proposal, this in turn corroborates our argument that the eventuality of V1 determines the possible event structure templates of an RVC and that the event structure templates determine the possible syntactic frames.

3.2.4 Ambiguity in sentences containing an RVC

After accounting for the formation and complex thematic relations of RVCs, we now turn to the question of whether the lexical-semantic account proposed can successfully explain the ambiguity in some sentences containing an RVC, particularly the ambiguity in (71).

(71) Zhangsan zhui-lei-le Lisi.
Zhangsan chase-tired-PERF Lisi.
(a) 'Zhangsan chased Lisi and as a result Lisi got tired.' (easiest)
(b) 'Zhangsan chased Lisi and as a result Zhangsan got tired.'
(c) 'Lisi chased Zhangsan and Zhangsan got Lisi tired.' (hardest)
(d) *'Lisi chased Zhangsan and Zhangsan got himself tired.'

First, I would concern myself with why the first three readings in (71) are good and the fourth one is bad. I argue that the three readings allowed fall out of different interactions of the individual thematic relation and the composite thematic relation, and that the fourth reading is bad for both grammatical and semantic reasons. In the first reading, the external argument of V1 is realized as the Causer; the single argument of V2 is realized as the Causee and is identified with the internal argument of V1. As in this case the Causer and the Causee are not identified, they are expressed in the subject and object position respectively according to the linking rule in (19a), repeated as (72a) below.

(72) Linking Rules for Complex Causative Events in Active Sentences
a. The Causer argument is realized in subject position and the Causee argument in object position, when both arguments are overtly expressed by different linguistic expressions.
b. When the Causer argument and the Causee argument are realized by one and the same linguistic expression, it appears in subject position.
c. When only the Causee argument is expressed, it is realized in subject position.

In this reading, the individual thematic relation and the composite thematic relation interact in the same way as they do in an unambiguous sentence like (73).

(73) Zhangsan xi-ganjing-le yifu.
Zhangsan wash-clean-PERF clothes
'Zhangsan washed his clothes clean.'

In the second reading, just as in the first one, the external argument of V1 is realized as the Causer and the single argument of V2 is realized as the Causee. However, in this case, the single argument of V2 is identified with the external argument of V1. As a result, the Causer and Causee arguments are identified. In (71), the two are realized by the same linguistic expression, which is linked to the subject position according to the rule in (72b). Therefore, the second reading of (71) is subject-oriented. The object position can be filled by the internal argument of V1 because this argument is overtly expressed in the same position as when V1 is used separately, as shown in (74). In this reading, the way that the individual thematic relation and the composite thematic relation interact is the same as that manifested in an unambiguous sentence like (75).

(74) Zhangsan zhui-le Lisi.
Zhangsan chase-PERF Lisi.
'Zhangsan chased Lisi.'

(75) Zhangsan kan-lei-le shu.
Zhangsan read-tired-PERF book
'Zhangsan read books and as a result he became tired.'

In the third reading, the internal argument of V1, namely *Zhangsan*, is realized as the Causer, and the single argument of V2, i.e. *Lisi*, is realized as the Causee. Furthermore, the single argument of V2 is identified with the external argument of V1. This way of realizing the Causer and the Causee leads to the *scare* reading. According to the linking rule in (72a), the Causer *Zhangsan* is realized in subject position and the Causee *Lisi* is expressed in object position. The way that the individual thematic relation and the composite thematic relation interact in this case is the same as that in (76), which is unambiguous.

(76) Na-bao yifu xi-lei-le Zhangsan.
that-CL clothes wash-tired-PERF Zhangsan
'Zhangsan washed that bundle of clothes and the clothes got Zhangsan tired.'

As for the fourth reading, although it is theoretically possible, it is bad for both structural and semantic reasons. In this reading, *Zhangsan*, the internal argument of V1, is realized as the Causer, and the single argument of V2 is realized as the Causee. Furthermore, the Causer argument is identified with the Causee argument. After identification, the Causer and Causee arguments are realized by the same expression *Zhangsan* in the subject position. This gives rise to the subject-oriented reading of the sentence. However, note that in this case the direct object position is an illicit position for the external argument of V1, namely *Lisi*, which is neither realized as the Causer nor as the Causee. Recall that for an argument of V1 or V2 that is not realized as the Causer or Causee to be overtly expressed, this argument has to be expressed in the same position as when the relevant verb is used separately. However, in the fourth reading of (71), the external argument of V1—*Lisi*—is realized in a different position than when V1 *zhui* 'chase' is used separately, as evidenced by the contrast between (71) and (77). Therefore, *Lisi* cannot occupy the object position of (71) on the fourth reading, which gives rise to the ungrammaticality of the sentence with respect to this reading.

(77) Lisi zhui-le Zhangsan.
Lisi chase-PERF Zhangsan.
'Lisi chased Zhangsan.'

Furthermore, the fourth reading of (71) is also ruled out on semantic grounds. Since in this reading the external argument of V1 is not realized as the Causer, the sentence takes on a *scare* reading. That is, the sentence in this case has to be interpreted as "Lisi chased Zhangsan and Zhangsan got himself tired." This, however, is semantically bad.[23] Relating

[23] Jim Huang (p.c.) suggested to me that the fact that the result component cannot be predicated of the Causer on the scare reading of an RVC sentence can be explained under any reasonable theory of control. To him, the

this to the behavior of lexical causatives like *scare*, it can be said that the ill-formedness of the fourth reading of (71) is analogous to the ungrammaticality of (78) on the intended reading.

(78) *The tiger scared the child. (Intended: 'The child did something to the tiger, and the tiger got itself scared.')

Next, let's see how to explain the varying degree of difficulty in obtaining the first three readings of (71) when there is not any further context. As indicated in (71), among the three readings allowed, the first reading is easiest to get and the third reading is the most difficult to obtain. I argue that this difference results from prototypicality and semantic/pragmatic factors. Particularly, I propose that a strategy or heuristic, namely the Animate Subject as Agent or Experiencer Strategy (ASAES) in (79), is used in processing a sentence.

(79) Animate Subject as Agent or Experiencer Strategy (ASAES)
Interpret the animate subject of an active sentence as the **Agent or Experiencer** of a (compound) verb.

The ASAES is proposed on the basis that animate beings are prototypically initiators of actions or perceivers of things. It is not a "hard" principle, but a strategy, because obviously it can be violated. For example, in *Bob received a letter*, the subject of the sentence, though

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fact that (i) cannot have a subject-oriented reading, but an object-oriented interpretation is because the sentence is associated with an event structure (which, according to Jim Huang, is equal to the underlying syntactic structure on a syntactic approach) in (ii) (cf. note 15 of this chapter). As *Zhangsan* in (ii) already controls the "Pro," it correctly predicts that the Causer *yifu* 'clothes,' which is farther away than *Zhangsan*, cannot control the Pro and thus cannot be interpreted as the Causee.

(i) Yifu xi-lei-le Zhangsan.
clothes wash-tired-PERF Zhangsan
'Zhangsan washed the clothes, and the clothes got Zhangsan tired.'

(ii) Those clothes CAUSE [Zhangsan$_i$ DO$_{<WASH>}$ CAUSE [BECOME [Pro$_i$ <*TIRED*>]]]

Although Jim Huang's suggestion can account for the fact that the sentence in (i) can only be object-oriented, I have some concern about extending the notions of "control" and "Pro" to the event-semantic representation of a sentence. Moreover, as pointed out earlier in Chapter 2, there are problems for identifying the semantic representation of a sentence with its underlying syntactic structure. Among others, one of the main problems is that there is no **syntactic** evidence for such an underlying **syntactic** structure.

animate, is a Recipient (or Goal), not an Agent. However, as implicit in Altmann & Steedman 1988 and explicit in Trueswell, Tanenhaus & Garnsey 1994, animacy plays an important role in sentence processing.[24] In fact, even for those who argue for a serial model of sentence processing (e.g. Clifton et al. 2003; Rayner, Carlson & Frazier 1983), semantic and pragmatic factors, including animacy, play a role in reanalysis. Therefore, there is evidence for the use of the ASAES in language processing.

Given the ASAES, we expect that the first two readings of (71) should be easier to obtain than the third reading. This is because in the first two readings the subject is interpreted as the Agent argument of *zhui* 'chase,' thus obeying the strategy in (79). However, in the third reading *Zhangsan* is interpreted as the chasee, thus violating the ASAES. Although the strategy in (79) is violable, a reading that obeys it is favored over one that violates it. As a result, the first two readings are favored over the third one.

The remaining question is why the first reading is easier to get than the second one. I argue that the answer to this question lies in prototypicality. When *x* does something to *y* and causes a change, the entity that is most likely to undergo the change is *y*, not *x*, because *y* is acted upon by *x*. In other words, for a transitive resultative construction with a transitive causing component, the most typical way of realizing the Causer and the Causee is to

[24] For example, Trueswell, Tanenhaus & Garnsey (1994) show that reduced relative clauses with animate nouns like (ia) are generally more difficult to process than reduced relative clauses with inanimate nouns like (ib).

(i) a. **The defendant examined** by the lawyer turned out to be unreliable.
b. **The evidence examined** by the lawyer turned out to be unreliable.

This is because the animate NP *the defendant* in (ia) is a good candidate for the Agent role played by the external argument of *examine*. As a result, at the point of "examined," (ia) induced a past-tense reading rather than a participial reading. In contrast, the relevant NP in (ib), namely *the evidence*, is inanimate. It is typically a Patient, and does not fit with the Agent role played by the external argument of *examine* from a semantic point of view. On the other hand, *the evidence* is semantically compatible with an interpretation on which it is the internal argument of *examine*. As a result, at the point of "examined," the verb is interpreted as being in its participial form, and *the evidence examined* is understood as a reduced relative clause, which is the correct interpretation. In sum, due to the animacy difference of the NPs involved, (ia) is more likely to lead to a garden path than (ib). As a result, sentences like (ia) are, in general, more difficult to parse than sentences like (ib).

respectively employ the external argument and the internal argument of the causing predicate. In this case, the internal argument of the causing predicate is identified with the single argument of the resulting predicate, if the resulting predicate is intransitive. Recall that in the first reading of (71), the external argument of the V1 of *zhui-lei* 'chase-tired' is realized as the Causer. The internal argument of V1 is identified with the single argument of V2, and the identified participant is realized as the Causee. As mentioned earlier, this way of realizing the Causer and the Causee is the most typical way of realizing the two composite arguments. In contrast, in the second reading, the single argument of V2, which is realized as the Causee, is identified with the external argument of V1, although as in the first reading, the external argument of V1 is also realized as the Causer in the second reading. In other words, in the second reading, the external argument of V1 is not only realized as the Causer but also as the Causee. This way of realizing the Causer and the Causee is an atypical way of realizing the two composite arguments. This is reflected in the fact that not only intralinguistically but also crosslinguistically, transitive object-oriented resultatives are much more common than transitive subject-oriented resultatives (see section 4.2 for further discussion). Therefore, the fact that the first reading of (71) is easier to obtain than the second one is due to the fact that the way of realizing the Causer and the Causee in the first reading is the most typical way of realizing the two composite arguments. Other things being equal, this reading is favored over the second reading.

To summarize, the first three readings of (71) fall out of the interaction of the Causer and Causee roles licensed by the complex event denoted by an RVC and the theta-roles individually licensed by each of the two components of the RVC. The fourth reading, though logically possible, is bad for grammatical and semantic reasons. The varying degree of

difficulty in obtaining the first three readings results from prototypicality and the working of the Animate Subject as Agent or Experiencer Strategy. Therefore, the lexical-semantic account I proposed can not only explain the ambiguity of some sentences containing an RVC, but also account for the varying degree of difficulty in obtaining the different readings.

Before moving on to the next subsection, I would like to make some further remarks on the subject-oriented and *scare* readings of a transitive RVC.[25] First, the subject-oriented reading of a transitive RVC is often said to disallow a referential object (e.g. Cheng 1997: 171, Cheng & C.-T. James Huang 1994: 205-206, Gu 1992: 27, Jimmy Lin 2004: 101), and the alleged contrast between sentences like (80) and those like (81) is often used to support this observation.

(80) Zhangsan qi-lei-le ma.
Zhangsan ride-tired-PERF horse
(a) 'Zhangsan rode the horse, and as a result the horse became tired.'
(b) 'Zhangsan rode horses, and as a result he became tired.'

(81) Zhangsan qi-lei-le na-pi ma.
Zhangsan ride-tired-PERF that-CL horse
(a) 'Zhangsan rode that horse, and as a result the horse became tired.'
(b) *'Zhangsan rode that horse, and as a result he became tired.'

On this view, (80) allows both an object-oriented and a subject-oriented reading because it involves a bare noun *ma* 'horse' which permits both a non-referential and a referential interpretation. Crucially, when (80) is understood as being subject-oriented, the bare noun has to be given a non-referential interpretation. In contrast to (80), (81) involves a definite object NP and only allows an object-oriented reading.

The above view is problematic, however. For one thing, as seen in (71), the object of a transitive subject-oriented resultative can be a proper name, which is referential. Based on

[25] The two readings will be given a crosslinguistic examination in the next chapter.

this, Huei-Ling Lin (1998: 70) concludes that "[s]ubject-oriented [resultative verb] compounds can be followed by NPs, referential or non-referential." For another, to me and to almost all speakers I consulted, the two readings given for (81) are both allowed. (82) and (83) further show that a definite description can be compatible with a transitive subject-oriented RVC. Therefore, transitive subject-oriented resultatives can not only occur with non-referential bare NPs, but also with proper names and definite descriptions.

(82) Zhangsan xiang-feng-le na-wei piaoliang-de guniang.
Zhangsan miss-crazy-PERF that-CL beautiful-MM lady
'Zhangsan missed that beautiful girl so much that he became crazy.'

(83) Zhangsan du-ni-le na-ben shu.
Zhangsan read-bored-PERF that-CL book
'Zhangsan read that book so much that he got bored.'

If the conclusion reached above is correct, then how can we account for sentences like (84) and (85), which involve quantified NPs without a demonstrative and which only allow an object-oriented reading (as long as this reading is semantically and pragmatically well-formed)?[26]

(84) Zhangsan qi-lei-le san-pi ma.
Zhangsan ride-tired-PERF three-CL horse
(a) 'Zhangsan rode horses, and as a result three horses became tired.'
(b) *'Zhangsan rode three horses (one by one), and as a result he became tired.'

[26] Examples like (i), which involves a Wh-NP, as well as those like (84) are often cited as evidence for the view that transitive subject-oriented resultatives only allow non-referential objects. However, the (b) reading of (i) is in fact not bad. Moreover, (ii) clearly shows that a Wh-NP can be used in the object position of a subject-oriented resultative.

(i) Zhangsan qi-lei-le na-pi ma?
Zhangsan ride-tired-PERF which-CL horse
(a) 'Which is the horse that Zhangsan rode and that became tired as a result?'
(b) *'Which is the horse that Zhangsan rode and as a result he became tired?'

(ii) Zhangsan du-ni-le na-ben shu?
Zhangsan read-bored-PERF which-CL book
'Which is the book that Zhangsan read so much that he became bored?'

(85) *Zhangsan du-ni-le liang-ben shu.
Zhangsan read-bored-PERF two-CL book
Intended: 'Zhangsan read two books, and as a result he got bored.'

I argue that the badness of the subject-oriented reading of (84-85) is due to the use of the quantified indefinite NP. Specifically, for a transitive RVC to have a subject-oriented reading, the subject and the direct object of the RVC and the result component of the compound need to form a well-formed proposition. Presumably for semantic reasons, when the direct object is a quantified indefinite NP, such a proposition cannot be readily formed, as seen from the contrast between (86a-b) and (86c). Such a contrast is replicable in English, as seen from (87).

(86) a. Zhangsan dui shu yijing ni-le.
Zhangsan towards book already bored-PERF
'Zhangsan has already become tired of books.'
b. Zhangsan dui na liang-ben shu yijing ni-le.
Zhangsan towards that two-CL book already bored-PERF
'Zhangsan has already become tired of those two books.'
c. *Zhangsan dui liang-ben shu yijing ni-le.
Zhangsan towards two-CL book already bored-PERF
*'Zhangsan has already become tired of two books.'

(87) a. John was tired of books.
b. John was tired of those two books.
c. ?/*John was tired of two books.

Note that *liang-ben shu* in (86c) and *two books* in (87c) are intended to be semantically unspecific. However, when *two books* in (87c), which is located at the end of the sentence, is further specified and made semantically specific, the sentence improves a lot, as seen from (88).

(88) John was tired of two books, namely *Ulysses* and *A Farewell to Arms*.

If our explanation is on the right track, we expect (85) to improve if *liang-ben shu*, which is also at the end of the sentence and thus comparable to *two books* in (87c), gets specified. As shown by (89), this expectation is met.

(89) Zhangsan du-ni-le liang-ben shu, ji *Youlixisi* he
Zhangsan read-bored-PERF two-CL book namely Ulysses and
Yongbie-le *wuqi*.
say.farewell-PERF weapon
'Zhangsan read two books, namely *Ulysses* and *A Farewell to Arms*, and as a result he became tired of them.'

Therefore, the ungrammaticality of (84) and (85) on the subject-oriented reading is due to the fact without further context, the quantified indefinite NPs are understood as being unspecific, thus failing to form a well-formed proposition with the subjects and the result components of the RVCs involved.[27]

After discussing the property of the direct object of a transitive subject-oriented RVC, I would like to remark on one restriction on the *scare r*eading of an RVC that was brought to my attention by Jim Huang (p.c.), namely that "the resultative part must be without an object." For example, although (90) is grammatical, one cannot convey the same meaning with (91).

(90) Naxie yifu shide Zhangsan xi-fan-le Lisi.
those clothes cause Zhangsan wash-vexed-PERF Lisi
'Those clothes caused Zhangsan to wash them to the point of getting Lisi vexed.'

(91) *Naxie yifu xi-fan-le Zhangsan Lisi.
those clothes wash-vexed-PERF Zhangsan Lisi

[27] Huei-Ling Lin (1998: 161) calls the unavailability of the subject-oriented reading in sentences like (84) and (85) an "arbitrary gap" (cf. note 32 of Chapter 2). However, given that such a gap can be explained, it is not arbitrary at all. Moreover, I think that Lin's claim that the referentiality of the object of a transitive subject-oriented RVC is "arbitrarily specified" (1998: 176) is incorrect. This is because the object can be a bare NP, a proper name, or a definite description as long as such NPs are semantically and pragmatically compatible with the rest of the sentence, which includes the requirement that such NPs can form a well-formed proposition with the subject and the result component of the RVC involved. That is, given that generalizations can be made and exceptions can be given an explanation, not much arbitrariness is involved.

Within the event structure model developed in this chapter, the ungrammaticality of (91) can be readily explained. Recall that as a structure participant, the Causee argument has to be realized in the overt syntax. In addition, given the intended meaning, it is Lisi that got tired, and therefore *Lisi* should be realized as the Causee. Because the Causer in (91) is *naxie yifu*, which is distinct from the Causee, the Causee is expected to be expressed in the direct object position of the sentence, given the linking rule that the Causer argument is realized in subject position and the Causee argument in object position when both arguments are overtly expressed by different linguistic expressions. However, in (91), *Zhangsan* instead of *Lisi* is realized in the object position. This leads to the unintended interpretation that Zhangsan got vexed. Therefore, (91) is ruled out.[28]

It is worth noting that even if *Zhangsan* and *Lisi* in (91) switched positions, the resulting sentence would still be ungrammatical, as shown in (92).

(92) *Naxie yifu xi-fan-le Lisi Zhangsan.
those clothes wash-vexed-PERF Lisi Zhangsan
Intended: 'Those clothes caused Zhangsan to wash them to the point of getting Lisi vexed.'

Note that *Zhangsan* in (92) is an external argument of V1, but is not realized as the Causer or the Causee of the compound in the overt syntax. Recall that for an argument of V1 or V2 that is not realized as the Causer or the Causee to be overtly expressed, the position it occupies has to be the same as when the relevant verb is used separately. As shown in (93), when *xi*, the V1 of the RVC *xi-fan* 'wash-vexed' in (92), is used separately, *Zhangsan* needs to be expressed in the subject position. However, as *Zhangsan* in (92) does not occupy the

[28] Jim Huang suggests that the ungrammaticality of (91) is due to the fact that *Lisi* does not get any Case, thus violating the Case filter, which requires each overt NP to receive a Case. However, even if the Case theory is adopted, I am not sure how Case assignment works with respect to an RVC. Given the abstract nature of Case, different researchers can make different proposals and thus come to different conclusions. In fact, in a theory that assumes a level of "D-structure," the D-structure can be abstract and sophisticated enough to allow *Lisi* to receive a Case (e.g. from the head of an abstract CausP).

subject position of the sentence, it cannot be overtly expressed in a single clause containing an RVC. Therefore, (92) is ungrammatical.

(93) Zhangsan xi-le yifu.
Zhangsan wash-PERF clothes
'Zhangsan washed the clothes.'

3.2.5 A comparison with previous accounts

In this subsection, I will compare my own lexical-semantic account with previous accounts, and argue that my account is more natural, more comprehensive, more explanatory, and more parsimonious.

First, the account proposed in this chapter is more natural and more plausible than the syntactic accounts by Jimmy Lin (2004), Sybesma (1991, 1999), and Zou (1994), and the lexical-syntactic account by Huei-Ling Lin (1998). Recall that in the latter accounts, the complex thematic relations of sentences containing an RVC are explained with different underlying syntactic representations that lack syntactic evidence and that are *ad hoc* in nature. That is, these accounts place the explanation of the complex thematic relations in syntax rather than in semantics and pragmatics. In contrast, on my account, the complex thematic relations fall out of the interaction of the individual thematic relation and the composite thematic relation. Therefore, my proposal places the complexity of sentences containing an RVC in semantics and pragmatics rather than in syntax. Given that all the active RVC examples cited in the literature are simple in syntactic structure ("NP1 + RVC (+ NP2) (+NP3)") and that the complexity of sentences containing an RVC lies in the complex thematic relations expressed, my lexical-semantic account is more natural than both the syntactic accounts and the lexical-syntactic account examined in the previous chapter. In

addition, my account is more natural than Yafei Li's (1995) lexical account in that it avoids the latter's stipulation as to the conditions on the assignment of the two causative roles, i.e. the Causer and the Causee in our terms.

Second, my account is more comprehensive than previous ones, because as far as I know, no previous accounts gave an analysis of all the complex thematic relations examined in this chapter. This is not only true of syntactic accounts and lexical-syntactic accounts, but also true of lexical accounts such as those by Chang (2003), Chu-Ren Huang & Fu-Wen Lin (1992), Yafei Li (1990, 1995), and Thompson (1973), from which I have freely drawn insights.

Third, my account is more explanatory than previous accounts in the sense that it correctly predicts the different ways of realizing the Causer and the Causee that are allowed, and rules out those that are bad for semantic and pragmatic reasons. In other words, by examining the different interactions of the individual thematic relation and the composite thematic relation and by proposing a theory of argument realization concerning complex causative events, I believe that my account has achieved not only descriptive adequacy but also explanatory adequacy.

Finally, my account is arguably also more parsimonious than previous syntactic and lexical-syntactic accounts. Recall that my proposal relies on event-semantic representations that are grammatically relevant, linking rules, and two-tier representations. The event-semantic representation and the two-tier representation are analogous to the underlying syntactic representation on a syntactic approach. As for linking rules, some form of them has to be assumed by any theory of argument structure and argument realization, including

Jimmy Lin's (2004) theory.[29] Therefore, my account does not rely on more mechanisms than previous (lexical-)syntactic accounts. In fact, it relies on fewer mechanisms because my account does not need complex movement operations that are required by the syntactic and lexical-syntactic accounts to get the right surface syntactic structure. Although at first sight the two-tier representation used in my account might seem to be too powerful as a tool, it turns out to be not the case when examined more closely. For one thing, both the individual thematic relation and the composite thematic relation are psychologically real, which is confirmed by entailment. For example, (94) entails not only "Zhangsan wiped the table" and "the table became clean," which are both individual thematic relations, but also "Zhangsan's wiping caused the table to become clean," which is the composite thematic relation.

(94) Zhangsan ca-ganjing-le zhuozi.
Zhangsan wipe-clean-PERF table
'Zhangsan wiped the table clean.'

For another, the use of the two-tier representation not only explicates the interaction of the individual thematic relation and the composite thematic relation, but also provides a tool for describing and predicting the complex thematic relations expressed by sentences containing an RVC. Moreover, compared with the underlying syntactic representation used in syntactic and lexical-syntactic accounts, the two-tier representation is less powerful. This is mainly because as a level of syntactic representation the former is short on syntactic evidence and thus *ad hoc* in nature, which is clearly reflected by the fact that different linguists often propose quite different underlying representations for the same reading of the same sentence.

[29] Contra Jimmy Lin (2004), who claims that by assuming event structure, argument structure and syntactic structure to be all the same, there would be no need for a linking theory, I argue that even with that assumption, linking rules still need to be preserved in an obscure form by stipulating which syntactic/semantic argument to occupy which syntactic position of the underlying representation.

Given the above considerations, I believe that compared with previous proposals, my proposal offers a more plausible, more successful, and more desirable account of Mandarin RVCs.

3.3 Theoretical implications of the account

In this section, I discuss some theoretical implications of the lexical-semantic account offered in section 3.2 from four angles, namely (i) the status of lexical rules, (ii) the relation between Agent and Causer, (iii) the relation between syntax and semantics, and (iv) the nature of argument realization with respect to complex causative events.

3.3.1 Lexical rule, lexical entry, and lexicon

In section 3.2.1, I proposed a lexical rule to account for the formation of RVCs. In the literature, there have been some attempts to give a lexical-rule account of resultatives. For example, concerning the formation of the English resultative construction, Carrier & Randall (1997), Soowon Kim & Maling (1997, 1998), Randall (1982: 85) and Simpson (1983) all propose a lexical rule. As far as Mandarin resultatives are concerned, we have seen Thompson's (1973) lexical-rule account.

However, lexical rule accounts of resultatives in particular and lexical rule accounts in general are criticized by Goldberg (1991a: 88) and Jackendoff (2002: 176) because lexical rules, when resulting in semantic change, require improbable verb senses. For example, given (95) below, a lexical rule account of resultatives would require *bark* to have a sense like "to cause someone to change state as a result of an entity's barking."

(95) The dog barked me awake last night.

Moreover, new senses can be posited on an *ad hoc* basis whenever the same verb occurs in novel syntactic configurations.[30] This is indeed worrisome, as it is fairly common for the same verb to occur in different syntactic frames. For example, Goldberg (1995: 11) observes that *kick* can occur in at least eight distinct argument structures, as shown in (96).

(96) a. Pat kicked the wall.
b. Pat kicked Bob black and blue.
c. Pat kicked the football into the stadium.
d. Pat kicked at the football.
e. Pat kicked his foot against the chair.
f. Pat kicked Bob the football.
g. The horse kicks.
h. Pat kicked his way out of the operating room.

Evidently, one does not want to claim that there are eight *kick*s on the basis of the different frames in which *kick* appears.

The above criticisms can be valid only when the output of each instance of a lexical rule is also listed in the lexicon in one way or another. Such an idea is indeed explicitly put forward by Levin & Rappaport Hovav (1991), Rapoport (1990) and Simpson (1983). Take Simpson's account as an example. As one of the earliest lexical rule accounts of the English resultative construction, Simpson 1983 proposes the following "XCOMP Addition Rule."

(97) XCOMP Addition Rule (Simpson 1983: 149)
Add a resultative attribute XCOMP.
Add the control equation: XCOMP SUBJECT = Verb's OBJECT

By this rule, (98b) is derived from (98a) by adding a resultative attribute *flat*.

(98) a. Brian hammered the metal.
b. Brian hammered the metal flat.

Crucially, Simpson assumes that there are two *hammer*s. That is, while $hammer_1$ is a two-place predicate that subcategorizes for a subject and an object as in (98a), $hammer_2$ is a three-

[30] A similar criticism is raised by Sybesma (1999: 197).

place predicate that involves a subject, an object, and an XCOMP as in (98b). Therefore, the *hammer* in (98a) and that in (98b) are either listed as two separate lexical entries or treated as two separate senses of the same lexical entry. As a result, Goldberg's and Jackendoff's criticisms are warranted.

Now there is the question of whether the lexical rule account I proposed with respect to Mandarin RVCs can avoid the criticisms raised by Goldberg and Jackendoff. I argue that by regarding a lexical rule itself as a language memory bank item, we need not posit that the output of the lexical rule is in the lexicon. In other words, the output is not necessarily stored in our long-term memory, and can be produced on-line through the rule. Consequently, the fact that the same verb appears with different frames does not necessarily lead to polysemy; the different senses may well result from the frame or the lexical rule itself rather than from that verb alone.[31]

Therefore, by treating the traditional lexicon as part of the language memory bank and by viewing lexical rules as language memory bank items as in sections 3.1 and 3.2, we not only throw some new light on the notion of "lexicon," but also avoid the problems encountered by some earlier lexical rule accounts of a particular linguistic phenomenon.

3.3.2 Simple event role and complex event role (Agent vs. Causer)

In accounting for the complex thematic relations expressed by sentences containing an RVC, I used two tiers to show the individual thematic relation and the composite thematic

[31] In principle, no lexical rule account, including Simpson's (1983) account mentioned above, needs to posit that any output of the rule has to be listed in the lexicon. Moreover, no lexical rule account needs to postulate that a verb's occurrence in different syntactic frames necessarily leads to polysemy. The point I want to make is that by regarding a lexical rule itself as a language memory bank item, it has become clearer that there is no need to make those postulations.

relation, respectively. In the event structure model developed in section 3.1, both traditional theta-roles such as Agent and Patient and the two complex thematic roles (i.e. Causer and Causee) are event roles. Since Causer and Causee are only associated with complex causative events, they can be called complex event roles. In contrast, the event roles that are associated with the individual thematic relation with respect to Mandarin RVCs are in fact also roles that are licensed by simple events. Therefore, these event roles can be called simple event roles.

The distinction between simple events and complex events and the distinction between simple event roles and complex event roles are significant in that they provide an answer to the question raised by Tenny & Pustejovsky (2000: 15) regarding the relation between Agent and Causer. Tenny & Pustejovsky observe that although Agent and Causer are both mapped to the subject position in syntax, they are semantically distinct.[32] This is evidenced by the fact that they can occur independently of each other. For example, in *Tony ran around the lake*, *Tony* serves as the Agent and the Theme of the action,[33] but no Causer is involved. On the other hand, in *The wind broke the branch*, there is a Causer, *the wind*. But since the action is nonvolitional, the same entity cannot be an Agent. Based on this observation, Tenny & Pustejovsky raise the question of whether Agent and Causer belong to two different systems, and if so, what systems. Now it is clear from the distinction between simple event roles and complex event roles that Agent and Causer are two types of event roles. The former is a simple event role and the latter a complex event role.[34] When the event is simple, it is only

[32] Grimshaw (1990: 33) also mentions that Agent and "Cause" "are always subjects." But obviously both Grimshaw's and Tenny & Pustejovsky's view can only hold of active sentences.
[33] Following Gruber (1976) and Jackendoff (1987), I use "Theme" to mean "the object in motion or being located."
[34] According to Levin & Rappaport Hovav (1996: 501), events denoted by *run* and *stink*, for example, are internally caused and involve a Causer. This, however, refers to a relation between the happening of the running or the stinking eventuality and what causes them to take place, on the assumption that everything happens with

possible for the Agent, but not for the Causer to be involved. As *Tony ran around the lake* express a simple event, *Tony* cannot be a Causer. When the event is complex and causative, the complex event role Causer is surely involved. In this case, as seen in the account of the complex thematic relations expressed by sentences containing an RVC, the argument bearing the Causer role may or may not be identified with an argument bearing a simple event role in the individual thematic tier. And when identification occurs, the argument in the individual thematic tier that is identified with the Causer may or may not bear an Agent role. As far as *The wind broke the branch* is concerned, we have a Causer argument which is identified with a non-agentive initiator argument of an unspecified causing action. Therefore, the distinction between the Agent and the Causer lies in the fact that the former is a simple event role and the latter a complex event role, and the relation between the Agent and the Causer with respect to a complex causative event can be seen as an identification relation between a simple and a complex event role.

3.3.3 "Simpler syntax"

The complex thematic relations expressed by sentences containing an RVC show that the complexity of RVCs lies in semantics and pragmatics rather than in syntax. The ambiguity found in some sentences containing an RVC is just a reflection of the complex thematic relations expressed. The fact that my lexical-semantic account can successfully explain the complex thematic relations and the ambiguity phenomenon serves as a case for a

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a good reason. But what I am interested in is whether the running or the stinking eventuality causes some other eventuality to take place. In other words, I am looking at a causal chain different than Levin & Rappaport Hovav's, although both causal chains can be said to be parts of a larger causal chain. Crucially, by presenting a running or a stinking eventuality without further information about whether they cause something to happen, neither the running nor the stinking eventuality can be said to involve a Causer from a linguistic point of view.

"simpler syntax" and supports Culicover & Jackendoff's (2005) "Simpler Syntax Hypothesis" in (99).

(99) Simpler Syntax Hypothesis (Culicover & Jackendoff 2005: 5)
The most explanatory syntactic theory is one that imputes the minimum structure necessary to mediate between phonology and meaning.

Meanwhile, it argues against the "syntactocentrism" (a word that probably was first used by Jackendoff (1990: 19)) of mainstream generative grammar, and gives semantics and pragmatics a due place.

Furthermore, the fact that the ambiguity phenomenon found with RVCs can be explained without resorting to different D-structures and complex derivations shows that although syntax and semantics are closely related, they are not isomorphic to each other. In section 2.2.3, I have pointed out some problems with Jimmy Lin's (2004) conflation of event structure and syntactic structure.[35] In what follows, I will strengthen the argument made there and adduce more evidence against the claim that there is isomorphism between syntax and semantics in particular and between form and meaning in general.

First, as mentioned in section 2.2.3, the conflation between syntactic structure and event structure or between syntax and semantics is unappealing from a theoretical point of view. This is because this conflation puts too much explanatory burden on the syntax, and as a result makes the syntax extremely complicated. Moreover, imposing semantic structure on syntax is against the vision of mainstream generative grammar that language is modular and that the autonomy of the syntax should be maintained.

Second, from the perspective of language acquisition, the conflation view entails that the syntax of a language is difficult to acquire (at least for those cases that are simple from

[35] Related to Jimmy Lin's claim are the recent attempts to syntacticize event structure by Borer (1998) and Ritter & Rosen (1998), for example.

the point of view of the overt syntax (e.g. *John broke the vase*) but complex in meaning). This, however, is inconsistent with the fact that the syntax of a language, particularly its basic order, is acquired very early and fairly easily.

Third, from an empirical point of view, the conflation view or the isomorphism approach does not have a sound basis at all. For one thing, the underlying representation as a level of syntactic representation is normally not justified on syntactic grounds. For another, the abstract level of syntax is often semantically motivated; however, even such a motivation is problematic, as evidenced by the study of causatives by Fodor (1970) and Shibatani (1976b). Finally, but more importantly, there is a great deal of mismatch between semantic structure and the overt syntactic structure (cf. Sadock 1991), and this fact itself casts doubt on the claim that these two structures are isomorphic. For example, as mentioned in section 2.2.3, a sentence like *John broke the window* has a simple syntactic structure, although it has a complex event structure. For another example, *John shouted, which made his throat hoarse*, *John shouted and as a result his throat became hoarse* and *John shouted his throat hoarse* arguably involve the same event structure, but they clearly have different syntactic structures. A final example of the mismatch comes from "coercion." A proper understanding of the sentences in (100) requires "type coercion" (see Pustejovsky 1995: 111) because *enjoy* requires an event, but the postverbal NPs in these sentences denote an entity.

(100) a. John enjoyed the movie. (*watching*)
b. John enjoyed the meal. (*eating*)
c. John enjoyed the cigarette. (*smoking*)

Although, as shown in (101), the three NPs can be used in a coordination structure, the different postverbal NPs imply different activities.

(101) John enjoyed the movie, the meal, and the cigarette.

That is, (100a) means a watching event, (100b) an eating event, and (100c) a smoking event. In other words, although these sentences are identical in syntax, they have subtle semantic or pragmatic differences. In an approach that maintains isomorphism between syntax and semantics, the different activities involved might be represented in the underlying level of syntactic representation, and then get deleted by a certain process. This, however, is not warranted, as there is no syntactic evidence that the three sentences in (100) involve a VP complement.

Finally, there is evidence from other areas of grammar that the isomorphism between form and meaning in general cannot be maintained, which provides indirect evidence against conflating semantic structure and syntactic structure. Take English compound nouns as an example. As argued by Downing (1977), the semantic relations between the members of compound nouns in English are infinite. In (102), each compound may have more than one interpretation.[36]

(102) a. bike boy (**a boy who rides a bike**)
b. lobster noodle (**noodle with lobster**)
c. dissertation student (**a student who is in the phase of writing his or her dissertation**)

For example, in different contexts, (102a) may mean "a boy who rides a bike/who sells bikes/who has a bike/…" But as far as the paraphrase in brackets given for each compound is concerned, the three compound nouns clearly express distinct semantic relations. The question is whether they should be given different structural analyses. The answer would be "Yes," if one adopted an approach that collapses form and meaning. Given that the semantic relations expressed by English compound nouns are infinite, the logical conclusion drawn

[36] (102c) is drawn from an email sent by Larry Horn to the graduate students of the Linguistics Department of Yale University.

from this approach is that the structures of these compound nouns are also infinite. However, the same empirical problem arises in this case. As far as (102) is concerned, there is no structural evidence that the three compound nouns are structurally distinct. On the other hand, if it is assumed that form and meaning can be distinct, (102) can be given a much simpler solution. Namely, the three different compound nouns have the same structure, with the first member of each compound serving as a modifier of the second member, which is the head of the compound. The different semantic relations expressed by them result from the composite effect of the two components and from the context, and no complications in structure are necessary.

If as argued above and by Carrier & Randall (1992), Napoli (1999) and Neeleman & van de Koot (2002), the isomorphism between syntax and semantics cannot be maintained, then both Perlmutter & Postal's (1984) "Universal Alignment Hypothesis" in (103) and Baker's (1988) "Uniformity of Theta Assignment Hypothesis" in (104) are too strong to be kept.

(103) Universal Alignment Hypothesis (Perlmutter & Postal 1984: 97)
There exist principles of universal grammar which predict the initial relation borne by each nominal in a given clause from the meaning of the clause.

(104) Uniformity of Theta Assignment Hypothesis (Baker 1988: 46)
Identical thematic relationships between items are represented by identical structural relationships between those items at the level of D-structure.

To conclude, the lexical-semantic account of the complex thematic relations expressed by sentences containing an RVC and of the ambiguity phenomenon found with RVCs argues for a simpler syntax and for a proper division of labor between syntax and semantics/pragmatics. On our proposal, all the sentences in (105) have the same syntactic

structure as (106), namely "Subject + V + Object"; all the examples in (107) have the same syntactic structure as (108), i.e. "Subject + V."

(105) a. Zhangsan qie-dun-le dao. (Object-oriented canonical transitive frame)
Zhangsan cut-blunt-PERF knife
'Zhangsan cut (something) with the knife, and as a result the knife became blunt.'

b. Na-kuai rou qie-dun-le san-ba dao. (Non-canonical transitive frame)
that-CL meat cut-blunt-PERF three-CL knife
'The meat got three knives blunt as a result of the cutting (by some specific person).'

c. Zhangsan kan-lei-le shu. (Subject-oriented canonical transitive frame)
Zhangsan read-tired-PERF book
'Zhangsan read the book and as a result he became tired.'

(106) Zhangsan qie-le rou.
Zhangsan cut-PERF meat
'Zhangsan cut the meat.'

(107) a. Zhangsan lei-bing-le. (Deep unaccusative frame)
Zhangsan tired-sick-PERF
'Zhangsan was (constantly) in the state of being tired and as a result he became sick.'

b. Zhangsan zou-lei-le. (Unergative frame)
Zhangsan walk-tired-PERF
'Zhangsan walked himself tired.'

c. Na-shan men ti-po-le. (Surface unaccusative frame)
that-CL door kick-broken-PERF
Literally: 'That door kicked broken' → 'The door was kicked and as a result it became broken.'

(108) Zhangsan lei-le.
Zhangsan tired-PERF
'Zhangsan has become tired.'

Given that an (in)transitive sentence containing an RVC has the same syntactic structure as an ordinary (in)transitive sentence, but expresses more complex thematic relations, the isomorphism between syntax and semantics cannot be maintained. This is supported by other language phenomena such as coercion and nominal compounding and by theoretical and language acquisition considerations. Needless to say, the debate over whether semantic/event

structure should be syntacticized is not over yet and I am sure that it will continue for decades to come. The eventual answer will be sought in the systematic examination of more linguistic phenomena both within particular languages and crosslinguistically from different perspectives, theoretical, empirical, and psycholinguistic.

3.3.4 Arguments and argument realization

The final theoretical implication I want to discuss concerns arguments and argument realization. Recall that one of the components of the event structure model is event structure templates. It should be noted that the arguments in the event structure templates are all semantic arguments, or more exactly grammatically relevant semantic arguments. As seen from my account of Mandarin RVCs, one special feature of complex event structure templates is that the arguments which are immediately relevant to linking are two semantic arguments that are contributed by the causing component and the result component, respectively.

It has been noted that the meaning of the resultative is compositionally derived (e.g. Alsina 1996: 4, Cheng & Huang 1994: 187, Levin & Rappaport Hovav 1995: 54). As we have seen, the semantic arguments of the resultative are also compositionally determined. As far as Mandarin RVCs are concerned, the Causer argument and the Causee argument are not determined by V1 or V2 alone. Rather, they are contributed by the complex causative event structure template derived from the combinatory force of V1 and V2. In other words, if there were no such thing as a complex causative event structure template, there would be no Causer or Causee. The fact that the semantic arguments that are immediately relevant to linking can be compositionally determined by the components of a complex predicate shows

that argument structure is not necessarily determined by the properties of the main verb. Since a complex predicate as a whole does not necessarily form a word as evidenced by English resultatives, the "lexical-entry-driven approach" (to use Borer's (1994: 20) words) to argument structure adopted by Grimshaw (1990), for example, needs to be revised. What can be concluded from this is that the semantic arguments that are relevant to linking can be simple constant and simple structure arguments in the simple event structure templates or composite semantic arguments that are compositionally derived from the complex event structure templates.

Given a set of semantic arguments licensed by a predicate, whether simple or complex, the event structure model does not predict all the possible syntactic frames in which a simple or complex predicate can occur.[37] There are several reasons for this. First, there are verbs like *eat* and *devour* which semantically involve the same two participants, with one of them performing the eating or devouring action, and the other being eaten or devoured. However, the two verbs show different syntactic behavior. Specifically, as shown in (109), the participant being eaten can be omitted, but not the participant being devoured (see Dowty 1989: 89-90, Jackendoff 2002: 133-134). This difference, however, cannot be predicted from the semantics or event structure templates of the two verbs.

(109) a. Jeff ate the apple.
Jeff ate.

b. Jeff devoured the apple.
*Jeff devoured.

Second, a verb that involves two participants and is associated with a simple activity event structure template may behave differently from its counterpart in a different language.

[37] However, Levin & Rappaport Hovav (1995: 1) hypothesize that "the syntactic properties of verbs are determined by their meaning."

Specifically, as Levin (1999: 226) puts it, "one language's object is expressed as a second's oblique." For example, both *agree* in English and *tongyi* in Mandarin mean "have or come to the same view," the second argument involved in these two predicates is realized as the direct object in Mandarin, but as an oblique in English, as shown in (110).

(110) a. Yuehan tongyi wo-de kanfa.
John agree I-GEN view
'John agrees with my view.'

b. John agrees with my view.

In this regard, Levin (1999: 227) correctly points out that when a verb describes an event that involves two participants, it is not safe to assume that this verb would be transitive and the nonactor argument would be expressed as an object (although this may be the default way of realizing the nonactor argument).[38]

Third, there are syntactic frames or constructions that involve an argument which is not a semantic argument of the predicate at all.[39] For example, in (111a), the use of *way* does not follow from the meaning of *belch*.

(111) a. Bill belched his way out of the restaurant. (Jackendoff 1990: 211)
b. Bill belched loudly.

The issue here is how to treat sentences like (111a) and those like (111b). Specifically, should both (111a) and (111b) be treated as constructions as Goldberg (1995) would do or should they be treated differently?[40] The fact that argument realization is predicted from the meaning of *belch* in (111b), but not in (111a) suggests that they should be treated differently.

[38] On the same page, Levin further says that "theories of argument expression which assume that a verb's transitivity is known and then provide a means for determining which argument is the subject and which one is the object, such as Dowty's (1991) proto-role approach, take too much for granted."

[39] It is worth pointing out that Goldberg (1995) argues explicitly against the claim that syntactic frames are predicted from the lexical semantics of the main verb. Likewise, van Hout (2000) argues for disconnecting lexical semantics and syntactic frames.

[40] Goldberg (1991a: 88) defines constructions as "form-meaning pairs which are not predictable from knowledge of the rest of the grammar."

In other words, contrary to Goldberg (1991a: 88; 1995: 23), who even views lexical items, idioms and grammatical morphemes as constructions, I argue that a syntactic frame is not a construction if argument realization with respect to this frame follows from the event structure template of the predicate involved and obeys general linking rules. As a result, only (111a) has to do with a construction.

All the facts above point to the conclusion that in many cases subcategorization frames are needed,[41] and that constructions as well as syntactic frames that are predicted from the number of semantic arguments and that follow general linking rules should be recognized. However, it should be pointed out that there are indeed regularities in linking and inviolable conditions on argument realization. For one thing, the Structure Participant Condition requires the structure participant to be expressed in the syntax. For another, as far as simple or complex predicates that denote a causative event and involve a change are concerned, general linking rules are responsible for the realization of the (composite) semantic arguments in the overt syntax, as seen from our account of Mandarin RVCs. Crucially, when the Causer and the Causee argument are both expressed in an active sentence by different linguistic expressions, the former has to be expressed in subject position and the latter in object position. In this respect, Mandarin RVCs behave like "core transitive verbs" (e.g. *break* and *destroy*), which involve a certain change, but differently from "noncore transitive verbs" (e.g. *study* and *visit*), which only express an activity.[42]

Therefore, the distinction between simple and complex event structure templates is significant in that argument realization with respect to the latter shows more regularity than

[41] For similar conclusions, see Dowty (1989: 89) and Jackendoff (2002: 141).
[42] See Levin 1999 for the distinction between "core transitive verbs" and "noncore transitive verbs," and their difference in argument realization.

that with respect to the former. Perhaps, for the simple event structure templates, only one general linking rule in the form of (112) can be formulated.

(112) General Linking Rule for Simple Event Structure Templates
The Agent argument must be realized in the subject position of an active sentence.

Although the event structure model does not predict all the possible syntactic frames with which a simple or complex predicate can appear, the number of the semantic arguments involved does have an implication for whether the syntactic frame would be transitive or intransitive when all the semantic arguments are overtly expressed in an active sentence by different linguistic expressions. However, in this regard, the syntactic frames predicted from simple predicates and those predicted from complex predicates are not of equal status. On the assumption that simple predicates are more basic than complex predicates, it is expected that the syntactic frames predicted from simple predicates are more basic than those predicted from complex predicates, although the syntactic frames predicted from complex predicates might be the same as those predicted from simple predicates. Abstracting away from language particularities, we expect that each language should at least have two basic or universal syntactic frames, intransitive and transitive, as in each language there are simple predicates that involve one or two semantic arguments.

Based on the above discussion, it can be concluded that the semantic arguments that are immediately relevant to linking can be simple semantic arguments when the event is simple, or composite semantic arguments when the event is complex. Moreover, constructions as well as syntactic frames that are predicted from the number of the semantic arguments and that follow general linking rules should be recognized. Although the event structure model does not predict all the possible syntactic frames with which a simple or complex predicate

can appear, there are indeed linking regularities and "hard" conditions on argument realization, particularly when the event involved is complex and causative.[43]

3.4 Summary and conclusions

In this chapter, I developed an event structure model of argument representation and argument realization on the basis of Levin & Rappaport Hovav's work. The model consists of three components, namely the distinction between simple event structure templates and complex event structure templates, the distinction between structure participants and constant participants, and the linking rules which connect semantic arguments and grammatical relations. As far as complex event structure templates are concerned, the Causer and Causee arguments are linked to grammatical relations according to three general linking rules.

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[43] Recently, there have been attempts by van Hout (2000) and Tenny (1988, 1992, 1994), for example, to determine argument expression by aspectual properties of the predicate and the NPs involved. This idea is well represented by Tenny's "Aspectual Interface Hypothesis" (AIH) in (i).

(i) Aspectual Interface Hypothesis (Tenny 1994: 2) (cf. Tenny 1988: 3, 1992: 2)
The universal principles of mapping between 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.

However, as argued by Levin (2000) and Rappaport Hovav & Levin (2002), the AIH is too strong. The main evidence for this comes from the fact that many "grammatically-relevant semantically-coherent" verb classes contain members that differ in aspectual properties, but show the same behavior with respect to argument realization. For example, the set of change of state verbs (e.g. *cool* and *widen*) referred to as "degree achievements" by Dowty (1979) displays an ambiguous telicity (as shown in (ii)), but this does not have any effect on the behavior of these verbs with regard to argument expression.

(ii) Levin (2000: 419)
a. The soup cooled in an hour. (telic)
b. The soup cooled for an hour. (atelic)

In addition, contrary to Tenny (1992: 3, 1994: 11), "incremental themes" (to use Dowty (1991)'s term), which form a homomorphism with relevant events, are not tied solely to the object. In fact, there is evidence that "not all incremental themes are direct objects" (Dowty 1991: 589; cf. 1991: 570-571, 1991: 593, note 34). For example, as shown in (iii), incremental themes can also appear in subject position.

(iii) Dowty 1991: 570
a. John entered the icy water (very slowly).
b. The crowd exited the auditorium (in 21 minutes).

Within the event structure model developed, I offered a lexical-semantic account of the formation of RVCs, the complex thematic relations associated with them, and the ambiguity phenomena found with such compounds. I argued that RVCs are formed through a lexical rule, which is itself a language memory bank item. I showed that the complex thematic relations result from different interactions of the individual thematic relation and the composite thematic relation, and from the different ways of realizing the Causer and the Causee. In addition, I demonstrated that whether V1 denotes a state or activity determines the possible event structure templates of an RVC, and that the event structure templates in turn determine the possible transitive and/or intransitives frames in which the RVC can occur.

On my account, the ambiguity found in some sentences containing an RVC is a reflection of the larger picture of the complex thematic relations associated with RVCs. Therefore, the different readings of the same sentence containing the same RVC follow from the different ways of realizing the Causer and the Causee and different interactions of the two tiers of thematic relations. Moreover, I showed that the varying degree of difficulty in obtaining the different readings results from the combining force of prototypicality and the Animate Subject as Agent or Experiencer Strategy.

Finally, I argued that the lexical-semantic account of Mandarin RVCs has theoretical implications in four respects. First, lexical rules (and syntactic rules), like ordinary lexical items, are language memory bank items, although they themselves are not lexical items. As a result, there is no need to list the outputs of the rules in the lexicon or in the language memory bank. In turn, using the same verb in different syntactic frames does not necessarily lead to polysemy. Second, both simple event roles licensed by simple events and complex event roles licensed by complex events should be recognized. The distinction between simple

and complex event roles also provides a window through which the relation between Agent and Causer can be given a clear view. Third, a division of labor should be maintained, syntax should be made simpler, and the isomorphism between syntax and semantics should be weakened into a default mapping. It has become common practice for many generative linguists to propose abstract and complex underlying structures (and then propose complicated movements to derive the surface form). "Regrettably, such strategies have become so commonplace in certain circles of generative syntax that many linguists no longer recognize their unnaturalness; indeed they may even think highly of the analysis on the grounds that it shows us more about the abstractness of Universal Grammar" (Jackendoff 2002: 169, note 7). Crucially, many linguistic phenomena, such as the ambiguity of some Mandarin sentences with an RVC, can have a better and more natural explanation by paying more attention to semantics and pragmatics, because the complexity of these phenomena lies not in syntax, but in semantics and pragmatics. Finally, semantic arguments that are immediately relevant to linking can be simple constant and simple structure arguments in a simple event structure template or composite semantic arguments compositionally derived from a complex event structure template. Although the event structure templates do not determine all the possible syntactic frames in which a predicate can occur, there are conditions and linking regularities that govern argument realization, particularly when the event involved is a complex and causative one. Constructions can be recognized when there are syntactic arguments that are not semantic arguments. The existence of constructions implies that both general linking rules and construction-specific linking rules are needed.

Chapter 4. Mandarin Resultatives in a Crosslinguistic Context

The previous chapters have been almost exclusively concerned with Mandarin resultative verb compounds. In this chapter, I place the study of Mandarin RVCs in a crosslinguistic context and examine whether and, if so, why the subject-oriented reading, the extreme-causative reading, the stative causing eventuality, and the surface unaccusative frame attested with Mandarin RVCs have analogues in some other languages—English, French, German, Japanese, Korean, Romanian and Swedish. But before undertaking this task, I will first discuss Washio's (1997a, 1997b, 1999, 2002) distinction between "strong resultatives" and "weak resultatives," because this distinction will be referred to from time to time in later sections.

4.1 "Strong resultatives" vs. "weak resultatives"

In typologizing resultatives, Washio (1997a, 1997b, 1999, 2002) makes an important distinction between "strong resultatives" and "weak resultatives." According to him, strong resultatives are those in which "the meaning of the verb and the meaning of the adjective are completely independent of each other" (1997b: 7; cf. 1997a: 227, 1999: 685-686, 2002: 373). That is, in resultatives of this type, the kind of state in which the Causee comes to be cannot be predicted from the semantics of the verb denoting the causing eventuality. On Washio's view, the following examples are strong resultatives.

(1) a. The horses dragged the logs smooth.
b. The jockeys raced the horses sweaty.

Furthermore, Washio (1997a: 227, 1997b: 8, 1999: 686, 2002: 374) claims that unergative resultatives—resultatives whose causing eventuality is expressed by an unergative verb—are

necessarily strong resultatives. This is because unergative verbs like *run* and *fly* in (2) do not contain anything like the notion "thin" in their lexical semantics.[1]

(2) a. The joggers ran the pavement thin.
b. The planes flew the ozone layer thin.

As for weak resultatives, Washio (1997a, 1997b, 1999, 2002) does not provide a positive definition. Instead, he regards all resultatives that are not "strong" in the above sense as weak resultatives. For Washio, what is crucial for weak resultatives is that the verb responsible for the causing eventuality, though not necessarily implicating or entailing a certain change, has "a 'disposition' towards certain states" (1997b: 10; cf. 1997a: 237) and indicates "a potential 'directed change'" (1997b: 16). According to him, the following examples are all weak resultatives.

(3) a. He wiped the table clean.
b. He sharpened the pencil pointy.
c. I froze the ice cream solid.

Although *sharpen* in (3b) and *freeze* in (3c) entail a change of state, *wipe* in (3a), according to Washio (1997b: 12; 1999: 686, note 9), is a verb of simple activity and does not imply any specific result state. However, on Washio's view, (3a) is still an instance of weak resultative because *wipe* "typically describes an activity with the specific purpose of cleaning something" (1997b: 13), namely "an activity which potentially affects an object in such a way that, if the object is caused to change its state, then it changes in a certain fixed direction to reach the final state where the object is free of dirt, liquid, etc." (1997b: 16).

[1] The same can be said of resultatives that involve a fake reflexive. For example, (i) is a strong resultative because in terms of lexical semantics, the meaning of *run* and that of *ragged* are independent of each other.
(i) John ran himself ragged.

Furthermore, just as unergative resultatives are necessarily strong, Washio (1997a: 228) claims that unaccusative resultatives, as illustrated in (4), are always weak.[2]

(4) The ice cream froze solid.[3]

Before we proceed to discuss Washio's typology of languages on the basis of the distinction between strong and weak resultatives, some remarks on the distinction are in order. First, recall that concerning weak resultatives, Washio does not require the causing predicate to implicate or entail a certain change. However, to make the distinction between strong and weak resultatives useful, it is necessary to make that requirement. Otherwise, scholars might come to different conclusions as to whether a resultative is strong or weak. For example, although adopting Washio's distinction, Kaufmann and Wunderlich (1998: 41) regard examples like (3a) as strong resultatives. On my view, if weak resultatives refer to those in which the change involved is either implicated or entailed by the causing predicate, then (3a) should be analyzed as a weak resultative, given that a wiping event conventionally

[2] To be complete, it needs to be pointed out that in addition to the distinction between strong and weak resultatives, both of which are true resultatives, Washio (1997a, 1997b) also makes a distinction between true resultatives and what he calls "spurious resultatives," which are illustrated in (i).

(i) a. He tied his shoelaces tight.
b. He tied his shoelaces loose.

According to Washio (1997a: 232, 1997b: 17), spurious resultatives have the following features. First, "they involve an activity such that a particular manner of action directly leads to a particular state." Second, it makes no significant difference in meaning when the adjective is replaced with its corresponding adverb. For example, there is virtually no difference in meaning between (ia) and (iia), or between (ib) and (iib). (Related to this, it can be added that both (ia) and (iia) and both (ib) and (iib) can be used to answer the question, "How did he tie his shoelaces?" (Larry Horn, p.c.).)

(ii) a. He tied his shoelaces tightly.
b. He tied his shoelaces loosely.

Third, as shown in (i), spurious resultatives "permit either one of the adjectives that form the antonym pair." Finally, the paraphrase in the form of "X (i.e. the causing eventuality) causes Y to become Z" often fails, especially with one of the antonymous adjectives. For example, as far as (i) is concerned, it is odd to paraphrase (ib) as "His tying the shoelaces causes them to become loose."

[3] Larry Horn wondered whether the grammaticality of sentences like (i) would turn (4) into a spurious resultative.

(i) The ice cream froze swashy, because the freezer isn't working right.

To me, the answer is negative because the secondary predicate involved in a true spurious resultative expresses a manner rather than a result. However, both *solid* in (4) and *swashy* in (i) express a result rather than a manner. Therefore, neither (4) nor (i) is a spurious resultative.

implicates something's become clean. In contrast to weak resultatives, the causing predicate of a strong resultative must neither implicate nor entail a change denoted by the result predicate.[4] For example, (2a) is a strong resultative because something's becoming thin is not implicated or entailed by the running event.

Second, contra Washio (1997a), unaccusative resultatives are not necessarily weak.[5] For example, as shown in (5) and as will be discussed in detail in section 4.4, the causing predicate of a Mandarin RVC can be a stative unaccusative. However, (5) is arguably a strong resultative, because becoming sick is not implicated or entailed by being tired.

(5) Zhangsan lei-bing-le.
Zhangsan tired-sick-PERF
'Zhangsan became sick as a result of being tired (for a period of time).'

Third, as is clear from his definition of strong resultatives, Washio is concerned with resultatives in which the result component is expressed by an adjective.[6] However, by our definition of resultatives in Chapter 1, which is repeated in (6) below and which does not require the result component to be an adjective, the examples in (7) are also resultatives.

(6) Definition of the Resultative Construction
A resultative is a complex predicate composed of two free components in a single clause, with the eventuality denoted by one component causing a change in a certain entity as a result, a change that is denoted by the other component, but not entailed by the causing component.

[4] The distinction between strong and weak resultatives in this sense corresponds to Takami's (1998) distinction between "lexical resultatives" and "pragmatic resultatives." According to Takami, while lexical resultatives refer to resultatives in which the cause-result relationship is either specified or implied in the verb meaning, pragmatic resultatives refer to those in which the cause-result relationship is reasonably inferred through our pragmatic knowledge.

[5] Thanks to Masha Babyonyshev for urging me to think more about Washio's claim as to the relation between unaccusative and weak resultatives.

[6] To be exact, Washio (1999: 676, note 1) does regard PP resultatives as belonging to the same kind of phenomena as AP resultatives, although in his earlier 1997b article, he cites Rapoport's (1993a, 1993b) work and states that PP resultatives need some special treatment (p. 44, note 4). But in any case, PP resultatives do not play an important role, if any, in Washio's typology of languages according to the distinction between strong and weak resultatives. Furthermore, as will be seen shortly, Washio seems to view both AP resultatives and non-AP resultatives in Japanese as AP resultatives, when he uses "Adjective-type Phrase" to subsume result predicates of both AP resultatives and non-AP resultatives.

(7) a. John cut the cake into small pieces.
b. Ben swept the broom to pieces.

The result components of the resultatives in (7) are prepositional phrases.[7] In addition, the result component can also be an NP as in (8) or a verb as in Mandarin RVCs.

(8) I painted the car a pale shade of yellow. (Simpson 1983: 143)

With these remarks in mind, let's turn to Washio's typology of languages on the basis of the distinction between strong and weak resultatives. According to Washio (1999: 686), languages are divided into three broad types—those which have both strong and weak resultatives (e.g. English), those which permit only weak resultatives (e.g. Japanese), and finally those which have neither strong nor weak resultatives (e.g. French).[8]

Note that Washio's typology is obtained on the basis of non-compound resultatives and in some cases on the basis of AP resultatives alone. However, when non-AP resultatives and compound resultatives are taken into account, French and Japanese, for example, need a different classification than Washio's.

Consider French first. Washio (1999) classifies French as belonging to the type of language which has neither strong nor weak resultatives, although in his 1997b article, he states that the status of (transitive) weak resultatives in French (and other Romance languages) is not that clear (pp. 28-29; see also note 8 of this chapter). As shown in (9), French does not have strong resultatives.[9]

(9) a. *Il a marché les jambes raides.
he has walked the legs stiff
Intended: 'He walked his legs off.' (Washio 1997b: 27; glosses added)

[7] It is worth pointing out that Kaufmann & Wunderlich (1998) extend Washio's distinction between strong and weak resultatives to PP resultatives.
[8] Washio (1997b: 30) is undecided on whether French has transitive weak resultatives. (He does not discuss unaccusative resultatives in his 1997b article.)
[9] Note that (9b) is a strong resultative because in general terms, when one pulls something *x*, *x*'s becoming tight is not implicated or entailed by the pulling action.

b. *Jean a tiré sa cravate serrée.
Jean has pulled his tie tight
Intended: 'Jean pulled his tie tight.' (Washio 1997b: 29; glosses added)

As for weak resultatives, AP resultatives are bad in French, as shown in (10).[10]

(10) Washio 1997b: 28 (glosses added)
a. *Jean a peint le mur rouge.
Jean has painted the wall red
Intended: 'Jean painted the wall red.'
b. *Jean l'a fusillé mort.
Jean 3SG.CLITIC-has shot dead
Intended: 'Jean shot him dead.'

The above facts may suggest that French has neither strong nor weak resultatives, as claimed by Washio (1999).[11, 12] However, as shown in (11), PP weak resultatives are allowed in French, although, as mentioned by Legendre (1997: 46), the causing predicate is restricted to a small set of transitive verbs, which include *couper* 'cut' and *peindre* 'paint.'

(11) a. Jean a coupé le pain en tranches.
Jean has cut the bread in slices
'Jean cut the bread into slices.'
b. Jean a peint le mur en rouge.
Jean has painted the wall in red
'Jean painted the wall red.'

From this, it can be concluded that although French does not have weak AP resultatives, it does have a restricted set of weak PP resultatives.

As for Japanese, the examples in (12) suggest that Japanese does not have strong resultatives, and those in (13) indicate that the language does have weak resultatives.

[10] As French has depictive secondary predicates, (10a) is good on the reading that John painted that wall while it was red. Moreover, since adjectival modifiers are generally put after the head noun in the language, (10a) is also good on the reading that John painted the red wall.
[11] Note that Washio's claim is made on the basis of AP resultatives in French.
[12] As pointed out by Legendre (1997: 46, note 3), although examples like (i) appear to be resultatives, *court* in (i) is an adverb rather than an adjective as it does not agree with the plural NP *cheveux* (even though (i) does entail that the hair became short).
(i) Il lui a coupé les cheveux court.
he him has cut the hair.PL short.SG
'He cut his hair short.'

(12) a. *Uma-ga maruta-o subesube-ni hikizut-ta.
horse-NOM log-ACC smooth drag-PAST
'The horses dragged the logs smooth.' (Washio 1997b: 6)
b. *Takusan-no hikooki-ga ozonsoo-o usuku ton-da.
many-GEN plane-NOM ozone.layer-ACC thin fly-PAST
'Many planes flew the ozone layer thin.' (Washio 1997b: 20)

(13) a. John-ga kabe-o aoku nut-ta.
J.-NOM wall-ACC blue paint-PAST
'John painted the wall blue.' (Washio 1997b: 2)
b. Boku-wa aisu kuriimu-o katikati-ni koorase-ta.
I-TOP ice cream-ACC solid freeze-PAST
'I froze the ice cream solid.' (Washio 1997b: 5)

Based on such examples, Washio (1997a, 1997b, 1999) concludes that Japanese only has weak resultatives.

Before we discuss this claim, it is necessary to make a few remarks about the secondary predicates in the above examples. Washio analyzes examples like those in (13) as Japanese counterparts of the English AP resultatives, although he views the second predicates (e.g. *aoku* in (13a)) in these examples as "Adjective-type Phrases" (ATPs) (1997b: 2). According to Washio (1997b), ATP covers three different categories in traditional Japanese grammar that can be used as secondary predicates in Japanese resultatives, namely adjective, nominal adjective, and noun.[13] When an adjective is used as a resultative secondary predicate, it is

[13] The three categories can be distinguished in the following ways. First, as shown in (i-iii), while adjectives like *akai* 'smart' cannot be used with the "copula" *-da/-desu* when functioning as the main predicate in a declarative sentence, nominal adjectives like *kirei* 'clean' and nouns like *nama* 'rawness' can.
(i) a. Sono ringo-wa akai.
the apple-TOP red
'The apple is red.'
b. *Sono ringo-wa akai-da.
(ii) Heya-wa kirei-da.
room-TOP clean-be.PRES
'The room is clean.'
(iii) Kono sakana-wa nama-da.
this fish-TOP rawness-be.PRES
'This fish is raw.'
Second, as shown in (iv-v), nominal adjectives and nouns differ in that when used as a modifier, the former are marked with *-na*, and the latter with *-no*, the genitive marker.

inflected with *-ku*; in the case of the other two categories, the *-ni* ending is used (Washio 1997b: 3; see also Hasegawa 1999: 184, note 4, and Uehara et al. 2001: 294).[14] For example, *aoku* in (13a) is in fact an inflected form derived from the adjective *aoi* 'blue' by adding the suffix *-ku*; *katikati-ni* in (13b) is composed of a nominal adjective *katikati* 'solid' and the *-ni* ending.

While *-ni* is attached to a nominal adjective in (13b), it can also be used with a noun in a resultative, as shown in (14).[15]

(14) Sara-ga konagona-ni ware-ta.
plate-NOM pieces-NI break-PAST
'The plate broke into pieces.'

Given that *-ni* is attached to nouns and nominal adjectives, which are used in the same way as nouns in some respects (see note 13), the resultatives formed with *-ni* are arguably resultatives formed with a postpositional phrase, i.e. resultatives analogous to English resultatives formed with a prepositional phrase.[16] I will use "PP resultative" as a cover term

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(iv) kirei-na heya
clean-MM room
'a clean room'
(v) nama-no sakana
rawness-GEN fish
'a raw fish'
In addition, as shown in (vi), when true adjectives are employed to modify a noun, they do not need any special marker.
(vi) akai ringo
red apple
'a red apple'

[14] As pointed out by Washio (1999), the form inflected with *-ku* can also have an adverbial function as in (i). In addition, as shown in (ii), it may constitute the main predicate of an embedded clause.
(i) Gakuseitati-ga arekore urusa-ku situmonsi-ta.
students-NOM this.that annoying-KU question-PAST
'The students made a nuisance of themselves questioning me about this and that.' (Washio 1999: 692)
(ii) Boku-ni-wa kanozyo-ga kawai-ku omoe-ta.
I-DAT-TOP she-NOM pretty-KU seem-PAST
'My impression is that she is pretty.' (Washio 1999: 701)

[15] Unless indicated in the text or in the examples, all the examples from French, German, Japanese, Korean, Romanian, and Swedish in this chapter are obtained through my elicitations with native speakers of these languages (see Acknowledgements at the beginning of the dissertation).

[16] As the second example in note 14 indicates, *-ni* can also be used as a dative case marker.

for both resultatives formed with a prepositional phrase and those formed with a postpositional phrase.[17]

With this background in mind, let's return to Washio's (1997a, 1997b, 1999) conclusion that Japanese only has weak resultatives. Note that regardless of whether the examples in (12-13) are AP resultatives or PP resultatives, the above conclusion is made on the basis of non-compound resultatives alone.[18] However, when compound resultatives like (15) are also taken into account, we must conclude that Japanese has both strong and weak resultatives.[19]

(15) a. John-ga hashiri-tsukare-ta.
John-NOM run-get.tired-PAST
'John ran himself tired.'
b. John-ga Bill-o oi-aki-ta.
John-NOM Bill-ACC chase-get.bored-PAST
'John chased Bill and as a result John got bored.'

The causing predicate *hashiru* 'run' in (15a) does not implicate or entail some change of state, and nor does the causing predicate *ou* 'chase.'[20] Therefore, the compound resultatives in (15) are strong resultatives. As a result, Japanese has strong resultatives, though these resultatives are always in the form of an RVC.[21]

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[17] Kaufmann & Wunderlich (1998: 15) mention that adjectives and nominal adjectives only appear with a few verbs in Japanese resultatives. As for nouns which are parts of PPs (or, more exactly, parts of postpositional phrases formed with *-ni*), they have more freedom to occur with more verbs, although these nouns are "restricted to so-called onomatopoetic nouns." For example, *katikati* in (13b) is an imitation of the tapping sound made on metal (Kaufmann & Wunderlich 1998: 15, note 15), and presumably involves reduplication.

[18] Although Washio (1997b) mentions that in some cases, a "complex verb" has to be used to translate an English resultative, he does not discuss examples like those in (15).

[19] As mentioned in section 1.2.2.4 and will be further discussed in section 4.2, Japanese RVCs do not allow an object-oriented reading. Therefore, (15b) is not ambiguous.

[20] *Hashiru* 'run' and *ou* 'chase' change to *hashiri* and *oi* respectively when functioning as the causing component of an RVC.

[21] Note that the result component of the two V-V compounds in (15) is intransitive. This type of compound is semiproductive in Japanese (Yafei Li 1993: 481, note 2), and is not the most predominant V-V compound type in the language. In fact, according to Nishiyama (1998: 184), the most predominant V-V compounds in Japanese are those which consist of two transitive verbs, as illustrated in (i).

(i) John-ga niwatori-o naguri-korosi-ta.
John-NOM chicken-ACC hit-kill-PAST
'John beat and killed a chicken.'

Given the extension of Washio's distinction to compound resultatives, we are now in a position to examine what kind(s) of resultatives Mandarin has. First, the examples in (16) show that Mandarin has weak resultatives.

(16) a. Zhangsan ca-ganjing-le zhuozi.
Zhangsan wipe-clean-PERF table
'Zhangsan wiped the table clean.'
b. Zhangsan qie-sui-le rou.
Zhangsan cut-in.pieces-PERF meat
'Zhangsan cut the meat into pieces.'

Second, the sentences in (17) demonstrate that Mandarin has strong resultatives as well.

(17) a. Zhangsan tui-dao-le Lisi.
Zhangsan push-fall-PERF Lisi
'Zhangsan pushed Lisi, and as a result Lisi fell down.'
b. Zhangsan ku-shi-le shoujuan.
Zhangsan cry-wet-PERF handkerchief
'Zhangsan cried the handkerchief wet.'

Therefore, it can be concluded that Mandarin also has both strong and weak resultatives.

Based on the above discussions, we conclude that English, Japanese, and Mandarin have both strong and weak resultatives, and that French only has restricted weak resultatives. Furthermore, on the basis of the examples in the literature and/or of my own elicitation with native speakers, both strong and weak resultatives are also attested in Dutch (e.g. Hoekstra 1988, Kaufmann & Wunderlich 1998), German (e.g. Boas 2003, Kaufmann 1995, Kratzer 2005, Müller 2002, Wunderlich 1997), Norwegian (e.g. Dimitrova-Vulchanova 2003, Lødrup 2000) and Swedish. Moreover, my own elicitation with respect to Romanian reveals that like

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The question is whether compounds like *naguri-korosu* 'hit-kill' in (i) are resultatives or not. By our definition of the resultative construction, these compounds do not count as resultatives. For one thing, the example in (i) cannot be paraphrased as "That John beat a chicken caused him to kill it." Therefore, it does not meet the criterion that a resultative should express a causative meaning. For another, even the paraphrase "John beat a chicken and as a result of his beating he killed it" is somewhat awkward. In other words, although the death of the chicken is due to John's beating it, the killing action is not due to the beating activity. Given these, I do not analyze sentences like (i) as resultatives in this study.

French, Romanian has only restricted weak PP resultatives (see section 4.2).[22] Furthermore, according to Washio (1997a, 1999, 2002), Korean and Turkish have only weak resultatives as well.[23] However, it should be added that weak resultatives in Korean are less restricted than in French and Romanian in the sense that it allows both AP and PP resultatives. Finally, based on Snyder 2001, it seems that Lingala (a Bantu language) and Javanese (an Austronesian language) have no resultatives.[24, 25]

Table 4.1 summarizes what is stated in the previous paragraph. What is noticeable in this table is the absence of languages which have strong resultatives, but at the same time do not allow weak resultatives. In fact, based on this, Washio (1999: 703, 2002: 380) makes the following generalization.

(18) Washio's Generalization[26]
If a language disallows Weak resultatives, then it also disallows Strong resultatives.

In other words, if a language has strong resultatives, then it must have weak resultatives.

[22] Based on the examples cited by Beck & Snyder (2001b), Hasegawa (1999), Snyder (1995a, 1995b, 2001), and Washio (1997b), Spanish can also be said to allow restricted weak PP resultatives alone. However, on the basis of Napoli's (1992, 1999) work, it seems that in contrast to resultatives in French, Romanian and Spanish, weak PP resultatives occur more freely in Italian, although Italian has no strong resultatives, either. In addition, although it seems that Italian allows AP resultatives in some special context (e.g. when the adjective is intensified), many AP resultatives cited by Napoli are in fact spurious resultatives in Washio's (1997b) sense, as pointed out by Kaufmann & Wunderlich (1998: 12).

[23] The data supplied by Meral (to appear; p.c.) confirms Washio's classification of Turkish. Moreover, Hasan Mesut Meral (p.c.) informed me that Turkish only has AP resultatives, although Korean, which, like Turkish, only has weak resultatives, allows both AP and PP resultatives.

[24] More detailed and systematic study needs to be carried out to determine whether the languages claimed to have no resultatives by Snyder (2001) really have no resultatives at all. For one thing, Snyder is only concerned with AP resultatives. For another, he only uses a few examples to determine whether a language allows resultatives.

[25] Rapoport (1999: 42) claims that "while depictives seem to be found in most languages, resultatives are found in relatively few." If the latter part of the claim is correct, the list of languages which have no resultatives is expected to be very long. On the other hand, which languages should be put in this list remains an empirical question and cries for further research. Obviously, when no resultatives are discussed in a grammar book of a certain language, one cannot simply take this to mean that no resultatives exist in this language.

[26] The generalizations made in Washio 1999 and in Washio 2002 are basically the same, except that in the former article, Washio uses "transitive Weak resultatives" instead of "Weak resultatives."

Table 4.1 Typology of Languages with Respect to Resultatives[27, 28]

Types	Examples
Languages which have both strong and weak resultatives	Dutch, English, German, Japanese, Mandarin, Norwegian, Swedish
Languages which have neither strong nor weak resultatives	Lingala, Javanese
Languages which only have weak resultatives	French (restricted), Korean, Romanian (restricted), Turkish
Languages which only have strong resultatives	***Unattested***

The generalization or the implicational universal above is still a description which needs to be explained. I believe that its explanation is tied to the strong-weak distinction itself, which, in turn, is traceable to the lexical semantics of the causing predicate of a resultative. Recall that on our conception about the distinction between strong and week resultatives, the causing predicate of a weak resultative, but not of a strong resultative, implicates or entails the change denoted by the result predicate. Given that weak resultatives are lexically implicated or entailed and that strong resultatives must not, it is expected that weak resultatives are more available to the language user than strong resultatives, which

[27](More) examples of resultatives in some of these languages—or (more) justification of the classification—will be given in subsequent sections, when the languages are under discussion.

[28] The languages which belong to one and the same type in Table 4.1 tend to form a language group. For example, as observed by Green (1975) and Washio (1999, 2002), Romance languages in general do not allow AP resultatives, while Germanic languages generally do. The question is what is responsible for this systematic variation in particular, and what counts as the necessary and sufficient conditions for a language to have weak and/or strong resultatives in general. Concerning this, some different hypotheses have been put forward in the literature. For example, Green (1975: 58-59) hypothesizes that whether a language has AP resultatives is contingent on whether the language has verb-particle constructions (e.g. *knock down*). Along a similar line, Washio (2002) suggests that having verb-particle constructions is a necessary condition for a language to have strong AP resultatives. For another example, Beck & Snyder (2001a: 116) and Snyder (2001: 330) propose that having productive N-N compounding is a necessary, though not sufficient, condition for a language to have AP resultatives. (However, in his earlier work, Snyder (1995b: 12, 25, 27, 29, 35) regards the condition as both necessary and sufficient.) According to Snyder (2001: 336), the connection between the two is semantic in nature: "the distinctive semantic characteristics that unify the complex-predicate constructions [like resultatives] derive from a mode of semantic composition available only within endocentric compounds [such as N-N compounds]."

involve more practical reasoning and more pragmatic inference. This explains why there is no language which has strong resultatives alone.

In fact, a more fine-grained prediction can be made if we push a bit further the idea about the richness of the lexical information provided by a causing predicate in relation to resultative formation. Note that Washio uses "strong resultatives" to cover both sentences like (19), which involves a subcategorized object, and those like (20), which contains an unsubcategorized object.

(19) The horses dragged the logs smooth.
(20) The planes flew the ozone layer thin.

Further note that weak resultatives involve more lexical information of the causing predicates than subcategorized strong resultatives like (19), because it is the former rather than the latter that lexically implicate or entail the resulting change denoted by the result component. In turn, subcategorized strong resultatives involve more lexical information of the causing predicates than unsubcategorized strong resultatives, because it is the former rather than the latter that involve a lexically subcategorized argument. On the assumption that the amount of information provided by causing predicates in relation to the formation of resultatives correlates with the possibility that the resultatives formed with such predicates are available to a language user, two predictions can be made. First, there is no language that only allows unsubcategorized strong resultatives and does not allow subcategorized strong resultatives and weak resultatives. Second, there is no language that only allows subcategorized strong resultatives and disallows weak resultatives. In other words, the proposal leads to the implicational hierarchy in (21).

(21) Resultative Implicational Hierarchy
Unsubcategorized Strong Resultatives > Subcategorized Strong Resultatives > Weak Resultatives

All the languages mentioned in table 4.1 are consistent with this hierarchy. Although the motivation for Washio's collapsing unsubcategorized and subcategorized strong resultatives is that he finds no language that allows one but disallow the other (see Washio 2002), it is an empirical question whether there are languages that allow weak resultatives and subcategorized strong resultatives but disallow unsubcategorized strong resultatives.

In addition, the fine-grained distinction makes an intralinguistic prediction that for a language like English which allows the three types of resultatives to different degrees, weak resultatives should be more acceptable than subcategorized strong resultatives, which in turn should be more acceptable than unsubcategorized strong resultatives. This prediction is borne out by the fact that no judgment difference is found with sentences like *John wiped the table clean*, little variation is found with sentences like (19), and a great of variation is found with sentences like (20). Therefore, there is evidence for the above proposal about the relation between the availability of a resultative and the richness of the lexical information provided by the causing predicate that is related to the formation of the resultative.

4.2 Subject-oriented reading

With the distinction between strong and weak resultatives in mind, let's now examine several aspects of Mandarin RVCs from a crosslinguistic perspective. The first aspect to be investigated is the subject-oriented reading of a resultative involving an unergative or transitive causing predicate. In this section, I restrict my attention to those cases where the

subject of the resultative sentence is interpreted as the external argument of the causing predicate.

As mentioned in earlier chapters and shown below, Mandarin RVCs can have a subject-oriented reading even when the causing predicate is unergative ((22a)) or transitive ((22b-d)).[29]

(22) a. Zhangsan pao-lei-le.
Zhangsan run-tired-PERF
'Zhangsan ran himself tired.'
b. Zhangsan xi-lei-le yifu, xianzai xiang zuo dianr bie-de.
Zhangsan wash-tried-PERF clothes now want do a.bit other-MM
'Zhangsan washed clothes and as a result he got tired. Now he wants to do something else.'
c. Zhangsan he-zui-le jiu.
Zhangsan drink-drunk-PERF liquor
'Zhangsan drank liquor and as a result he became drunk.'
d. Zhangsan wen-fan-le Lisi.
Zhangsan ask-vexed-PERF Lisi
'Zhangsan asked Lisi (something) and as a result Zhangsan became vexed.'

However, as shown in (23), English resultatives normally do not allow a subject-oriented reading when the main verb involved is unergative or transitive.[30]

(23) a. *Bob ran tired.
b. *Jack washed the clothes tired.
c. *John drank liquor drunk.

Furthermore, although (23a) can be saved by using a "fake reflexive" (as dubbed by Simpson (1983: 145)) as shown in (24), what we get is an object-oriented resultative, not a subject-oriented one.

(24) Bob ran himself tired.

[29] (22d) has an object-oriented reading as well, but we are concerned with the subject-oriented reading alone in this section.
[30] Although the sentences in (23) are bad on the resultative reading, they are good on a depictive reading, namely 'Bob ran while he was tired,' 'Jack washed the clothes while he was tired' and 'John drank liquor while he was drunk.'

For one thing, the use of the fake reflexive *himself* in (24) is for structural reasons alone, as this sentence involves a single participant. For another, there is independent evidence from (23b-c) that transitive resultatives in English do not allow a subject-oriented reading.

While subject-oriented resultatives are generally bad in English, the following examples, however, are also attested.[31]

(25) Rappaport Hovav & Levin 2001: 774 (emphasis added)
   a. a man grabbed and groped her and tried to get under her clothing , but **she kicked free** and fled. (*The Courier-Journal*, 21 Apr. 1998, p. 05B)
   b. One woman gets up to leave, but Red-Eyes grabs her roughly by the arm and pulls her into his lap. **She wriggles free**, but remains seated obediently beside him. (*The Ottawa Citizen*, 30 Nov. 1997, p. D10)
   c. . . . **one of his race cars wiggled loose** inside the transporter and caused damage to both of his cars. (*Kansas City Star*, 1 Aug. 1997, p. D11)

Note that all the resultative sentences in (25) have a subject-oriented reading. Note that they are intransitive in form. Crucially, although transitive resultatives like (22b) are grammatical in Mandarin, no such resultatives are allowed in English, as shown by (23b) and (23c). This, together with the fact that the examples in (25) are grammatical, suggests that to get the subject-oriented reading, the two components of a resultative have to be adjacent to each other. However, this condition fails to account for the contrast between (23a) and (25), both of which involve intransitive resultatives. In fact, it seems that to get the subject-oriented reading, the two components of a resultative have to be, to some extent, realized as a compound. This is because realization as a compound and thus as a single word enables the subject and the result compound to establish a relation more easily.

As argued in Chapter 3, Mandarin resultatives are compounds. The question is whether (25), in contrast to (23a), involves a compound resultative. I argue that although the resultatives in (25) do not form true compounds as Mandarin resultatives do, they can be

[31] Thanks to Jim Huang for bringing this to my attention.

considered to form pseudo-compounds. On the one hand, in contrast to Mandarin RVCs (see section 3.2.1), the adjectival result component in (25) that can be modified with a degree modifier when the adjective is used alone can also be modified in the same way when used to form a resultative. For example, as shown in (26), *loose* can be modified when used separately. Further, it can be modified in the same way when used as the result component of a resultative.

(26) One of the race cars became completely loose.
(27) One of the race cars wiggled completely loose.

This fact suggests that resultatives like *wiggle loose* do not form true compounds. On the other hand, there is evidence that resultatives formed with *free*, *loose*, *open* and *shut* behave differently from true phrasal resultatives. The evidence comes from the contrast between (28) and (29), when the factor of heaviness is controlled. That is, as far as transitive resultatives are concerned, resultatives like *kick loose*, in contrast to those like *hammer flat*, allow the object to occur after the result component.

(28) a. John hammered the metal flat.
b. */?John hammered flat the metal.

(29) a. John kicked the latch loose.
b. John kicked loose the latch.

This shows that resultatives like *kick loose* behave like phrasal verbs such as *turn on* in (30) in that they can function **like** a single verb.

(30) a. John turned the radio on.
b. John turned on the radio.

Given that *loose* is a free morpheme, English resultatives formed with *loose* can be said to form a pseudo-compound. I believe that this is the reason why (25c) can have the subject-oriented reading. Based on this, I hypothesize that realization as a (pseudo-)compound is a

necessary condition for a resultative with an unergative or transitive causing predicate to allow a subject-oriented reading.

The above hypothesis is supported by non-compound resultatives in German and Swedish. As background information, (31) and (32) show that like English, German and Swedish allow both strong and weak non-compound resultatives.

(31) German
a. John wischte den Tisch sauber. (weak)
John wiped the table clean
'John wiped the table clean.'
b. John aß den Teller leer. (strong)
John ate the plate empty
'John ate the plate empty.'

(32) Swedish
a. John torkade bordet rent. (weak)
John wiped table.the clean
'John wiped the table clean.'
b. John sprang trottoaren tunn. (strong)
John ran pavement.the thin
'John ran the pavement thin.'

Further, as shown in (33-34), neither German nor Swedish allows subject-oriented non-compound resultatives with an unergative or transitive causing predicate. Still further, as shown in (33a') and (34a'), the intended meaning of (33a) and (34a) can be expressed with a fake reflexive in German and Swedish, as in English.[32, 33]

(33) German
a. *John rannte müde.
John ran tired
Intended: 'John ran himself tired.'
a'. John rannte sich müde.
John ran self tried
'John ran himself tried.'

[32] As in English, all the sentences in (33-34) except the fake reflexive ones are grammatical on a depictive reading.
[33] It would be interesting to examine whether the similarities among English, German, and Swedish result from some parallel development or from borrowing. I will leave this for future research.

b. *John wusch die Kleidung müde.
John washed the clothes tired
Intended: 'John washed the clothes and as a result he became tired.'
c. *John trank den Alkohol betrunken.
John drank the alcohol drunk
Intended: 'John drank the alcohol and as a result he became drunk.'

(34) Swedish
a. *John sprang trött.
John ran tired
Intended: 'John ran himself tired.'
a'. John sprang sig trött.
John ran self tired
'John ran himself tired.'
b. *John tvättade kläderna trött.
John washed clothes tired
Intended: 'John washed the clothes and as a result he became tired.'
c. *John drack sprit full.
John drank liquor drunk
Intended: 'John drank liquor and as a result he became drunk.'

Therefore, German and Swedish non-compound resultatives, though like Mandarin having both strong and weak resultatives, do not allow a subject-oriented reading when the causing predicate is unergative or transitive.

Given that the subject-oriented resultatives under discussion are in fact strong resultatives, it is expected that French, a language which only has restricted weak PP resultatives, does not permit such a reading, either. As shown in (35), this prediction is borne out.[34]

(35) a. *Pierre a couru fatigué.
Pierre has run tired
Intended: 'Pierre ran himself tired.'
b. *Pierre a lavé ces vêtements fatigué.
Pierre has washed the clothes tired
Intended: 'Pierre washed the clothes and as a result he became tired.'
c. *Pierre a bu l'alcool ivre.
Pierre has drunk the.alcohol drunk
Intended: 'Pierre drank the liquor and as a result he became drunk.'

[34] The sentences in (35) are good on a depictive reading.

Furthermore, given that French does not allow strong resultatives and that unergative resultatives are always strong, (35a) cannot be saved by resorting to a fake reflexive, as shown in (36).

(36) *Pierre s'est couru fatigué.
Pierre self.is run tired
Intended: 'Pierre ran himself tired.'

In addition, as shown in (37), Romanian, like French, does not have strong resultatives, and only allow restricted weak PP resultatives.[35]

(37) a. *Ion a alergat trotuarul subtire. (strong resultative)
Ion has run sidewalk thin
Intended: 'Ion ran the pavement thin.'
b. *Ion a şters masa curată (weak AP resultative)
Ion has wiped table.the clean
Intended: 'Ion wiped the table clean.'
c. Ion a spart vaza in bucati. (weak PP resultative)
Ion has broken vase.the in pieces
'Ion broke the vase into pieces.'

Therefore, it is predicted that Romanian should show the same pattern as French, and the data in (38-39) confirms this prediction.[36]

(38) a. *Ion a alergat obosit.
Ion has run tired
Intended: 'Ion ran himself tired.
b. *Ion a spălat hainele obosit.
Ion has washed clothes.the tired
Intended: 'Ion washed those clothes and as a result he became tired.'
c. *Ion a băut lichior beat.
Ion has drunk liquor drunk
Intended: 'Ion drank liquor and as a result he became drunk.'

(39) *Ion s-a alergat obosit.
Ion self-has run tired
Intended: 'Ion ran himself tired.'

[35] (37b) is good on a depictive reading, namely "Ion wiped the table while it was clean."
[36] All the sentences in (38) are grammatical on a depictive reading.

The examples in (38) show that like French, Romanian does not allow resultatives with a subject-oriented reading when the causing predicate is unergative or transitive. Moreover, (39) shows that as in French, the intended meaning of (38a) cannot be expressed with a resultative containing a fake reflexive.

It can be seen from the above that French and Romanian resultatives do not allow the subject-oriented reading. Crucially, such resultatives do not form (pseudo-)compounds. Therefore, the French and Romanian data is consistent with our hypothesis that realization as a (pseudo-)compound is a necessary condition for a resultative with an unergative or transitive causing predicate to allow a subject-oriented reading.

The above hypothesis is supported by the fact that Japanese, which has resultative verb compounds, does allow subject-oriented resultatives with an unergative or transitive causing predicate, as shown in (40). Crucially, the subject-oriented reading is only available to such compounds.[37]

(40) a. John-ga hashiri-tsukare-ta.
John-NOM run-get.tired-PAST
'John ran himself tired.'
b. John-ga Bill-o oi-aki-ta.
John-NOM Bill-ACC chase-get.bored-PAST
'John chased Bill and as a result John became got bored.'

However, note that there is a difference between Mandarin and Japanese RVCs. As seen in the previous chapters and demonstrated below, Mandarin sentences with an RVC may be ambiguous. For example, sentences like (41) allow at least a subject-oriented reading and an object-oriented reading.

[37] As non-compound resultatives in Japanese are weak and as resultatives considered in this section are strong, Japanese non-compound resultatives do not allow a subject-oriented reading when the causing component is unergative or transitive.

(41) Zhangsan zhui-lei-le Lisi.
Zhangsan chase-tired-PERF Lisi
(a) 'Zhangsan chased Lisi and as a result Zhangsan got tired.'
(b) 'Zhangsan chased Lisi and as a result Lisi got tired.'

However, as pointed out by Yafei Li (1993: 481), Japanese sentences with an RVC are consistently unambiguous, and can only have a subject-oriented reading. For example, although (40b) is similar to (41), it is not ambiguous and cannot have the reading "John chased Bill and as a result Bill became bored."

I believe that the contrast between Mandarin and Japanese RVCs is related to the issue of whether RVCs of a language have a head, and if so which part is the head. If this is correct, then some remarks on the headedness of Japanese are in order. It is assumed by Kaufmann & Wunderlich (1998: 15, note 14; 1998: 44), Yafei Li (1993: 486-487), Nishiyama (1998: 200) and Washio (1997b: 1) that Japanese RVCs are head-final or right-headed. To justify this assumption, Li (1993) reasons that since most types of compounds are head-final in Japanese and since the right-hand component of an RVC is of the same category as the whole compound, namely a verb, "the minimal assumption is that they pattern with all these other types of compounds in being head-final" (Li 1993: 487).

However, on my view, there is a more important piece of evidence for the assumption that RVCs in Japanese are head-final. To start with, note that Japanese RVCs are V-V compounds. For example, *oi-aki-ta* in (40b) is a past tense form of the RVC *oi-akiru*, which is composed of two verbs, *akiru* 'get bored' and *ou* 'chase,' which changes to *oi-* in the compound. If so, the head issue of RVCs can be seen from the angle of the headedness of other V-V compounds in Japanese.

Crucially, there is evidence from case marking that other V-V compounds in Japanese are right-headed. For example, as shown in (42), although *ou* 'chase' and *tsuku* 'attach,'

when used separately, require an accusative object and a dative object respectively, the compound *oi-tsuku* 'chase-attach' can only be followed by a dative object (Nishiyama 1998: 184).

(42) a. John-ga Mary-o ot-ta.
John-NOM Mary-ACC chase-PAST
'John chased Mary.' (Nishiyama 1998: 177)
b. John-ga Bill-ni tui-ta.
John-NOM Bill-DAT attach-PAST
'John attached to Bill.' (Nishiyama 1998: 177)
c. John-ga Mary-ni/*o oi-tui-ta.
John-NOM Mary-DAT/ACC chase-attach-PAST
'John chased Mary and attached to (i.e., caught up with) Mary.' (Nishiyama 1998: 184)

Therefore, there is evidence that V-V compounds in Japanese are generally head-final. This, in turn, provides the strongest indirect evidence that Japanese RVCs, which are V-V compounds, are also head-final.

Now the question is whether the absence of ambiguity in (40b) can be accounted for by the assumption that Japanese RVCs are head-final. The answer is "Yes" if we assume the head feature percolation condition discussed in section 1.2.2.4, namely that the way the arguments of the head of an RVC are realized in the overt syntax should be maintained on the compound level.[38] In (40b), the second component of the compound *oi-akiru* 'chase-get bored' is an intransitive verb. As shown in (43), when it is used alone, the singe argument of *akiru* is realized as the subject of the sentence.

(43) John-ga aki-ta.
John-NOM get.tired-PAST
'John got tired.'

[38] Related to this, recall that in accounting for Mandarin RVCs, Yafei Li (1990) assumes that the theta-roles assigned have different degrees of prominency and that the theta-role prominency of the head must be preserved in the theta-grid of the compound.

If *akiru* is the head of *oi-akiru*, its single argument is expected to be realized as the subject of the compound. As a result, the one who got tired in (40b) can only be *John*, and the sentence cannot have an object-oriented reading.

Note that there is independent evidence from other V-V compounds for the head feature percolation condition. For example, the fact that (44) is grammatical is because the V2 of the compound involved is transitive and the way its arguments are realized in the overt syntax is maintained on the compound level.

(44) John-ga soup-o [suupu-o] huki-kobosi-ta.
John-NOM soup-ACC boil.over (INTR)-spill (TR)-PAST
'The soup boiled over and John spilled it.' (Nishiyama 1998: 193)

Note that in this example, V1 is intransitive and its single argument is realized as the object of the sentence. As shown in (45), when V1 is used alone, its single argument is realized in the subject position.

(45) Suupu-ga huki-ta.
soup-NOM boil.over (INTR)-PAST
'The soup boiled over.'

This shows that the way the argument(s) of the non-head component of a compound are realized in the syntax need not be maintained on the compound level. In turn, it suggests that the grammaticality of (44) is due to the fact that the argument realization related to V2 (the head) rather than V1 (the non-head) is preserved on the compound level.

As for Mandarin RVCs, I have argued in Chapter 1 that they are headless from the perspective of argument realization. Given this, the ambiguity of *zhui-lei* in (41) is not something unexpected.[39]

[39] Jim Huang suggested to me that if Mandarin RVCs are headless, it will lead one to expect a more widespread distribution of subject-oriented resultatives in Mandarin than is actually attested. However, I believe that there are good reasons why subject-oriented resultatives are restricted, both within particular languages and crosslinguistically. First, the marked nature of the subject-oriented reading is partly due to the "theme-object

The (pseudo-)compound condition, however, is apparently challenged by Korean resultatives, which on the one hand are not compounds, and on the other hand are often claimed to have subject-oriented resultatives involving an unergative or transitive causing predicate. Specifically, Hong (2004), Jong-Bok Kim (1999), and Uehara et al. (2001) all claim that subject-oriented resultatives are possible in Korean. The following are three examples that figure prominently in the discussion of Korean subject-orientedness.[40]

(46) John-un Mary-lul ciluha-key ccochatani-ess-ta.
John-TOP Mary-ACC bored$_A$-KEY chase$_V$-PAST-IND
'John chased Mary so that he/she became bored.' (Cormack & Smith 1999: 269)

(47) John-i mal-ul cichi-key talliessta.
John-NOM horse-[ACC] tired-COMP ran
(a) 'John ran (his) horse tired.'
(b) 'John ran his horse, and he became tired.' (Kim 1999: 146)

(48) John-i Mary-uy son-ul aphu-key capassta.
John-NOM Mary-GEN hand-ACC painful-COMP hold [held]
(a) 'John hold [held] Mary's hands painful.' ['John held Mary's hand and her hands became painful.']
(b) 'John hold [held] Mary's hands and his hands became painful. (Kim 1999: 146)

All these sentences are presented as ambiguous, and one of the readings is apparently subject-oriented. However, not all the five native speakers of Korean I consulted share the same judgments as the ones given by the authors. With respect to (46), although four speakers found it ambiguous, three of these four speakers also said that the sentence was "weird" or "awkward" and could be improved either by changing 'bored' to its inchoative form (with the suffix *-ci*) as shown in (46′), or by replacing *-key* (see below for its uses) with

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tendency" dubbed by Wechsler (2005a: 271), which in our terms means that Patient and Causee tend to be object rather than subject. It follows from this that resultatives tend to be predicated of objects rather than subjects. Second, the marked character is also partly due to the fact that animate NPs are prototypical subjects and inanimate NPs prototypical objects and that there are not many result predicates that are applicable to animate beings. In contrast, there are numerous result predicates that can be used for inanimate entities.

[40] *Talli-* 'run' in (47) is a transitive verb.

-tolok (which indicates degree or extent, and means "until" or "to the point where" (Washio 1997a: 247)), as shown in (46″).[41, 42]

(46′) John-un Mary-lul cilwuha-ci-key ccochatani-ess-ta.
John-TOP Mary-ACC bored-INCH-KEY chase-PAST-IND
'John chased Mary so that he/she became bored.'

(46") John-un Mary-lul cilwuha-(ci)-tolok ccochatani-ess-ta.
John-TOP Mary-ACC bored-INCH-TOLOK chase-PAST-IND
'John chased Mary so that he/she became bored.'

Concerning (47), among the five speakers, three of them found it ambiguous, and three of them (not identical with the former three) found it weird or awkward. For the latter three speakers, the sentence is greatly improved by using *-tolok* instead of *-key*, as shown in (47'), which is ambiguous to these three consultants.

(47′) John-i mal-ul cichi-tolok talli-ess-ta.
John-NOM horse-ACC tired-TOLOK run-PAST-IND
(a) 'John rode the horse, and as a result the horse became tired.'
(b) 'John rode the horse, and as a result he became tired.'

As for (48), four speakers said that the sentence had only the reading that Mary's hands became painful; the only one who regarded (48) ambiguous said that the sentence was "perhaps ambiguous," and that the first reading was more salient.

Therefore, there is a great deal of judgment variation with respect to the three examples cited from the literature, and not all speakers regard them as ambiguous. However, I argue that even for those speakers who view them as ambiguous, the subject-oriented and object-oriented readings are not resultative readings in our sense of "resultative." Specifically, I

[41] As the Yale transliteration system will be consistently adopted in this chapter for the Korean examples drawn from my own elicitation, I transcribed the Korean word for 'bored' as *cilwuha* in (46′) and (46") rather than as *ciluha*.
[42] Although (46") is acceptable when without the inchoative suffix *-ci*, it is more natural and acceptable when with it.

argue that (46-48) are not true resultatives, and that they either involve an adverbial phrase or two separate clauses or both.

First, if the sentences in (46-48) are resultatives involving a single clause at all, they must be strong resultatives, as the main verbs in them do not implicate or entail a change of state. However, as convincingly argued by Washio (1997a, 1999) and further confirmed by him in our personal communication, Korean only has weak resultatives, as shown by the following unambiguous sentences in (49-50).

(49) Strong Resultatives

a. *Kutul-nun kwutwu-patak-lul yalp-key talli-ess-ta.
they-TOP shoe-soles-ACC thin run-PAST-DCL
'They ran the soles of their shoes thin.' (Washio 1999: 682)

b. *Mal-i thongnamwu-lul pantulpantulha-key kkul-ess-ta.
horse-NOM log-ACC smooth drag-PAST-DCL
'The horses dragged the logs smooth.' (Washio 1999: 684)

(50) Weak Resultatives

a. Ku yeca-nun meli-lul ppalkah-key mwultuli-ess-ta.
she-TOP hair-ACC red-COMP dye-PAST-DCL
'She dyed her hair red.' (Washio 1999: 682)

b. Kutul-un kil-ul phyengphyengha-key kollass-ta.
they-TOP road-ACC flat-COMP level/roll-PAST-DCL
'They leveled the road flat/even.' (Washio 1999: 682)

Given this, the status of the set of examples in (46-48) as resultatives is questionable.[43]

Second, there is evidence that the suffix *-key* has some different uses, including its function as a clause introducer (Soowon Kim & Maling 1997: 192, 1998: 366-367; Uehara et al. 2001: 301; Washio 1999: 692-702 and p.c.; Wechsler & Noh 2001: 405). For example, *-key* can be used to derive an adverb from an adjective, as illustrated by (51).[44]

[43] Admittedly, the data in (49-50) does not count as conclusive evidence for Korean's disallowing strong resultatives. However, it does suggest that the status of (46-48) as strong resultatives should be taken with a grain of salt.

[44] Given that *-key* can be used to derive adverbs, one may wonder whether the examples in (50) are true resultatives. My answer to this issue is positive and there are two pieces of evidence for this. First, even though *alumtap-key* in (51a) is apparently predicative, *ttukep-key* in (51b) is not. In contrast, *ppalkah-key* in (50a) and *phyengphyengha-key* in (50b) are predicative. Second, there is another adverbializing suffix *-i* in Korean, which

(51) a. Kkoch-i alumtap-key phi-ess-ta.
flower-NOM beautiful-KEY bloom-PAST-DCL
'The flower bloomed beautifully.' (Washio 1999: 692)

b. Robin-i Sandy-lul ttukep-key an-ass-ta.
Robin-NOM Sandy-ACC hot hug-PST-IND
'Robin hugged Sandy passionately (i.e. in a hot manner)' (Kim & Maling 1997: 192, 1998: 367)

Crucially, however, as shown in (52), *-key* can also be used to introduce a clause, and this is probably why it is often glossed or analyzed as a complementizer in the literature (for example, by Jong-Bok Kim (1993, 1999) and Jang & Siyoun Kim (2001)).

(52) [$_{CLS}$ na-eykey-nun [$_{CLS}$ ku yeca-ka kwiyep-key] sayngki-ess-ta (>sayngkyessta)]
I-DAT-TOP she-NOM pretty-KEY seem-PAST-DEC
'My impression is that she is pretty.' (Washio 1999: 701)

(52) involves a non-result clause. As shown in (53), *-key* can also be used to introduce a result clause.

(53) a. Ku-nun Mary-lul [chim-i malu-key] chingchanhayessta.
he-TOP Mary-ACC saliva-NOM dry.out-COMP praised
'(lit.) He praised Mary (his) saliva dried out.'
'He spoke in the highest terms of Mary.' (Jong-Bok Kim 1999: 138)

b. Kim-i [tali-ka hwui-key] umsik-ul sang-ey ollyenoh-ass-ta.
Kim-NOM legs-NOM bent food-ACC table-DAT pile/put-PST-IND
'Kim piled food on the table (so that its) legs (became) bent' (Soowon Kim & Maling 1997: 193, 1998: 368)

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has no other functions (Jang 1997, Wechsler & Noh 2001). Crucially, although the adverbs derived from the same adjective by adding *-i* and *-key* are often exchangeable, as shown in (i), the *-i* form cannot be used to replace the *-key* form in sentences which are putatively resultatives, as shown in (ii). Based on these two pieces of evidence, I conclude that the sentences in (50) are true resultatives.

(i) Jang 1997: 149
a. John-i ppal-i talin-ta.
b. John-i ppalu-key talin-ta.
John-NOM fast run-DEC
'John runs fast.'

(ii) Jang 1997: 154
a. *John-un kkangthong-ul napcaki nwul-ess-ta.
b. John-un kkangthong-ul napcakhakey nwul-ess-ta.
John-TOP can-ACC flat press-PST-DEC
'John pressed the can flat.'

c. [Meli-ka ccwuppyese-key] koymul-i na-eykey takaw-ass-ta.
hair-NOM on.end monster-NOM I-DAT approach-PST-IND
'A monster approached me (so that) my hair (became) on end.' (Soowon Kim & Maling 1997: 194, 1998: 368)

The parts in square brackets in (53) are clauses because all the subcategorized arguments by the main verbs of the examples are overtly expressed. Further, the NPs marked with the nominative case in the parts in square brackets are not arguments subcategorized for by the main verbs. This unambiguously shows that these parts form separate clauses, which correspond to English clauses introduced by *so that*.[45, 46] As all the sentences in (53) are biclausal and involve a result clause, none of them is a true resultative, in which the causing and result predicates are in one and the same clause.[47]

Given that there is evidence from unambiguous sentences that Korean does not have strong resultatives, and that *-key* can be used to introduce a clause and derive an adverb, I

[45] The clausal status of the parts in square brackets in (53) is further strongly suggested by the fact that the NPs involved are marked with the nominative case, which is typically used to mark subjects.

[46] Given that there is independent evidence that *-key* can be used to introduce a result clause, each of the following two examples in (i) can be said to involve two clauses as well.

(i) a. Ku-nun (casin-uy) sonswuken-i ces-key wulessta.
He-TOP (self-GEN) handkerchief-NOM soggy-COMP cried
'He cried the handkerchief soggy.' (Jong-Bok Kim 1999: 138)

b. Ku-nun pay-ka aphu-key mekessta.
he-TOP belly-NOM sick-COMP eat
'(literally) He ate (his) belly sick.' (Jong-Bok Kim 1993: 473)

In addition, if *-key* can introduce a clause (or more exactly, a non-finite clause), one might wonder whether the examples in (50) are biclausal, with the subordinate clause introduced by *-key* involving a PRO. This is a legitimate question, given that subject-drop in Korean is widespread. However, as argued by Wechsler & Noh (2001: 406-408), such an analysis does not hold. One of the pieces of evidence they present comes from the use of *-tolok*, which indicates degree or extent, and means "until" or "to the point where" (Washio 1997a: 247). Crucially, according to Lee & Lee (2003: 171), unlike *-key*, which can not only be combined with a **predicate**, but also be used to introduce a **clause**, *-tolok* can only be combined with a **clause**. Therefore, if examples like those in (50) could be replaced with *-tolok*, they would each involve two clauses. However, as demonstrated by Wechsler & Noh (2001: 407-408) and Lee & Lee (2003: 171, 173), this is not the case. In fact, only the clause-introducing *-key* as in (53) and in (i) of the present note can be replaced with *-tolok*. As for the putative predicate cases as in (50), the replacement of *-key* with *-tolok* is not allowed. Therefore, the examples in (50) involve a single clause, and are true resultatives.

[47] The monoclausal condition on resultatives is implicitly assumed by Washio (1997a, 1999) and Wechsler & Noh (2001). In fact, it is based on this requirement that Washio comes to the conclusion that sentences like those in (i) of note 46 are not strong resultatives (given that they are not true resultatives involving a single clause). As a result, such sentences do not pose a problem to his view that Korean does not have strong resultatives.

conclude that the sentences in (46-48) are not true resultatives, let alone strong resultatives. In fact, the readings allowed involve either an adverbial or two clauses, with the subject of the clause introduced by *-key* being dropped in the latter case. Furthermore, which reading (an adverbial, two clauses, or both) is possible for each sentence depends on the morphological category of the part to which *-key* is attached. When that part is a verb, whether a base verb or one derived by adding suffixes like the inchoative *-ci* (to an adjective), only the two-clause reading is possible.[48] However, when that part is an adjective, both an adverbial reading and a two-clause reading are possible.[49] With this said, the source of the ambiguity of (46-48) to some native speakers of Korean can be sought. First, *ciluha* 'bored' in (46) and *aphu* 'painful' in (48) are adjectives. Therefore, their ambiguity is due to an adverbial reading plus a two-clause reading, or to the ambiguity in the two-clause reading itself (i.e. to what the referent of the dropped subject is). Second, *cichi* 'get tired' in (47) is a verb, and therefore the sentence is biclausal. As a result, the ambiguity of the sentence is due to the fact that the dropped subject in the subordinate clause can be 'John' or 'the horse.'[50] In addition, some speakers' preference for *-tolok* rather than for *-key* in sentences like (46-48) is

[48] This is based on the assumption that deriving an adverb by adding *-key* to a verb is unlikely.

[49] Although the distinction between adjectives and verbs in Korean is sometimes extremely confusing, Hyoungbae Lee (p.c.) informed me that there are at least three useful tests. One is to use a derivational suffix. For example, the inchoative suffix *-ci* can be used with adjectives to derive verbs, but it cannot be used with intransitive verbs (although it can be used with transitive verbs to get their passivized forms). For example, given that *sulphe-ci* 'become sad' (from *sulphu-* 'sad') is well-formed and that **cichye-ci* (from *cichi-* 'get tired') is not, it can be concluded that *sulphu* is an adjective and *cichi* a verb. Another test is to employ *-(e/a)ha*, which also turns adjectives into verbs and which cannot be used with verbs. For example, given that *cichi-* 'get tired' is a verb, **cichye-ha* is bad. In contrast, given that *sulphu* 'sad' is an adjective, *sulphe-ha* 'feel sad' is well-formed. Finally, verbs, but not adjectives, can be used in imperative constructions, in which the verbs bear the *-la* ending. For example, *malu* 'get dry' is a verb, because it can be used in the imperative *Malla-la.* In contrast, *yeppu* 'pretty' is an adjective because its imperative form **Yeppe-la* is ill-formed (although the imperative based on the inchoative form of *yeppu*, namely *Yeppe-ci-ela*, is good).

[50] In this context, it is worthwhile to point out that although the following sentence is apparently a subject-oriented resultative, it, like (47), actually involves two clauses, given that *cichi* is a verb and that *-key* in this case introduces a separate clause. As a result, (i) is not a true resultative in our sense.

(i) John-un cichi-key talli-ess-ta.
John-TOP get.tired-KEY run-PAST-IND
'John ran himself tired.'

because *-tolok* has a single use, and according to Washio (1999: 680), it "has a stronger lexical orientation toward the 'degree' and 'extent' sense than *-key*." Moreover, some speakers' preference for an inchoative form when an adjective is involved is due to the fact that the inchoative form makes the change of state expressed in such sentences more semantically transparent and that this form is a verb and as a result its use with *-key* unambiguously involves a separate clause. Finally, the fact that most speakers find (48) unambiguous is probably due to pragmatics, as the reading that John held Mary's hands and John's hands became painful is somewhat odd, though not impossible.

Given that the sentences in (46-48) are not true resultatives, the apparent subject-oriented reading in these sentences does not pose a problem to our hypothesis that realization as a (pseudo-)compound is a necessary condition for a resultative with an unergative or transitive causing predicate to allow a subject-oriented reading.

With the Korean data settled, I conclude this section by discussing some (apparent) cases of compound resultatives in English, German, and Swedish. First, although English and German adjectival passives or participles formed from resultatives (e.g. *wiped-clean* in *a wiped-clean table* in English, and *plattgefahren* in *plattgefahrene Reifen* (lit. flat-driven tires) 'bald tires' in German) are apparently in a compound form, they are not relevant to our study as we are concerned with resultative verb compounds as main predicates.

Second, although apparently a "compound" involving a result predicate can be used as the main predicate in German, this happens only when there is an auxiliary verb involved or when the parts of the resultative occur in a subordinate clause, as shown in (54).

(54) a. Er hat den Tisch saubergewischt. (present perfect tense)
he has the table clean.wiped
'He wiped the table clean.'

b. Er wird den Tisch sauberwischen.
he FUT the table clean.wipe
'He will wipe the table clean.'
c. Der Tisch wurde saubergewischt. (passive)
the table PASS clean.wiped
'The table was wiped clean.'
d. John sagte, dass er den Tisch sauberwischte.
John said COMP he the table clean.wiped
'John said that he wiped the table clean.'

Crucially, however, as shown in (55), the two parts of a resultative cannot form a compound when they are used in a main clause which does not involve a tense-bearing auxiliary verb.

(55) a. Er wischte den Tisch sauber.
he wiped the table clean
'He wiped the table clean.'
b. *Er sauberwischte den Tisch.
he clean.wiped the table
Intended: 'He wiped the table clean.'

This fact indicates that the apparent German "compound" forms as main predicates are perhaps just a result of orthographical convention, and that they are not the (pseudo-) compound predicates we are looking for. This conclusion is further supported by the fact that unlike Swedish resultatives like (56b), which is truly a compound because the result predicate cannot be modified by 'very' (as shown in (56c)), the result predicate in (54a), for example, can be modified with a degree modifier, as shown in (57).

(56) a. John torkade bordet mycket rent.
John wiped table.the very clean
'John wiped the table very clean.'
b. John ren-torkade bordet.
John clean-wiped table.the
'John wiped the table clean.'
c. *John mycket ren-torkade bordet.
John very clean-wiped table.the
Intended: 'John wiped the table very clean.'

(57) Er hat den Tisch ganz saubergewischt.
he has the table very clean.wiped
'He wiped the table very clean.'

Finally, although as shown in (56) above and (58) below, the two parts of a Swedish resultative can form a compound, these compounds are not productive, as seen from (59-61) and from the contrast between (58) and (59).[51]

(58) a. De målade huset rött.
they painted house.the red
'They painted the house red.'
b. De röd-målade huset.
they red-painted house.the

(59) a. John nöp sin kind röd.
John pinched his cheek red
'John pinched his cheek red.'
b. *John röd-nöp sin kind.
John red-pinched his cheek

(60) a. John sprang trottoaren tunn.
John ran pavement.the thin
'John ran the pavement thin.'
b. */?John tunn-sprang trottoaren.
John thin-ran pavement.the

(61) a. Han skrek sin hals hes.
he shouted his throat hoarse
'He shouted his throat hoarse.'
b. */?Han hes-skrek sin hals.
he hoarse-shouted his throat

Note that the examples in (58) are weak resultatives and those in (59-61) are strong resultatives. Based on this, one might conclude that only weak non-compound resultatives have a compound counterpart in Swedish. However, this conclusion does not hold when other examples of strong resultatives are taken into consideration. For example, although

[51] Note that in non-compound resultatives, the result predicate agrees with the nominal of which it is predicated in gender and number, and that this cannot take place in compound resultatives. This contrast is apparent when the nominal involved is neuter in gender. For example, *huset* 'the house' in (58) is neuter, and therefore the result predicate 'red' agrees with it in (58a), but not in (58b), which involves a compound resultative. This fact itself suggests that (58a) involves a phrasal resultative and (58b) a compound resultative.

(62a) below is a strong non-compound resultative, it has a compound counterpart, as shown in (62b).

(62) a. De plockade trädet rent.
they picked tree.the bare
'They picked the tree bare.'
b. De ren-plockade trädet.
they bare-picked tree.the

Therefore, the contrast between (58) and (59-61) seems not to be determined by the strong-weak distinction.

Regardless of the condition on the formation of Swedish RVCs, (63) show that as far as unergative and transitive causing predicates are concerned, subject-oriented RVCs, like subject-oriented non-compound resultatives, are bad in Swedish.

(63) a. *John trött-jagade Alex.
John tired-chased Alex
Intended: 'John chased Alex, and as a result John got tired.'
b. *John uttråkad-retade Alex.
John bored-teased Alex
Intended: 'John teased Alex and as a result John got bored.'
c. *John besvärad-pikade Alex.
John vexed-taunted Alex
Intended: 'John taunted Alex and as a result John became vexed.'

Given the established fact that RVCs are very restricted in Swedish, the ill-formedness of the examples in (63) might be due to the ill-formedness of the compounds themselves. There are two pieces of evidence for this. First, these sentences are bad even on the object-oriented reading. Second, as one of my Swedish informants told me, it is doubtful whether *jaga* 'chase' (the causing predicate of *tröttjagade* in (63a)), for example, can form an RVC with a result predicate at all. Based on these, it can be concluded that although Swedish meets the necessary condition on subject-oriented resultatives with an unergative or transitive causing

predicate, the fact that such resultatives are unattested may be due to the restrictedness in forming RVCs in the language.

To summarize, in this section, we have proposed that for a language to have subject-oriented resultatives with an unergative or transitive causing predicate, it is necessary for the language to have (pseudo-)compound resultatives. This proposal is supported by the following facts. First, English has pseudo-compound resultatives, and the subject-oriented reading is only attested with such resultatives. Second, Japanese and Mandarin have RVCs and have the subject-oriented resultatives in question. Third, French, German and Romanian do not have the compound predicates we are looking for, and they do not allow subject-oriented resultatives involving an unergative or transitive causing predicate. Finally, although Swedish meets the necessary condition proposed, the absence of the subject-oriented resultatives under consideration is perhaps due to the restrictedness as to RVC formation in the language.[52]

[52] Note that my proposal as to subject orientation does not make any predictions about whether the *de*-extent construction in Mandarin (see note 6 of Chapter 1) can have the subject-oriented reading, as the proposal is only concerned with resultatives whose two components belong to one and the same clause. Therefore, the fact that the predicate of the subordinate clause of the *de*-extent construction can be predicated of the subject of the main clause as shown in (i) does not count as evidence against my hypothesis.

(i) a. Zhangsan ku-de yun-le guoqu.
Zhangsan cry-DE faint-PERF away
'Zhangsan cried to such an extent that he fainted.'

b. Wo deng-de nimen hao xinjiao a. (Jim Huang, p.c.)
I wait-DE you.PL so anxious SFP
'I waited for you and became so anxious.'

As to why the *de*-extent construction allows such a "subject-oriented" reading, I believe that this is due to the function of the *de*-extent clause, which is a degree modifier that modifies the main predicate. Therefore, in principle it is possible for the subordinate predicate, the focus of the extent clause, to establish a predication relation with any overtly realized participant related to the main predicate. When the main predicate is intransitive, when the single argument of the main predicate is overtly realized as the subject of the main clause, and when the subordinate clause does not involve an overt subject, the subordinate predicate is (indirectly) predicated of the single argument of the main predicate (via a pro in the subordinate clause), as in the case of (ia). As for cases like (ib), which involves a transitive main predicate whose two arguments are both overtly expressed, there is prosodic evidence that *wo deng-de nimen* and *hao xinjiao a* form two distinct intonation and information units. As the function of the *de*-clause is to specify the degree or extent of the eventuality denoted by the main predicate, (ib) does not rule out the possibility that the subordinate predicate can be predicated of the subject of the main clause, i.e. the external argument of the main predicate. This is so, even though structurally it is easier for the subordinate predicate to establish a predication relation with the internal argument

4.3 *Scare* reading

In this section, we examine another kind of reading allowed by Mandarin RVCs from a crosslinguistic perspective, namely the *scare* reading shown in (64).

(64) a. Na-bao yifu xi-lei-le Zhangsan.
that-CL clothes wash-tired-PERF Zhangsan
'Zhangsan washed that bundle of clothes and the clothes got Zhangsan tired.'
b. Na-ping jiu he-zui-le Zhangsan.
that-CL liquor drink-inebriated-PERF Zhangsan
'Zhangsan drank that bottle of liquor and the liquor got Zhangsan drunk.'
c. Na-ben shu xie-bai-le Zhangsan-de toufa.
that-CL book write-white-PERF Zhangsan-GEN hair
'Zhangsan wrote that book and the book got Zhangsan's hair white.'

Recall that the prominent feature of this reading is that it allows an interpretation that some property of the subject participant causes some change to take place in the object participant. Also recall that we name the reading involved in (64) the *scare* reading because of its similarities to lexical causatives like *scare* (as in *He scared me*) in both interpretation and argument realization.

As shown in (65), English resultatives do not allow the *scare* reading.

(65) a. *Those clothes washed John tired.
b. *That bottle of liquor drank Mat drunk.
c. *The book wrote Jason's hair white.

The purpose of this section is to account for the contrast between (64) and (65) and to answer the question of when the *scare* reading will be allowed. I propose that for resultatives in a language to have the *scare* reading, the resultatives must be formed as a compound and the compound must be headless.

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of the main predicate. As far as (ib) is concerned, this more natural predication relation leads to the reading "I waited for you so much that you became anxious," which is, however, pragmatically ruled out. As for the possible "subject-oriented" reading, it turns out to be the proper interpretation.

The condition that the resultatives must be in the form of a compound is motivated by two facts. First, the two components of a resultative form a compound in Mandarin (see section 3.2.1), but not in English. Second, *scare* resultatives in (64) parallel English lexical causatives in (66) in both form and meaning.

(66) a. The tiger scared the child.
b. The boy's behavior shocked his mother.

Specifically, in terms of form, resultatives with a *scare* reading, like lexical causatives, must be transitive. In terms of meaning, such resultatives, just like lexical causatives, express "Something gets something else X," where X is a predicate denoting a resulting state. Given these similarities and given that lexical causatives operate on word level predicates, not on phrasal level predicates, it is reasonable to hypothesize that to obtain the *scare* reading, the predicate involved must be a word, and must be a compound in the case of resultatives.

The compound condition proposed predicts that non-compound resultatives should disallow the *scare* reading. This prediction is borne out by the fact that as shown in (67-72), non-compound resultatives in French, German, Japanese, Korean, Romanian, and Swedish do not allow the *scare* reading.

(67) French
a. *Ces vêtements ont lavé John fatigué.
those clothes have washed John tired
Intended: 'John washed those clothes and the clothes got John tired.'
b. *Cette bouteille d'alcool a bu John ivre.
that bottle of.liquor has drunk John inebriated
Intended: 'John drank that bottle of liquor and the liquor got John drunk.'
c. *Ce livre a écrit les cheveux de John blancs.
that book has written the hair.PL of John white
Intended: 'John wrote that book and the book got John's hair white.'

(68) German
a. *Diese Kleider wuschen John müde.
those clothes washed John tired
Intended: 'John washed those clothes and the clothes got John tired.'

b. *Die Flasche Alkohol trank John betrunken.
the bottle liquor drank John trunk
Intended: 'John drank that bottle of liquor and the liquor got John drunk.'
c. *Das Buch schrieb Johns Haare weiss.
the book wrote John's hair white
Intended: 'John wrote that book and the book got John's hair white.'

(69) Japanese
a. *Sorerano fuku-ga tsukarete John-o arat-ta.
those clothes-NOM tired John-ACC wash-PAST
Intended: 'John washed those clothes and the clothes got John tired.'
b. *Sono sake-no bin-ga yotte John-o non-da.
that liquor-GEN bottle-NOM drunk John-ACC drink-PAST
Intended: 'John drank that bottle of liquor and the liquor got John drunk.'
c. *Sono hon-ga John-no kami-o shiroku kai-ta.
that book-NOM John-GEN hair-ACC white write-PAST
Intended: 'John wrote that book and the book got John's hair white.'

(70) Korean
a. *Ce os-i John-ul phikonha-key ppal-ass-ta.
that cloth-NOM John-ACC tired-KEY wash-PAST-IND
Intended: 'John washed those clothes and the clothes got John tired.'
b. *Swul-i John-ul chwiha-key masi-ess-ta.
liquor-NOM John-ACC drunk-KEY drink-PAST-IND
Intended: 'John drank the liquor and the liquor got John drunk.'
c. *Ce chayk-i John-uy meli-lul hi-key ss-ess-ta.
that book-NOM John-GEN hair-ACC white-KEY write-PAST-IND
Intended: 'John wrote that book and the book got John's hair white.'

(71) Romanian
a. *Hainele l-au spălat pe John obosit.
clothes him.CLITIC-have washed on John tired
Intended: 'John washed those clothes and the clothes got John tired.'
b. *Sticla de lichior l-a băut pe John beat.
bottle.the of liquor him.CLITIC-has drunk on John inebriated
Intended: 'John drank that bottle of liquor and the liquor got John drunk.'
c. *Cartea i-a scris părul lui John alb.
book.the him.CLITIC-has written hair.the to/of John white
Intended: 'John wrote that book and the book got John's hair white.'

(72) Swedish
a. *De där kläderna tvättade John trött.
those there clothes washed John tired
Intended: 'John washed those clothes and the clothes got John tired.'

b. *Spritflaskan drack John full.
bottle.of.liquor drank John inebriated
Intended: 'John drank that bottle of liquor and the liquor got John drunk.'
c. *Den där boken skrev Johns hår vitt.
that there book wrote John's hair white
Intended: 'John wrote that book and the book got John's hair white.'

Given the compound condition proposed, it is necessary to consider whether RVCs in Japanese and Swedish allow the *scare* reading. However, as shown in (73-74), such a reading is disallowed in Japanese and Swedish even when RVCs are used.

(73) Japanese
a. *Sorerano fuku-ga John-o arai-tsukare-ta.
those clothes-NOM John-ACC wash-get.tired-PAST
Intended: 'John washed those clothes and the clothes got John tired.'
b. *Sono sake-no bin-ga John-o nomi-yot-ta.
that liquor-GEN bottle-NOM John-ACC drink-get.drunk-PAST
Intended: 'John drank that bottle of liquor and the liquor got John drunk.'
c. *Sono hon-ga John-no kami-o kaki-shirokushi-ta.
that book-NOM John-GEN hair-ACC write-whiten-PAST
Intended: 'John wrote that book and the book got John's hair white.'

(74) Swedish
a. *De där kläderna trött-tvättade John.
those there clothes tired-washed John
Intended: 'John washed those clothes and the clothes got John tired.'
b. *Spritflaskan full-drack John.
bottle.of.liquor inebriated-drank John
Intended: 'John drank that bottle of liquor and the liquor got John drunk.'
c. *Den där boken vit-skrev Johns hår.
that there book white-wrote John's hair
Intended: 'John wrote that book and the book got John's hair white.'

Given the non-productivity of RVCs in Swedish as seen in the previous section, and the semiproductivity or non-productivity of Japanese RVCs (Yafei Li 1993: 481, note 2; Nishiyama 1998: 189), the immediate possible reason for the unavailability of the extreme-causativity reading in (73-74) might be the ill-formedness of the compounds involved. Although this seems to be the case for the Swedish examples, it cannot fully account for the

Japanese examples. This is because, as shown in (75), the compound *arai-tsukareru* 'wash-get tired' in (73a), for example, is well-formed and can have a subject-oriented reading.

(75) John-ga Sorerano fuku-o arai-tsukare-ta.
John-NOM those clothes-ACC wash-get.tired-PAST
'John washed those clothes and as a result John got tired.'

However, regardless of whether or not the ungrammaticality of (73-74) is due to the ill-formedness of the compounds involved, there is a deeper reason for the ungrammaticality of these sentences, namely the headedness of the compounds. Recall that the way the arguments of the head of an RVC are realized in the syntax should be maintained on the compound level. As argued in section 4.2, Japanese RVCs are head-final. Required by the head feature percolation condition, the single argument of the head of the RVCs in (73) should be realized in the subject position. As a result, (73a), for example, would mean that the clothes became tired. Such a reading, however, is pragmatically bad. Furthermore, even if it were not bad, it would simply have a subject-oriented reading, not the *scare* reading, which is object-oriented.

As for the Swedish RVCs in (74), there is evidence that they are head-final as well. There are two related pieces of evidence for this. First, the category of the compound is identical with the category of the right component, which is a verb, not with the category of the left component, which is an adjective. Second, unlike Japanese and Mandarin RVCs, in which the causing predicate precedes the result predicate, Swedish RVCs have the reverse order.[53] I argue that such an ordering is motivated by the fact that verbs but not adjectives in

[53] According to Yafei Li (1993: 499), the ordering of the two components of Japanese and Mandarin RVCs is motivated by iconicity considerations, namely the requirement that the temporal relation of the two components must be reflected in their surface linear order. Obviously, Swedish RVCs pose a problem to Li's "Temporal Iconicity Condition." To account for similar counterexamples in German, Li proposes that the condition applies only when the two components of the compound are both verbal. While this proposal predicts that RVCs like those in Swedish do not need to meet the condition proposed by Li because such compounds are composed of an adjective and a verb, Li fails to account for why the two components of such compounds must be in the "adjective-verb" order.

Swedish can bear tense inflection. Given that Swedish RVCs function as main predicates and thus are verbs, and that regular tense inflection in the language is in the form of suffixes, it is necessary for the component which can bear tense to be in the right position of the compounds. If so, the ordering of the two components of Swedish RVCs provides additional support for the view that the right component has the same category as the whole compound, and in turn supplies additional evidence that this component is the head.

If Swedish RVCs are head-final, then the ungrammaticality of (74) can be readily explained. Given the head feature percolation condition requiring that the way that the arguments of the head are realized in the syntax should be maintained on the compound level, the Agent argument of the head of the RVCs in (74) should be realized in the subject position, not the object position of the sentence. As the argument realization of the head of the compounds in (74) is not maintained on the compound level, these sentences are ungrammatical. Therefore, the ungrammaticality of the sentences in (73-74) is due to the fact that in contrast to Mandarin RVCs, which are headless,[54] both Japanese and Swedish RVCs

[54] Note that in section 1.2.2.4 *scare* resultatives were used as evidence for the headlessness of Mandarin RVCs. As a result, other evidence than *scare* resultatives is needed to avoid any circularity. Crucially, there are two other pieces of evidence for the headlessness of Mandarin RVCs. First, given the independently motivated head feature percolation condition, the fact that the sentences in (i) allow the object-oriented reading shows that the V2 of a Mandarin RVC cannot the head of the compound.

(i) a. Zhangsan xi-**ganjing**-le **yifu**.
Zhangsan wash-clean-PERF clothes
'Zhangsan washed his clothes clean.'

b. Zhangsan qie-**dun**-le **dao**.
Zhangsan cut-blunt-PERF knife
'Zhangsan cut (something) with the knife, and as a result it became blunt.'

This is because if V2 were the head, the head feature percolation condition would require the single argument of each result predicate in (i) to be realized in the subject position of the sentence, not in the object position. Second, the grammaticality of sentences like (ii) shows that V1 cannot be the head of a Mandarin RVC, either.

(ii) a. **Yifu** **xi**-ganjing-le.
clothes wash-clean-PERF
Literally: 'The clothes washed clean.' → 'The clothes were washed clean.'

b. **Dao** **qie**-dun-le.
knife cut-blunt-PERF
Literally: 'The knife cut blunt.' → 'The knife got blunt from the cutting.'

have a head, and to the fact that *scare* resultatives in these two languages violate the head feature percolation condition.

Additional evidence for the proposal as to the conditions on the obtainment of the *scare* reading comes from Igbo, where resultatives are realized as verb-verb compounds and thus meet the compound condition. Moreover, given the independently motivated head feature percolation condition, the fact that the sentences in (76) can have an object-oriented reading shows that V2 cannot be the head of an Igbo RVC.[55]

(76) a. Ọ kụ wa-ra ọba ahụ.
3SG strike split-FACT gourd that
'S/he made that gourd split by striking it.' (Williams 2005: 11)
b. O bi kpụ-rụ mma.
3SG cut blunt-FACT knife
'S/he made his knife blunt by cutting.' (Williams 2005: 46)

This is because if V2 were the head, the head feature percolation condition would require the single argument of each result predicate in (76) to be realized not in the object position, but in the subject position. Therefore, the grammaticality of the sentences in (76) shows that the result component of an Igbo RVC cannot be the head of the compound. Furthermore, the grammaticality of sentences like (77) shows that V1 cannot be the head of an Igbo RVC, either.[56]

This is because if V1 were the head, the independently motivated head feature percolation condition would require the Patient argument of *xi* 'wash' in *xi-ganjing* 'wash-clean' of (iia) to be realized in the object position, not in the subject position, given the argument realization in (iii) when *xi* is used separately.

(iii) Zhangsan **xi**-le **yifu**.
Zhangsan wash-PERF clothes
'Zhangsan washed the clothes.'

More importantly, *dao* 'knife' is not an argument of the V1 of the RVC in (iib). The fact that no argument of *qie* 'cut' is overtly expressed in (iib) clearly shows that V1 cannot the head of a Mandarin RVC, either. From this discussion, it can be concluded that Mandarin RVCs are headless.

[55] "FACT" in the glosses of (76) means "factative." "[R]oughly, a predicate in the factative has past time reference when eventive and nonpast time reference when stative" (Williams 2005: 2, note 2).

[56] "BVC" in the glosses of (77) means "bound verb cognate," which indicates "a nominalization of the verb group" (Williams 2005: 2, note 2).

(77) a. Ọba ahụ kụ-wa-ra akụwa.
Gourd that strike-split-FACT BVC
'That gourd split from striking.' (Williams 2005: 70)
b. Mma ahụ bi-kpụ-rụ ebikpụ.
Knife that cut-dull-FACT BVC
'That knife got blunt from cutting.' (Williams 2005: 165)

This is because if V1 were the head, the independently motivated head feature percolation condition would require the Patient argument of *ku* 'strike' in *ku -wa* 'strike-split' of (77a) to be realized not in the subject position, but in the object position. More importantly, *mma* 'knife' is not an argument of the causing predicate of the RVC in (77b). The fact that no argument of *bi* 'cut' is overtly expressed in (77b) clearly shows that V1 cannot the head of an Igbo RVC, either.

It can be concluded from the above discussion that Igbo RVCs are headless and are realized as compounds. Given that they meet the two conditions on the obtainment of the *scare* reading, our proposal predicts that resultatives in Igbo should allow the *scare* reading. As shown in (78), this prediction is borne out, although according to Williams (2005), not all Igbo speakers accept this kind of sentence.[57]

(78) Ji ahụ gwu-ji-ri ogụ ya.
yam that dig.out-snap-FACT hoe 3SG.GEN
'That yam made his hoe snap from digging out (i.e. from its being dug out).' (Williams 2005: 69)

[57] The *scare* reading is also attested in Chinese dialects such as Cantonese ((i)) and the Min dialect (or Taiwanese) ((ii)), though to different degrees (see Cheng et al. 1997, Williams 2005).

(i) Gó jek láaih-fán hóu yùhngyih **sihk fèih** dī bìbhī.
that CL milk-power very easily eat fat CL babies
'That milk power easily makes babies fat.' (Matthews & Yip 1994: 155; emphasis original) (see Williams 2005: 66, note 5)

(ii) Hid-bun gaugau-e siosuad **knua-huei**-a Zhangsan-e vagjiu.
that-CL thick-MM novel read-dizzy-PERF Zhangsan-MM eye
'Zhangsan read that thick novel, and the novel got Zhangsan's eyes dim-sighted.'

Crucially, the single-clause resultatives that allow this reading are realized as compounds in these dialects, and there is evidence from similar examples to the Igbo ones in (76-77) that these compounds are headless. Further, the fact that Taiwanese *scare* resultatives, for example, are not as natural and productive as Mandarin *scare* resultatives (Jim Huang, p.c.) does not count as evidence against our proposal. In this case, attestation is more important than productivity. As to the difference in productivity between Mandarin and Taiwanese *scare* resultatives, it may be due to the fact that Taiwanese does not allow extensive compounding (Jim Huang, p.c.).

To summarize, for resultatives in a language to allow the *scare* reading, two conditions must be met, namely that the resultative must be realized as a compound and that the compound must be headless. On this proposal, non-compound resultatives in English, French, German, Japanese, Korean, Romanian and Swedish cannot have the *scare* reading because they do not meet the first condition. Moreover, Japanese and Swedish RVCs do not allow this reading because they do not meet the second condition. Finally, as Igbo and Mandarin RVCs meet both conditions, they can have the *scare* reading.[58]

4.4 Causing eventuality

After discussing the two marked readings of Mandarin RVCs from a crosslinguistic perspective, we now turn to another aspect of Mandarin RVCs, namely their allowing stative causing predicates. As mentioned in section 1.2.1 and section 1.2.2.1, and illustrated in (79) below, the causing eventuality of a Mandarin RVC can be a state.

(79) a. Zhangsan lei-bing-le.
Zhangsan tired-sick-PERF
'As a result of Zhangsan's being tired, he became sick.'
b. Zhangsan e-shou-le.
Zhangsan hungry-thin-PERF
'As a result of Zhangsan's being hungry, he became thin.

[58] Note that although the *de*-extent construction also allows the *scare* reading, as shown in (i), this does not pose a problem for our hypothesis.

(i) Na-ben shu xie-de Zhangsan-de toufa dou bai le.
that-CL book write-DE Zhangsan-MM hair EMPHATIC white SFP
'Zhangsan wrote that book to the extent that his hair got white.'

This is because the hypothesis is concerned with single-clause resultatives and does not make any predictions as to whether the *de*-extent construction, which involves two clauses, allows the *scare* reading. As to why the *de*-extent construction allows this reading, I speculate that this is related to the fact that Mandarin is a topic-prominent and discourse-oriented language (C.-T. James Huang 1984a, Li & Thompson 1976, Tsao 1979), which enables the language to have more freedom to allow different kinds of NPs (including the internal argument of a verb) to occur more freely in the sentence-initial position and function as a topic, though not necessarily as the subject of the sentence at the same time.

According to Vendler (1957: 146-147), states like *be tall* and achievements like *find* cannot be used in "continuous tenses" (or, more exactly, in the progressive aspect) as shown in (80),[59] and the two differ in that the former last for a period of time, while the latter occur instantaneously.

(80) a. *John is being tall.
b. *John is finding the book.

Based on this, the stative status of *lei* in *lei-bing* 'tired-sick' and *e* in *e-shou* 'hungry-thin' can be established by the fact that as shown in (81), they cannot be used in the progressive aspect and that they have to be interpreted as lasting for a period of time when used in (79).[60]

(81) a. *Zhangsan zai lei.
Zhangsan PROG tired
Intended: 'Zhangsan is in the continuous state of being tired.'
b. *Zhangsan zai e.
Zhangsan PROG hungry
Intended: 'Zhangsan is in the continuous state of being hungry.'

The fact that a state eventuality can function as the causing component of a resultative is both typologically and theoretically significant. First of all, this is typologically significant because crosslinguistically it is unusual for a stative predicate to serve as the causing component. Specifically, although the examples cited in the previous sections show that the resultative in all the languages examined allows an eventuality which has an activity component to function as the causing predicate, no grammatical counterparts of the two examples in (79) are found in the other seven languages under investigation.

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[59] Some stative predicates like *be polite* and *be quiet* can be used in the progressive aspect, as shown in (i).
(i) a. John is being polite.
b. Kathy is being quiet.
However, what such sentences mean is that someone is **acting** in some other way than his or her normal way of behaving. In other words, it seems that in such cases some coercion is involved.

[60] The progressive marker *zai* cannot be used with verbal statives either, as shown in (i).
(i) *Zhangsan zai zhidao Lisi.
Zhangsan PROG know Lisi
*'Zhangsan is knowing Lisi.'

The rarity of the stative causing eventuality is partly because states are not typical causing eventualities, and partly because not many languages have the right resources to allow the use of a stative predicate as the causing component of a resultative. Specifically, if the resultative of a language is not realized as a compound, then its causing component must be an element which can function as the main predicate by itself. This predicts that adjectival stative predicates in English, French, German, Romanian and Swedish cannot serve as causing eventualities of resultatives, because, as shown in (82), an adjective like 'tired' in these languages cannot function as a predicate by itself when no copula is used. As shown in (83), this prediction is borne out.

(82) Intended: 'John was tired'
  a. *John tired.
  b. *John fatigué. (French)
  c. *John müde. (German)
  d. *John obosit. (Romanian)
  e. *John trött. (Swedish)

(83) Intended: 'As a result of John's being tired, he became sick.'
  a. *John tired sick.
  b. *John fatigué malade. (French)
  c. *John müde krank. (German)
  d. *John obosit bolnov. (Romanian)
  e. *John trött sjuk. (Swedish)

In addition, as shown in (84), although adjectives like 'tired' in Korean can be used as the main predicate of a sentence, 'tired...sick' as a resultative is bad in the language.

(84) a. John-i phikonhay-ess-ta.
  John-NOM tired-PAST-IND
  'John was tired.'
  b. *John-i aphu-key phikonhay-ess-ta.
  John-NOM sick-KEY tired-PAST-IND
  Intended: 'As a result of John's being tired, he became sick.'

This is because such a resultative is strong. But as discussed in section 4.2, Korean does not allow strong resultatives.

Moreover, as shown in (85), although words like 'tired' can be used as predicates on their own in Japanese, 'tired … sick' as a non-compound resultative is bad because as seen in section 4.1, non-compound resultatives must be weak in this language. Therefore, as far as non-compound resultatives in Japanese are concerned, no predicates like 'tired' can be used as the causing eventuality, either.

(85) a. Jon-wa tsukarete-ita.
John-TOP tired-exist.PAST
'John was tried.'
b. *John-wa byooki-ni tsukarete-ita.
John-TOP sickness-NI tired-exist.PAST
Intended: 'As a result of John's being tired, he became sick.'

It should be noted that so far we have been concerned with non-compound resultatives with an adjective as the causing eventuality. However, not all stative predicates are in the form of an adjective, and there are stative predicates which are verbs, e.g. *be*, *resemble* and *know* in English. The question is whether such verbal statives can be used as the causing eventuality of a non-compound resultative.

An examination of possible resultatives formed with verbal stative predicates as causing eventualities in different languages shows that the answer to the above question is negative. To begin with, as shown in (86), such resultatives are ungrammatical in English.

(86) a. *John knows Bill proud. (Intended: John knows Bill, and as a result Bill becomes proud.)
b. *John resembles Bill happy. (Intended: John resembles Bill, and as a result Bill becomes happy.)
c. *John was a lawyer rich. (Intended: John was a lawyer, and as a result he became rich.)

Further, as shown in (87-88), non-compound resultatives like 'know … proud' are ungrammatical in French, German, Japanese, Korean, Romanian, and Swedish as well.

(87) Intended: 'John knows Bill, and as a result Bill becomes proud.'

a. *John connaît Bill fier. (French)
John knows Bill proud

b. *John kennt Bill stolz. (German)
John knows Bill proud

c. *John-wa Bill-o koei-ni shitte-iru. (Japanese)
John-TOP Bill-ACC proud-NI know-exist.PRES

d. *John-i Bill-ul calangsulep-key an-ta. (Korean)
John-NOM Bill-ACC proud-KEY know.PRES-IND

e. *John îl ştie pe Bill mândru. (Romanian)
John him.ACC.CLITIC knows on Bill proud.

f. *John känner Bill stolt. (Swedish)
John knows Bill proud

(88) Intended: 'John resembles Bill, and as a result Bill becomes happy.'

a. *John ressemble à Bill heureux. (French)
John resembles to Bill happy

b. *John ähnelt Bill glücklich. (German)
John resembles Bill happy

c. *John-wa Bill-ni shiawase-ni nite-iru. (Japanese)
John-TOP Bill-DAT happy-NI resemble-exist.PRES

d. *John-i Bill-ul hayngpokha-key talm-ta. (Korean)
John-NOM Bill-ACC happy-KEY resemble.PRES-IND

e. *John seamănă cu Bill fericit. (Romanian)
John resembles with Bill happy

f. *John liknar Bill glad. (Swedish)
John resembles Bill happy

As non-compound resultatives like 'know … proud' are strong, their ungrammaticality in French, Japanese, Korean, and Romanian may be due to the fact that these languages do not allow strong non-compound resultatives. However, the fact that such non-compound resultatives are also ungrammatical in English, German, and Swedish (all of which allow strong resultatives) suggests that the ungrammaticality of resultatives like 'know … proud' might be due to semantic and pragmatic factors and to the fact that resultatives, on our definition, are complex predicates in a single clause. Specifically, unlike cases such as *John knows Bill, and as a result of that Bill becomes proud*, there seems to be more restrictions on the formation of monoclausal resultatives. As a result, monoclausal resultatives like *John*

knows Bill proud that involve a great deal of practical reasoning to attain the resultative interpretation are generally banned, even in languages that allow strong resultatives.

The above explanation as to the ungrammaticality of resultatives that involve a causing predicate like *know* is further supported by the fact that such resultatives are bad even in the form of a compound. Take the compound resultative formed by 'know' and 'proud' as an example. As shown in (89), such a compound is bad not only in Japanese and Swedish but also in Mandarin, regardless of whether the reading is subject-oriented or object-oriented.

(89) Intended: 'John knows Bill, and as a result John/Bill becomes (or has become) proud.'

a. *John-ga Bill-o shitteiri-hokoru. (Japanese)
John-NOM Bill-ACC know-be.proud

b. *John zhidao-zihao-le Bill. (Mandarin)
John know-proud-PERF Bill

c. *John stolt-känner Bill. (Swedish)
John proud-know Bill

If compound resultatives involving a verbal stative causing predicate are not attested in any language investigated in this work, a question arises as to whether compound resultatives that involve an adjectival stative causing predicate are allowed in Japanese and Swedish. The answer to this question is negative as well. First, concerning Japanese, compound resultatives that involve an adjectival stative causing predicate are not well-formed in this language because of a language-specific constraint, namely that Japanese resultative verb compounds must be composed of two verbal elements. For example, in (89a), *shitteiri-hokoru* is composed of two verbs, *shitteiru* 'know' and *hokoru* 'be proud.' In fact, even for those cases that involve a verbal stative causing predicate like *tsukareteiru* 'be tired' that is typically realized as an adjective in English and other languages, a well-formed compound resultative

is apparently not attested because of the constraint mentioned above.[61] Specifically, this is because the result component that is semantically compatible with such a causing predicate is either realized as a noun or as an adjective, thus violating the constraint that the two components of a Japanese RVC must be both verbal. For example, although (90) is grammatical in Mandarin, its counterpart is ungrammatical in Japanese, as shown in (91), because the result component that corresponds to 'sick' is realized as a noun, namely *byooki* and because there is no verb in the language that corresponds to 'be sick' or 'get sick.'

(90) Zhangsan lei-bing-le.
Zhangsan tired-sick-PERF
'As a result of Zhangsan's being tired, he became sick.'

(91) *John tsukareteiri-byooki.
John be.tired-sickness
Intended: 'As a result of John's being tired, he became sick.'

As for Swedish, compound resultatives that involve an adjectival stative causing predicate are bad in the language for three reasons. First, recall that the order of the two components of a Swedish RVC is "result component + causing component." Second, as argued in section 4.3, Swedish RVCs are head-final. That is, the causing component is the head of a Swedish RVC and is the element that bears tense inflection. Finally, as shown earlier, Swedish adjectives cannot be tense bearers, and they have to resort to a copula to have tense inflection. Therefore, a Swedish RVC like *sjuk-trött* 'sick-tired' is ungrammatical, as shown in (92).

(92) *John sjuk-trött.
John sick-tired
Intended: 'As a result of John's being tired, he became sick.'

[61] It is an empirical question whether Japanese has any well-formed RVCs that involve a verbal stative causing predicate (that is typically realized as an adjective in other languages). Although I do not find any such well-formed RVCs through my elicitation, more research is needed to confirm or disconfirm the conclusion reached.

It can be seen from the above discussion that the use of the state eventuality as the causing component of a resultative is crosslinguistically rare, and that the rarity is partly because states are not typical causing eventualities and partly because not many languages have the right resources to allow the using of a state predicate as the causing component of a resultative. Specifically, if the resultative of a language is not realized as a compound, then its causing component must be an element which can function as the main predicate by itself. This correctly predicts that English examples like *tired … sick* and their counterparts in French, German, Romanian, and Swedish are bad because the causing predicate like 'tired' in these languages cannot function as a predicate by itself. Further, although similar predicates can be used on their own in Korean and Japanese, no resultatives formed with these predicates are attested. This is because on the one hand the resultatives formed with such causing predicates are strong, and on the other hand there is independent evidence that Korean resultatives and Japanese non-compound resultatives cannot be strong. Moreover, although there are stative predicates like 'know' which can be used without a copula, probably due to semantic (and) pragmatic reasons, no well-formed resultatives with such predicates as the causing component are attested. This is supported by the fact that even compound resultatives formed with stative predicates like 'know' are not attested in any language under investigation. As for compound resultatives that involve a causing predicate which is typically realized as an adjective in English and other languages, they are not attested in Japanese and Swedish, although these two languages have RVCs. Such compound resultatives are not found in Japanese because on the one hand the two components of Japanese RVCs must both be verbs, and on the other hand either the stative causing component or the result component has to be expressed by a word which is not a verb.

Similar compound resultatives are not attested in Swedish either, because the causing predicate is the head and needs to bear tense inflection and because in such cases the causing predicates typically cannot be used without a copula and cannot be a tense bearer.

The crosslinguistic investigation undertaken in this section makes the following predictions. First, as far as non-compound resultatives involving a stative causing component are concerned, they are expected to be available only in languages where the causing component is an element that can function as the predicate of a sentence on its own and where the resultative formed with such a causing component does not involve too much practical reasoning (cf. the unavailability of such non-compound resultatives in English, French, German, Japanese, Korean, Romanian, and Swedish). Second, as for compound resultatives involving a stative causing component, they are likely to be found in languages like Mandarin where each of the two components of an RVC can function as a main predicate on its own so that regardless of which is the head of the RVC, the second component can be a tense or aspect bearer. Further, such compound resultatives are unlikely to be available in languages like Japanese where there is a constraint that both components have to be verbal and where either the stative causing component or the result component is typically realized as a category other than a verb. However, these compound resultatives are very likely to be found in languages where both components of an RVC are required to be verbal and where each component is typically realized as a verb.[62, 63]

[62] I will leave it for future research to see, through an examination of more languages (including Igbo), whether there are other languages than Mandarin that allow the use of a stative predicate as the causing eventuality of a resultative.

[63] Note that the predictions made here have nothing to do with the *de*-extent construction in Mandarin, as it involves two clauses. However, given that the causing predicate can be stative in Mandarin RVCs and that it can be used as the main predicate of a sentence on its own, it is not surprising that a stative causing predicate can also be used as the main predicate of the main clause of a *de*-extent construction, as shown in (i).

Before we discuss the theoretical significance of having a state predicate as the causing component of a resultative, it should be pointed out that Kaufmann & Wunderlich (1998) regard the following sentences as involving a stative causing predicate.[64]

(93) Kaufmann & Wunderlich (1998: 22-23; with glosses or translation added)
a. Der Vorhang hängt sich glatt.
the curtain hangs itself smooth
'The curtain is hanging itself smooth.'
b. Der Säugling hat sich die Beine krumm gestanden.
the baby has himself the legs bandy stood
'The baby stood so that his legs became bandy.'
c. Er haßte sich in Raserei.
he hated himself in rage
'He hated himself into a rage.'

If so, then German, like Mandarin, also allows resultatives that involve a stative causing predicate. But the question is whether verbs like *hängen* 'hang' and *haßen* 'hate' (or *hassen* in the new orthography) express states. As there is no exact progressive aspect in German, the progressive aspect test used by Vendler (1957) is inapplicable in this case. However, as far as the use of English *hang* and *hate* is concerned, the sentences in (94) show that they can be used in the progressive aspect.

(94) a. The curtain is hanging there.
b. People are hating him for what he did.

(i) Zhangsan **e**-de yun-le guoqu.
Zhangsan **hungry**-DE faint-PERF away
'Zhangsan was so hungry that he fainted away.'

[64] It should be pointed out that (93c) is "ungrammatical" or "rather odd" to my German consultants. Moreover, as shown below, similar English and Norwegian examples to the ones in (93) are found in the literature as well.

(i) Tenny 1992: 17
a. John resented his neighbor so much, he resented him right into the hospital (by attacking him with a bat).
b. Mary admires her brother to pieces.

(ii) Lødrup 2000: 176
a. Kjøttet har hengt seg mørt
meat-DEF have-PRES hang-PART REFLEXIVE tender-NEUT.SG
'The meat has hung itself tender.'
b. Døra har stått seg skjev
door-DEF have-PRES stand-PART REFLEXIVE lopsided-FEM.SG
'The door has stood itself lopsided.'

Given this, *hang* and *hate* are not true state verbs by Vendler's criterion. This at least provides some indirect evidence that *hängen* and *haßen* in (93) are not state predicates. In fact, as far as *hängen* in (93a) is concerned, it does not purely express a state; rather, it depicts a resulting state that is due to a hanging action. That is, the hanging action seems to be relevant to the meaning of *hängen* even in the case of (93a). This further suggests that *hängen* in this case is not a (pure) state predicate. In this regard, it needs to be pointed out that by Comrie's (1976: 13) criterion that a state requires no "input of energy" (see also Nedjalkov & Jaxontov 1988: 4, Tenny & Pustejovsky 2000: 15), it seems that *hängen* 'hang' in (93a) is a state verb and *haßen* 'hate' in (93c) is not. However, by taking into consideration both Comrie's criterion and Vendler's progressive aspect test, it can be concluded that neither *hängen* nor *haßen* is a state predicate. Based on this, I tend to view the main predicates in (93) as non-state verbs, and as a result I do not regard the three resultatives in (93) as involving a stative causing predicate.[65]

In addition to the typological significance of the fact that Mandarin allows resultatives with a stative causing predicate, this fact is also theoretically significant, because it has been suggested or claimed by a number of linguists (e.g. Giannakidou & Merchant 1999: 94, Jen-i Li 1994: 352, Nakamura 1997: 498, Pustejovsky 1991b: 65, Rapoport 1990: 40, Rothstein 2004: 83, Tai 1984: 290, Wechsler 1997: 308) that only process or activity verbs can function as the causing predicates of resultatives. However, given that a state predicate can be the causing component of a resultative in Mandarin, the above suggestion or claim cannot hold.

[65] Even if the three resultatives in (93) involved a stative causing predicate, this would still be consistent with our proposal that for non-compound resultatives to involve a stative causing predicate, the causing predicate must be an element that can function as the predicate of a sentence without the use of a copula or some other auxiliary verb.

4.5 Surface unaccusative frame

As pointed out in Chapter 1 and illustrated in (95-97) below, many Mandarin RVCs can occur in both the object-oriented canonical transitive frame and the surface unaccusative frame, in which only the Causee argument of an RVC is syntactically expressed and it is expressed in subject position.[66]

(95) a. Zhangsan ca-ganjing-le zhuozi.
Zhangsan wipe-clean-PERF table
'Zhangsan wiped the table clean.'
b. Zhuozi ca-ganjing-le.
table wipe-clean-PERF
Literally: 'The table wiped clean.' → 'The table was wiped clean.'

(96) a. Zhangsan qi-hong-le qiang
Zhangsan paint-red-PERF wall
'Zhangsan painted the wall red.'
b. Qiang qi-hong-le.
wall paint-red-PERF
Literally: 'The wall painted red.' → 'The wall was painted red.'

(97) a. Zhangsan ku-shi-le shoupa.
Zhangsan cry-wet-PERF handkerchief
'Zhangsan cried the handkerchief wet.'

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[66] Although there is no morphological evidence that the single NP in each of the (b) sentences in (95-97) is a subject, I think there are four pieces of evidence that it is. First, in terms of linear order, these NPs appear in the canonical subject position. Second, unlike the topicalized NP in (i), which is accompanied with a pause, no pause is necessary after the single NP in (95b).

(i) Yifu, Zhangsan xi-ganjing-le.
clothes Zhangsan wash-clean-PERF
'Zhangsan washed the clothes clean.'

This suggests that it is at least not necessary to analyze the (b) sentences in (95-97) as involving a topicalized Causee and a dropped Causer that occupies the subject position. Third, the (b) sentences in (95-97) are similar to the inchoative use of English change of state predicates such as *break* and *open* in (ii) in both form and meaning, except that as argued in section 3.1, the sentences in (ii), unlike the (b) sentences in (95-97), do not entail a Causer.

(ii) a. The vase broke.
b. The door opened.

Given this, the fact that the NPs of the sentences in (ii) are subjects strongly suggests that the single NP in each of the (b) sentences in (95-97) is also a subject. Finally, unlike (iii), which is strongly felt to be an incomplete sentence without a proper context, the (b) sentences in (95-97) sound natural without any further context.

(iii) Zhangsan ji-le.
Zhangsan send-PERF
'Zhangsan sent (it).'

Based on these, I conclude that the NPs in the (b) sentences of (95-97) are subjects.

b. Shoupa ku-shi-le.
handkerchief cry-wet-PERF
Literally: 'The handkerchief cried wet.' → 'The handkerchief was cried wet.'

As (97) involves a strong resultative and not all the other languages under investigation have strong resultatives, I will only examine whether sentences similar to (95b) and (96b) are grammatical in other languages. To start with, with respect to resultatives like Mandarin *ca-ganjing* 'wipe-clean,' there is a contrast between Mandarin on the one hand and English and Swedish on the other. That is, although as shown by the (a) sentences in (95) and in (98-100), resultatives in all these languages can occur in the transitive frame, English and Swedish resultatives, unlike Mandarin resultatives, cannot occur in the surface unaccusative frame, as shown by the ungrammaticality of the (b) sentences in (98-100).

(98) a. John wiped the table clean.
b. *The table wiped clean.[67]

(99) Swedish
a. John torkade bordet rent.
John wiped table.the clean
'John wiped the table clean.'
b. *Bordet torkade rent.
table.the wiped clean
Intended: 'The table was wiped clean.'

(100) Swedish
a. John ren-torkade bordet.
John clean-wiped table.the
'John wiped the table clean.'
b. *Bordet ren-torkade.
table.the clean-wiped
Intended: 'The table was wiped clean.'

[67] Although sentences like (i) are grammatical to Larry Horn and some other speakers, five out of seven speakers I consulted regarded them as ungrammatical.
(i) Finally, after we got out the heavy-duty scrubber and abrasive detergent, **the table wiped clean**. (Larry Horn, p.c.)
The above example certainly involves more context than (98b). Crucially, without further context, a sentence like (98b) is ungrammatical. In contrast, a sentence like (95b) is grammatical even when there is no further context.

To account for why (95b) is grammatical and the (b) sentences in (98-100) are not, I propose that for resultatives in a language to appear in the surface unaccusative frame, two conditions must be met. First, the two components of a resultative must form a predicate of the word level. Second, the resultative formed does not violate the head feature percolation condition discussed in sections 1.2.2.4, 4.2 and 4.3, namely that the way the arguments of the head of an RVC are realized in the overt syntax should be maintained on the compound level.

The first condition is motivated by two facts. First, whereas Mandarin resultatives are compounds (see section 3.2.1), English resultatives as in (98) and Swedish resultatives as in (99) are not. Second, although both *wipe … clean* in (98) and *break* in (101) encode a change of state, (98b) is bad and (101b) is good. This indicates that for a predicate to occur in the surface unaccusative frame, the predicate as a whole must be a word, which includes compounds. This proposal is further supported by the fact that none of the non-compound resultatives in French, German, Japanese, Korean, and Romanian can appear in the surface unaccusative frame, as shown in (102-103).

(101) a. John broke the glass.
b. The glass broke.

(102) Intended: 'The table was wiped clean.'
a. *La table a frotté propre. (French)
the table has wiped clean
b. *Der Tisch wischte sauber. (German)
the table wiped clean
c. *Teeburu-ga kirei-ni fui-ta. (Japanese)
table-NOM clean-NI wipe-PAST
d. *Takca-ka kkaykkusha-key takk-ass-ta. (Korean)
table-NOM clean-KEY wipe-PAST-IND
e. *Masa a şters curată. (Romanian)
table.the has wiped clean

(103) Intended: 'The wall was painted red.'

a. *Le mur a peint rouge. (French)
the wall has painted red

b. *Die Wand strich rot. (German)
the wall painted red

c. *Kabe-ga aka-ku nut-ta. (Japanese)
wall-NOM red-KU paint-PAST

d. *Pyek-i ppalkah-key chilha-yess-ta. (Korean)
wall-NOM red-KEY paint-PAST-IND

e. *Peretele pictat roşu. (Romanian)
wall painted red

While the word level predicate condition accounts for the contrast between (95b) on the one hand and (98b) and (99b) on the other, the second condition is needed to account for the contrast between (95b) and (100b). This is because in both (95b) and (100b), the resultatives involved are compounds, thus meeting the first condition. Crucially, like the first condition, the second condition is well-motivated as well. That is, there is independent evidence for the head feature percolation condition from non-resultative verb compounds in Japanese (see section 4.2). Recall that Swedish RVCs are head-final and are in the order of "result component + causing component" (see section 4.3). Given the head feature percolation condition and the head-final nature of Swedish RVCs, the ungrammaticality of sentences like (100b) can be accounted for. That is, such sentences violate the head feature percolation condition. Specifically, as shown in (104), the external argument of *torka*, the head of *ren-torka* 'clean-wipe' in (100), is realized in the subject position when *torka* is used separately.

(104) John torkade bordet.
John wiped table.the
'John wiped the table.'

However, in (100b) it is the internal argument of *torka* that is expressed in the subject position, thus violating the head feature percolation and leading to the ungrammaticality of

the sentence. As for Mandarin, the grammaticality of (95b) is not something unexpected because as argued in section 1.2.2.4, Mandarin RVCs are headless.

Additional evidence for our proposal comes from Japanese RVCs. As Japanese RVCs are compounds and are word level predicates, they are expected to be able to occur in the surface unaccusative frame as long as they do not violate the head feature percolation condition. As argued in section 4.2, Japanese RVCs are head-final as well, although the order of the two components of a Japanese RVC is "causing component + result component." This predicts that if the result component of a Japanese RVC is intransitive and if its single argument is realized in the subject position of a sentence containing the RVC, the sentence would be grammatical due to its obeying the head feature percolation condition. As shown in (105), this prediction is borne out.[68]

(105) Nishiyama 1998: 189
a. Sigoto-ga si-agat-ta.
job-NOM do-get.ready-PAST
'The job was done and got ready.' ['The job was done and it was completed.']
b. Coat-ga [cooto-ga] ki-kuzure-ta.
coat-NOM wear-get.out.of.shape-PAST
'The coat was worn and got out of shape.'

Although the head feature percolation condition accounts for the contrast between Swedish and Mandarin RVCs and correctly predicts the occurrence of the surface unaccusative frame with respect to Japanese RVCs, I argue that from a more general

[68] Our proposal has implications for an account of the alternation in (i) (thanks to Jim Huang for bringing the relevance of phrasal verbs to my attention).
(i) a. They have just sold out the books.
b. The books have just sold out.
For one thing, phrasal verbs like *sell out* that involve some sort of resultative interpretation are arguably word level predicates. For another, such phrasal verbs are not true compounds as it is the first element that is inflected for tense (cf. the number inflection with respect to true compounds like *takeout* in *three takeouts*). As a result, the head feature percolation condition, which is proposed for compounds, is inapplicable to phrasal verbs. Therefore, the grammaticality of (ib) is consistent with the spirit of our proposal and indicates that the alternation illustrated by (i), which is similar to the alternation exemplified by Mandarin RVCs in (95-96), operates on word level predicates as well.

perspective, the attestation of the surface unaccusative frame in Mandarin but not in Swedish is also related to the topic-prominent nature of Mandarin. The rationale behind this is that a language, if topic-prominent, will have more freedom in allowing different kinds of NP to function as the topic of a sentence.

Specifically, the topic-prominence factor is motivated by the following three facts. First, according to Charles Li & Thompson (1976), Mandarin is a topic-prominent language, and Swedish, like other Indo-European languages, is not. Further, in Chao Li 2004, I propose that for a language to be considered topic-prominent, two conditions must be met: (i) the "double nominative" construction is natural both in planned and unplanned discourses and (ii) the topic-chain construction is a basic discourse unit of the language. As far as the first condition is concerned, there is evidence from (106) that Mandarin allows natural occurrences of the double nominative construction, in which the sentence-initial topic is not part of the comment part, which itself is a complete clause. However, as shown in (107), Swedish does not allow this construction and therefore cannot be considered to be a topic-prominent language.

(106) a. Na-ke shu, yezi hen maosheng.
that-CL tree leaf very exuberant
'Speaking of that tree, its leaves are very exuberant.'
b. Na-chang huo, xiaofangdui lai de hen jishi.
that-CL fire fire.brigade come DE very in.time
'Concerning that fire, the fire brigade came in time.'

(107) a. *Trädet, löven är frodiga.
Tree.the leaves.the be.PRES exuberant.PL
Intended: 'Speaking of that tree, its leaves are exuberant.'
b. *Den branden, brandmännen kom i tid.
the fire.the firemen.the came in time
Intended: 'Speaking of that fire, the firemen came in time.'

Second, as far as Mandarin RVCs are concerned, the NP used in the surface unaccusative frame must be definite or generic when without a contrastive context, which is

similar to the requirement that topics in Mandarin must be either definite or generic (Charles Li & Thompson 1981: 85). Moreover, the NP used in the surface unaccusative frame is typically the topic of a sentence. For example, as shown in (108), while a bare NP with a definite reference,[69] a bare NP with a generic interpretation, or a definite description can be used in the surface unaccusative frame, an indefinite NP cannot be used in this frame when no contrastive context is available.[70] Furthermore, except for making a thetic statement, which involves all new information, the single NPs in the first three examples of (108) have to be interpreted as topics.

(108) a. Zhuozi ca-ganjing-le.
table wipe-clean-PERF
'The table was wiped clean.'
b. Zhuozi yiban keyi ca-ganjing.
table generally may wipe-clean
'Generally, tables can be wiped clean.'
c. Na-zhang zhuozi ca-ganjing-le.
that-CL table wipe-clean-PERF
'That table was wiped clean.'
d. *Yi-zhang zhuozi ca-ganjing-le.
one-CL table wipe-clean-PERF
Intended: 'One table was wiped clean.'

Finally, as shown in (109-113), Mandarin allows many other similar alternations to the case of *ca-ganjing* 'wipe-clean' in (95), not only in the perfective aspect as in (109-111), but also in the progressive aspect as in (112-113).

(109) a. Zhangsan jian-le fangzi.
Zhangsan build-PERF house
'Zhangsan has built the house.'

[69] It needs to be pointed out that a bare NP in Mandarin is often used for the reason of a high degree of reference accessibility to the addressee, a degree actually higher than an overt definite NP. Given this, it is not surprising that the bare NP on this use has a definite reference.

[70] For some speakers I consulted, (108c) is less natural than (108a). In addition, in other cases, the subject of a sentence can be an indefinite NP even when no contrastive context is involved, as shown in (i) below.

(i) Shu-shang-de yi-pian yezi luo-le.
tree-on-MM one-CL leaf fall-PERF
'One of the leaves on the tree fell.'

b. Fangzi jian-le.
house build-PERF
Literally: 'The house built.' → 'The house has been built.'

(110) a. Zhangsan qie-le rou.
Zhangsan cut-PERF meat
'Zhangsan has cut the meat.'
b. Rou qie-le.
meat cut-PERF
Literally: 'The meat cut.' → 'The meat has been cut.'

(111) a. Zhangsan kan-le na-ben shu.
Zhangsan read-PERF that-CL book
'Zhangsan has read that book.'
b. Na-ben shu kan-le.
that-CL book read-PERF
Literally: 'The book read.' → 'The book has been read.'

(112) a. Zhangsan zai jian fangzi.
Zhangsan PROG build house
'Zhangsan is building the house.'
b. Fangzi zai jian.
house PROG build
Literally: 'The house is building.' → 'The house is being built.'

(113) a. Zhangsan zai zhi bu.
Zhangsan PROG weave cloth
'Zhangsan is weaving cloth.'
b. Bu zai zhi.
cloth PROG weave
Literally: 'The cloth is weaving.' → 'The cloth is being woven.'

Given the topic-prominent nature of Chinese, the grammaticality of the (b) sentences in (109-113) is very likely to result from the language's having more freedom than many other languages (e.g. English) to allow different kinds of NP to function as the topic of a sentence.[71]

[71] One possible contributing factor to the grammaticality of the alternations in (109-113) as well as (95-97) is that when topicalization is used in an interrogative question in spoken Mandarin, the second person pronoun is often left unexpressed, especially in the perfective aspect, as shown in (i).
(i) Zhangsan: Shu huan-le ma?
book return-PERF QUESTION
'Have you returned the book?'

If the suggestion that topic prominence is a factor relevant to the grammaticality of the (b) sentences in (109-113) is on the right track, the contrast between Mandarin and Swedish with respect to the surface unaccusative frame might also be due to the fact that the former is a topic-prominent language and the latter is not.[72] Note that in this respect, the fact that Japanese resultatives can occur in the surface unaccusative frame is consistent with our suggestion, as on Charles Li & Thompson's (1976) typology, Japanese is both a topic-prominent and a subject-prominent language.[73] Given this, it can be concluded that although being topic-prominent is not a necessary condition, it may well be a contributing factor as to the occurrence of a resultative in the surface unaccusative frame.

Before we leave this section, I would like to address two additional issues, one related to the middle construction and the other about the theoretical significance of the occurrence

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Lisi: Huan-le.
return-PERF
'Yes, I have.'

Crucially, when Zhangsan asks the question in (i), he is asking whether the addressee Lisi has returned the book, which is known to both of them.

[72] Given the topic-prominent nature of Mandarin, it is not surprising that the internal argument of the main predicate of the main clause in the *de*-extent construction can be used as the topic and as the main subject of a sentence, as shown in (i).

(i) Zhuozi ca-de ganganjingjing de.
table wipe-DE very.clean SFP
'The table is/was wiped very clean.'

[73] One may argue that since the NPs in (105) are in the nominative case and are not marked with the topic marker *-wa*, the grammaticality of (105) is not related to the topic prominence of Japanese at all. However, this cannot be true for two reasons. First, the two NPs in (105) can certainly be marked with *-wa*, and in circumstances other than a thetic statement (see Kuroda 1972 for a discussion of thetic statements) or an exhaustive listing (see Kuno 1973), this marker is in fact required. Second, although the NPs in (105) can be marked with the nominative case, the existence of the surface unaccusative frame in itself is likely to be made possible by the topic-prominent nature of Japanese and by those cases that involve the topic marker. In this respect, it is worth considering the fact that the first NP of a double nominative construction (see (i) and (ii)), whose natural occurrence is one of the defining features of a topic-prominent language, can also be marked with the nominative case, although it is marked with *-wa* in a non-thetic and non-exhaustive-listing context.

(i) Yama ga ki ga kirei desu.
mountain NOM trees NOM pretty are
a. 'It is the mountains that trees are pretty in.'
b. '(Look!) The mountains—their trees are pretty.'(Kuno 1973: 69; glosses added)

(ii) Nihonjin-ga kome-ga shushoku-da.
Japanese-NOM rice-NOM staple.food-be
'The Japanese have rice as their staple food.' (Kumashiro & Langacker 2003: 2)

of Mandarin RVCs in the surface unaccusative frame. First, the middle construction. Note that although resultatives like *wipe…clean* in English cannot occur in the surface unaccusative frame, it can appear in a similar syntactic frame, namely the middle construction, as shown by the contrast between (114a) and (114b).

(114) a. *The table wipes/wiped clean.
b. The table wipes/wiped clean easily.

The question is why with the addition of an adverbial phrase like *easily*, (114a) becomes grammatical. I propose that the grammaticality of (114b) is due to the fact that the addition of *easily* makes the event more stativized and thus make it more possible to talk from the perspective of the entity being acted upon and to present this entity and the action involved as an event in itself.[74] In this respect, the adverbial phrase in the middle construction plays a similar role to the progressive aspect in sentences like (115) in making the event stativized (through the meaning of continuousness in the case of the progressive aspect) and in contributing to make possible the presentation from the perspective of the entity being acted upon.

(115) a. The SWAT team is also told that a blue and white shirt is hanging on the door knob. (http://www.cnn.com/SPECIALS/2000/columbine.cd/Pages/NARRATIVE.Time.Line2.htm)
b. There is also a television and magazines to pass the time while clothes are washing. (http://camping.about.com/od/campgroundreviews/fr/ucpcge27.htm)

Second, the fact that Mandarin RVCs can occur in the surface unaccusative frame and thus can participate in the causative alternation as illustrated in (116) is theoretically

[74] As shown in (i), English resultatives can also occur in the surface unaccusative frame when an explicit or implicit contrastive context is involved, including the use of negation, which provides contrast for free (Larry Horn, p.c.). (To Larry Horn, contrast also plays an important role in the grammaticality of (114b). For me, stativization plays a more important role in that case.)

(i) a. One of the two tables wiped clean, and the other didn't.
b. The table didn't wipe clean, so it couldn't be used.
c. Contrary to your predictions, the table DID wipe clean. (Larry Horn, p.c.)

significant because it shows that Levin & Rappaport Hovav's (1995: 107; cf. 1991: 133, note 8) hypothesis—"an externally caused verb can leave its cause argument unexpressed only if the nature of the causing event is left completely unspecified"—does not hold crosslinguistically.

(116) a. Zhangsan xi-ganjing-le yifu.
Zhangsan wash-clean-PERF clothes
'Zhangsan washed his clothes clean.'
b. Yifu xi-ganjing-le.
clothes wash-clean-PERF
'The clothes were washed clean.'

Levin & Rappaport Hovav cite the English causative alternation as evidence for their hypothesis. For example, as shown in (117), *break* can participate in the causative alternation because, as demonstrated by (117a), (118) and (119) respectively, not only agents, but also instruments and natural forces can act as the Causer.

(117) a. Jack broke the window.
b. The window broke.

(118) The stones broke the window.

(119) The hurricane broke the window.

In contrast, as shown in (120), *cut* cannot occur in the causative alternation because, as evidenced by (121), the nature of the causing event for *cut* cannot be completely unspecified, but rather has to be specified as involving an agent Causer (as in (120a)) or an instrument Causer (as in (122)).

(120) a. Jane cut the cake.
b. *The cake cut.

(121) *The lightning cut the clothesline. (Levin & Rappaport Hovav 1995: 103)

(122) The knife cut the cake.

Given Levin & Rappaport Hovav's explanation of the contrast between *break* and *cut*, we should expect *xi-ganjing* 'wash-clean' not to participate in the causative alternation. This

is because when there is a causing subevent for *xi-ganjing*, the Causer has to an agent as exemplified in (116a) or an instrument as shown in (123). Crucially, as shown in (124), the Causer cannot be a natural force.

(123) Xiyiji xi-ganjing-le yifu.
washing.machine wash-clean-PERF clothes
'The clothes were washed clean with a washing machine.'

(124) */?Da yu xi-ganjing-le yifu.
big rain wash-clean-PERF clothes
'The rainstorm washed the clothes clean.'

Given that the nature of the causing subevent of *xi-ganjing* has to be specified and that this RVC can occur in the causative alternation as evidenced by (116), it can be concluded that Levin & Rappaport Hovav's hypothesis concerning the causative alternation does not hold for Mandarin, and thus does not hold crosslinguistically. This is further supported by the causative alternation found with simplex predicates like *e*, as shown in (125).

(125) a. Zhangsan e-le Lisi san zhou.
Zhangsan hungry-PERF Lisi three week
'Zhangsan starved Lisi for three weeks.'
b. Lisi e-le san zhou.
Lisi hungry-PERF three week
'Lisi starved for three weeks.'

Crucially, although as shown in (125a), *e* allows an agent Causer, a "natural force" Causer sounds rather unnatural, as shown in (126).

(126) ?Jihuang e-le Lisi san zhou.
famine hungry-PERF Lisi three week
'The famine starved Lisi for three weeks.'

Moreover, with respect to *e*, it is beyond imagination to think of a case where an instrument acts as the Causer. This shows that the Causer of *e* cannot be completely unspecified. As a

result, Levin & Rappaport Hovav's hypothesis incorrectly predicts that *e* cannot participate in the causative alternation.[75]

In fact, when predicates like *e* were taken into consideration, it would mean that Levin & Rappaport Hovav's hypothesis does not hold of English, either. This is because English predicates such as *starve*, like Mandarin predicates such as *e* 'hungry', cannot be completely unspecified. Crucially, like Mandarin *e*, English *starve* cannot occur with an instrument Causer. However, as shown in (127), *starve* can participate in the causative alternation.

(127) a. John starved Bill for three weeks.
b. Bill starved for three weeks.

It can be concluded from the above discussion that if both cases like *e* 'hunger' and those like *ca-ganjing* 'wipe-clean' are taken into consideration, Levin & Rappaport Hovav's hypothesis would not hold of English or Mandarin. Moreover, if the *e* cases alone were excluded, the hypothesis could not be said to hold crosslinguistically, given the causative alternation attested with Mandarin RVCs like *ca-ganjing*. Therefore, it seems that if Levin & Rappaport Hovav's hypothesis were to be maintained in some form, it might have to be stipulated as applying only to simplex causative predicates which involve a causing action, whether specified or unspecified in the meaning of such predicates. More research is needed to determine if this weaker version of the original hypothesis holds crosslinguistically.

[75] Admittedly, Mandarin has few simplex causative predicates, if verbs like *jian* 'build' and *qie* 'cut' are not to be considered predicates that are relevant to the causative alternation (cf. the alternation in (109-110)). As a result, languages that have more lexical causatives need to be studied to better determine whether Levin & Rappaport Hovav's hypothesis holds of simplex causative predicates. I leave this for future research.

4.6 Summary—resultative markedness and implicational universals

In this chapter, it has been shown that from a typological point of view, weak resultatives are unmarked and strong resultatives are marked. This is because the former are lexically implicated or entailed, and thus are more available and less expensive than the latter in the sense that they involve less practical reasoning. In addition, in terms of the strong-weak distinction, an implicational universal can be posited, namely that if a language has strong resultatives, it must have weak resultatives as well (Washio 1999, 2002).

It has also been shown that from a crosslinguistic point of view, the subject-oriented reading (of resultatives which involve an unergative or transitive causing predicate), the *scare* reading, and the surface unaccusative frame found with Mandarin RVCs are all marked, and that this fact itself makes Mandarin RVCs typologically significant. It was proposed that for resultatives in a certain language to have the subject-oriented reading (when the causing predicate is unergative or transitive) or the *scare* reading, or to appear in the surface unaccusative frame, it must, first of all, be realized as a predicate of the word level, which includes compounds.[76] Therefore, one important source of variation concerning resultatives is the domain where the resultative is formed. When the (pseudo-)compound condition is met, the difference among different languages can be attributed to the headedness of the compound (and to the degree of topic prominence of these languages).

If the conditions proposed are correct, then the marked nature of the three phenomena mentioned above can be largely attributed to the fact that not many languages meet the compound condition (and the headlessness condition). For example, the *scare* reading is

[76] This word level predicate condition and the fact that Mandarin resultatives allow the subject-oriented and the *scare* readings and can occur in the surface unaccusative frame provide further support for the lexical account of Mandarin RVCs proposed in section 3.2.1.

predicted to be found in languages where resultatives are realized as headless compounds. The fact that no languages investigated other than Igbo and Mandarin allow this reading is due to the rarity of languages which meet both the compound condition and the headlessness condition. For another example, the marked nature of the subject-oriented reading is due to the fact that in most languages resultatives are not realized as (pseudo-)compounds. In addition, as far as transitive RVCs are concerned, the marked nature of the subject-oriented reading in contrast to the canonical object-oriented reading may also be due to the "theme-object tendency" identified by Wechsler (2005a: 271), which in our terms means that Patient and Causee tend to be objects rather than subjects. It follows from this that transitive resultatives tend to be predicated of objects rather than subjects. In fact, in this case another implicational hierarchy can be formulated, namely that as far as transitive resultatives are concerned, if a languages allows the subject-oriented reading, it will also allow the object-oriented reading.

Like the three other aspects of Mandarin RVCs, the fact that Mandarin RVCs allow a stative causing predicate is also crosslinguistically marked and thus typologically significant. It has been proposed that for non-compound resultatives in a language to allow a stative causing predicate, the state must be able to be expressed by an element that, when used alone, can function as the main predicate of a sentence. With respect to the causing predicate of resultatives, an implicational universal can also be formulated. That is, if a language has resultatives which have a stative causing predicate, then the language must also allow resultatives which have a causing predicate that is an activity or an accomplishment verb. The reason for this, I believe, lies in the fact that it is normal to have a result caused by an action, but unusual to have a result caused by a state.

Finally, it has been demonstrated that the fact that Mandarin RVCs allow a stative causing predicate and the fact that they can occur in the surface unaccusative frame are also theoretically significant. The stative causing predicate phenomenon is of theoretical significance because it shows that it is not the case that only process or activity verbs can function as the causing predicate of resultatives. Moreover, the fact that Mandarin RVCs can occur in the surface unaccusative frame and thus can participate in some causative alternations which are unavailable in other languages is theoretically significant because it shows that Levin & Rappaport Hovav's (1995) hypothesis concerning the causative alternation does not hold crosslinguistically, or cannot apply to both simplex and complex predicates.

Chapter 5. Summary and Conclusions

In this dissertation, I offered a definition of the resultative construction. On the basis of the definition, Mandarin resultative verb compounds were analyzed as instances of the resultative construction. Concerning Mandarin RVCs, I undertook three tasks. First, I showed that the earlier accounts of the complex thematic relations expressed by Mandarin RVCs in general and of the ambiguity phenomenon found with Mandarin RVCs in particular suffer one or more of the following problems—lack of evidence, lack of empirical coverage, unattractive or untenable (theoretical) implications, and inappropriate formulations of the important mechanisms used. In particular, I demonstrated that the proposal that (some) RVCs are syntactically derived from complicated underlying **syntactic** representations and through complex movements is unnatural and untenable. It is unnatural because the complexity of the phenomenon lies not in syntax, but in **semantics** and **pragmatics**. It is untenable because there is no **syntactic** evidence that the result predicate and the NP of which it is predicated form a syntactic constituent. It is unnatural and untenable also because the different underlying syntactic representations for different readings of the same sentence containing the same RVC are *ad hoc* and arbitrary in nature. The arbitrary nature of the representations proposed is clearly reflected in the fact that different scholars propose different underlying representations for the same reading of the same sentence.

Second, I offered my own lexical-semantic account of Mandarin RVCs within the event structure model of argument representation and argument realization developed on the basis of Levin & Rappaport Hovav's work (particularly Levin 1999 and Rappaport Hovav & Levin 1998). I argued that RVCs are formed through a lexical rule, which is itself a language memory bank item. On my account, the complex thematic relations result from different

interactions of the individual thematic relation and the composite thematic relation, and from the different ways of realizing the Causer and the Causee. On this account, the ambiguity found in some sentences containing an RVC was readily and naturally explained. That is, the ambiguity phenomenon is just a reflection of the larger picture of the complex thematic relations associated with RVCs. Therefore, the different readings of the same sentence containing the same RVC follow from the different ways of realizing the Causer and the Causee and from the different interactions of the two tiers of thematic relations. Furthermore, I showed that with due importance attached to semantics and pragmatics, the varying degree of difficulty in obtaining the different readings of the same sentence results from the combining force of iconicity and the Animate Subject as Agent or Experiencer Strategy.

I argued that compared with earlier accounts of Mandarin RVCs, my account is more natural, more comprehensive, and more explanatory. It is more natural because the complexity of the thematic relations lies in semantics and pragmatics, and the account offered correctly puts the explanatory burden in semantics and pragmatics. It is more natural also because it is less stipulative and involves no underlying syntactic representations, which are unfalsifiable on the one hand, and unconstrained and too powerful as an analytical tool on the other. Moreover, my account is more comprehensive because it has a fuller empirical coverage than any other accounts I am aware of. Still more, it is more explanatory because, in contrast to the derivational accounts proposed in the literature, which, as far as I can see, are only able to describe the different thematic relations, my account is capable of both describing and predicting the different thematic relations expressed. My account is more explanatory also because it gives a general and principled answer to the question of argument realization associated with Mandarin RVCs.

The third task I undertook in this dissertation was to place the study of Mandarin RVCs in a larger context and to examine four aspects of Mandarin RVCs from a crosslinguistic perspective. It was shown that the fact that Mandarin RVCs allow subject-oriented resultatives with an unergative or transitive causing predicate, admit the *scare* reading, allow stative causing predicates, and can occur in the surface unaccusative frame is typologically significant because such phenomena are crosslinguistically marked. It was suggested that for non-compound resultatives in a certain language to allow a stative causing predicate, the state must be able to be expressed by a verbal element that can function as the main predicate of a sentence on its own. In addition, it was proposed that for resultatives in a language to have the subject-oriented reading (when the causing predicate is unergative or transitive) or the *scare* reading, or to appear in the surface unaccusative frame, it must, first of all, be realized as a (pseudo-)compound. When the compound condition is met, the difference among different languages can be attributed to the difference in the headedness of the compound (and to the degree of topic prominence of these languages). Therefore, the differences among English, French, German, Japanese, Korean, Mandarin, Romanian, and Swedish with respect to the last three phenomena fall out of the difference in the domain where the resultative is formed, the headedness of the compound (and the degree of topic prominence of a language).

It was shown that concerning the resultative construction, at least three implicational universals can be formulated from a typological point of view and all of them are supported by the data from the languages examined in this work. First, if a language has strong resultatives, it must have weak resultatives. Second, if a language allows subject-oriented transitive resultatives, it will also admit object-oriented transitive resultatives. Finally, if a

language has resultatives which involve a stative causing predicate, then the language must allow resultatives which involve a causing predicate that is an activity or accomplishment.

The lexical-semantic account of Mandarin RVCs offered and two of the four aspects of Mandarin RVCs examined from a crosslinguistic perspective are of theoretical significance. To start with, the lexical-semantic account proposed has the following theoretical implications. First, lexical and syntactic rules, like ordinary lexical items, are language memory bank items, although they themselves are not lexical items. As a result, there is no need to list the outputs of the rules in the lexicon or in the language memory bank. In turn, it does not necessarily lead to polysemy when the same verb is used in different syntactic frames. Second, both simple event roles licensed by simple events and complex event roles licensed by complex events should be recognized. Through the window of this distinction, the relation between the Agent and the Causer can be given a clearer view. Third, the division of labor should be maintained, syntax should be made simpler, and the complete isomorphism between syntax and semantics should be abandoned. By doing so and by paying more attention to semantics and pragmatics, many linguistic phenomena, such as the ambiguity of some Mandarin sentences containing an RVC, can have a better and more natural explanation, because the complexity of these phenomena lies not in syntax, but in semantics and pragmatics. Finally, semantic arguments that are immediately relevant to linking can be simple constant and simple structure arguments in a simple event structure template, or composite semantic arguments compositionally derived from a complex event structure template. Although the event structure templates do not determine all the possible syntactic frames in which a predicate can occur, there are conditions and linking regularities that govern argument realization, particularly when the event involved is a complex causative

event. In fact, one of the most important contributions of this dissertation lies in its development of a theory of argument realization with respect to complex causative events.

In addition, the fact that Mandarin RVCs allow a stative causing predicate and the fact that they can occur in the surface unaccusative frame are also theoretically significant. The stative causing predicate phenomenon is of theoretical significance because it shows that it is not the case that only process or activity verbs can function as the causing predicate of resultatives. Moreover, the fact that Mandarin RVCs can occur in the surface unaccusative frame and thus can participate in some causative alternations which are unavailable in other languages is theoretically significant because it shows that Levin & Rappaport Hovav's (1995) hypothesis concerning the causative alternation does not hold crosslinguistically, or cannot apply to both simplex and complex predicates.

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