Resultative expressions in Mandarin Chinese

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of the requirements for the degree of
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Declaration

I, Wenkai Tay, confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

Abstract

This thesis is concerned with why Mandarin V-V resultatives are more flexible in their argument realisation patterns than other resultatives in Mandarin and other resultatives in languages like English. I propose that this is because Mandarin V-V resultatives are compounds built in morphology, with a structure V1-∅-V2. The null affix ∅ inherits all of the arguments of V2 and may introduce a causer argument, but crucially, it does not inherit any of the arguments of V1. This proposal thus predicts that there is no syntactic requirement for any of the arguments of a V-V resultative to be interpreted as arguments of V1. Nevertheless, there is an extra-syntactic requirement that the causer argument be interpreted as a participant of the event denoted by V1. I show that this proposal generates the argument realisation patterns attested in a range of V-V resultatives.

This proposal correctly predicts that Mandarin V-*de* resultatives, which are built in the syntax, do not have the same flexibility of argument structure as V-V resultatives. In fact, an obligatorily transitive V1 must project its internal argument in a V-*de* resultative but not in a V-V resultative. As such, this proposal fares better than the dominant view in the literature that both Mandarin V-V and V-*de* resultatives are built in syntax, and that neither class of resultatives inherits the arguments of V1 because V1 never projects any arguments in Mandarin. Furthermore, this proposal also explains why compound resultatives are more flexible than non-compound resultatives cross-linguistically.

To the extent that it is on the right track, this proposal provides evidence for an architecture of the grammar in which morphology and syntax are distinct subsystems.

Impact statement

This thesis contributes to the study of how language is organised within the human mind and how different systems within the human language faculty are responsible for different aspects of language. In particular, it provides evidence for the view that the system that puts together the structure of words is distinct from the system that puts together the structure of larger units like phrases and sentences. The discussion in this thesis would be of interest to the community of researchers working in theoretical linguistics.

This thesis also contributes to our understanding of the linguistic representation of causation more generally. Specifically, it analyses resultatives like *The baby cried Mother awake* as special cases of causatives like *The baby woke Mother by crying*.

This thesis focuses on resultatives and related constructions in Mandarin Chinese, and so is of particular relevance to researchers working on the linguistics of Mandarin Chinese and related languages. Given that resultatives are so productive in Mandarin, the findings presented in this thesis could have fruitful applications in pedagogy and natural language processing.

Finally, this thesis suggests avenues for comparing resultatives across different languages. Further research into resultatives could shed light on how different languages express events of change. The scope of this research into resultatives could be expanded beyond Germanic languages to include East Asian languages, West African languages and related creoles.

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Abbreviations

CCF	crucial contributory factor
1	first person
2	second person
3	third person
CLF	classifier
DET	determiner
F	feminine
GEN	genitive
HON	honorific
INTR	intransitive
IPFV	imperfective
NOM	nominative
PFV	perfective
PL	plural
PROG	progressive
PRS	present
PST	past
SFP	sentence-final particle
SG	singular
TR	transitive

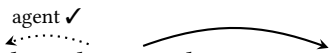
Chapter 1

Introduction

This thesis aims to explain why Mandarin V-V resultatives are more flexible in their argument realisation patterns than other resultatives in Mandarin as well as other resultatives in languages like English.

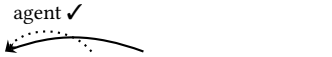
Mandarin has a productive range of resultatives composed of two verbs, V1 and V2. These V-V resultatives can take one or two arguments in a simple sentence, or three arguments in a *bǎ*-construction.

In a V-V resultative with two arguments, the result state can hold either of the object, as in (1) and (2), or of the subject, as in (3) and (4). The subject can be interpreted as the agent of V1, as in (1) and (3), or not, as in (2) and (4).

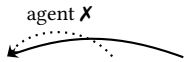


(1) *Bǎobao kū-xǐng-le māma.*
baby cry-awake-PFV mother
'The baby cried and as a result Mother woke up.'
(adapted from Huang 2006:9)

(2) *Yīfú xǐ-lèi-le jiějiě.*
clothes wash-tired-PFV elder.sister
'These clothes made big sister tired by [her] washing [them].'
(Ren 2001; cited in Williams 2005:66)

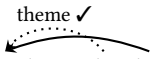


(3) *Bǎobao chī-bǎo-le fàn.*
baby eat-full-PFV food
'The baby became full as a result of eating food.'

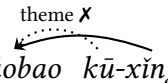


(4) *Yùgāng guàn-mǎn-le shuǐ.*
bathtub pour-full-PFV water
'The bathtub became full as a result of [someone] pouring water [into it].' (adapted from Sybesma 1999:51)

In a V-V resultative with only one argument, the result holds of that sole argument. The subject can be interpreted as the theme of an unaccusative V1, as in (5), or not, as in (6).



(5) *Shāngkǒu liè-kāi-le.*
wound crack-open-PFV
'The wound cracked open.' (Tham 2015:307)

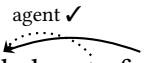


(6) *Bǎobao kū-xǐng-le.*
baby cry-awake-PFV
'The baby cried itself awake.' (adapted from Huang 2006:9)

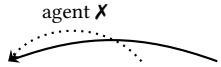
The examples above illustrate the flexibility of argument realisation in Mandarin V-V resultatives but are by no means exhaustive. This range of argument realisation patterns is not attested across all languages. For example, only two of the English counterparts of (1)-(6) are grammatical.

(7) The baby cried Mother awake.

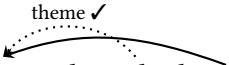
(8) *The clothes washed my sister tired.



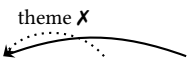
(9) *The baby ate full ({of/with} food).



(10) *The bathtub poured full ({of/with} water).

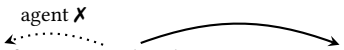


(11) The wound cracked open.



(12) *The baby cried awake.

The question that naturally arises is: why are Mandarin V-V resultatives so flexible? The flexibility of Mandarin V-V resultatives is unexpected if we assume that the Projection Principle (Chomsky 1981) applies to each component of a resultative. Consider the V1 *xǐ* 'wash' in the Mandarin V-V resultative *xǐ-lèi* 'wash-tired' in (2), repeated below as (13). If we adopt a projectionist approach to argument structure, *xǐ* 'wash' would bear a subcategorisation feature that requires that its theme argument be realised as an internal argument. If the Projection Principle applied to *xǐ* 'wash' in the Mandarin V-V resultative *xǐ-lèi* 'wash-tired', this requirement cannot be waived. Thus, we might expect the theme of V1 *xǐ* 'wash' to be realised as an internal argument rather than an external argument in (13). This expectation is not borne out.



(13) *Yīfú* *xǐ-lèi-le* *jiějiě.*
clothes wash-tired-PFV elder.sister
'These clothes made big sister tired by [her] washing [them].'
(Ren 2001; cited in Williams 2005:66)

The flexibility of Mandarin V-V resultatives might be less surprising if we reject the Projection Principle entirely, as is often done in decompositional or neo-constructionist approaches to argument structure (Halle and Marantz 1993; Borer 2005; Ramchand 2008). According to such non-projectionist approaches, a verb does not impose any selectional requirements on its arguments, because these arguments are introduced not by the verb itself, but by the particular template or construction into which the verb is inserted. Thus, we would not have any *a priori* expectation that the theme of V1 *xǐ* 'wash' ought to be realised as an internal argument when it appears in a resultative template or construction as in (13). But although non-projectionist approaches could potentially explain why Mandarin V-V resultatives are so flexible, we are left having to answer the inverse question of why English resultatives are so *in*flexible.

A more promising approach is to somehow relativise the Projection Principle so that it holds for certain resultatives but does not hold (or at least appears not to hold) for other resultatives. This is the approach that I adopt in this thesis. I propose that the reason why Mandarin V-V resultatives have such flexibility of argument realisation is because Mandarin V-V resultatives are compounds built in morphology rather than syntax. In a nutshell, I claim that the Projection Principle applies not to the components of the compound

as it is built in morphology, but instead applies to the entire compound at the point that it is inserted into as a terminal node in syntax.

This idea that Mandarin V-V resultatives are more flexible because they are compounds is not a new one (Y. Li 1990, 1995; C. Li 2007). The challenge, however, has been to come up with a set of rules that maps the argument structures of V1 and V2 onto the argument structure of the resultative compound. As it turns out, this is no trivial matter. Too many rules, and one merely restates the facts in terms of arbitrary stipulations. Too few rules, and one undergenerates attested resultatives or overgenerates unattested ones. And even if one could come up with a workable set of mapping rules, what is the motivation for these rules?

In Chapter 2, I propose that Mandarin V-V resultatives are synthetic compounds that contain a null affix that inherits all the arguments of V2 and none of the arguments of V1. Additionally, the null affix may introduce a Causer argument iff V2 does not already have one.

In Chapters 3 and 4, I turn to the task of deriving the full range of V-V resultatives without over- or undergeneration. In Chapter 3, I derive V-V resultatives that denote a change of state. Since the resultative does not inherit any of the arguments of V1, there is no syntactic requirement for any of the arguments of the resultative to be interpreted as arguments of V1. This explains why the sole argument of an unaccusative resultative can be interpreted as the agent (14) or theme (15) of the event denoted by V1.

(14) *Bǎobao kū-xǐng-le.*
baby cry-awake-PFV
'The baby cried itself awake.' (adapted from Huang 2006:9)

(15) *Shāngkǒu liè-kāi-le.*
wound crack-open-PFV
'The wound cracked open.' (Tham 2015:307)

It also explains why the external argument of a transitive resultative can be interpreted as various participants in the event denoted by V1 such as the agent (16), theme (17) or subject matter (18).

(16) *Bǎobao kū-xǐng-le māma.*
baby cry-awake-PFV mother
'The baby cried and as a result Mother woke up.'
(adapted from Huang 2006:9)

(17) *Yīfú xǐ-lèi-le jiějiě.*
clothes wash-tired-PFV elder.sister
'These clothes made big sister tired by [her] washing [them].'
(Ren 2001; cited in Williams 2005:66)

(18) *Zhè chǎng èmèng kū-xǐng-le māma.*
this CLF nightmare cry-awake-PFV mother
'Mother became awake as a result of (Mother/*someone else) crying about this nightmare.'

Nevertheless, there are semantic constraints on the interpretation of arguments in a V-V resultative. For example, the external argument of a transitive resultative cannot be interpreted as an entity that is not a participant in the event denoted by V1.

(19) **Zhè xiē yángcōng kū-hóng-le wǒ de yǎnjīng.*
this CLF onions cry-red-PFV 1SG DE eye
Intended: 'These onions caused me to cry and as a result my eyes became red.'

I derive this semantic constraint from an independent restriction on simplex causative predicates that applies cross-linguistically.

In Chapter 4, I derive V-V resultatives that denote a change of location.

(20) *Zhāngsān bǎ yáng gǎn-jìn-le yángjuàn.*
Zhangsan BA sheep drive-enter-PFV sheep.pen
'Zhangsan drove the sheep into the sheep pen.'[1]

I also derive a class of V-V resultatives, exemplified by (21), which simultaneously denote a change of state and a change of location. I analyse subject-oriented transitive resultatives like (22) as unaccusative alternants of this class of resultatives.

(21) *Māma bǎ bǎobao wèi-bǎo-le fàn.*
mother BA baby feed-full-PFV food
'Mother fed the baby full with food.'

(22) *Bǎobao chī-bǎo-le fàn.*
baby eat-full-PFV food
'The baby became full by eating food.'

[1] Adapted from `http://bcc.blcu.edu.cn/show/768739035_4_6_-1_-1/0/`.

Having derived the range of V-V resultatives in Mandarin, I show how my proposal makes different predictions from the dominant view in the literature that rejects the distinction between morphology and syntax and assumes that Mandarin V-V resultatives are built in syntax. According to this view, the point of parametric variation that separates Mandarin V-V resultatives and English resultatives cannot be that the former are compounds while the latter are not. Instead, the reason why Mandarin V-V resultatives do not inherit any of the arguments of V1 is because V1 never projects any arguments in Mandarin, whether contained in a resultative or not. In essense, such an approach relativises the Projection Principle so that it holds in some languages like Mandarin but not in other languages like English. I critically evaluate this idea in Chapter 5.

The dominant view that Mandarin V-V resultatives are built in syntax makes three incorrect predictions:

First, it incorrectly predicts that Mandarin V-*de* resultatives like (23) have the same range of argument realisation patterns as V-V resultatives, since both types of resultatives are built in syntax.

(23) *Bǎobao kū de [māma xǐng-le].*
baby cry DE mother awake-PFV
'The baby cried and as a result Mother became awake.'

In the first half of Chapter 6, I show that this prediction is not borne out. For example, V-V resultatives headed by an obligatorily transitive V1 like (24) are grammatical in an out-of-the-blue context while their V-*de* counterparts like (25) are not.

Context: What happened?

(24) *Mǎlì rǎn-hóng-le tóufà.*
Mary dye-red-PFV hair
'Mary dyed her hair red.'

(25) **Mǎlì rǎn de [tóufà hóng-le].*
Mary dye DE hair red-PFV
Intended: 'Mary dyed her hair red.'

Second, the view that V-V resultatives like (26) are built in syntax predicts that V-*de/bu*-V constructions like (27) are also built in syntax. The consensus is that

V-*de/bu*-V constructions are derived from their V-V resultative counterparts because they contain the same resultative meaning, albeit with an additional modal interpretation. In the second half of Chapter 6, I show that syntactic analyses of the V-*de/bu*-V construction are untenable, and present an alternative account according to which V-*de/bu*-V constructions are composed on a par with V-V compounds, but involve an additional derivational step in which the null affix combines with *de/bu* before the resulting element combines with V2 and V1.

(26) *Lǎo Wèi tī-duàn-le nà tiáo mùbǎn.*
Lao Wei kick-snap-PFV that CLF plank
'Lao Wei made that plank snap by kicking.'

(27) *Lǎo Wèi tī-dé/bù-duàn nà tiáo mùbǎn.*
Lao Wei kick-DE/BU-snap that CLF plank
'Lao Wei can/not make that plank snap by kicking.'(Williams 2005:256)

Finally, the proposal that Mandarin V-V resultatives are built in syntax also cannot explain why compound resultatives are more flexible than phrasal resultatives cross-linguistically. In Chapter 7, I show that in another language with both compound and phrasal resultatives, namely Japanese, compound resultatives are more flexible than phrasal resultatives. For example, the sole argument of an intransitive compound resultative like (28) can be interpreted as the agent of V1, whereas the sole argument of an intransitive phrasal resultative like (29) cannot.

(28) *Taroo-ga hasiri-tukare-ta.*
Taro-NOM run-get.tired-PST
'Taro got tired by running.' (Hasegawa 1999)

(29) **Taroo-ga kutakuta-ni hasit-ta.*
Taro-NOM dead.tired-NI run-PST
'Taro ran tired.' (Takami 1998)

Suppose that compound resultatives like Mandarin V-V resultatives and non-compound resultatives like English resultatives (but not Mandarin V-*de* resultatives) form a class of resultative complex predicates which share essentially the same basic branching structure. Let us also suppose that the arguments of

a verb must be projected in the syntax. Since V1 does not project its arguments in compound resultatives, it must then be true that the structure of a compound resultative is not built in syntax, but in a separate, structure-building module of the grammar. A natural candidate for this module that is sensitive to the distinction between compounds and non-compounds is morphology. To the extent that it is on the right track, my proposal therefore provides evidence for an architecture of the grammar in which morphology and syntax are distinct subsystems.

Chapter 2

The syntax and semantics of Mandarin V-V resultatives

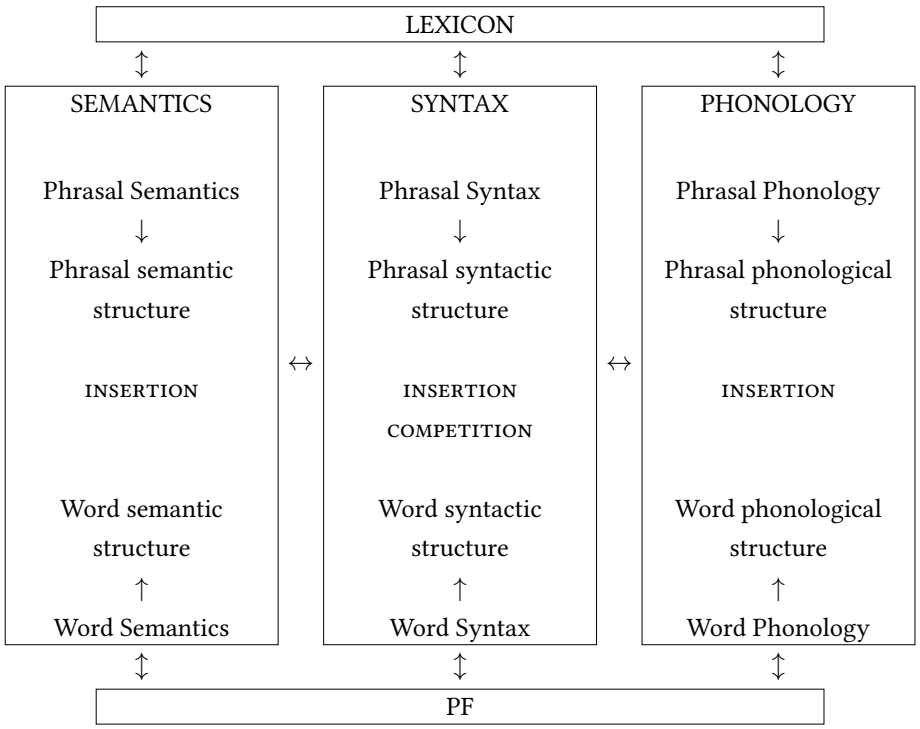
1 Introduction

In this chapter, I propose that the reason why Mandarin V-V resultatives have such flexibility of argument realisation is because they are compounds built in morphology rather than in syntax. My proposal predicts that the components of a V-V resultatives are inaccessible to syntactic operations; I show that this prediction is borne out. I then propose that V-V resultatives, like some other compounds, do not inherit the argument structure of their components. Specifically, I propose that V-V resultatives inherit all of the arguments of V2 but none of the arguments of V1.

2 V-V resultatives are morphological compounds

I propose that V-V resultatives are built in the morphological submodule of the grammar and hence are inaccessible to operations that apply in the syntactic submodule of the grammar. Implicit in this proposal is the assumption that morphology and syntax are distinct subsystems of the grammar (cf. Di Sciullo and Williams 1987) and cannot be reduced to a single generative system as is commonly assumed in Distributed Morphology and similar frameworks in the Minimalist Program (cf. Halle and Marantz (1993) *et seq.*). I adopt the model of grammar set forth in Ackema and Neeleman (2004) shown in (30) below.

(30)



(Ackema and Neeleman 2004:4)

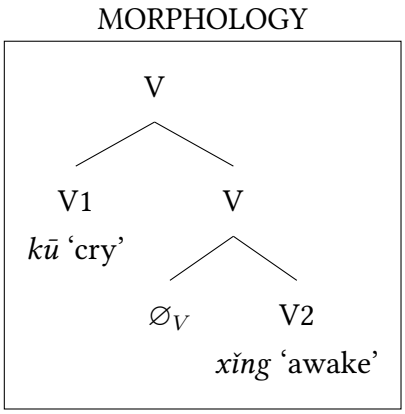
According to this model, there are three distinct macromodules in the grammar – semantics, syntax and phonology – which are responsible for different aspects of language roughly corresponding to meaning, structure and sound respectively. Within each of these macromodules are two submodules responsible for generating word-level and phrase-level structures. On this view, morphology (or word syntax) refers to the submodule that generates word-level syntactic structures, while phrasal syntax generates phrase-level syntactic structures. Both of these are submodules of a larger syntax module. For simplicity, I will refer to word syntax as morphology and phrasal syntax simply as syntax.

Consider the V-V resultative in (31).

(31) *Bǎobao kū-xǐng-le māma.*
baby cry-awake-PFV mother
'The baby cried Mother awake.'

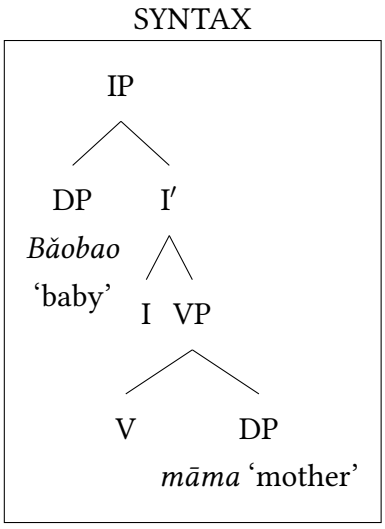
I assume that the V-V resultative *kū-xǐng* ‘cry-awake’ has the structure in the morphological submodule as shown in (32). For ease of presentation, I omit the perfective marker *-le*. The ∅ head is a null affix that introduces the semantics of the resultative. Equivalently, one could assume a more articulated structure in place of this single affix (cf. Embick 2004; Ramchand 2008; Mateu 2012; *inter alia*) as long as one assumes that this structure is built in morphology rather than syntax.

(32)



The rest of the tree is built in the syntactic submodule as shown in (33).[1]

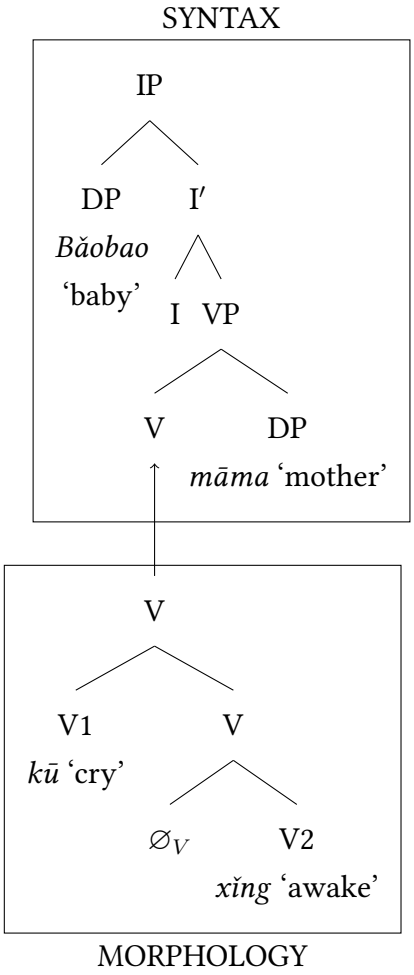
(33)



[1]Whether the syntactic structure and linear order are determined by phrase structure rules or categorial features is orthogonal to my proposal.

The top V node of the structure in (32) is inserted into the V node in (33), as indicated by the arrow in (34).

(34)



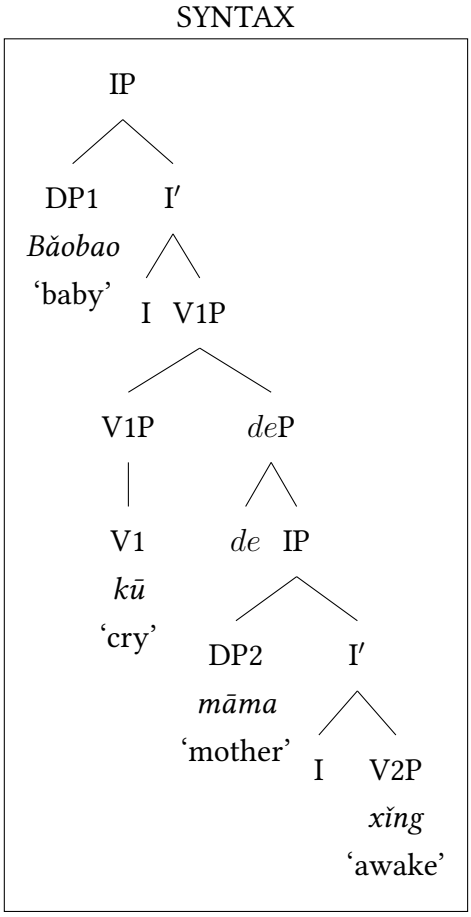
This operation of insertion does not actually involve removing an object and merging it as a building block in another object, as Ackema and Neeleman take pains to make clear. The morphological object in (32) and the syntactic object in (33) are distinct objects in their respective submodules, but the top V node of the structure in (32) and the V node in (33) are associated with each other by virtue of having matching features. Since the structure in (32) is not present in the structure in (33), my proposal predicts that the components of (32) are inaccessible to the operations that apply to (33).

Now consider the V-*de* resultative in (35).

(35) *Bǎobao kū de [māma xǐng-le].*
baby cry DE mother awake-PFV
'The baby cried until/ and as a result Mother woke up.'

I propose that the V-*de* resultative is built in syntax as in (36). The manner-denoting V1 merges with its internal argument (if present), and the result-denoting *de*-phrase is adjoined to V1P. (I discuss the syntax and semantics of V-*de* resultatives in Chapter 6.)

(36)

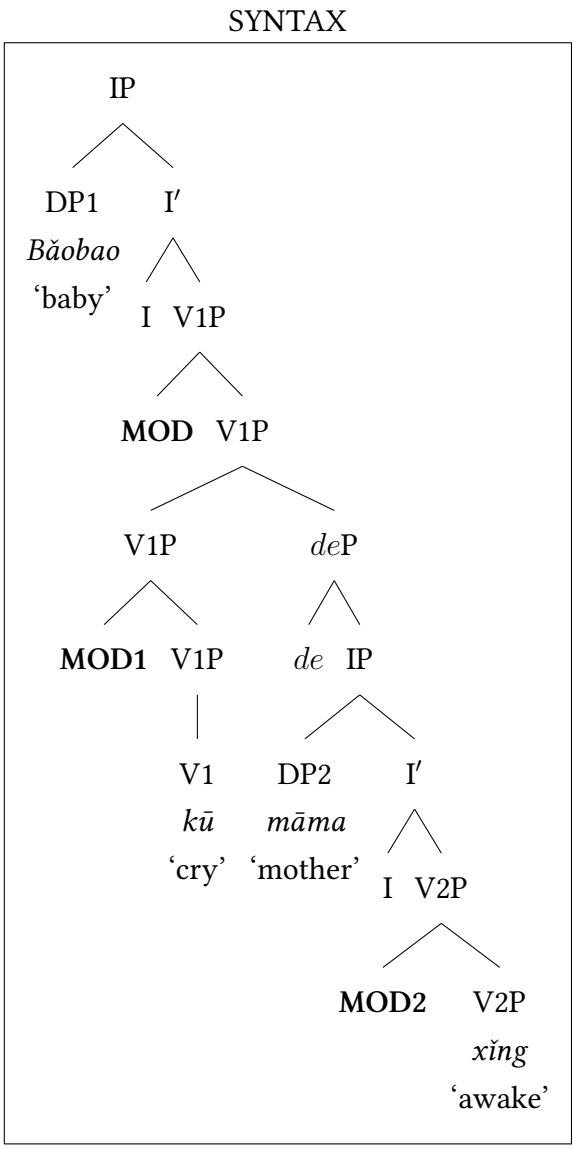


2.1 V-*de* resultatives are accessible to syntactic operations while V-V resultatives are not

My proposal that V-V resultatives are syntactically simplex while V-*de* resultatives are not predicts that the components of a V-*de* resultative are accessible to syntactic operations while those of a V-V resultative are not.

Given the structure in (36), I predict that a V-*de* resultative can be modified by a modifier adjoined above the *de*-phrase, but that V1 and V2 can also be independently modified.

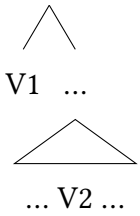
(37)



My proposal makes different predictions from competing proposals that derive V-V resultatives from V-*de* resultatives or other syntactically complex source structures. Such proposals typically assume that V-V resultatives underlyingly have a complementation structure as in (38). They differ primarily in terms of the size of the complement of V1 – be it a small clause (Sybesma 1999), a VP (Nishiyama 1998), a vP (N. Zhang 2001), a CP (C.-A. A. Wang 2010), a functional projection FP specific to Mandarin (Tang 1997) or a more articulated structure containing nested AspPs (Sybesma 2017; Xuan 2011) – and where the object of the resultative is merged relative to V2. As far as I am aware, there is no extant proposal for Mandarin V-V resultatives that explicitly claims that the complement of V1 is a RootP in which the root V2 selects an argument as its

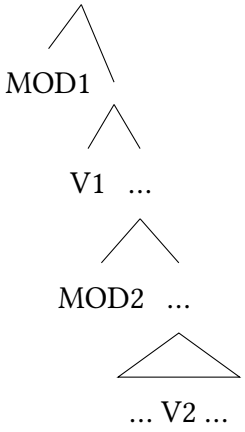
complement. Such a proposal would make the same empirical predictions as one in which V1 selects a VP. If RootP is large enough to introduce an argument, it should be large enough to host a syntactic modifier.

(38)



All these proposals predict that in a V-*de* resultative, V1 cannot be independently modified since a modifier that is adjoined above V1 must modify the entire V-*de* resultative. These proposals also predict that in a V-*de* resultative, V2 can be independently modified since a modifier can be adjoined to an intermediate position above V2 to the exclusion of V1.

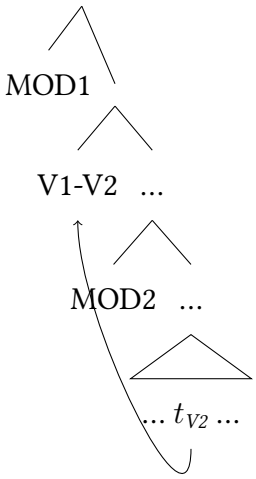
(39)



Since such proposals assume that V-V resultatives are derived from V-*de* resultatives, such proposals would predict that in a V-V resultative, V1 cannot be independently modified but V2 can. If these proposals assume that V2 does not move, they would predict that the modifier of V2 would be realised in between V1 and V2, yielding the surface word order V1 MOD2 V2 as in (39).

Alternatively, if these proposals assume that V2 undergoes head-to-head movement to V1, they would predict that the modifier of V2 should follow V2, yielding the surface word order V1 V2 MOD2 as in (40).

(40)



Both my proposal as well as these competing proposals correctly predict that it is possible to modify an entire V-*de* resultative as in (41) or in a V-V resultative as in (42).

(41) *Bǎobao* ***fǎnfǎnfùfùde*** *kū* *de* *[māma* *xǐng-le].*
baby repeatedly cry DE mother awake-PFV
'Mother repeatedly woke up as a result of the baby crying.'

(42) *Bǎobao* ***fǎnfǎnfùfùde*** *kū-xǐng-le* *māma.*
baby repeatedly cry-awake-PFV mother
'Mother repeatedly woke up as a result of the baby crying.'

However, these competing proposals make two wrong predictions. First, V1 can be independently modified in a V-*de* resultative but not in a V-V resultative. Now in general, it is not easy for speakers to access the reading where V1 is independently modified if the alternative reading where the entire resultative is modified is more accessible.

(43) *??Bǎobao* ***fǎnfǎnfùfùde*** *kū* *de* *[māma* *xǐng-le].*
baby repeatedly cry DE mother awake-PFV
Intended: 'The baby cried repeatedly until Mother woke up (once).'

(44) **Bǎobao* ***fǎnfǎnfùfùde*** *kū-xǐng-le* *māma.*
baby repeatedly cry-awake-PFV mother
Intended: 'The baby cried repeatedly until Mother woke up (once).'

However, if that more accessible reading is blocked due to infelicity, speakers can access the less accessible reading in which V1 is independently modifed in a V-*de* resultative as in (45) but not in a V-V resultative as in (46).

Context: The baby cried at home until the neighbours woke up next door.

(45) *Bǎobao* ***zài*** ***jiā*** ***lǐ*** *kū* *de* *[línjū* *xǐng-le].*
baby at house inside cry DE neighbour awake-PFV
'The baby cried at home until the neighbours woke up (next door).'

(46) **Bǎobao* ***zài*** ***jiā*** ***lǐ*** *kū-xǐng-le* *línjū.*
baby at house inside cry-awake-PFV neighbour
Intended: 'The baby cried at home until the neighbours woke up (next door).'

The V-V resultative remains degraded on the intended reading if we prepose the object above the modifier using a *bǎ*-construction as in (47). However, it is likely that (47) is ruled out for independent reasons since (48) is also degraded even if the entire event occurs in the same location.

(47) **Bǎobao* *bǎ* *línjū* ***zài*** ***jiā*** ***lǐ*** *kū-xǐng-le.*
baby BA neighbour at house inside cry-awake-PFV
Intended: 'The baby cried at home until the neighbours woke up (next door).'

(48) *??Bǎobao* *bǎ* *māma* ***zài*** ***jiā*** ***lǐ*** *kū-xǐng-le.*
baby BA mother at house inside cry-awake-PFV
Intended: 'The baby cried at home until Mother woke up.'

Interestingly, the intended reading is available if the modifier is above the preposed object in the *bǎ*-construction as in (49). I speculate that this is because the *bǎ*-construction is biclausal, as indicated by the brackets, and the modifier modifies the higher clause but not the lower clause. I set this issue to one side.

(49) *Bǎobao* ***zài*** ***jiā*** ***lǐ*** *bǎ* *[línjū* *kū-xǐng-le].*
baby at house inside BA neighbour cry-awake-PFV
'The baby cried at home until the neighbours woke up (next door).'

Second, V2 can be independently modified in a V-*de* resultative but not in a V-V resultative. For example, V2 can be modified by a manner modifier in a V-*de*

resultative as in (50) but not in a V-V resultative as in (51). The V-V resultative remains degraded on the intended reading even if we prepose the object using a *bǎ*-construction as in (52).

(50) *Bǎobao kū de [māma* ***mímíhúhúde*** *xǐng-le].*
baby cry DE mother in.a.daze awake-PFV
'The baby cried until Mother woke up in a daze.'

(51) *Bǎobao kū- (**mímíhúhúde*) -xǐng-le (**mímíhúhúde*)*
baby cry- in.a.daze -awake-PFV in.a.daze
*māma (**mímíhúhúde*).*
mother in.a.daze
'The baby cried and as a result Mother woke up (*in a daze).'

(52) *Bǎobao bǎ māma kū- (**mímíhúhúde*) -xǐng-le*
baby BA mother cry- in.a.daze awake-PFV
*(**mímíhúhúde*).*
in.a.daze
'The baby cried until/ and as a result Mother woke up (*in a daze).'

Similarly, V2 can be independently modified by a locative modifier in a V-*de* resultative as in (53) but not in a V-V resultative as in (54) or (55).

(53) *Bǎobao (zài lóuxià) kū de [māma* ***zài lóushàng***
baby at downstairs cry DE mother at upstairs
xǐng-le].
awake-PFV
'The baby cried (downstairs) until Mother woke up upstairs.'

(54) *Bǎobao kū- (**zài lóushàng*) -xǐng-le (**zài lóushàng*)*
baby cry- at upstairs -awake-PFV at upstairs
*māma (**zài lóushàng*).*
mother at upstairs
'The baby cried and as a result Mother woke up (*upstairs).'

(55) *Bǎobao bǎ māma kū- (**zài lóushàng*) -xǐng-le (**zài*
baby BA mother cry- at upstairs -awake-PFV at
lóushàng).
upstairs
'The baby cried and as a result Mother woke up (*upstairs).'

And again, V2 can be independently modified by a temporal modifier in a V-*de* resultative as in (56) but not in a V-V resultative as in (57) or (58).

(56) *Māma (zuówǎn) chàng de [sǎngzi* ***jīntiān*** *yǎ-le].*
mother last.night sing DE throat today hoarse-PFV
'Mother sang (last night) until her throat became hoarse today.'

(57) *Māma chàng- (*****jīntiān****) -yǎ-le (*****jīntiān****) sǎngzi (*****jīntiān****).*
mother sing- today -hoarse-PFV today throat today
'Mother sang until her throat became hoarse (*today).'

(58) *Māma bǎ sǎngzi chàng- (*****jīntiān****) -yǎ-le (*****jīntiān****).*
mother BA throat sing- today -hoarse-PFV today
'Mother sang until her throat became hoarse (*today).'

One could claim that V2 in a V-V resultative cannot be independently modified because V2 undergoes head movement. In general, however, movement of a head does not block modification of that head. For example, it has been proposed that in some languages like French, the lexical verb undergoes head movement from V to I (Pollock 1989). In such cases, however, an adverb that modifies the verb can be stranded in a position following the verb, as shown in (59).

(59) *John embrasse$_i$ souvent t_i Mary.*
John kisses often Mary
'John often kisses Mary.' (adapted from Pollock 1989:367)

Alternatively, one could claim that in a V-V resultative, the complement of V1 is a bare root V2 and stipulate that V2 can neither introduce arguments nor host modifiers. But since on such an account V2 would be syntactically inert, any claim that V-V resultatives are syntactically complex would be rendered vacuous. Furthermore, this account cannot explain why a V-V resultative inherits all the arguments of V2, as we shall see later in this chapter and in the next two chapters.

2.2 Addressing apparent counterarguments

There are four apparent counterarguments to my claim that the components of a V-V resultative are inaccessible to syntactic operations.

The first counterargument is that it appears as if V1 can be independently modified in V-V resultatives like (60). However, it is likely that the modifier in such examples modifies the entire V-V resultative rather than just V1 (Liu 2019).

(60) *John* ***{yònglìde/ shēngqìde}*** *tuī-kāi nà shān mén.*
John forcefully/ angrily push-open that CLF door
'John pushed that door forcefully/angrily and got it open.'(Liu 2019:85)

The second counterargument is that presuppositional adverbs like *yòu* 'again' and *chàyīdiǎn* 'almost' appear to target the resultant state denoted by V2 in a V-V resultative. Examples of V-V resultatives with such adverbs have been used to support the claim that V-V resultatives have a complex syntactic structure in which V2 can be independently modified (Liu 2019).

(61) *Context: The door was open but Lisi closed it. Then...*

Zhāngsān ***yòu*** *tī-kāi-le nà shān mén.*
Zhangsan again kick-open-PFV that CLF door
'Zhangsan kicked the door open again.'

(62) *Context: Zhangsan kicked the door and as a result the door almost opened but it didn't.*

Zhāngsān ***chàyīdiǎn*** *tī-kāi-le nà shān mén.*
Zhangsan almost kick-open-PFV that CLF door
'Zhangsan almost kicked the door open.'

However, such examples do not decisively show that V-V resultatives are syntactically complex because presuppositional adverbs can also target the resultant state of simplex lexical causative verbs as well.

(63) *Context: same as (61).*

Zhāngsān ***yòu*** *kāi-le* *nà* *shān* *mén.*
Zhangsan again open-PFV that CLF door
'Zhangsan opened the door again.'

(64) *Context: same as (62).*

Zhāngsān ***chàyīdiǎn*** *kāi-le* *nà* *shān* *mén.*
Zhangsan almost open-PFV that CLF door
'Zhangsan almost opened the door.'

The data could be explained by assuming that both V-V resultatives and lexical causatives have a complex syntactic structure. However, Neeleman and Van de Koot (2020) argue convincingly that lexical causatives do not have a complex syntactic structure. They show that it is not possible to independently modify the resultant event of a lexical causative using manner, locational and temporal modifiers. I provide an example in Mandarin below.

(65) *Context: Zhangsan sees someone outside his front door. He quickly presses a button to open the door, and the door opens slowly.*

Zhāngsān* ***mànmànde* *kāi-le* *nà* *shān* *mén.*
Zhangsan slowly open-PFV that CLF door
Intended: 'Zhangsan caused the door to open slowly.'

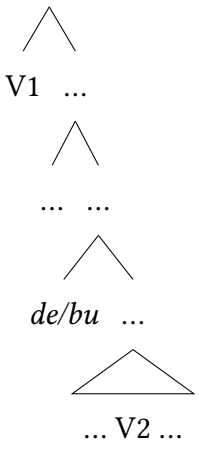
Furthermore, Neeleman and Van de Koot provide an account of how a presupposition targets the resultant state of a lexical causative without assuming that lexical causatives have a complex syntactic structure. Given the above, it is unclear that presuppositional adverbs provide decisive evidence that V-V resultatives have a syntactically complex structure.

The third counterargument is that the components of a V-V resultative can be separated by *de/bu*. This fact has been cited as evidence that V-V resultatives are syntactically complex (C.-A. A. Wang 2010). Implicit in this counterargument is that the operation of *de/bu* insertion is a syntactic one. If so, one would predict that the components of a V-*de/bu*-V construction would be accessible to syntactic operations. But this prediction is not borne out. The same arguments

used to show that V-V resultatives are inaccessible to syntactic operations can be used to show that V-*de/bu*-V constructions are inaccessible to syntactic operations.

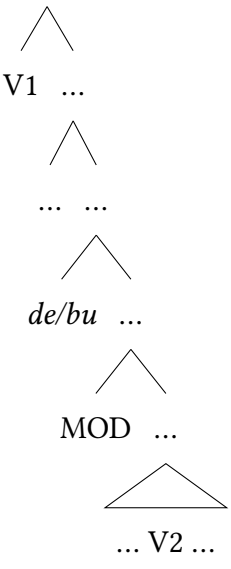
If V-*de/bu*-V constructions were derived from a syntactically complex source structure like (66), it should be possible to independently modify V2.

(66)

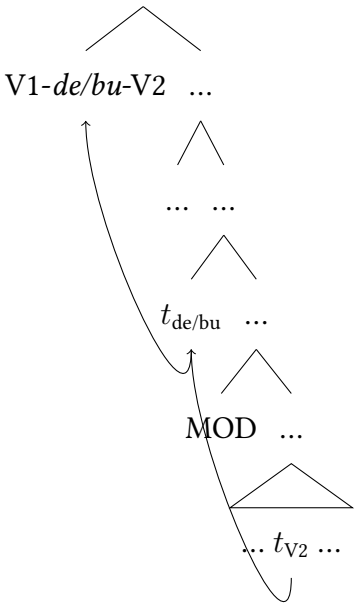


Given (66), we would expect that a modifier of V2 could surface between V1 and V2, as in (67), or after V2, as in (68).

(67)



(68)



But none of these word orders are attested. V2 cannot be modified by a degree

modifier like *fēicháng* 'extremely' (Williams 2005).

(69) *Zhāngsān xǐ-{de/bu}- (*fēicháng) -gānjìng (*fēicháng) zhè*
Zhangsan wash-DE/BU- extremely clean extremely this
*xiē yīfu (*fēicháng).*
CLF clothes extremely
'Zhangsan {can/cannot} wash these clothes (*extremely) clean.'
(adapted from (Williams 2005:256)

V2 cannot be independently modified by manner, location or temporal modifiers.

(70) *Zhāngsān dǎ-de/bu- {*xùnsùde/ *míngtiān/ *zài yīyuàn-lǐ}*
Zhangsan hit-DE/BU- quickly tomorrow at hospital-in
-sǐ Lǐsì.
dead Lisi
'Zhangsan can(not) hit Lisi dead {*quickly/ *tomorrow/ *in the hospital}.'

(71) *Zhāngsān dǎ-de/bu-sǐ {*xùnsùde/ *míngtiān/ *zài*
Zhangsan hit-DE/BU-dead quickly tomorrow at
yīyuàn-lǐ} Lǐsì.
hospital-in Lisi
'Zhangsan can(not) hit Lisi dead {*quickly/ *tomorrow/ *in the hospital}.'

(72) *Zhāngsān dǎ-de/bu-sǐ Lǐsì {*xùnsùde/ *míngtiān/ *zài*
Zhangsan hit-DE/BU-dead Lisi quickly tomorrow at
yīyuàn-lǐ}.
hospital-in
'Zhangsan can(not) hit Lisi dead {*quickly/ *tomorrow/ *in the hospital}.'

None of these sentences are improved by preposing the object using a *bǎ*-construction, not least because the V-*de/bu*-V construction is not compatible with *bǎ* to begin with. I illustrate this with the degree modifier *fēicháng* 'extremely' below, but the same applies to manner, location or temporal modifiers as well.

(73) **Zhāngsān bǎ nà tiáo kùzi xǐ-de/bu- (fēicháng) -gānjìng*
Zhangsan BA that CLF pants wash-DE/BU- extremely clean
(fēicháng).
extremely
Intended: 'Zhangsan can(not) wash those pants (extremely) clean.'

The fourth and final counterargument is that the operation that forms A-not-A questions in Mandarin can apparently target V1 of a V-V resultative to the exclusion of V2.

(74) *Zhāngsān* ***xǐ-méi-xǐ****-gānjìng* *zhè* *xiē* *yīfu?*
Zhangsan wash-not-wash-clean this CLF clothes
'Did Zhangsan wash these clothes clean or did he not wash these clothes clean?'

But I claim that (74) is an A-not-A question formed from the entire compound, not just V1. When an A-not-A question is formed out of a disyllabic word like *xǐhuān* 'like', only the first syllable *xǐ-* is reduplicated (75). Likewise, in (74), only the first syllable of the V-V compound *xǐ-* is reduplicated, giving rise to the appearance that the A-not-A operation has been applied only to V1, when it has actually applied to the entire compound. So we cannot conclude that in (74), A-not-A question formation applies only to V1.

(75) *Tā* *xǐ-bù-xǐhuān* *zhè* *běn* *shū?*
he li-not-like this CLF book
'Does he like or not like this book?' (Hagstrom 2017)

Having addressed these counterarguments, we may conclude that the components of a V-*de* resultative are accessible to syntactic operations like modification, while those of a V-V resultative are not.

3 The semantics of V-V resultatives

Since V-V resultatives are built in morphology and not syntax, I am able to hypothesise that a V-V resultative need not inherit the argument structure of its components. This is precisely what we need to derive the range of attested argument realisation patterns in Mandarin V-V resultatives.

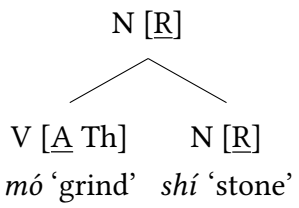
3.1 V-V resultatives are not root compounds

Morphological compounds can be divided into two categories: synthetic compounds and root compounds (Lieber 1983; Roeper and Siegel 1978; Selkirk 1982 *et seq.*). The components of a synthetic compound stand in a particular semantic relation to each other that can be captured in terms of a regular rule or

an affix, whereas the components of a root compound do not stand in any predictable semantic relation. In this subsection, I show that V-V resultatives cannot be analysed as root compounds.[2,3]

In root compounds, the compound inherits the arguments of its head but not of its nonhead. Consider the root compound *móshí* 'grindstone' which is composed of the verb *mó* 'grind' and the noun *shí* 'stone'. The compound inherits both its syntactic category and its external θ-role from the head of the compound *shí* 'stone'. It does not inherit the agent or theme θ-roles of the verb *mó* 'grind'.

(76)



Suppose we analyse a V-V resultative like *jī-chén* 'strike-sink' as a root compound. According to this analysis, the V-V resultative would inherit the arguments of V2 *chén* 'sink' but none of the arguments of V1 *jī* 'strike'.

(77) *Éjūn* *jī-chén-le* *yī* *sōu* *xúnyángjiàn.*
Russian.forces strike-sink-PFV one CLF cruiser
'A cruiser sank as a result of Russian troops striking [it].'

However, this analysis runs into two problems.

First, in many V-V resultatives, V2 is unaccusative, but the V-V resultative is transitive, so the V-V resultative ostensibly does not inherit the argument structure of V2. For example, the verb *dǎo* 'fall' is unaccusative as in (78) and cannot be used transitively as in (79). However, *dǎo* can appear as V2 in the transitive V-V resultative *tuī-dǎo* 'push-fall' in (80), which is unexpected if *tuī-dǎo* is a root compound.

(78) *Shù* *dǎo-le.*
tree fall-PFV
'The tree fell.'

[2]In the literature on English morphological compounds, synthetic compounds are often defined more narrowly as those in which the second component is deverbal. By this definition, Mandarin V-V resultatives would be classified as synthetic compounds, not root compounds.

[3]I focus on Mandarin V-V resultatives and set other V-V compounds in Mandarin to one side.

(79) **Zhāngsān dǎo-le shù.*
Zhangsan fall-PFV tree
Intended: 'Zhangsan caused the tree to fall.'

(80) *Zhāngsān tuī-dǎo-le shù.*
Zhangsan push-fall-PFV tree
'Zhangsan caused the tree to fall by pushing it.'

Second, while root compounds have no predictable semantics, the components of a V-V resultative can only denote events that stand in a causal relation to each other.

The components of a root compound do not stand in any particular semantic relation with respect to each other. In fact, root compounds often do not have any predictable semantics, but their meanings must be listed in the lexicon. Consider the following N-N compounds formed by with *dāo* 'knife'. The precise semantic relation between the first and second components is not identical across these four root compounds.

(81) *cài-dāo*
vegetable-knife
'a knife used to cut vegetables'

(82) *cān-dāo*
meal-knife
'a knife used for or during meals'

(83) *wǎ-dāo*
tile-knife
'a knife used to spread mortar on tiles, i.e., a trowel'

(84) *liǔyè-dāo*
willow.leaf-knife
'a knife in the shape of a willow leaf, i.e., a lancet'

In contrast, the semantics of a V-V resultative is predictable. The V-V resultative in (80), repeated below as (85), can only mean that Zhangsan caused the tree to fall by pushing it. The relation between the two events denoted by a V-V resultative cannot be just one of temporal precedence: (85) is infelicitous in a context where Zhangsan happened to push a particular tree before a strong gust of wind caused it to fall. A V-V resultative cannot denote a relation in which one event necessarily enables another: (85) is infelicitous if Zhangsan pushes a tree, weakening the structure of the tree to the point that a light gust of wind was able to cause it to fall.

(85) *Zhāngsān tuī-dǎo-le shù.*
Zhangsan push-fall-PFV tree
'Zhangsan caused the tree to fall by pushing it.'

Since V-V resultatives have predictable semantics, they cannot be root compounds, but must be analysed as synthetic compounds.

3.2 Synthetic compounds need not inherit the argument structure of their components

Since V-V resultatives are not root compounds, they must be synthetic compounds built by affixation. It is a property of many synthetic compounds that they do not inherit the event structure or argument structure of their components. This is because synthetic compounds contain affixes which are functors that can map one category onto another. These affixes can introduce their own event structure and argument structure. I will make this idea more concrete using two examples modelled after the English examples in Ackema and Neeleman (2004).

In synthetic compounds, affixes can not only suppress arguments of the nonheads that they select, but also introduce additional arguments. Consider the prefix *kě-* '-able' in the compounds below.

(86) *kě-ài*
KE-love
'lovable'

(87) *kě-kào*
KE-depend
'dependable'

(88) *kě-huíshōu*
KE-recycle
'recyclable'

(89) *kě-zhédié*
KE-fold
'foldable'

Consider the semantics of the compound *kě-zhédié* 'foldable'. When people say that Y is foldable, they mean that in some possible world w' consistent with their beliefs, knowledge or desires in the actual world w, there exists an event in which someone folds Y. (The function R denotes the relation between the actual world w and the possible world w'.)

(90) $[\![$*kě-zhédié* 'foldable'$]\!]=\lambda y\lambda s\lambda w\exists w'.[R(w,w') \wedge [\exists e\exists x.[\text{FOLD}(e) \wedge \text{Agent}(e)=x \wedge \text{Theme}(e)=y]$ in $w']]$

The compound *kě-zhédié* 'foldable' is derived from the root *zhédié* 'fold' which denotes an event of folding.

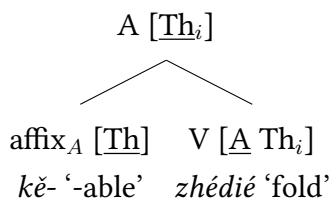
(91) $[\![$*zhédié* 'fold'$]\!]=\lambda y\lambda x\lambda e.[\text{FOLD}(e) \wedge \text{Agent}(e)=x \wedge \text{Theme}(e)=y]$

The semantic denotation of *kě-* '-able' can thus be given as in (92). The prefix *kě-* takes a verb as its input and returns an adjective as its output. It introduces a state variable s and embeds the eventuality e denoted by its sister within that state. It binds the external argument of P through existential closure but identifies the internal argument of P with its sole argument.

(92) $[\![$*ke-* '-able'$]\!]=\lambda P\lambda y\lambda s\lambda w\exists w'.[R(w,w') \wedge [\exists e\exists x.P(e,x,y) \text{ in } w']]$

In this way, the affix *kě-* introduces an external theme argument that is identified with the internal theme argument of the verb it selects. Stated differently, the external argument of the verb is suppressed, while its internal argument is promoted to the external argument of the compound.

(93)



Not only can affixes suppress arguments of the nonheads that they select, but they can also introduce additional arguments. Consider the suffix *-huà* '-ise, -ify, -en' in the compounds below.

(94)	*měi-huà*	(95)	*ruǎn-huà*	(96)	*làngmàn-huà*
	beautiful-HUA		soft-HUA		romantic-HUA
	'beautify'		'soften'		'romanticise'

Consider the semantics of the lexical causative *ruǎn-huà* 'soften'. It denotes an event of change that culminates in something being soft. This culmination is brought about by a causing event or an extended causal chain of events, which in turn can contain many participants or causal factors. The external argument of a lexical causative identifies the essential factor in this event of change, which I will call the crucial contributory factor (CCF), following Neeleman and Van de Koot (2012). I also follow Neeleman and Van de Koot in assuming that the causing event is not encoded in the semantics of a lexical causative. The semantic denotation of *ruǎn-huà* 'soften' is given in (97).

(97) $[\![$*ruǎn-huà* 'soften'$]\!]=\lambda y\lambda c\lambda e\exists s.[\text{CCF}(e)=c \wedge \text{BECOME}(e,s) \wedge \text{SOFT}(s) \wedge \text{Theme}(s)=y]$

The compound *ruǎn-huà* 'soften' is derived from the root adjective *ruǎn* 'soft' which denotes a state of being soft.

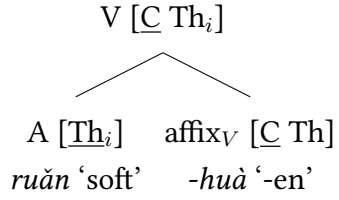
(98) $[\![$*ruǎn* 'soft'$]\!]=\lambda y\lambda s.[\text{SOFT}(s) \wedge \text{Theme}(s)=y]$

The semantics of *-huà* '-ise, -ify, -en' can thus be given as in (99). The prefix *-huà* takes an adjective as its input and returns a verb as its output. It introduces a macroevent e and embeds the state s denoted by its sister within the macroevent. It introduces a CCF argument as its external argument but identifies the sole argument of P with its own internal argument.

(99) $[\![$*-huà* '-ise, -ify, -en'$]\!]=\lambda R\lambda y\lambda c\lambda e\exists s.[\text{CCF}(e) = c\wedge \text{BECOME}(e,s) \wedge R(s,y)]$

In this way, the affix *-huà* introduces a theme argument that is identified with the theme of the adjective it selects, but also introduces a "causer" argument. Note that the external theme argument of its sister *ruǎn* 'soft' is demoted to the internal argument of the compound.

(100)



From these two examples, we see that affixes can change the syntactic category of their sisters and introduce additional event structure. Affixes can suppress, promote or demote the arguments of their sisters or introduce additional arguments.

3.3 V-V resultatives contain a null affix

If Mandarin V-V resultatives are synthetic compounds, as proposed here, it is not surprising that some of the arguments of the components of these resultatives are suppressed and new ones are added. In this subsection, I develop a proposal for the semantics of the null affix ∅ in Mandarin V-V resultatives.

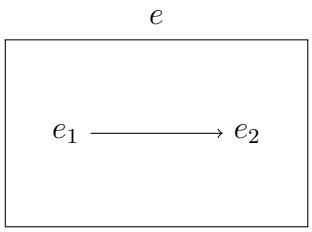
The semantic contribution of the null affix ∅ that I propose contains three components: (i) it introduces a causal relation between the causing event and the caused event, (ii) it integrates the arguments of V1 and V2, and (iii) it optionally introduces a causer argument.

First, the null affix ∅ introduces a relation between a causing event e_1 and a caused event e_2, as is commonly assumed in the literature on the semantics of resultatives (Dowty 1979; Pustejovsky 1991; Carrier and Randall 1992; Rappaport Hovav and Levin 1998; *inter alia*). I represent this relation as an abstract predicate CAUSE that relates three events: a macroevent e and the two subevents it contains, e_1 and e_2 (Williams 2005).

(101) $[\![\varnothing]\!] = \ldots \lambda e \ldots \exists e_2 \exists e_1 . [\text{CAUSE}(e, e_1, e_2) \ldots]$

The relation between e, e_1 and e_2 is illustrated in (102).

(102)



A precise characterisation of the relation between e_1 and e_2 remains an open question (see Levin 2019 for discussion). For our current purposes, it suffices to assume that this relation is one of causation in the sense of Lewis (1973), according to which e_1 causes e_2 if e_1 and e_2 satisfy two conditions:

1. e_1 must not follow e_2.
2. If e_1 had not occurred, e_2 would not have occurred either.

The semantic content of e_1 and e_2 are supplied by the semantic predicates denoted by V1 and V2 respectively.

(103) $[\![\varnothing]\!] = \lambda \mathbf{R_2} \lambda \mathbf{R_1} \ldots \lambda e \ldots \exists e_2 \exists e_1 . [\text{CAUSE}(e, e_1, e_2) \ldots \wedge \mathbf{R_2}(\mathbf{e_2}, \ldots) \wedge \mathbf{R_1}(\mathbf{e_1}, \ldots)]$

Let us compare this proposal to two other alternative analytical options. My proposal assumes that V-V resultatives are essentially trieventive, i.e., e_1 and e_2

are subevents of a larger event e (cf. Ramchand 2008). Alternatively, we could assume that V-V resultatives are monoeventive as in (104), in which case the events denoted by V1 and V2 would be a single identical event e (cf. Kratzer 2005). Or we could assume that V-V resultatives are bieventive, in which case either e_2 is subordinate to e_1 as in (105), or e_1 is subordinate to e_2 as in (106).

(104) $[\![\varnothing_{1e}]\!]=\lambda R_2 \lambda R_1 \ldots \lambda e \ldots .[\ldots R_2(e, \ldots) \wedge R_1(e, \ldots)]$

(105) $[\![\varnothing_{2e}]\!]=\lambda R_2 \lambda R_1 \ldots \lambda e_1 \ldots \exists e_2.[\text{CAUSE}(e_1,e_2) \cdots \wedge R_2(e_2, \ldots) \wedge R_1(e_1, \ldots)]$

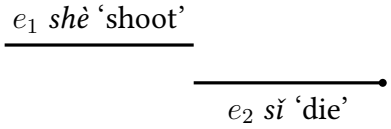
(106) $[\![\varnothing_{2e}]\!]=\lambda R_2 \lambda R_1 \ldots \lambda e_2 \ldots \exists e_1.[\text{CAUSE}(e_1,e_2) \cdots \wedge R_2(e_2, \ldots) \wedge R_1(e_1, \ldots)]$

The monoeventive and bieventive accounts are empirically inadequate for Mandarin V-V resultatives. Consider a scenario in which Zhangsan shoots Lisi. Lisi is fatally wounded but does not die immediately. This scenario is compatible with the V-V resultative *shè-sǐ* 'shoot-die' in (107).

(107) *Zhāngsān* *shè-sǐ-le* *Lǐsì.*
Zhangsan shoot-die-PFV Lisi
'Zhangsan shot Lisi dead.'

In this scenario, the temporal traces of the events denoted by V1 *shè* 'shoot' and V2 *sǐ* 'die' overlap only at a single point when the bullet makes contact with Lisi, as illustrated in (108).

(108)



The monoeventive account cannot account for (107) because e_1 and e_2 are not spatiotemporally coextensive and thus cannot be a single event. The bieventive accounts cannot account for (107) because e_2 is not temporally contained within e_1 or vice versa. Only the trieventive account can account for (107).

Second, the null affix $\varnothing$ integrates the arguments introduced by V1 and V2. The null affix can compose with V2 of different arities. I assume a family of null affixes that can compose with V2s of different arities. Regardless of the arity of V2, I stipulate that the null affix inherits all the arguments of V2.

(109) $[\![\varnothing]\!]=\lambda R_2 \ldots \lambda \mathbf{y_n} \ldots \lambda \mathbf{y_1} \lambda e \ldots \exists e_2 \exists e_1.[\text{CAUSE}(e,e_1,e_2) \cdots \wedge$
$R_2(e_2,\mathbf{y_1},\ldots,\mathbf{y_n}) \ldots]$

Similarly, the null affix can compose with V1 of different arities. I assume a family of null affixes that can compose with different V1s. (Alternatively, one could assume a family of composition rules as in Williams 2005:36.) Regardless of the arity of V1, I stipulate that the null affix existentially closes all the arguments of V1.

(110) $[\![\varnothing]\!]=\lambda R_2 \lambda R_1 \lambda y_n \ldots \lambda y_1 \lambda e \exists \mathbf{x_m} \ldots \exists \mathbf{x_1} \exists e_2 \exists e_1.[\text{CAUSE}(e,e_1,e_2) \wedge$
$\wedge R_2(e_2,y_1,\ldots,y_n) \wedge R_1(e_1,\mathbf{x_1},\ldots,\mathbf{x_m})]$

Finally, the null affix may introduce a causer argument. This causer argument is sometimes assumed to be introduced by a Voice head that is distinct from the head that introduces the causal relation between e_1 and e_2 (Kratzer 2005; Williams 2005; Liu 2019), but for simplicity, I will assume that both the causer and the causal relation are introduced by the same $\varnothing$ head. I indicate the presence of a causer argument with the subscript +C on the null affix.

(111) $[\![\varnothing_{+\text{C}}]\!]=\lambda R_2 \lambda R_1 \lambda y_n \ldots \lambda y_1 \lambda \mathbf{c} \lambda e \exists x_m \ldots \exists x_1 \exists e_2 \exists e_1.[\text{CAUSE}(e,e_1,e_2) \wedge$
$\mathbf{CCF(e)}=\mathbf{c} \wedge R_2(e_2,y_1,\ldots,y_n) \wedge R_1(e_1,x_1,\ldots,x_m)]$

Note that in (111), the causer argument c is not an argument of the causing event e_1 denoted by V1.

My proposal assumes that the thematic relation of causer is a semantic primitive (cf. Reinhart 2002). As such, my proposal departs from some lexical decompositional approaches in the literature (notably Wunderlich 1997a,1997b), according to which the most prominent (or least deeply embedded) argument in the event structure of the resultative must be realised as the most prominent syntactic argument (corresponding to c in (111)). For example, Rappaport Hovav and Levin (1998) propose that resultatives have the event structure in (112). The most prominent argument in this event structure is the agent of the manner component (V1) of the resultative, x, and it is this argument that is realised as the most prominent syntactic argument of the resultative.

(112) [[x $\text{ACT}_{\text{<MANNER>}}$] CAUSE [BECOME [y <STATE>]]]
(Rappaport Hovav and Levin 1998:108)

In contrast, according to the semantics that I propose for ∅, the most prominent syntactic argument of a V-V resultative need not be interpreted as the agent of V1. Since all the semantic arguments of V1 are existentially closed, there is no absolute requirement for the arguments of ∅ to be interpreted as arguments of V1.

To summarise, I propose that V-V resultatives contain a null affix that introduces a causal relation between a causing event and a caused event and optionally introduces a causer argument. Crucially, the null affix inherits all arguments of V2 but none of the arguments of V1. Consequently, there is no syntactic requirement that the arguments of the null affix – and by extension, the arguments of the V-V resultative – be interpreted as arguments of V1.

4 Concluding remarks

In this chapter, I have shown that V-V resultatives are morphological objects that are inaccessible to syntactic operations. The proposal that V-V resultatives are morphological compounds provides a natural explanation as to why V-V resultatives do not inherit the argument structure of V1. I have presented a proposal of how the argument structure of a V-V resultative is derived from the argument structure of its components. In the next two chapters, I show that the assumption that V1 never projects any of its arguments is sufficient to derive all the attested argument realisation patterns in Mandarin V-V resultatives.

Chapter 3

Deriving change-of-state V-V resultatives

1 Introduction

In the previous chapter, I accounted for the argument structure of Mandarin V-V resultatives by analysing them as built in morphology and not syntax. On this analysis, V-V resultatives are morphological compounds which contain a null affix that inherits all the arguments of V2 but none of the arguments of V1. The proposed analysis successfully derives the range of argument realisation patterns attested in Mandarin V-V resultatives.

In this chapter, I focus on V-V resultatives that describe a change of state. In these resultatives, V2 has one internal argument. I discuss transitive resultatives like (113) in Section 2 before turning to their unaccusative counterparts like (114) in Section 3.

(113) *Bǎobao kū-xǐng-le māma.*
baby cry-awake-PFV mother
'The baby cried until/ and as a result Mother woke up.'

(114) *Māma kū-xǐng-le.*
mother cry-awake-PFV
'Mother cried herself awake.'

I will show that in sentences like (113) and (114), there is no absolute requirement for the arguments of a V-V resultative to be interpreted as arguments of V1.

The proposal defended in this thesis makes several predictions that run counter to those made by competing proposals that assume that V1 is the head of a Mandarin V-V resultative (Y. Li 1990; Cheng and Huang 1994). In what follows, I will show that the data are inconsistent with the notion that V1 is the head of the resultative.

2 Deriving transitive V-V resultatives with intransitive V2

In this section, I derive the class of transitive V-V resultatives with intransitive V2. I focus here on resultatives in which the result state holds of the object of the resultative; I discuss apparently transitive resultatives in which the result state appears to hold of the subject of the resultative in Chapter 4.

I begin by characterising the intransitive verbs that can appear as V2 in this class of resultatives. V2 is typically an inchoative verb that denotes a change-of-state event. In (115), V2 *dǎo* 'fall' does not have an adjectival counterpart.

(115) *Zhāngsān kǎn-dǎo-le shù.*
Zhangsan chop-fall-PFV tree
'Zhangsan chopped the tree down.' (J. Lin 2004:104)

Crucially, as is the case for the majority of V2 in V-V resultatives, V2 *dǎo* 'fall' does not have a transitive counterpart, as (116) illustrates. (Refer to the discussion of (148) for further evidence that an inchoative V2 lacks an external argument.)

(116) **Zhāngsān dǎo-le shù.*
Zhangsan fall-PFV tree
Intended: 'Zhangsan caused the tree to fall.'

For many resultatives in this class, V2 is systematically ambiguous between an inchoative verb with a change-of-state interpretation and an adjective with a stative interpretation (Tham 2010, 2013), as exemplified by (117). The predicate *dùn* 'dull' can mean 'to become dull' as in (118) or 'to be dull' in (119). I follow Tham (2012) in assuming that whenever V2 is ambiguous between two variants, it is the inchoative variant of V2 that appears in V-V resultatives.

(117) *Wǒ qiē-dùn-le càidāo.*
I cut-dull-PFV knife
'The knife became dull from me cutting [something].'

(118) *Càidāo huì dùn.*
knife will dull
'The knife will become dull.'

(119) *Càidāo hěn dùn.*
knife very dull
'The knife is dull.'

Exceptionally, V2 can sometimes be an unergative verb like *kū* 'cry' or *tù* 'vomit'. However, a good case can be made that these verbs should be analysed as having been coerced into an inchoative interpretation. For example, in (120), V2 *kū* has the meaning 'to tear up' or 'to break down in tears'.

(120) *Zhāngsān chàng-kū-le guānzhòng.*
Zhangsan sing-cry-PFV audience
'The audience cried as a result of Zhangsan singing.'

Again, V2 *kū* does not have a causative counterpart.

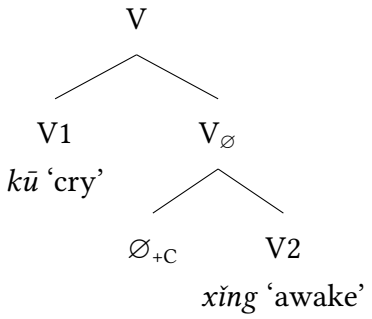
(121) **Zhāngsān kū-le guānzhòng.*
Zhangsan cry-PFV audience
Intended: 'Zhangsan made the audience cry.'

Having characterised the verbs that can appear as V2 in this class of resultatives, I present a semantic derivation for this class of resultatives using *kū-xǐng* 'cry-awake' as an example.

(122) *Bǎobao kū-xǐng-le māma.*
baby cry-awake-PFV mother
'The baby cried and as a result Mother woke up.'

In line with the proposal defended here, the derivation proceeds in two steps: the $\varnothing_{+C}$ head merges with V2 to form another verbal node, which I will refer to as $V_{\varnothing}$, which then merges with V1.

(123)



In the first step, the $\varnothing_{+C}$ head first merges with V2 *xǐng* ‘awake’. The $\varnothing_{+C}$ head has the semantic denotation given in (124). I present the form of $\varnothing_{+C}$ that takes an unergative V1 and an intransitive V2.

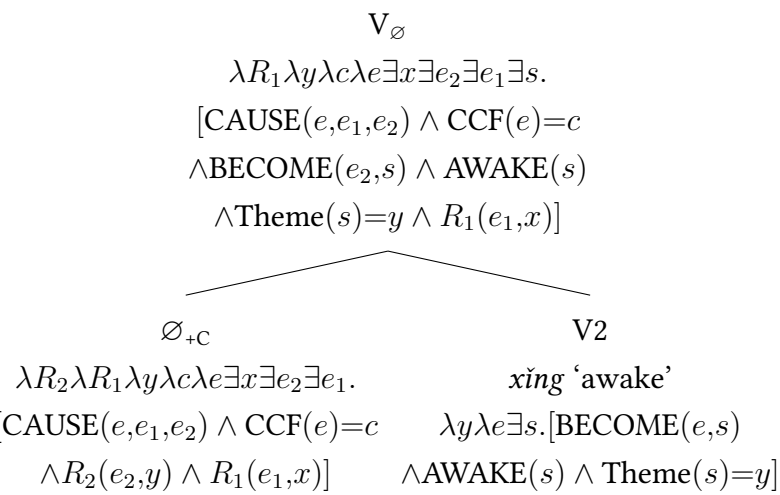
(124) $[\![\varnothing_{+C}]\!]=\lambda R_2\lambda R_1\lambda y\lambda c\lambda e\exists x\exists e_2\exists e_1.[\text{CAUSE}(e,e_1,e_2) \wedge \text{CCF}(e)=c \wedge R_2(e_2,y) \wedge R_1(e_1,x)]$

I assume that V2 has the semantics in (125). Here I follow Tham (2010, 2013) in assuming that intransitive V2 does not contain an external argument (a CCF in our terms).

(125) $[\![\textit{xǐng}\text{ ‘awake’}]\!]=\lambda y\lambda e\exists s.[\text{BECOME}(e,s) \wedge \text{AWAKE}(s) \wedge \text{Theme}(s)=y]$

The semantics of the $V_{\varnothing}$ is compositionally derived from the semantics of the $\varnothing_{+C}$ head and V2 by Function Application.

(126)

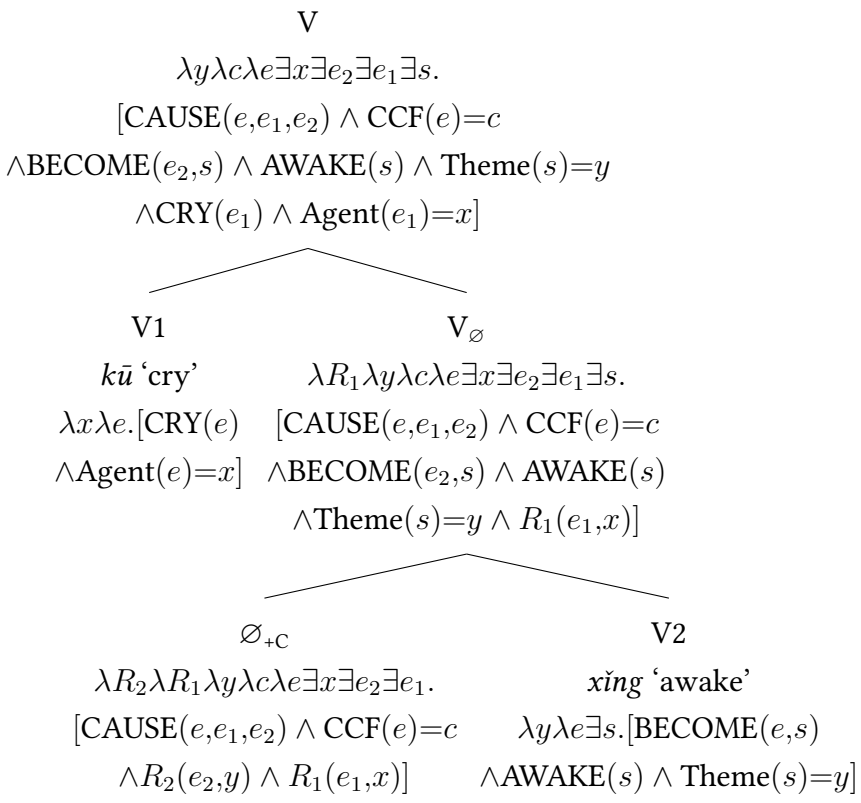


In the second step, shown in (128), $V_{\varnothing}$ merges with V1. I assume that V1 has the semantics given in (127).

(127) $[\![\textit{kū}\text{ ‘cry’}]\!]=\lambda x\lambda e.[\text{CRY}(e) \wedge \text{Agent}(e)=x]$

The semantics of the top V node is derived compositionally from the semantics of V1 and $V_{\varnothing}$ by Function Application.[1]

(128)

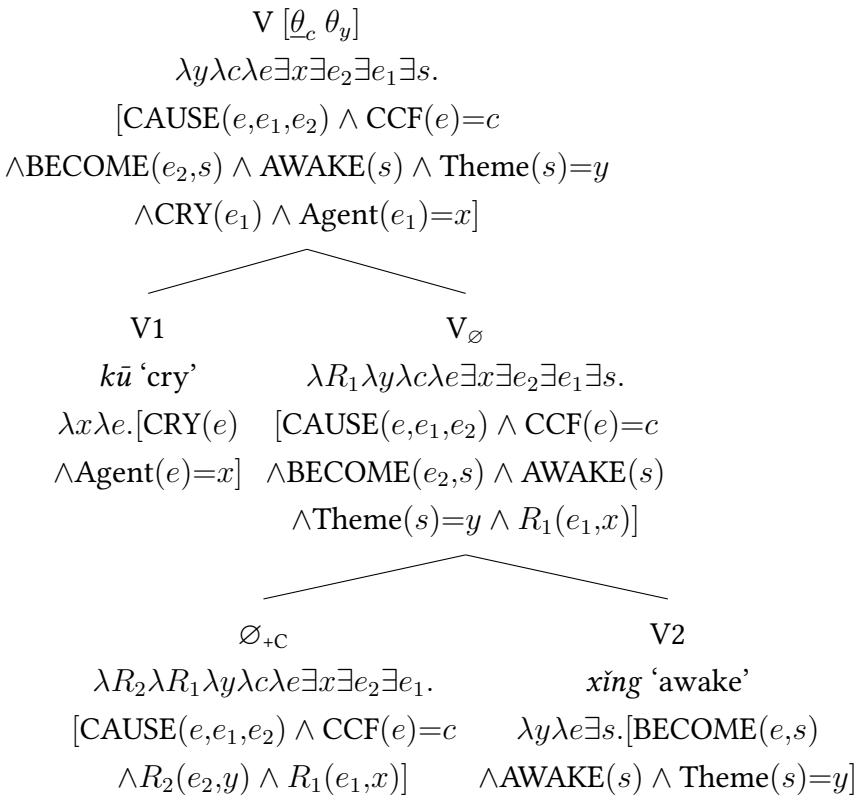


I assume an architecture of the syntax-semantics interface following Reinhart (2002). According to Reinhart, the available argument positions of a predicate are represented in a θ-grid, which is an ordered set of θ-roles. θ-roles are syntactic features that are manipulated by the (phrasal) syntactic computational system. As syntactic features, θ-roles do not have any semantic content, i.e., they do not bear semantic labels like "agent" or "theme". Rather, semantic arguments are mapped to θ-roles according to certain mapping rules, in order that the outputs of the syntactic computational system may be legible to the inference systems (i.e., the output of the syntax can receive the correct semantic interpretations).

[1] According to some accounts, in the absence of an overt V1, the causative semantics can be supplied by a light verb *nòng* 'do' or *gǎo* 'do' (e.g. Gu 1992; Lin 2001), e.g. *nòng-xǐng* 'do-awake'. I analyse *nòng* and *gǎo* as V1s with bleached semantics.

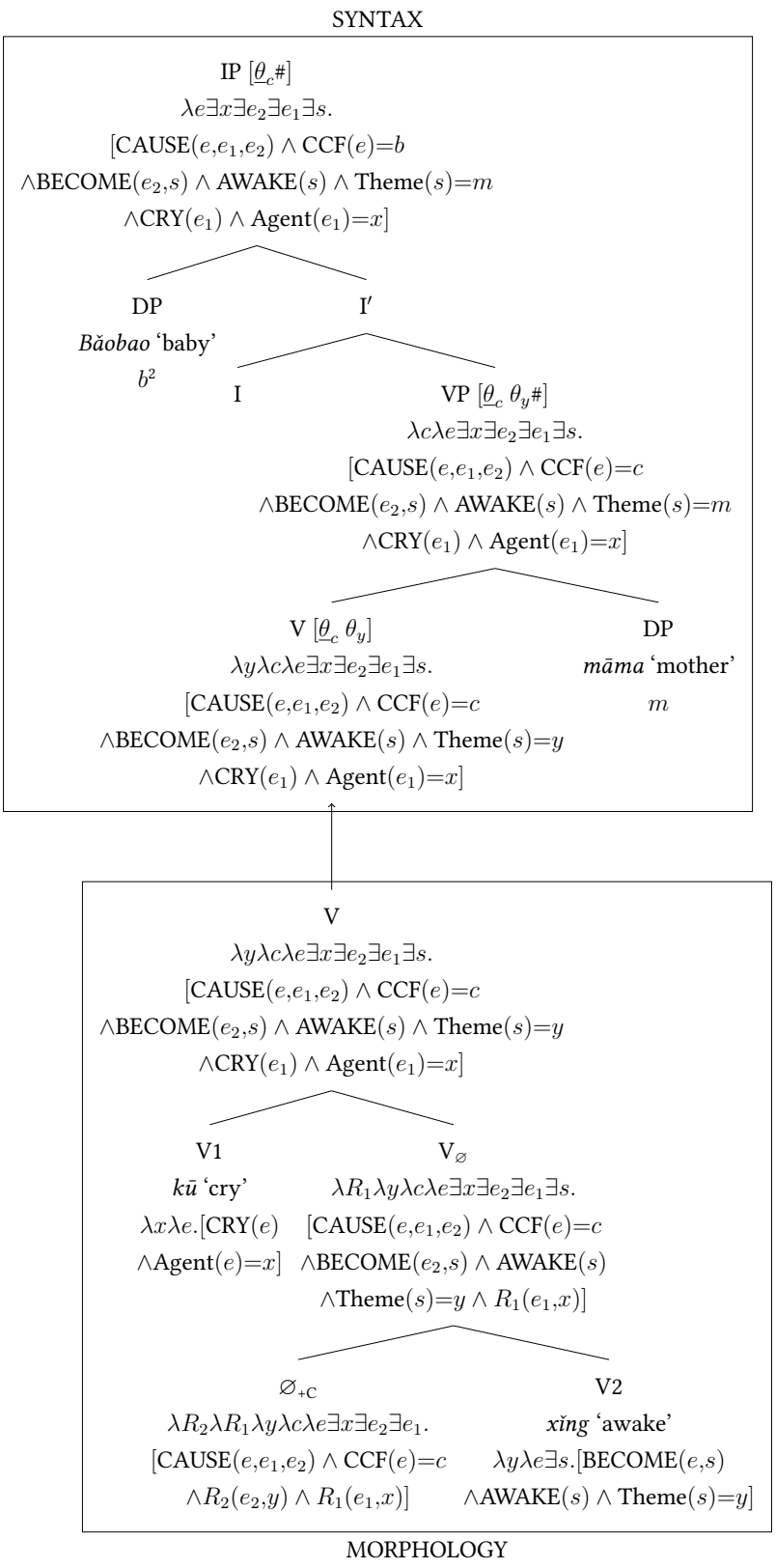
The λ-bound event participant arguments of the top V node are thus mapped onto θ-roles of the compound. Mapping only takes place at the top V node because only this node is visible to (phrasal) syntax.

(129)



For completeness, I present a full syntactic and semantic derivation of a sentence containing the V-V resultative *kū-xǐng* 'cry-awake'. A node has its θ-role satisfied (indicated by #) iff it directly dominates an appropriate argument DP; the satisfied θ-role is no longer copied up the tree.

(130)



[2]For simplicity, I assume that all argument DPs denote semantic constants.

Since the arguments of V1 are not mapped onto the θ-grid of the V-V resultative, there is no syntactic requirement that any argument of the V-V resultative be interpreted as a participant of the event denoted by V1. My proposal thus makes two predictions:

1. The first prediction is that since the arguments of V1 are not mapped onto the θ-grid of a V-V resultative, syntax does not constrain how the external argument of the resultative is interpreted with respect to V1. Nevertheless, the external argument of a transitive V-V resultative cannot denote a "pure causer", i.e., an individual who is not a participant in the event denoted by V1. I show that this prohibition on pure causers follows from an independently motivated restriction that applies to causative predicates cross-linguistically.

2. The second prediction is that there is no requirement for the internal argument of a V-V resultative to be thematically related to V1.

I will show that each of these two predictions is borne out.

2.1 No syntactic constraints on how the external argument of a V-V resultative is interpreted with respect to V1

The first prediction that my proposal makes is that syntax does not constrain how the external argument of a V-V resultative is interpreted with respect to V1. This is because the argument variables of V1 are not mapped onto θ-roles. It follows that the external argument of a V-V resultative can in principle be interpreted as any argument of V1.

The external argument of a transitive V-V resultative with intransitive V2 can be interpreted as the agent of V1. V1 can be unergative like *kū* 'cry' in (131) or transitive like *qiē* 'cut' in (132).

(131) *Bǎobao kū-xǐng-le māma.*
baby cry-awake-PFV mother
'The baby cried until/ and as a result Mother woke up.'

(132) *Wǒ qiē-suì-le yángcōng.*
I cut-in.pieces-PFV onion
'I cut the onion in pieces.'

The external argument of a transitive V-V resultative with intransitive V2 can be interpreted as the theme of V1. V1 can be unaccusative like *xià* 'fall' in (133) or transitive like *xǐ* 'wash' in (134).

(133) *Mìyǔ* *xià-hēi-le* *tiāndì.*
dense.rain fall-black-PFV earth
'The dense rain made the earth dark by falling.'
(L. Li 1980; cited in Williams 2005:67)

(134) *Yīfú* *xǐ-lèi-le* *jiějiě.*
clothes wash-tired-PFV elder.sister
'These clothes made big sister tired by [her] washing [them].'
(Ren 2001; cited in Williams 2005:66)

Thus, the prediction that there are no syntactic constraints on how the external argument of a V-V resultative is interpreted with respect to V1 is borne out.

2.2 No pure causers

Although there are no syntactic constraints on how the external argument of a V-V resultative is interpreted with respect to V1, the external argument of a transitive V-V resultative cannot denote a "pure causer", i.e., an individual who is not a participant in the event denoted by V1.

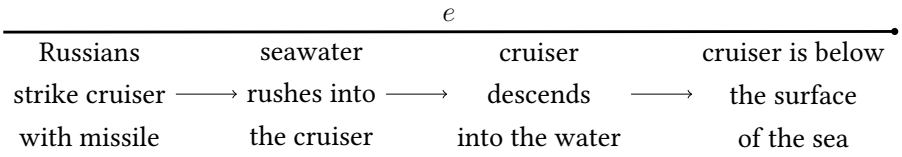
To understand what is meant by the term "pure causer", let us begin by considering the lexical causative *chén* 'sink' in (135).

(135) *Éjūn* ***chén**-le* *yī* *sōu* *xúnyángjiàn.*
Russian.troops sink-PFV one CLF cruiser
'Russian troops sank a cruiser.'[3]

I claim that *chén* 'sink' denotes a change-of-state macroevent, i.e., a possibly extended causal chain of events that culminates in a state. (136) shows a causal chain of events compatible with (135). The cruiser only undergoes a change of state from not sunk to sunk when it descends below the surface of the sea. However, the event denoted by *chén* 'sink' in (135) encompasses the entire causal chain of events.

[3]https://www.163.com/dy/article/H5347KCG0543OQIJ.html

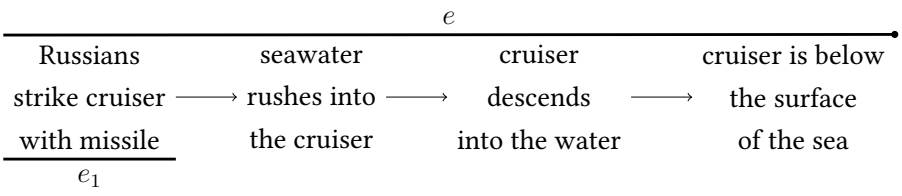
(136)



Now consider the V-V resultative *jī-chén* 'strike-sink' in (137). The null affix in the V-V resultative identifies one subevent within the macroevent as the striking event denoted by V1 *jī* 'strike'. In this case, the external argument *Éjūn* 'Russian forces' denotes a participant in the event denoted by V1.

(137) *Éjūn* ***jī**-chén-le* *yī* *sōu* *xúnyángjiàn.*
Russian.forces strike-sink-PFV one CLF cruiser
'A cruiser sank as a result of Russian troops striking [it].'

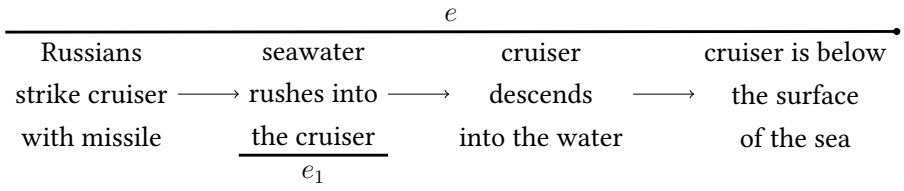
(138)



In theory, the null affix could identify a different subevent as the event denoted by V1, as in (139), in which case the external argument *Éjūn* 'Russian forces' would denote a pure causer, i.e., it would not denote a participant in the event denoted by V1. (139) may seem odd or unintuitive to some readers, but remember that in general, an event of change can be brought about by any number of causal factors, and nothing so far prevents the CCF and V1 from identifying two different causal factors. Furthermore, recall that the semantics of the null affix identifies the CCF as an argument of the macroevent e, not the event e_1 denoted by V1.

(139) **Éjūn* ***chōng**-chén-le* *yī* *sōu* *xúnyángjiàn.*
Russian.forces rush-sink-PFV one CLF cruiser
'A cruiser sank as a result of Russian troops causing [water] to enter [it].'

(140)



However, as long as we assume that the combination of the null head and V2 in a V-V compound is equivalent to a simplex causative, then (139) is ruled out by an independent cross-linguistic restriction on simplex causative predicates proposed by Kim (forthcoming) and given in (141).

(141) Onset Condition (Kim forthcoming)

If an event e_1 is semantically integrated into the event e_2 denoted by a simplex causative predicate, e_1 must be mapped to the initial event of the causal chain (or macroevent e_2) denoted by that predicate.

Kim motivates the Onset Condition using data from English. In English, when a causal adjunct like a *by*-PP or a *with*-PP modifies a predicate as in (142), it introduces an event e_1 that is semantically integrated with the event denoted by the main predicate e_2.[4]

(142) John died {**by** jumping off the cliff/ **with** a blow to the head}.

Kim shows that e_1 is semantically integrated into e_2 because it is not possible to independently modify e_1 with a temporal modifier.

(143) *Context: On Monday, John {jumped off a cliff/ received a blow to the head}. He was rushed to hospital, but on Friday he died.*

#John died on Friday {**by** jumping off the cliff/ **with** a blow to the head}.

In contrast, the event introduced by the *from*-PP in (144) is not semantically integrated with the event denoted by the main predicate.

(144) *Context: same as (143).*

John died on Friday {**from** jumping off the cliff/ **from** a blow to the head}.

[4]The Onset Condition does not apply to sentences like (i) because the *with*-PP is not a causal adjunct.

(i) John died **with** a smile on his face.

When a causative predicate is modified by a *by*-PP or a *with*-PP, the event e_1 introduced by the PP is semantically integrated into the event denoted by the predicate it modifies, and so the Onset Condition requires that e_1 be mapped onto the initial event of the causal chain denoted by the causative predicate. One piece of evidence that Kim provides for the Onset Condition is given in (145).

(145) John$_i$ killed Mary by (PRO$_i$/ *Bill) poisoning her.

The subject of the sentence *John* identifies the crucial contributory factor that is essential in bringing about the resultant state of Mary's death. John therefore must be a participant in the initial event of the causal chain that leads to Mary's death. The Onset Condition requires that the event denoted by the *by*-PP must be this initial event as well, hence the subject of the *by*-PP must also be a participant in the initial event. It follows then that the subject of the *by*-PP must be controlled by the subject of the sentence. The Onset Condition prohibits the subject of the *by*-PP from referring to another entity that is not a participant in the initial event. For example, (145) cannot describe a situation in which John killed Mary by serving her a cup of tea that Bill poisoned.

Unlike English, Mandarin has very few lexical causatives. Instead, where English and similar languages use a lexical causative, Mandarin uses a V-V resultative. I will assume that the event e_1 denoted by V1 is integrated into the macroevent e denoted by the null affix $\varnothing$ in a Mandarin V-V resultative in the same way that the event denoted by a *by*- or *with*-PP is integrated into the macroevent denoted by a lexical causative in English. Therefore I assume that the Onset Condition is also operative in Mandarin. Hence, the event e_1 must be identified with the first event in the macroevent e denoted by $\varnothing$.

It follows then that the external argument of a transitive V-V resultative cannot denote a pure causer. This prediction is borne out. For example, when V1 is unergative or transitive, the external argument of a transitive V-V resultative cannot denote an animate causer other than the agent of V1.

(146) **Jiàoliàn* *zǒu-lèi-le* *John.*
coach walk-tired-PFV John
Intended: 'The coach caused John to walk and as a result John got tired.' (Liu 2019:149)

(147) **Lǎobǎn shuō-gān-le xiàshǔ de zuǐchún.*
boss speak-dry-PFV subordinate DE lip
Intended: 'The boss caused his subordinate's lips to become dry as a result of his subordinate's talking.'

Strikingly, the external argument of a transitive V-V resultative cannot denote an animate causer even when V1 lacks a CCF argument like *liè* 'crack', as illustrated in (148). Since V1 *liè* 'crack' in Mandarin is inchoative and does not have a causative alternant, V1 does not contain a CCF argument, and so the external argument cannot be interpreted as the CCF argument of V1. The external argument could in principle be interpreted as the theme of V1, in which case (148) would have the interpretation 'Zhangsan opened the egg as a result of Zhangsan undergoing a cracking event', but such an interpretation is incoherent.

(148) **Zhāngsān liè-kāi-le jīdàn.*
Zhangsan crack-open-PFV egg
Intended: 'Zhangsan cracked the egg open.'

The external argument of a transitive resultative cannot be an inanimate causer that is not an argument of V1.

(149) **Qiēcàibǎn qiē-dùn-le wǒ de càidāo.*
cutting.board cut-dull-PFV 1SG DE knife
Intended: 'That cutting board caused my knife to become dull as a result of cutting.'

Despite the facts presented above, the dominant view in the literature is that the external argument of a transitive resultative can be a pure causer which is thematically unrelated to V1 (Sybesma 1999; J. Lin 2004; Huang 2006).

There are two subclasses of transitive resultatives for which it is often claimed that the external argument is a pure causer. However, I will show that in each of these classes of resultatives, the referent of the external argument is interpreted as a participant of the event denoted by V1.

2.2.1 Transitive V-V resultatives with V1 *kū* 'cry' or *xiào* 'laugh'

The first is the subclass of transitive resultatives with V1 *kū* 'cry' or *xiào* 'laugh'. In (150) and (151), the external argument appears to be a pure causer because

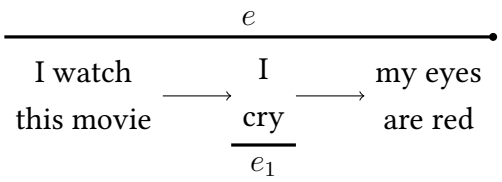
it is clearly not the agent of V1 and it cannot be the theme of V1 because V1 is unergative.

(150) *Zhè bù diànyǐng kū-hóng-le wǒ de yǎnjīng.*
this CLF movie cry-red-PFV 1SG DE eye
'My eyes became red as a result of crying about this movie.'

(151) *Nèi ge xiàohuà xiào-téng-le Zhāngsān de dùzi.*
that CLF joke laugh-hurt-PFV Zhangsan DE belly
'That joke caused Zhangsan to laugh and as a result his belly hurts.'
(Gu 1992:141)
Or: 'Zhangsan's belly hurt as a result of laughing about this joke.'

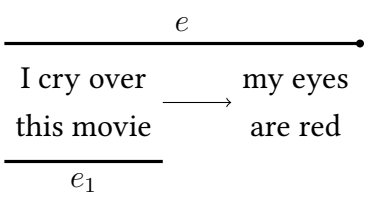
According to the view that the external argument of a transitive V-V resultatives can be a pure causer, (150) can describe a causal chain of events in (152), in violation of the Onset Condition.

(152)



However, there is strong evidence that the external argument in this class of resultatives must be interpreted as the subject matter of the event denoted by V1 and cannot denote an entity that is not a participant in the event denoted by V1. According to this view, (150) describes the causal chain of events in (153) which obeys the Onset Condition.

(153)



A subject matter is a kind of non-agentive cause; not all non-agentive causes are interpretable as subject matters. This distinction can be clearly seen in the English verbs *cry* and *laugh*. For these English verbs, the prepositions *over* and *about* can introduce subject matters but not other non-agentive causes.

(154) I cried over {this movie/ *these onions/ *the tear gas}.

(155) I laughed about {this joke/ *the laughing gas}.

Note that the contrast between subject matters and other non-agentive causes has nothing to do with whether these entities are permissible as direct causes. All of these entities are acceptable as causes in periphrastic causatives.

(156) {This movie/ these onions/ the tear gas} caused me to cry.

(157) {This joke/ the laughing gas} caused me to laugh.

In Mandarin, verbs like *kū* 'cry' or *xiào* 'laugh' generally cannot appear with their subject matters in simple sentences. This may be because Mandarin lacks direct counterparts of English prepositions like *over* and *about* that can license subject matters as oblique arguments.

(158) **Wǒ kū-le zhè bù diànyǐng.*
I cry-PFV this CLF movie
Intended: 'I cried over this movie.'

(159) **Zhāngsān xiào-téng-le nèi ge xiàohuà.*
Zhangsan laugh-PFV that CLF joke
Intended: 'Zhangsan laughed about that joke.'

However, it is possible for the subject matter of *kū* 'cry' to appear in certain set phrases.[5]

(160) *Māo kū hàozi.*
cat cry mouse
'The cat cries over the mouse.' (A metaphor for false sympathy.)

(161) *Zhūgě Liàng kū Zhōu Yú.*
Zhuge Liang cry Zhou Yu
'Zhuge Liang cries over [his rival] Zhou Yu.' (A metaphor for hypocrisy.)

[5]Thanks to Shiao Wei Tham for pointing this out.

If *kū* 'cry' or *xiào* 'laugh' have subject matters, then it is predicted that a transitive resultative containing one of these verbs can satisfy the Onset Condition if its external argument is interpreted as a subject matter. This expectation is borne out. In (150), repeated below as (162), *zhè bù diànyǐng* 'this movie' is interpreted as what I am crying over, while in (151), repeated below as (163), *nèi ge xiàohuà* 'that joke' is interpreted as what I am laughing about.

(162) *Zhè bù diànyǐng kū-hóng-le wǒ de yǎnjīng.*
this CLF movie cry-red-PFV 1SG DE eye
'My eyes became red as a result of crying about this movie.'

(163) *Nèi ge xiàohuà xiào-téng-le Zhāngsān de dùzi.*
that CLF joke laugh-hurt-PFV Zhangsan DE belly
'That joke caused Zhangsan to laugh and as a result his belly hurts.'
(Gu 1992:141)
Or: 'Zhangsan's belly hurt as a result of laughing about this joke.'

Furthermore, the Onset Condition does not permit the external argument of a transitive resultative to be interpreted as some non-agentive cause other than the subject matter because such a non-agentive cause is not a participant of the event denoted by V1 *kū* 'cry' or *xiào* 'laugh'. This correctly predicts that examples like (164) and (165) are unacceptable.

(164) **{Zhè xiē yángcōng/ cuīlèidàn} kū-hóng-le wǒ de yǎnjīng.*
this CLF onions/ tear.gas cry-red-PFV 1SG DE eye
Intended: '{These onions/ tear gas} caused me to cry and as a result my eyes became red.'

(165) **Xiàoqì xiào-téng-le wǒ de dùzi.*
laughing.gas laugh-hurt-PFV 1SG DE belly
Intended: 'Laughing gas caused me to laugh and as a result my belly hurt.'

The ungrammaticality of (164) and (165) has nothing to do with whether the external arguments are appropriate causers. All of these arguments are acceptable in sentences with a lexical causative like *shǐ* 'cause'.

(166) *{Zhè bù bēijù/ zhè xiē yángcōng/ cuīlèidàn} shǐ wǒ*
this CLF tragedy/ this CLF onions/ tear.gas cause 1SG
kū-hóng-le (wǒ de) yǎnjīng.
cry-red-PFV (1SG DE) eye
'{This tragic show/ these onions/ tear gas} caused me to cry and as a result my eyes became red.'

(167) *{Nèi ge xiàohuà/ xiàoqì} shǐ wǒ xiào-téng-le (wǒ*
that CLF joke/ laughing.gas cause 1SG laugh-hurt-PFV (1SG
de) dùzi.
DE) belly
'{That joke/ laughing gas} caused me to laugh and as a result my belly hurt.'

As such, it is clear that any restrictions on the external argument of a transitive resultative containing *kū* 'cry' or *xiào* 'laugh' do not arise due to pragmatic restrictions on certain entities being the cause of crying or laughing. Rather, the ungrammaticality of (164) and (165) shows that the external argument of such resultatives must denote participants in the event denoted by V1.

2.2.2 Transitive V-V resultatives with (de)adjectival V1

The second subclass of transitive resultatives for which the external argument appears to be a pure causer is the class of resultatives in which V1 is arguably an adjectival or deadjectival predicate like *zuì* 'drunk', *lèi* 'tired' and *è* 'hungry'.

(168) *Nèi bēi jiǔ zuì-dǎo-le Zhāngsān.*
that cup wine intoxicated-fall-PFV Zhangsan
'That glass of wine caused Zhangsan to become so drunk that he fell/collapsed.' (Tham 2015)

(169) *Zhèi ge gōngzuò lèi-bìng-le Lǐsì.*
this CLF job tire-ill-PFV Lisi
'This job was so tiring that Lisi fell ill.' (Gu 1992:112)

(170) *Nà chǎng jīhuāng è-sǐ-le hěn duō rén.*
that CLF famine hungry-dead-PFV very many people
'Many people starved to death in that famine.' (Y. Li 1995:262)

These resultatives with (de)adjectival V1 cannot be analysed as transitive resultatives with a transitive V1 because these V1 do not have a transitive use outside of resultatives.

(171) **Nèi bēi jiǔ zuì-le Zhāngsān.*
that cup wine intoxicated-PFV Zhangsan
Intended: 'That glass of wine caused Zhangsan to become drunk.'

(172) **Zhèi ge gōngzuò lèi-le Lǐsì.*
this CLF job tire-PFV Lisi
Intended: 'This job tired Lisi.'

(173) **Nà chǎng jīhuāng è-le hěn duō rén.*
that CLF famine hungry-PFV very many people
Intended: 'That famine starved many people.'

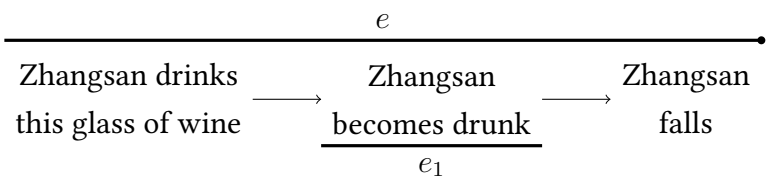
Although V1 is sometimes analysed as an adjective or stative verb because it can be modified by *hěn* 'very', as in (174), V1 also has a change-of-state interpretation, as in (175). Nothing in what follows hinges on whether we analyse V1 as an adjective that denotes a state or a deadjectival verb that denotes a change of state.

(174) *Zhāngsān hěn {zuì/ lèi/ è}.*
Zhangsan very drunk/ tired/ hungry
'Zhangsan is very {drunk/tired/hungry}.'

(175) *Zhāngsān {zuì/ lèi/ è}-le.*
Zhangsan drunk/ tired/ hungry-PFV
'Zhangsan became {drunk/tired/hungry}.'

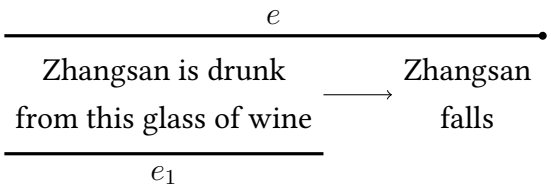
According to the view that the external argument of a transitive V-V resultatives can be a pure causer, (168) can describe a causal chain of events in (176), in violation of the Onset Condition.

(176)



However, I claim that the external argument in this class of resultatives must be interpreted as a source of V1 (cf. Ioannidou 2012). According to this view, (168) describes the causal chain of events in (177) which obeys the Onset Condition.

(177)



A source is a non-agentive cause. Sources can be divided into two subtypes: non-eventive and eventive. (According to this dichotomy, a subject matter would be considered a kind of non-eventive source.) This distinction between non-eventive and eventive sources can be clearly seen in the English predicates *drunk*, *tired* and *red*.

Non-eventive sources in English are introduced by prepositions like *with*, *by* or *of*. Note that sources are not restricted to arguably derived adjectives like *drunk* and *tired*, but are also present in underived adjectives like *red*.

(178) ...the woman was **drunk with the blood of the saints**....[6]

(179) We are **tired with blanket statements of peace** when there is no peace.[7]

(180) My hands were **red with blood**.[8]

Eventive sources in English are introduced by the preposition *from*.

(181) I was a bit **drunk from my rehearsal dinner**.[9]

(182) My legs were **tired from the hike today**.[10]

(183) His message spoke of the need for reconciliation as people were tired of war and **hungry from famine**.[11]

(184) My hands were **red from peeling beetroot**.[12]

[6]Revelations 17:6. The Holy Bible: New Revised Standard Version. 1989. Nashville: Thomas Nelson Publishers.

[7]https://www.yorkdispatch.com/story/news/2021/01/17/mlks-timeless-message-divided-nation/4200516001/

[8]https://www.atomicarchive.com/media/photographs/hiroshima-archive/photo2-12.html

[9]https://www.mamamia.com.au/wedding-beauty-advice/

[10]https://mobile.twitter.com/Mrs_Bertolini/status/950256956370862080

[11]https://religionmediacentre.org.uk/news/religion-news-4-july-2022/

[12]https://www.bradfieldcollege.org.uk/blog/bradfieldian_article/in-the-press-award-winning-frankie-fox/

By definition, sources are non-agentive. Since agentive causers are not sources, they cannot be introduced by prepositions like *with* or *from*. In fact, I claim that these agentive causers are not arguments selected by the adjectival predicates at all. These adjectives are simplex inchoative forms with no causative counterparts.

(185) *The woman was drunk {from/with/by} the heavy-handed bartender (who poured her a stiff martini).

(186) *My legs were tired {from/with/by} my sadistic scoutmaster (who forced us to hike ten miles without a break).

(187) *People were hungry {from/with/by} the corrupt dictator (who enacted land reforms that triggered a nationwide famine).

Returning to Mandarin, predicates like *zuì* 'drunk', *lèi* 'tired' and *è* 'hungry' cannot appear with their sources in simple sentences, as illustrated in (188)-(190). As before, I speculate that this is because Mandarin lacks direct counterparts of English prepositions like *with* and *from* that can license sources as oblique arguments. The absence of such prepositions could be one of the reasons why V-V resultatives are so productive, since V-V resultatives provide a way to express sources in Mandarin.[13]

(188) **Zhāngsān zuì-le nèi bēi jiǔ.*
Zhangsan intoxicated-PFV that cup wine
Intended: 'Zhangsan became drunk with that glass of wine.'

(189) **Lǐsì lèi-le zhèi ge gōngzuò.*
Lisi tire-PFV this CLF job
Intended: 'Lisi became tired with this job.'

(190) **Hěn duō rén è-le nà chǎng jīhuāng.*
very many people hungry-PFV that CLF famine
Intended: 'Many people became hungry from that famine.'

However, if *zuì* 'drunk', *lèi* 'tired' and *è* 'hungry' have sources, then a transitive resultative containing one of these verbs can satisfy the Onset Condition if its external argument is interpreted as a source.

[13] Mandarin has structures like *yīnwèi... ér...* 'because of... therefore...', but I assume that these structures are more complex that those introduced by English *with* and *from*.

Returning to Mandarin resultatives with (de)adjectival V1, we see that the external argument can be a non-eventive source of V1. For example, in (191), *nèi bēi jiǔ* 'that glass of wine' is what Zhangsan gets intoxicated from, while in (192), *zhèi ge gōngzuò* 'this job' is what Lisi gets tired of.

(191) *Nèi bēi jiǔ zuì-dǎo-le Zhāngsān.*
that cup wine intoxicated-fall-PFV Zhangsan
'That glass of wine caused Zhangsan to fall because he was intoxicated from it.' (Tham 2015, my translation)

(192) *Zhèi ge gōngzuò lèi-bìng-le Lǐsì.*
this CLF job tire-ill-PFV Lisi
'This job caused Lisi to fall ill because he was tired of it.'
(Gu 1992:112, my translation)

Alternatively, the external argument can be an eventive source of V1.

(193) *Nà chǎng pàiduì zuì-dǎo-le hěn duō rén.*
that CLF party intoxicated-fall-PFV very many people
'Many people collapsed as a result of becoming drunk from that party.'

(194) *Nà chǎng mǎlāsōng bǐsài lèi-bìng-le hěn duō cānsàizhě.*
that CLF marathon competition tired-sick-PFV very many competitors
'Many competitors became sick as a result of becoming tired from that marathon.'

(195) *Nà chǎng jīhuāng è-sǐ-le hěn duō rén.*
that CLF famine hungry-dead-PFV very many people
'Many people starved to death in that famine.' (Y. Li 1995:262)
Or: 'Many people died as a result of becoming hungry from that famine.'

It is furthermore predicted that the Onset Condition does not permit the external argument of a transitive resultative to be interpreted as an agentive cause that is not selected by V1 *zuì* 'drunk', *lèi* 'tired' and *è* 'hungry'. This prediction is borne out. When the external argument in these sentences is interpreted as an agentive causer, the sentences become degraded.

(196) **Lǎobǎn zuì-dǎo-le xiàshǔ.*
boss intoxicated-fall-PFV subordinate
Intended: 'The boss caused the subordinate to become so drunk that he collapsed.'

(197) *?Lǎobǎn lèi-bìng-le xiàshǔ.*
boss tire-ill-PFV subordinate
Intended: 'The boss caused the subordinate to become so tired that he became ill.'

(198) *?Lǐ Zǒngtǒng, nǐ zài è-sǐ jǐ qiān gè xuéshēng!*
Li president, 2SG PROG hungry-die several thousand CLF student
Intended: 'President Li, you are making several thousand students die from hunger! (Williams 2005:136, his reported judgement)

Note that the ungrammaticality of (196), (197) and (198) has nothing to do with whether the external arguments are appropriate causers. All of these arguments are acceptable in sentences with a lexical causative like *shǐ* 'cause'.

(199) *Lǎobǎn shǐ xiàshǔ zuì-dǎo-le.*
boss cause subordinate intoxicated-fall-PFV
'The boss caused the subordinate to become so drunk that he collapsed.'

(200) *Lǎobǎn shǐ xiàshǔ lèi-bìng-le.*
boss cause subordinate tire-ill-PFV
'The boss caused the subordinate to become so tired that he became ill.'

(201) *Lǐ Zǒngtǒng, nǐ zài shǐ jǐ qiān gè xuéshēng è-sǐ!*
Li president, 2SG PROG cause several thousand CLF student hungry-die
'President Li, you are making several thousand students die from hunger!

Therefore, the ungrammaticality of (196), (197) and (198) is entirely due to the fact that the external argument of a transitive resultative with (de)adjectival V1 must be interpreted as a source of V1.

I have shown that in two subclasses of transitive resultatives for which it is claimed that the external argument appears to be a pure causer, the external argument of the transitive resultative must be interpreted as a participant of the event denoted by V1. These findings further corroborate the prediction that the external argument of a transitive V-V resultative cannot denote a pure causer.

2.3 No syntactic or pragmatic constraints on how the internal argument of a V-V resultative is interpreted with respect to V1

The second prediction that my proposal makes is that there is no requirement for the internal argument of a V-V resultative to be thematically related to V1. There are many examples that show that this prediction is borne out.

When the external argument of a transitive V-V resultative is interpreted as the agent of V1, there is no requirement for the theme of V1 to be present. Even when V1 is obligatorily transitive like *qiē* 'cut', as in (132), the theme of V1 need not be realised.

(202) *Wǒ qiē-dùn-le càidāo.*
I cut-dull-PFV knife
'I cut [something] and as a result the knife became dull.'

When the external argument of a transitive V-V resultative is interpreted as an argument of V1 other than the agent, there is no requirement for the internal argument of the resultative to be interpreted as an argument of V1. In particular, the internal argument of such resultatives need not be the agent of V1, as shown in (203) and (204) below.

(203) *Nà gēn gǔtóu qiē-dùn-le wǒ de càidāo.*
that CLF bone cut-dull-PFV 1SG DE knife
'That bone made my knife dull from cutting.' (Williams 2015:271)

(204) *Nèi ge xiàohuà xiào-téng-le Zhāngsān de dùzi.*
that CLF joke laugh-hurt-PFV Zhangsan DE belly
'That joke caused Zhangsan to laugh and as a result his belly hurts.'
(Gu 1992:141)

It could be argued that the internal argument of such a resultative is an instrument possessed or wielded by the agent of V1 in the case of (203) and an inalienable body part possessed by the agent of V1 in the case of (204). But further examples given in (205) and (206) below show that the internal argument of such a resultative could be an entity that is completely distinct from the agent of V1. In (205), I need not have eaten the meal that resulted in my poverty; I could become poor from paying for someone else's meal. And in (206), the audience need not have done the singing that resulted in crying; in fact, it is more plausible that they were driven to tears by the performer on stage.

(205) *Zhè dùn fàn chī-qióng-le wǒ.*
this CLF meal eat-poor-PFV me
'I became poor as a result of {me/someone} eating this meal.'

(206) *Zhè shǒu gē chàng-kū-le guānzhòng.*
this CLF song sing-cry-PFV audience
'The audience cried as a result of {the audience/someone} singing this song.'

The ambiguity in (205) and (206) cannot be explained by accounts that assume that V1 must assign its agent role to the internal argument of the resultative, as claimed by Y. Li (1995).

Any tendency to interpret the object of such a resultative as the agent of V1 is most likely due to world knowledge. For example, the agent of washing in (134), repeated below as (207), is most likely to be *jiějiě* 'elder sister' because it is implausible that she became tired as a result of someone else washing the clothes.

(207) *Yīfú xǐ-lèi-le jiějiě.*
clothes wash-tired-PFV elder.sister
'These clothes made big sister tired by [her] washing [them].'
(Ren 2001; cited in Williams 2005:66)

An apparent piece of counterevidence to this third prediction that my proposal makes is given in (208). In this sentence, the internal argument of the resultative *māma* 'Mother' is obligatorily interpreted as the agent of V1 *kū* 'cry'. This sentence is only compatible with a context in which Mother becomes awake

as a result of her own crying, and not someone else's crying. This restriction is unexpected if there are indeed no constraints on how the internal argument of this resultative is interpreted with respect to V1.

(208) *Zhè chǎng èmèng kū-xǐng-le māma.*
this CLF nightmare cry-awake-PFV mother
'Mother became awake as a result of (Mother/*someone else) crying about this nightmare.'

Note that there is nothing in principle preventing a resultative from describing a context in which Mother becomes awake as a result of someone else's crying, as in (209).

(209) *Bǎobao kū-xǐng-le māma.*
baby cry-awake-PFV mother
'The baby cried Mother awake.'

That (208) must describe a scenario in which Mother becomes awake from her own nightmare and not someone else's arises, I claim, due to restrictions on what can plausibly be interpreted as a cause of Mother's becoming awake. The external argument of causative verbs – and by extension, of resultatives – identifies a crucial contributory factor out of the myriad factors that come together to bring about a result (Neeleman and Van de Koot 2012). In order for one factor to be singled out as a CCF, the other factors in the causal chain must be taken for granted.

Consider the examples in (205) and (206), repeated below as (210) and (211). In (210), it is some property of the meal such as the number of dishes or the price of the ingredients that is identified as more crucial to the becoming-poor event than the action of the eaters. Similarly in (211), it is some property of the song that is identified as more crucial to the crying event than the action of the singer.

(210) *Zhè dùn fàn chī-qióng-le wǒ.*
this CLF meal eat-poor-PFV me
'I became poor as a result of {me/someone} eating this meal.'

(211) *Zhè shǒu gē chàng-kū-le guānzhòng.*
this CLF song sing-cry-PFV audience
'The audience cried as a result of {the audience/someone} singing this song.'

Returning to (208), some property of the nightmare is identified as more crucial to the crying-awake event than any other factor. On the unattested reading where someone else other than Mother cries, it is not possible to identify this property of the nightmare as being the CCF while taking the emotional reaction of this third party for granted. Since different third parties could have different experiences of the same nightmare, their emotional reaction to the nightmare is just as crucial to the crying-awake event as the properties of the nightmare itself.

But on the attested reading where Mother cries, there is no variation in the intervening experiencer whose emotional reaction is crucial to the crying-awake event. It is thus plausible to present the properties of a particular nightmare, as opposed to those of a different nightmare, as the CCF of Mother's emotional response and, by extension, the crying-awake event.

If this line of reasoning is correct for resultatives, then the same line of reasoning should apply to lexical causatives as well. This is correct. Since Mandarin has few lexical causatives, I will illustrate my point using the English sentence in (212).

(212) The nightmare woke Mother.

Just like (208), (212) is incompatible with a context in which Mother woke up as a result of someone else crying from their nightmare, but fully compatible with a context in which Mother wakes up as a result of crying from her own nightmare.[14] We may therefore conclude that it is highly implausible that the interpretive constraint on (208) has anything to do with the internal make-up of the V-V resultative.

Finally, returning to the main line of argumentation, we conclude that the prediction that there are no syntactic or pragmatic constraints on how the internal argument of a V-V resultative is interpreted with respect to V1 is borne out.

To summarise, in this section, I have derived the range of transitive resultatives with intransitive V2 in Mandarin. Since the arguments of V1 are not mapped onto the θ-grid of the V-V resultative, there is no syntactic requirement that either argument of the V-V resultative be interpreted as denoting

[14](212) is also compatible with a context in which Mother wakes up without crying, but this context is not relevant to the discussion at hand.

a participant of the event denoted by V1. However, there is a semantic requirement that the external argument – but not the internal argument – of a transitive V-V resultative be interpreted as denoting a participant in the event denoted by V1.

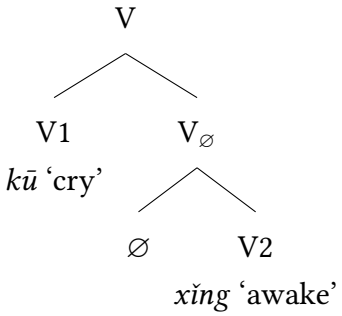
3 Deriving unaccusative V-V resultatives with intransitive V2

In this section, I present the derivation of unaccusative V-V resultatives with intransitive V2 using the unaccusative alternant of *kū-xǐng* 'cry-awake' as an example.

(213) *Māma* *kū-xǐng-le.*
mother cry-awake-PFV
'Mother cried herself awake.'

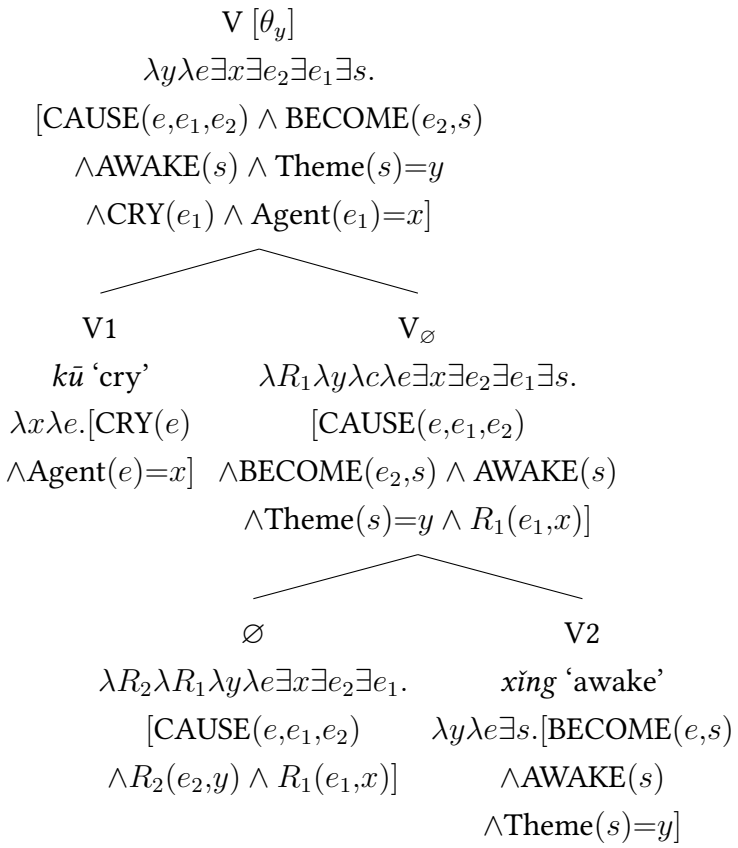
I propose that an unaccusative V-V resultative contains ∅ which introduces the causal relation between the events denoted by V1 and V2 but not a CCF.

(214)



The semantic derivation of an unaccusative V-V resultative is given in (215). The sole λ-bound event participant argument of the top V node is mapped onto the internal θ-role of the compound.

(215)



My proposal makes two predictions:

1. The first prediction is that since the arguments of V1 are not mapped onto the θ-grid of a V-V resultative, syntax does not constrain how the sole argument of the resultative is interpreted with respect to V1.

2. The second prediction is that since unaccusative V-V resultatives are derived via detransitivisation of the ∅ head rather than V1, it should be possible to form an unaccusative V-V resultative even when the V1 it contains cannot undergo detransitivisation.

I will show that both of these predictions are borne out.

3.1 No syntactic constraints on how the sole argument of a V-V resultative is interpreted with respect to V1

The first prediction that my proposal makes is that since the arguments of V1 are not mapped onto the θ-grid of a V-V resultative, syntax does not constrain

the interpretation of the sole argument of the resultative with respect to V1. Therefore, the sole argument of a V-V resultative can in principle be interpreted as any argument of V1.

The sole argument of an unaccusative V-V resultative with intransitive V2 can be interpreted as the theme of V1, as in (216).

(216) *Yīfú* *xǐ-gānjìng-le.*
clothes wash-clean-PFV
'The clothes were washed clean.' (C. Li 2007:229)

But the sole argument of the unaccusative resultative can also be interpreted as an argument of V1 other than the theme. It can be interpreted as an instrument used in the event denoted by V1, as in (217).

(217) *Wǒ de càidāo qiē-dùn-le.*
1SG DE knife cut-dull-PFV
'My knife became dull as a result of cutting.'

The sole argument can be interpreted as the agent of V1, as in (218) and (219).

(218) *Zhāngsān tīng-fán-le.*
Zhangsan listen-annoyed-PFV
'Zhangsan became annoyed from listening.' (Gu 1992:128)

(219) *Zhāngsān kū-lèi-le.*
Zhangsan cry-tired-PFV
'Zhangsan cried himself tired.' (C. Li 2007:54)

The sole argument can be interpreted as a proxy for the agent of V1, i.e., it can denote an entity that stands in a privileged configuration with respect to the agent of V1. In (220), it denotes a body part of the agent of V1 *xiào* 'laugh'.

(220) *Zhāngsān de dùzi xiào-téng-le.*
Zhangsan DE belly laugh-hurt-PFV
'Zhangsan's belly hurt as a result of laughing.'

The sole argument can also be interpreted as thematically unrelated to the event denoted by V1, as in (221).

(221) *Shǒujuǎn* *kū-shī-le.*
handkerchief cry-wet-PFV
'The handkerchief became wet from crying.' (Sybesma 1999:16)

Although (221) is reported by Sybesma (1999) as being grammatical and is often cited as such in the literature, some of my consultants judge this sentence to be slightly degraded, especially in an out-of-the-blue context. To the extent that (221) is acceptable to some speakers, it could be analysed as containing a topic in sentence-initial position and a null subject that refers to someone already present in the preceding discourse (but see Cheng and Huang 1994, who explicitly argue against such an analysis).

(222) *Context: Mother must be very sad.*

Shǒujuǎn *pro* *kū-shī-le.*
handkerchief cry-wet-PFV
'The handkerchief, it became wet from (her) crying.'

Since the CCF of an unaccusative resultative is absent, there is no syntactic constraint on the entity that brings about the change denoted by the resultative. For example, (223) is acceptable regardless of who washed the clothes.

(223) *Yīfú* *xǐ-gānjìng-le.*
clothes wash-clean-PFV
'The clothes were washed clean.' (C. Li 2007:229)

However, in some unaccusative resultatives, the sole argument must be interpreted as the agent of V1. For example, (224) is only compatible with a situation in which Mother cries herself awake, and is incompatible with a situation in which someone else, e.g. a baby, cries herself awake. I have nothing to say about this interpretative restriction on unaccusative resultatives like (224), and leave this issue for further research.

(224) *Māma* *kū-xǐng-le.*
mother cry-awake-PFV
'Mother cried herself awake.'
Not: 'Mother became awake as a result of someone else (e.g. a baby) crying.'

Notwithstanding this issue, the prediction that there are no syntactic constraints on how the sole argument of a V-V resultative is interpreted with respect to V1 is borne out.

3.2 Detransitivisation of a V-V resultative is independent of detransitivisation of its V1

The second prediction that my proposal makes is that whether a resultative can be detransitivised is independent of whether the V1 it contains can itself be detransitivised. According to my proposal, the null affix is the semantic head of a V-V resultative, and unaccusative V-V resultatives are formed by detransitivisation of this null affix, not V1.

The operation of detransitivisation is not restricted to resultatives, but is independently attested in simplex verbs. For example, the unaccusative verb *kāi* 'open' in (226) is derived from detransitivisation of its transitive counterpart in (225).

(225) *Zhāngsān kāi-le mén.*
Zhangsan open-PFV door
'Zhangsan opened the door.'

(226) *Mén kāi-le.*
door open-PFV
'The door opened.'

Detransitivisation appears to apply to a wider range of predicates in Mandarin than in English. In English, the external argument of agentive verbs like *wash* and *cut* cannot be omitted.

(227) John washed that towel.

(228) *That towel washed.

(229) John cut the bread.

(230) *The bread cut.

But in Mandarin, the external argument of agentive verbs like *xǐ* 'wash' and *qiē* 'cut' can be omitted. Similar patterns are attested in Haitian Creole (Massam 1989) and Hindi-Urdu (Bhatt and Embick 2017). It is unclear whether the operation that detransitivises *xǐ* 'wash' and *qiē* 'cut' in (232) and (234) is the same as that which detransitivises *kāi* 'open' in (226).

(231) *Guōjìng xǐ-le nèi tiáo máojīn.*
Guojing wash-PFV that CLF towel
'Guojing washed that towel.' (Cheng 1989:81)

(232) *Nèi tiáo máojīn xǐ-le.*
that CLF towel wash-PFV
'That towel is washed.' (Cheng 1989:81)

(233) *John qiē-le miànbāo.*
John cut-PFV bread
'John cut the bread.' (Y. Zhang 2022:37)

(234) *Miànbāo qiē-le.*
bread cut-PFV
'The bread is cut.' (Y. Zhang 2022:37)

But not all predicates in Mandarin can be detransitivised. For example, predicates like *dǎ* 'hit' and *tī* 'kick' cannot undergo detransitivisation.

(235) *Zhāngsān dǎ-le Lǐsì.*
Zhangsan beat-PFV Lisi
'Zhangsan beat Lisi.' (Y. Zhang 2022:170)

(236) **Lǐsì dǎ-le.*
Lisi beat-PFV
Intended: 'Lisi was/is beaten.' (Y. Zhang 2022:169)

(237) *Zhāngsān tī-le Lǐsì.*
Zhangsan kick-PFV Lisi
'Zhangsan kicked Lisi.'

(238) **Lǐsì tī-le.*
Lisi kick-PFV
Intended: 'Lisi was/is kicked.'

The operation of detransitivisation in Mandarin is poorly understood, and judgements are subject to a great deal of speaker variation. It would take me too far afield to provide an account of which predicates can and cannot undergo detransitivisation in Mandarin; see Y. Zhang (2022) for more in-depth discussion.

For our current purposes, it suffices to say that detransitivisation is independently and widely attested in simplex verbs in Mandarin.

One possible analysis is that V-V resultatives are headed by V1, and unaccusative V-V resultatives are formed by detransitivisation of V1 (Sybesma 1999). However, I claim that unaccusative V-V resultatives are formed by omission of the external argument of the null affix, not by omission of an argument of V1. Hence, I predict that it should be possible to form an unaccusative V-V resultative even when the V1 it contains cannot be detransitivised.

Of course there are cases where both a resultative and the V1 it contains can omit their external arguments.

(239) *Nèi tiáo máojīn xǐ-gānjìng-le.*
that CLF towel wash-clean-PFV
'That towel is washed clean.'

(240) *Nèi tiáo máojīn xǐ-le.*
that CLF towel wash-PFV
'That towel is washed.' (Cheng 1989:81)

But as it turns out, Mandarin V-V resultatives are more likely than simple verbs to appear without their external argument (Cheng 1989). Although judgements may vary among speakers with regards to specific lexical items, speakers are more likely to accept sentences with unaccusative resultatives like *yā-biǎn* 'press-flat' in (241) and *cā-gānjìng* 'wipe-clean' in (243) than their counterparts with an detransitivised V1 *yā* 'press' in (242) and *cā* 'wipe' in (244).

(241) *Nèi tiáo miànbāo yā-biǎn-le.*
that CLF bread press-flat-PFV
'That loaf of bread was pressed flat.' (Cheng 1989:86)

(242) **Nèi tiáo miànbāo yā-le.*
that CLF bread press-PFV
Intended: 'That loaf of bread was pressed.' (Cheng 1989:83)

(243) *Hēibǎn cā-gānjìng-le.*
blackboard wipe-clean-PFV
'The blackboard got clean from wiping.'
(H. Huang 1982; cited in Williams 2005:70)

(244) *?*Hēibǎn cā-le.*
blackboard wipe-PFV
Intended: 'The blackboard underwent wiping.'
Can mean: 'The blackboard, *pro* wiped.' (Williams 2005:70)

This pattern is unexpected if V1 is the head of a V-V resultative or if the detransitivisation of a V-V resultative depended in any way on the detransitivisation of V1. However, this pattern can be explained if an unaccusative V-V resultative is formed via detransitivisation of the entire compound, not via detransitivisation of V1.

In summary, in this section, I have derived the range of unaccusative V-V resultatives with intransitive V2. Since the arguments of V1 are not mapped onto the θ-grid of the V-V resultative, there is no syntactic requirement that the sole argument of the V-V resultative be interpreted as denoting a participant of the event denoted by V1.

4 Concluding remarks

In this chapter, I have derived the range of argument realisation patterns attested in change-of-state V-V resultatives based on the proposal that such resultatives inherit all of the arguments of V2 but none of the arguments of V1.

I have shown that my proposal correctly predicts that there is no syntactic constraint on how the external argument of a V-V resultative is interpreted with respect to V1. I have also shown that whether a V-V resultative can undergo detransitivisation is independent of whether V1 can undergo detransitivisation.

I have proposed that there is nonetheless an interpretive restriction on causatives generally, namely the Onset Condition, which requires that the CCF argument of the resultative be interpreted as denoting a participant in the event denoted by V1. It follows from this condition that the CCF argument of a transitive V-V resultative cannot be a "pure causer" that is unrelated to the event denoted by V1.

Taken together, these facts go against the view that V1 is the head of a V-V resultative and strongly support the proposal developed in Chapter 2.

Chapter 4

Deriving change-of-location V-V resultatives

1 Introduction

Having derived the range of argument realisation patterns in Mandarin change-of-state V-V resultatives, I now turn to change-of-location V-V resultatives in this language. Change-of-location V-V resultatives are not always included in accounts of Mandarin V-V resultatives more generally. One exception is Tham (2012), who argues that both change-of-state and (unaccusative) change-of-location resultatives in Mandarin have the same event structure. In this chapter, I will extend my analysis of the argument structure of change-of-state V-V resultatives to include change-of-location V-V resultatives.

I begin by discussing **directional resultatives** which describe a pure change of location. These resultatives can be either transitive, as in (245), or unaccusative, as in (246).

(245) *Zhāngsān bǎ yáng* ***gǎn-jìn****-le* *yángjuàn.*
Zhangsan BA sheep drive-enter-PFV sheep.pen
'Zhangsan drove the sheep into the sheep pen.'[1]

(246) *Yáng* ***pǎo-jìn****-le* *yángjuàn.*
sheep run-enter-PFV sheep.pen
'The sheep ran into the sheep pen.'

[1] Adapted from `http://bcc.blcu.edu.cn/show/768739035_4_6_-1_-1/0/`.

I claim that directional resultatives have two internal arguments instead of one: (i) a Location argument and (ii) a Locatum argument that undergoes a change of location.

I then discuss what I will call **hybrid resultatives** which simultaneously denote a change of state and a change of location. These resultatives can be either transitive, as in (247), or unaccusative, as in (248).

(247) *Zhāngsān bǎ yùgāng* ***guàn-mǎn****-le shuǐ.*
Zhangsan BA bathtub pour-full-PFV water
'Zhangsan filled the bathtub full of water.'

(248) *Yùgāng* ***guàn-mǎn****-le shuǐ.*
bathtub pour-full-PFV water
'The bathtub became full of water.'

I claim that hybrid resultatives have two internal arguments: (i) a Location argument that undergoes a change of state and (ii) a Locatum argument that undergoes a change of location.

Additionally, I will also show that the class of apparently subject-oriented transitive V-V resultatives as in (249) can be analysed as a special type of unaccusative hybrid resultative as in (248).

(249) *Zhāngsān* ***chī-bǎo****-le fàn.*
Zhangsan eat-full-PFV food
'Zhangsan ate himself full with food.'

2 Directional V-V resultatives

In this section, I give an account of directional resultatives like (245) and (246). I propose that these resultatives are derived in the same way as change-of-state resultatives discussed in Chapter 3, except that V2 has two internal arguments instead of one: a Locatum argument and a Location argument.

Directional V-V resultatives as they are discussed in the literature are composed of three elements:

- The first element is a **manner verb** which typically, but not exclusively, denotes an activity of displacement.

- The second element is a **directional verb**, of which there are six core examples: *shàng* 'ascend', *xià* 'descend', *jìn* 'enter', *chū* 'exit', *huí* 'return' and *guò* 'cross'.
- The third element is one of two **deictic verbs**: *lái* 'come' and *qù* 'go'.

These three elements can be combined to form four classes of directional V-V resultatives.

The first class of directional V-V resultatives is formed from a manner verb and a directional verb. These can be transitive, as in (250), or unaccusative, as in (251).

(250) *Zhāngsān bǎ yáng **gǎn-jìn**-le yángjuàn.*
Zhangsan BA sheep drive-enter-PFV sheep.pen
'Zhangsan drove the sheep into the sheep pen.'[2]

(251) *Yáng **pǎo-jìn**-le yángjuàn.*
sheep run-enter-PFV sheep.pen
'The sheep ran into the sheep pen.'

The second class of directional resultatives is formed from a manner verb and a deictic verb. These can be transitive, as in (252), or unaccusative, as in (253).

(252) *Zhāngsān bǎ yáng **gǎn-lái**-le.*
Zhangsan BA sheep drive-come-PFV
'Zhangsan drove the sheep here.'

(253) *Yáng **pǎo-lái**-le.*
sheep run-come-PFV
'The sheep ran here.'

The third class of directional resultatives is formed from a directional verb and a deictic verb. These cannot be transitive, as in (254), but can only be unaccusative, as in (255).

(254) **Zhāngsān bǎ yáng **jìn-lái**-le.*
Zhangsan BA sheep enter-come-PFV
Intended: 'Zhangsan caused the sheep to come in.'

[2] Adapted from `http://bcc.blcu.edu.cn/show/768739035_4_6_-1_-1/0/`.

(255) *Yáng* ***jìn-lái**-le.*
sheep enter-come-PFV
'The sheep came in.'

The fourth class of directional resultatives is formed from a manner verb, a directional verb and a deictic verb. These V-V-V resultatives can be transitive (256) or unaccusative (257).

(256) *Zhāngsān bǎ yáng* ***gǎn-jìn-lái**-le.*
Zhangsan BA sheep drive-enter-come-PFV
'Zhangsan drove the sheep in here.'

(257) *Yáng* ***pǎo-jìn-lái**-le.*
sheep run-enter-come-PFV
'The sheep ran in here.'

In this section, I will focus on the derivation of the first class of directional resultatives formed from a manner verb and a directional verb. I will then discuss how the remaining classes of directional resultatives are derived. I will finally compare my proposal to competing proposals that claim that these V-V(-V) resultatives are derived from serial verb constructions.

2.1 Directional resultatives composed of a manner verb and a directional verb

In this subsection, I present the derivation of directional V-V resultatives that are formed from a manner verb and a directional verb. In these resultatives, V2 is one of a small number of directional verbs which include *jìn* 'enter', *chū* 'exit', *shàng* 'ascend', *xià* 'descend', *huí* 'return' and *guò* 'cross' (Paul 2022).[3] These verbs select two arguments: a Locatum and a Location.

(258) *Yī kē dòulìtáng* ***jìn**-le zhuǐ-lǐ.*
one CLF jelly.bean enter-PFV mouth-in
'A jelly bean entered his mouth.'

(259) *Zhāngsān* ***chū**-le gōngchǎng.*
Zhangsan exit-PFV factory
'Zhangsan left the factory.'

[3]This analysis could possibly be extended to include *dé* 'get' and *yíng* in the sense of 'win (something)', not 'be triumphant', but I set these two verbs aside.

(260) *Zhāngsān* ***shàng****-le* *chuán.*
Zhangsan ascend-PFV boat
'Zhangsan got on the boat.'

(261) *Zhāngsān* ***xià****-le* *huǒchē.*
Zhangsan descend-PFV train
'Zhangsan got off the train.'

(262) *Zhāngsān* ***huí****-le* *Shànghǎi.*
Zhangsan return-PFV Shanghai
'Zhangsan returned to Shanghai.'

(263) *Zhāngsān* ***guò****-le* *hé.*
Zhangsan cross-PFV river
'Zhangsan crossed the river.'

The Location argument of V2 does not necessarily specify the destination of the Locatum argument. This is most apparent for the directional verb *guò* 'cross'. Rather, the Location should be thought of as an anchor relative to which the position of the Locatum is determined.

Just like V2 in the V-V resultatives discussed in Chapter 3, V2 in directional resultatives is unaccusative and lacks a causative counterpart. I illustrate this point for *jìn* 'enter' in (264).

(264) **Zhāngsān* *bǎ* *yáng* ***jìn****-le* *yángjuàn.*
Zhangsan BA sheep enter-PFV sheep.pen
'The sheep entered the pen as a result of Zhangsan doing something.'

Each of these directional verbs can appear as V2 in a transitive directional resultative in which the Locatum of V2 appears as the argument that follows *bǎ*.

(265) *Zhāngsān* *bǎ* *yī* *kē* *dòulìtáng* ***rēng-jìn****-le* *zhuǐ-lǐ.*
Zhangsan BA one CLF jelly.bean throw-enter-PFV mouth-in
'Zhangsan threw a jelly bean into his mouth.'[4]

(266) *Zhāngsān* *bǎ* *lǎobǎn* ***tī-chū****-le* *gōngchǎng.*
Zhangsan BA boss kick-exit-PFV factory
'Zhangsan kicked the boss out of the factory.'[5]

[4] Adapted from `http://bcc.blcu.edu.cn/show/1196175725_11_13_-1_-1/0/`.
[5] Adapted from `http://bcc.blcu.edu.cn/show/1178771577_2_2_5_7/0/`.

(267) *Zhāngsān bǎ chuán* ***tuī-shàng****-le hǎitān.*
Zhangsan BA boat push-ascend-PFV beach
'Zhangsan pushed the boat up onto the beach.'[6]

(268) *Zhāngsān bǎ wǒ* ***lā-xià****-le huǒchē.*
Zhangsan BA me pull-descend-PFV train
'Zhangsan pulled me down from the train.'[7]

(269) *Zhāngsān bǎ chē* ***kāi-huí****-le Shànghǎi.*
Zhangsan BA car drive-return-PFV Shanghai
'Zhangsan drove the car back to Shanghai.'[8]

(270) *Zhāngsān bǎ tā* ***bēi-guò****-le hé.*
Zhangsan BA her carry-cross-PFV river
'Zhangsan carried her across the river.'[9]

Each of these directional verbs can appear in unaccusative directional V-V resultatives. In the examples below, the subject of the resultative is interpreted as the Locatum of V2 while the object is interpreted as the Location of V2.

(271) *Wǒ zǎozǎode* ***pá-jìn****-le nuǎnnuǎnde bèiwō!*
I early crawl-enter-PFV warm bed
'I crawled into the warm bed early.'[10]

(272) *Tā* ***zǒu-chū****-le fángjiān.*
3SG walk-exit-PFV room
'She walked out of the room.' (Paul 2022)

(273) *Tāmen* ***tiào-shàng****-le diànchē.*
they jump-ascend-PFV tram
'They jumped onto the tram.' (Paul 2022)

(274) *Yǎnlèi* ***huá-xià****-le tā de liǎnpáng.*
tear roll-descend-PFV 3SG DE face
'Tears rolled down his face.'[11]

[6] Adapted from http://bcc.blcu.edu.cn/show/1155443059_8_8_10_12/0/.
[7] Adapted from http://bcc.blcu.edu.cn/show/1035412946_4_4_7_9/0/.
[8] Adapted from http://bcc.blcu.edu.cn/show/1223709831_2_2_4_6/0/.
[9] Adapted from http://bcc.blcu.edu.cn/show/1063556871_3_3_5_7/0/.
[10] http://bcc.blcu.edu.cn/show/127532135_4_6_-1_-1/0/
[11] http://bcc.blcu.edu.cn/show/1367560890_2_4_-1_-1/0/

(275) *Zhāngsān* ***zǒu-huí****-le* *jiā.*
3SG walk-return-PFV home
'Zhangsan walked back home.'

(276) *Zhāngsān* ***pǎo-guò****-le* *yī* *tiáo* *mǎlù.*
Zhangsan run-cross-PFV one CLF road
'Zhangsan ran across a road.'[12]

It is important to distinguish the directional V-V resultatives we are discussing from similar-looking constructions where the Location of V2 is not realised, as in (277). Such examples are more plausibly analysed as verb-particle constructions (Teng 1977). I will set such examples to one side.

(277) *Tā* *chuān-shàng-le* *yīfu.*
3SG wear-ascend-PFV clothes
'He put on clothes.' (Paul 2022)

V2 in these directional resultatives also arguably includes verbs like *dǒng* 'understand'[13] in *tīng-dǒng* 'listen-understand' and *wàng* 'forget' in *wán-wàng* 'play-forget'. Resultatives with these V2 have been dismissed as "spurious" (J. Lin 2004) and are excluded from many analyses of V-V resultatives, but can be accommodated by my analysis of directional resultatives.

(278) *Lǐsì* ***tīng-dǒng****-le* *nèi* *jù* *huà.*
Lisi listen-understand-PFV that CLF speech
'Lisi listened to the sentence and then he understood it.' (Gu 1992:101)

(279) *Zhāngsān* ***wán-wàng****-le* *yào* *zuò* *de* *gōngkè.*
Zhangsan play-forget-PFV need do DE homework
'Zhangsan played (so much) that he forgot the homework that he was supposed to do.' (Gu 1992:104)

In isolation, V2 *dǒng* 'understand' and *wàng* 'forget' select two arguments, which can be characterised as Experiencer and Subject Matter, but can alternatively be conceived as Location and Locatum arguments respectively.[14]

[12] Adapted from `http://bcc.blcu.edu.cn/show/1133255463_6_8_-1_-1/0/`.

[13] *Dǒng* 'understand' is ambiguous between a stative interpretation and a change-of-state interpretation. I assume that it is the inchoative variant of *dǒng* 'understand' that appears in V-V resultatives.

[14] For simplicity, I will assume that V2 *dǒng* 'understand' and *wàng* 'forget' in these V-V

(280) *Lǐsì* ***dǒng****-le* *nèi jù huà.*
Lisi understand-PFV that CLF speech
'Lisi understood that sentence.'

(281) *Zhāngsān* ***wàng****-le* *yào zuò de gōngkè.*
Zhangsan forget-PFV need do DE homework
'Zhangsan forgot the homework that needed to be done.'

This alternative view is consistent with the proposal in Landau (2009) to think of "experiencers as mental locations – containers or destinations of mental states/effects". Landau gives examples in many languages where experiencers are marked by prepositions like *in*, *at* or *on* which introduce locations, or prepositions like *to* and dative case which mark goals or destinations.

According to this view, the example in (278) means that (the intensional representation of) the sentence underwent a change of location from not being in Lisi's mind to being in Lisi's mind as a result of Lisi listening to it. The direction of motion is reversed in an example like (279); it means that (the intensional representation of) the homework underwent a change of location from being in Zhangsan's mind to not being in Zhangsan's mind as a result of Zhangsan's playing. *Dǒng* 'understand' and *wàng* 'forget' can thus be thought of as psychological counterparts of the directional verbs *jìn* 'enter' and *chū* 'exit'.

Having characterised the verbs that can appear in this class of resultatives, I present the derivation of a causative directional V-V resultative using *gǎn-jìn* 'drive-enter' as an example. I assume that V2 *jìn* 'enter' has the semantics in (282). It takes two internal arguments y_1 and y_2 which are interpreted as its Location and Locatum arguments respectively.

(282) $[\![$*jìn* 'enter'$]\!]=\lambda y_2 \lambda y_1 \lambda e \exists s.[\text{BECOME}(e,s) \wedge \text{IN}(s) \wedge \text{Location}(s)=y_1 \wedge \text{Locatum}(s)=y_2]$

resultatives are unaccusative. There is some evidence from other languages that the verb *forget* is unaccusative. For example, in Dutch, *vergeten* 'to forget' takes the auxiliary *zijn* 'to be' but not *hebben* 'to have', which indicates that *vergeten* is unaccusative.

(ii) *Jan {is/ *heeft} haar naam vergeten*
Jan is has her name forgotten
'Jan forgot her name.'

V2 first merges with the null affix, which adds a CCF argument to the argument structure of V2. I assume the variant of the null affix in (283) that composes with a V2 with two internal arguments and a transitive V1.

(283) $[\![\varnothing_{+C}]\!]=\lambda R_2\lambda R_1\lambda y_2\lambda y_1\lambda c\lambda e\exists x_2\exists x_1\exists e_2\exists e_1.[\text{CAUSE}(e,e_1,e_2) \wedge \text{CCF}(e)=c \wedge R_2(e_2,y_1,y_2) \wedge R_1(e_1,x_1,x_2)]$

The node formed from the merger of V2 and the null affix then merges with V1. V1 *gǎn* 'drive (away), chase' has the semantics in (284).

(284) $[\![gǎn \text{ 'drive'}]\!]=\lambda x_2\lambda x_1\lambda e.[\text{DRIVE}(e) \wedge \text{Agent}(e)=x_1 \wedge \text{Theme}(e)=x_2]$

The derivation of a transitive directional V-V resultative composed of a manner verb and a directional verb like *gǎn-jìn* 'drive-enter' is given in (285) below:

(285)

V $[\underline{\theta}_c\ \theta_{y_1}\ \theta_{y_2}]$
$\lambda y_2\lambda y_1\lambda c\lambda e\exists x_2\exists x_1\exists e_2\exists e_1\exists s.$
$[\text{CAUSE}(e,e_1,e_2) \wedge \text{CCF}(e)=c$
$\wedge\text{BECOME}(e_2,s) \wedge \text{IN}(s) \wedge \text{Location}(s)=y_1$
$\wedge\text{Locatum}(s)=y_2 \wedge \text{DRIVE}(e_1)$
$\wedge\text{Agent}(e_1)=x_1 \wedge \text{Theme}(e_1)=x_2]$

V1
gǎn 'drive'
$\lambda x_2\lambda x_1\lambda e.[\text{DRIVE}(e)$
$\wedge\text{Agent}(e)=x_1$
$\wedge\text{Theme}(e)=x_2]$

$\text{V}_{\varnothing}$
$\lambda R_1\lambda y_2\lambda y_1\lambda c\lambda e\exists x_2\exists x_1\exists e_2\exists e_1\exists s.$
$[\text{CAUSE}(e,e_1,e_2) \wedge \text{CCF}(e)=c$
$\wedge\text{BECOME}(e_2,s) \wedge \text{IN}(s) \wedge \text{Location}(s)=y_1$
$\wedge\text{Locatum}(s)=y_2 \wedge R_1(e_1,x_1,x_2)]$

$\varnothing_{+C}$
$\lambda R_2\lambda R_1\lambda y_2\lambda y_1\lambda c\lambda e\exists x_2\exists x_1\exists e_2\exists e_1.$
$[\text{CAUSE}(e,e_1,e_2) \wedge \text{CCF}(e)=c$
$\wedge R_2(e_2,y_1,y_2) \wedge R_1(e_1,x_1,x_2)]$

V2
jìn 'enter'
$\lambda y_2\lambda y_1\lambda e\exists s.[\text{BECOME}(e,s)$
$\wedge\text{IN}(s) \wedge \text{Location}(s)=y_1$
$\wedge\text{Locatum}(s)=y_2]$

Since the arguments of V1 are not mapped onto the θ-grid of the V-V resultative, syntax does not constrain how the arguments of the resultative are interpreted with respect to V1. However, the interpretation of the arguments of the V-V resultative is subject to other restrictions.

Recall from our discussion in Chapter 3 that the interpretation of the arguments of a V-V resultative are subject to a restriction that follows from the Onset Condition presented in Chapter 3 and repeated below:

(286) Onset Condition (Kim forthcoming)

> If an event e_1 is semantically integrated into the event e_2 denoted by a simplex causative predicate, e_1 must be mapped to the initial event of the causal chain (or macroevent e_2) denoted by that predicate.

As discussed in Chapter 3, it follows from the Onset Condition that the external argument of a transitive resultative must be interpreted as a participant in the event denoted by V1. In other words, we would expect that the external argument cannot denote a pure causer that is not a participant in the event denoted by V1. This expectation is borne out, as shown in (287).

(287) **Zhāngsān bǎ yáng **pǎo-jìn**-le yángjuàn.*
Zhangsan BA sheep run-enter-PFV sheep.pen
Intended: 'Zhangsan caused the sheep to run into the sheep pen.'

In addition, the Locatum argument of the resultative is typically interpreted as the Theme of V1. Consider the contrast between (288) and (289) below. In (288), the Locatum argument *nítǔ* 'mud' is interpreted as the Theme of V1 *dài* 'bring', whereas in (289), *nítǔ* 'mud' cannot be interpreted as the Theme of V1 *pǎo* 'run'.

Context: Zhangsan runs into the house wearing muddy shoes.

(288) *Zhāngsān bǎ nítǔ **dài-jìn**-le wūzi lǐ.*
Zhangsan BA mud bring-enter-PFV house inside
'Zhangsan brought mud into the house.'

(289) **Zhāngsān bǎ nítǔ **pǎo-jìn**-le wūzi lǐ.*
Zhangsan BA mud run-enter-PFV house inside
Intended: 'Zhangsan caused mud to enter the house by running [into the house].'
'*Zhangsan ran mud into the house.'

However, this tendency for the Locatum argument of the resultative to be interpreted as the Theme of V1 cannot be an absolute requirement. For example, (290) is grammatical even though the Locatum *zìjǐ* 'self' cannot be interpreted as the Theme of V1 *chàng* 'sing'.

(290) *Gěng Liánfèng bǎ zìjǐ **chàng-jìn**-le yīyuàn.*
Geng Lianfeng BA self sing-enter-PFV hospital
'Geng Lianfeng sang herself into hospital [due to exhaustion].'[15]

It is likely that the contrast between (288) and (289) arises due to a pragmatic condition that applies to the causal relation between the events denoted by V1 and V2. On this account, (288) is more acceptable because it is easier to establish a causal link between the events denoted by V1 and V2 when the event denoted by V1 involves direct transmission of physical force to the Locatum argument (cf. Rappaport Hovav and Levin (2001) for a discussion of the notion of 'force recipient' in resultatives). In contrast, (289) is less acceptable because the connection between the event denoted by V1 and the referent of the Locatum argument is less direct and/or more abstract. I will not attempt to refine this pragmatic condition here.

Having presented the derivation of transitive directional resultatives, I now turn to the derivation of unaccusative directional resultatives like (291).

(291) *Yáng **pǎo-jìn**-le yángjuàn.*
sheep run-enter-PFV sheep.pen
'The sheep ran into the sheep pen.'

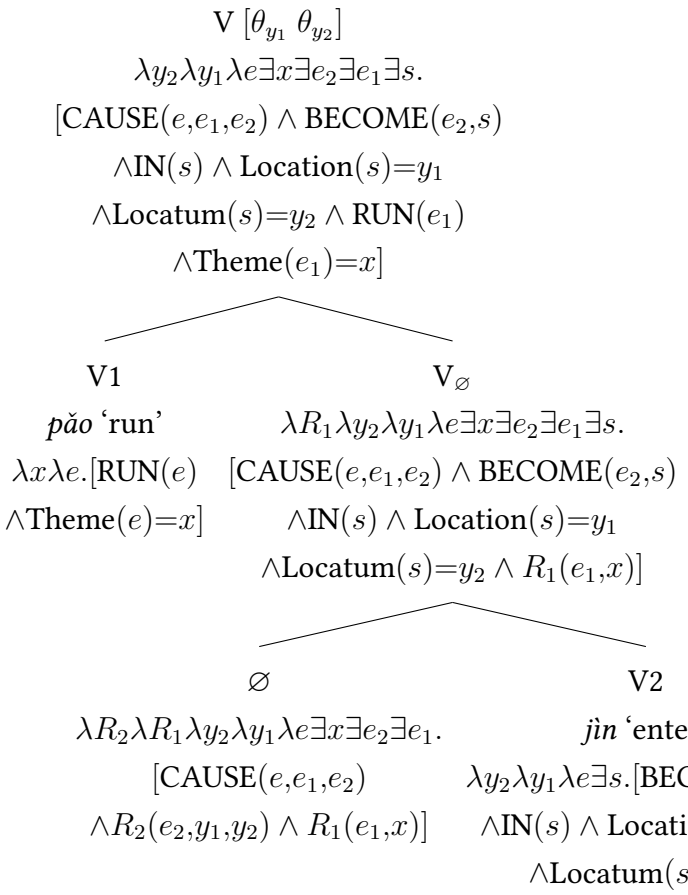
I assume that V1 *pǎo* 'run' has the semantics in (292). In many languages, verbs of motion systematically alternate between unaccusative and unergative forms depending on whether the motion is directed or not. I assume that *pǎo* 'run' here is a verb of directed motion that takes an unaccusative form.

(292) $[\![$*pǎo* 'run'$]\!]=\lambda x \lambda e.[\text{RUN}(e) \wedge \text{Theme}(e)=x]$

The derivation of an unaccusative directional V-V resultative composed of a manner verb and a directional verb like *pǎo-jìn* 'run-enter' is given in (293) below:

[15] `https://www.dzwww.com/shenghuoribao/shenghuoyulexinwen/200404270157.htm` See also `https://m.familydoctor.com.cn/201602/942791.html` for another example.

(293)



Although it may seem unintuitive to think of the event denoted by V1 *pǎo* 'run' as causing the event denoted by V2 *jìn* 'enter', e_1 and e_2 do indeed stand in a relation of causation as defined by Lewis (1973): (i) the running event does not follow the entering event and (ii) if the running event had not occurred, the entering event would not have occurred either.

Thus, directional resultatives composed of a manner verb and a directional verb can be derived in very much the same way as the change-of-state resultatives discussed in Chapter 3. The key difference is that in these directional resultatives, V2 has two internal arguments instead of one: a Locatum argument and a Location argument. As was the case with change-of-state resultatives, I assume that syntax does not constrain how the arguments of such directional resultatives are interpreted with respect to V1, although admittedly, it is difficult to demonstrate the absence of such a syntactic constraint when other pragmatic constraints are also present.

2.2 Directional resultatives with deictic verbs

In this subsection, I present the derivation of directional resultatives in which the final verb is one of two deictic verbs: *lái* 'come' and *qù* 'go'.

In these resultatives, V2 is an unaccusative verb. This can be seen from the fact that the sole argument of *lái* 'come' and *qù* 'go' can appear postverbally, which is a property of unaccusative verbs (Paul, Lu, and Lee 2020).

(294) *Jīntiān* ***lái****-le* *sān* *gè* *kèrén.*
today come-PFV three CLF guests
'There have come three guests today.' (Paul 2022)

(295) *Zuótiān* *yǐjīng* ***qù****-le* *sān* *gè* *rén.*
yesterday already go-PFV three CLF person
'Yesterday, there already left three persons.' (Paul 2022)

I assume the semantics of *lái* 'come' and *qù* 'go' below, where HERE refers to a location that is contextually defined relative to the speaker. A deictic verb like *lái* 'come' or *qù* 'go' can thus be thought of as a special type of directional verb (like *jìn* 'enter' etc.) but with a Location argument that is encoded in its semantics.[16]

(296) $[\![$*lái* 'come'$]\!]=\lambda y\lambda e\exists s.[\text{BECOME}(e,s) \wedge \text{AT}(s) \wedge \text{Locatum}(s)=y \wedge \text{Location}(s)=\text{HERE}]$

(297) $[\![$*qù* 'go'$]\!]=\lambda y\lambda e\exists s.[\text{BECOME}(e,s) \wedge \neg\text{AT}(s) \wedge \text{Locatum}(s)=y \wedge \text{Location}(s)=\text{HERE}]$

Given that deictic verbs are a special case of directional verbs, we would expect that manner verbs can combine with them to form directional V-V resultatives. This expectation is borne out. Such resultatives can be transitive, as in (298), or unaccusative, as in (299).

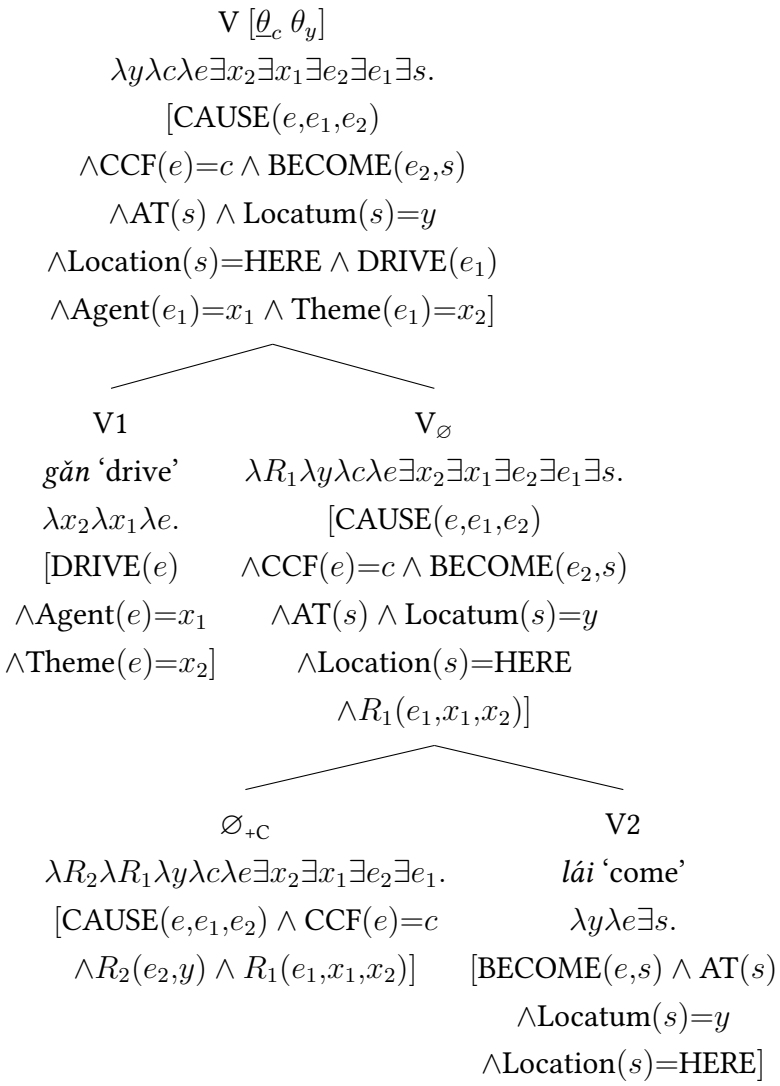
(298) *Zhāngsān* *bǎ* *yáng* ***gǎn-lái****-le.*
Zhangsan BA sheep drive-come-PFV
'Zhangsan drove the sheep here.'

(299) *Yáng* ***pǎo-lái****-le.*
sheep run-come-PFV
'The sheep ran here.'

[16]For a different view, see Hu (2022) who analyses *lái* 'come' and *qù* 'go' as ambiguous between a verb, a preposition that introduces a path and an aspectual marker.

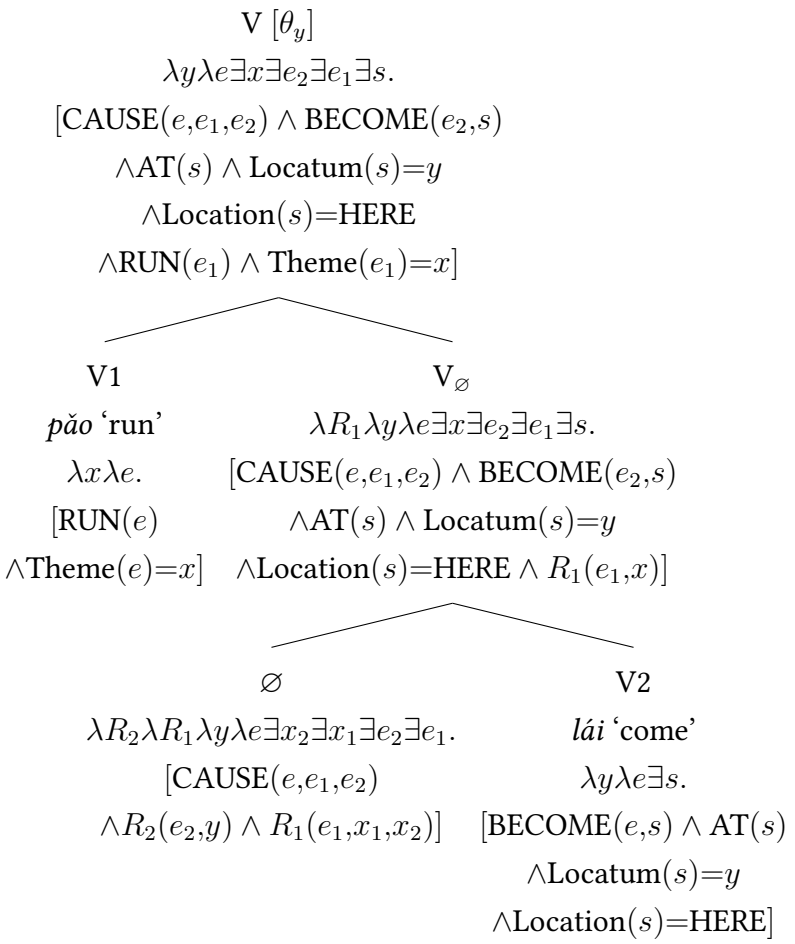
The derivation of a transitive directional V-V resultative composed of a manner verb and a deictic verb like *gǎn-lái* 'drive-come' is given in (300) below:

(300)



The derivation of an unaccusative directional V-V resultative composed of a manner verb and a deictic verb like *pǎo-lái* 'run-come' is given in (301) below:

(301)



Furthermore, directional verbs can combine with a deictic verb to form directional V-V resultatives. As mentioned earlier in this section, these cannot be transitive, as in (302), but can only be unaccusative, as in (303).

(302) **Zhāngsān bǎ yáng* ***jìn-lái**-le.*
Zhangsan BA sheep enter-come-PFV
Intended: 'Zhangsan caused the sheep to come in here.'

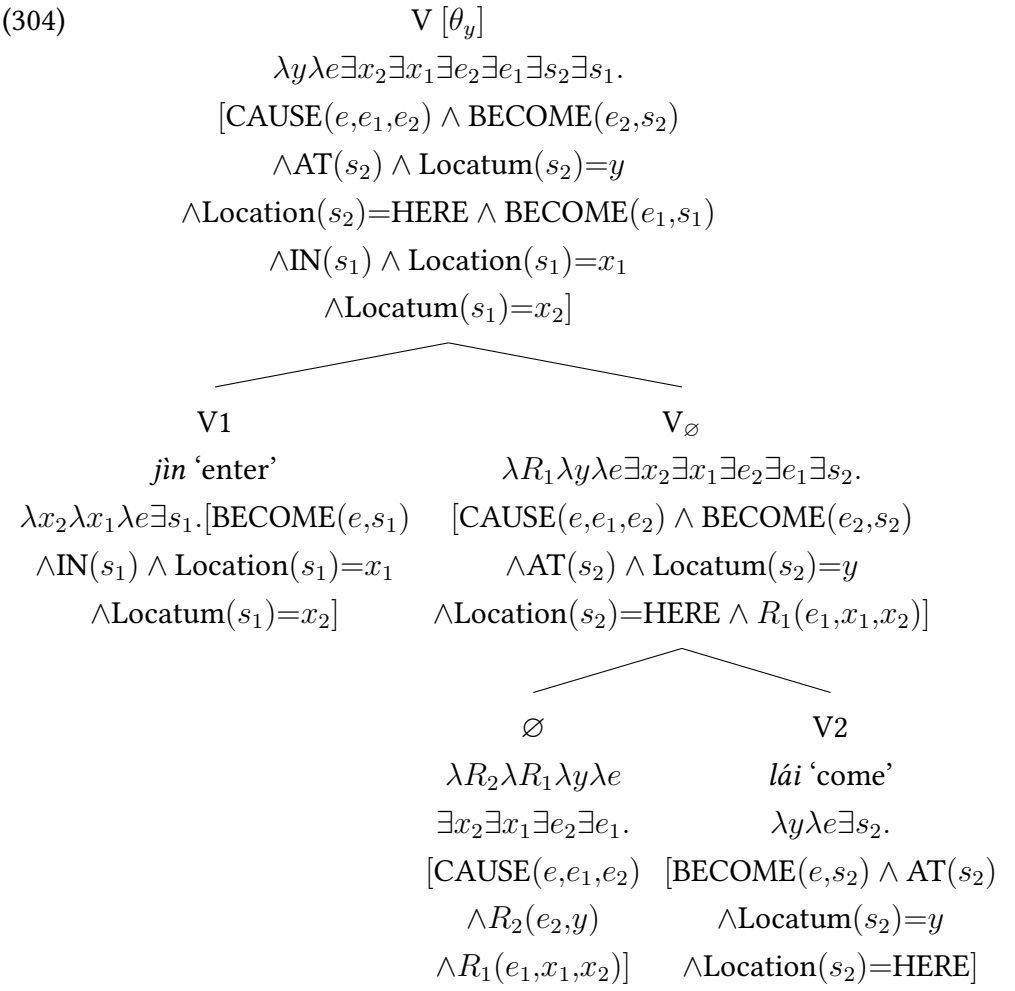
(303) *Yáng* ***jìn-lái**-le.*
sheep enter-come-PFV
'The sheep came in here.'

As was the case with the directional resultatives discussed in Section 2.1 of this chapter, these V-V resultatives are subject to an interpretive condition which

follows from the Onset Condition, namely, that the external argument of a transitive resultative must be interpreted as a participant in the event denoted by V1. This condition is not satisfied in (302), and so the sentence is ungrammatical.

The derivation of an unaccusative directional V-V resultative composed of a directional verb and a deictic verb like *jìn-lái* 'enter-come' is given in (304) below:

(304)



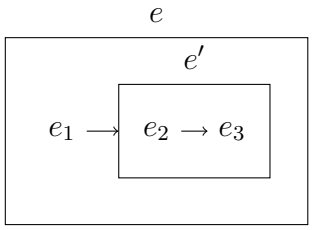
Given that a manner verb can combine with a directional verb (e.g. *gǎn-jìn* 'drive-enter'), and a directional verb can combine with a deictic verb (e.g. *jìn-lái* 'enter-come'), we might expect that a manner verb can combine with a directional verb and a deictic verb to form a V-V-V resultative (*gǎn-jìn-lái* 'drive-enter-come'). This expectation is borne out. Such resultatives can be transitive, as in (305), or unaccusative, as in (306).

(305) *Zhāngsān bǎ yáng* ***gǎn-jìn-lái****-le.*
Zhangsan BA sheep drive-enter-come-PFV
'Zhangsan drove the sheep in here.'

(306) *Yáng* ***pǎo-jìn-lái****-le.*
sheep run-enter-come-PFV
'The sheep ran in here.'

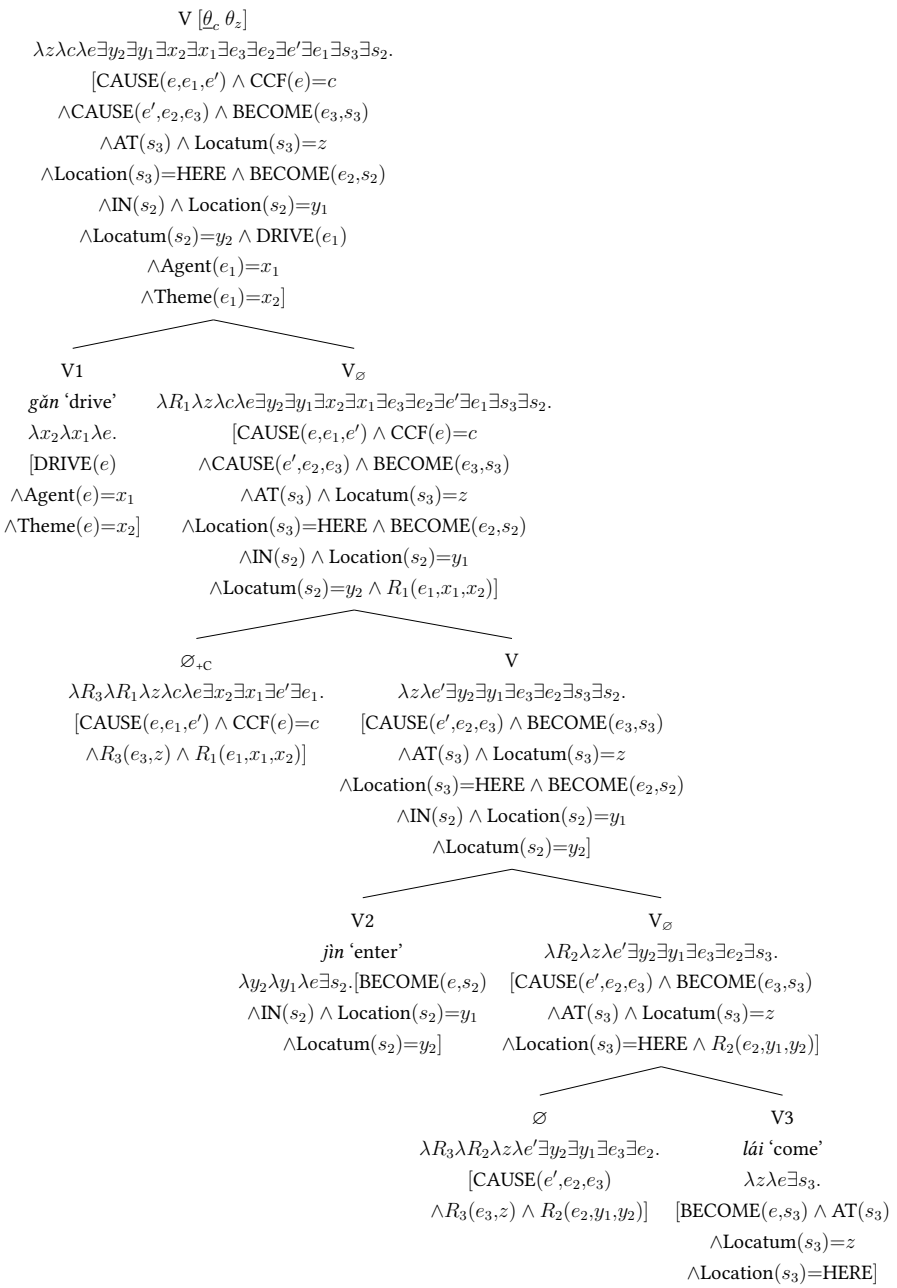
Nothing in the proposal for the semantics and argument structure of V-V resultatives that I put forward in Chapter 2 rules out the formation of V-V-V resultatives. V1, V2 and V3 denote three events e_1, e_2 and e_3 respectively. These events are related by two null heads that apply recursively: one that introduces a macroevent e' containing the causing event e_2 and the caused event e_3, and one that introduces a macroevent e containing the causing event e_1 and the caused event e', as illustrated in (307).

(307)



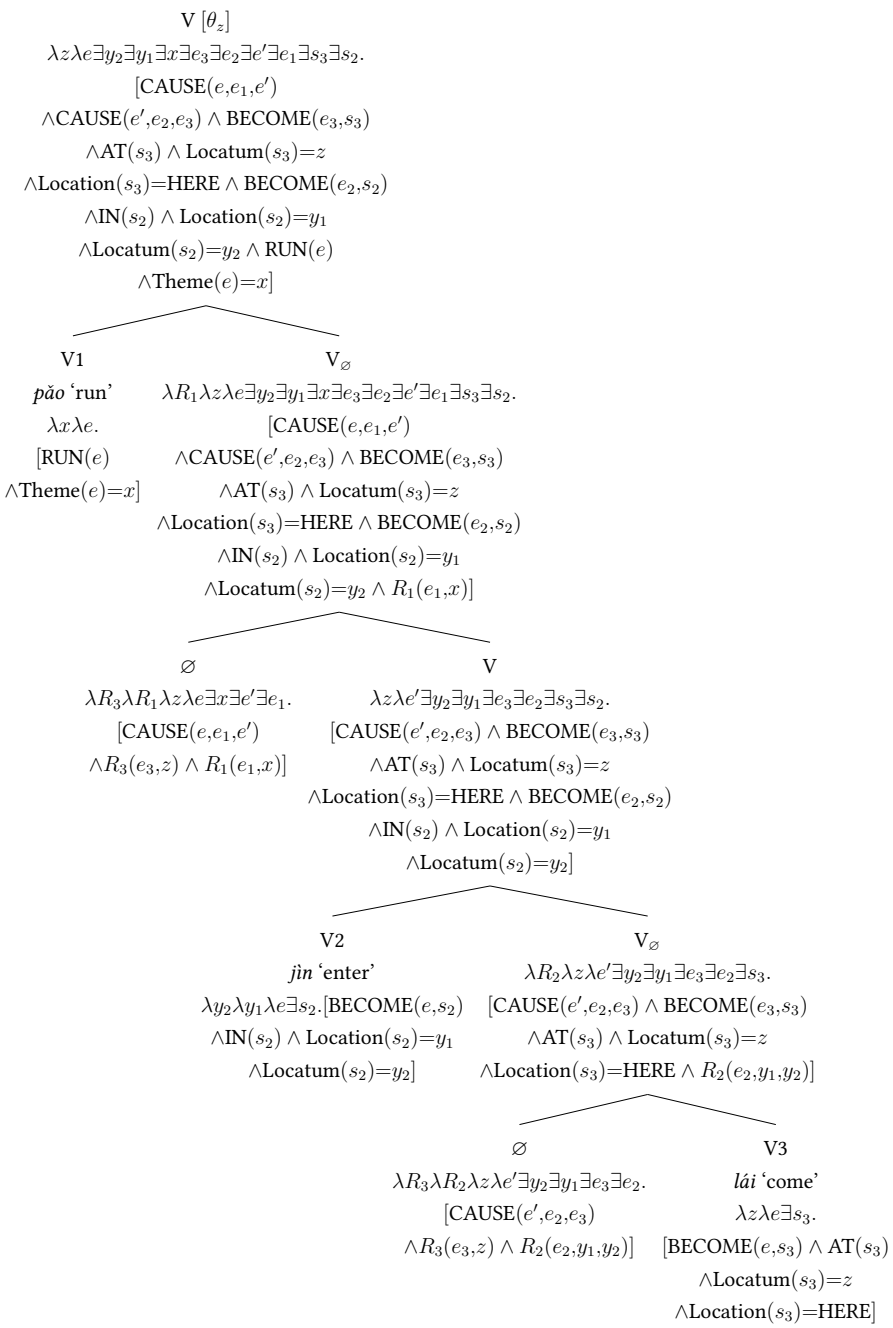
The derivation of a transitive directional V-V-V resultative like *gǎn-jìn-lái* ‘drive-enter-come’ is given in (308) below:

(308)



The derivation of an unaccusative directional V-V-V resultative like *pǎo-jìn-lái* 'run-enter-come' is given in (309) below:

(309)



To summarise, the deictic verbs *lái* 'come' and *qù* 'go' are special types of directional verbs (like *jìn* 'enter' etc.) whose Location arguments are not overtly realised in syntax but are supplied by the context. Nevertheless, deictic verbs can combine with manner verbs to form directional resultatives, just like di-

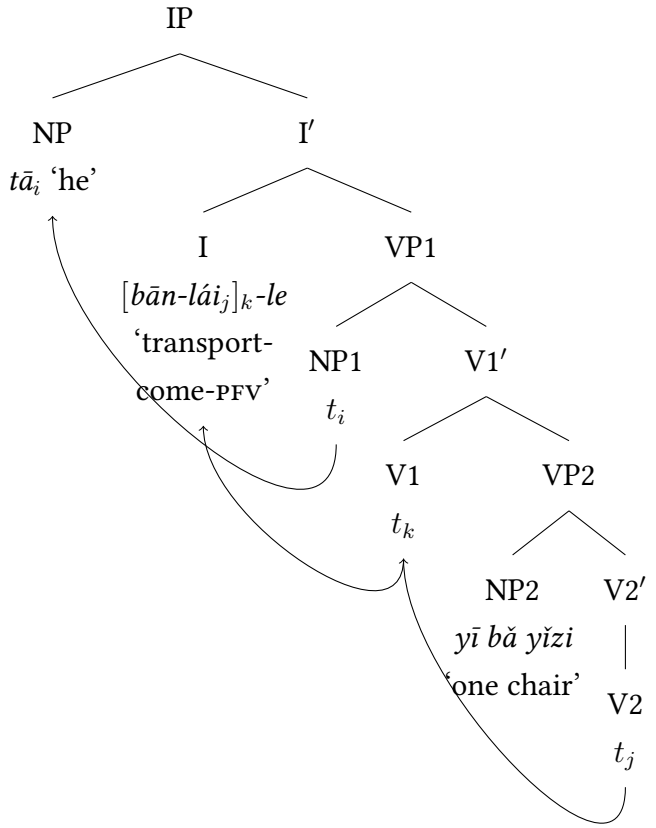
rectional verbs do. They can also combine with directional verbs to form directional resultatives. Interestingly, it is also possible for a manner verb, a directional verb and a deictic verb to combine to form a V-V-V resultative via recursive application of the null head. The proposal I defend in this thesis is able to generate this entire range of directional resultatives.

2.3 Comparison with competing accounts

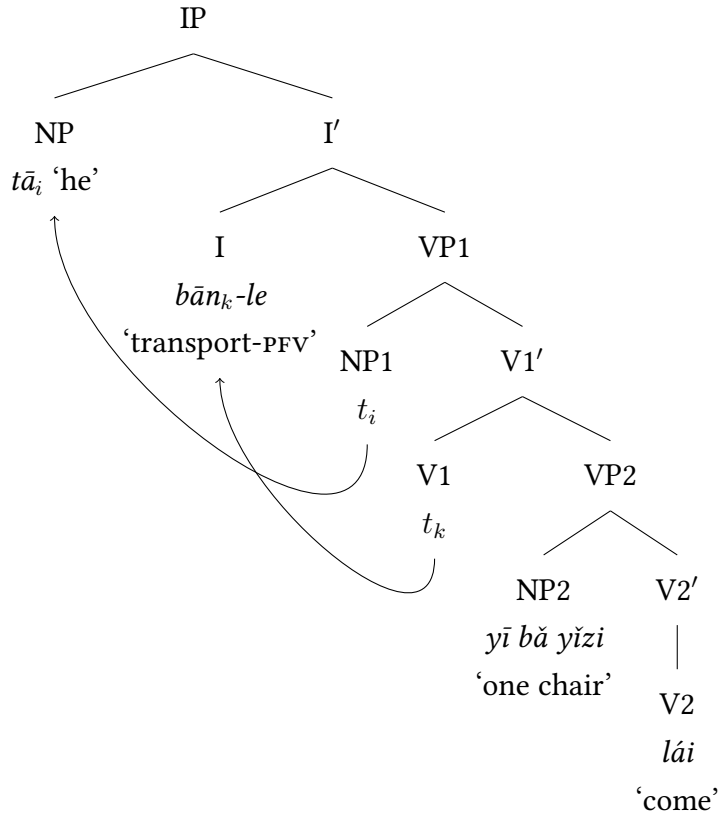
My proposal fares better than the dominant view in the literature that directional resultatives are derived from serial verb constructions (Zou 1994; Law 1996; Paul 2022; Chen 2023).

According to this view, the directional V-V resultative *bān-lái* 'transport-come' in (310) comprising of the manner verb *bān* 'transport' and the deictic verb *lái* 'come' can be derived from the corresponding directional SVC in (311) via verb movement.

(310) *Tā* ***bān-lái**-le* *yī* *bǎ* *yǐzi.*
3SG transport-come-PFV one CLF chair
'He moved a chair here.'



(311) *Tā* ***bān****-le* *yī* *bǎ* *yǐzi* ***lái****.*
3SG transport-PFV one CLF chair come
'He moved a chair here.'



According to this view, the directional V-V-V resultative *bān-huí-lái* 'transport-return-come' in (312) differs from the directional SVCs in (313) and (314) only in terms of the extent of verb movement that takes place.

(312) *Tā* ***bān-huí-lái****-le* *yī* *bǎ* *yǐzi.*
3SG transport-return-come-PFV one CLF chair
'He moved a chair back here.' (Zou 1994:453; translation mine)

(313) *Tā* ***bān-huí****-le* *yī* *bǎ* *yǐzi* ***lái****.*
3SG transport-return-PFV one CLF chair come
'He moved a chair back here.' (Zou 1994:453; translation mine)

(314) *Tā* ***bān****-le* *yī* *bǎ* *yǐzi* ***huí-lái****.*
3SG transport-PFV one CLF chair return-come
'He moved a chair back here.' (Zou 1994:453; translation mine)

I will not attempt to give an account of directional SVCs as doing so would take me too far afield. For our current purposes, it suffices to adopt the complementation structure often assumed for directional SVCs. Instead, I will mention two ways in which my proposal fares better than the dominant view that directional V-V(-V) resultatives are derived from their SVC counterparts.

First, my proposal derives directional V-V resultatives composed of a manner verb and a directional verb like (315) which have no SVC counterparts like (316).

(315) *Yáng* ***pǎo-jìn****-le* *yángjuàn.*
sheep run-enter-PFV sheep.pen
'The sheep ran into the sheep pen.'

(316) **Yáng* ***pǎo****-le* *yángjuàn* ***jìn****.*
sheep run-PFV sheep.pen enter
Intended: 'The sheep ran into the sheep pen.'

More recent proposals like Law (1996) and Paul (2022) have excluded directional resultatives like (315) from the scope of their analyses. In contrast, my proposal provides a uniform account of directional resultatives including (315).

Second, by making a distinction between directional V-V resultatives and their corresponding directional SVCs, my proposal allows us to understand why these two constructions differ in their aspectual properties. In contrast, these aspectual differences are unexpected if these two constructions have identical underlying structures and differ only in terms of the extent to which verb movement takes place.

The aspectual differences between directional V-V resultatives and their corresponding directional SVCs have been observed by many in the literature (Kimura 1984 *et seq.*). Researchers differ on the best way to characterise these differences, but broadly speaking, directional V-V resultatives tend to denote achievements while serial verb constructions tend to denote accomplishments (e.g. Chen 2023). These differences can be demonstrated by a range of tests, most notably by compatibility with the progressive marker *zhèngzài*.

Most V-V resultatives are incompatible with the progressive marker *(zhèng)zài*, except for V-V resultatives like (317) with a durative V1 and a V2 with an open-ended scale (Chief 2007).

(317) *Tā zài* ***lā-cháng*** *xiàngpíjīn.*
he PROG pull-long rubber.band
'He is lengthening the rubber band by pulling it.' (Chief 2007:153)

Hence, directional V-V resultatives composed of a durative manner V1 and a directional V2 like (318) are compatible with *zhèngzài*.

(318) *Yīngtè'ěr zhèngzài* ***pá-chū*** *dà kēng.*
Intel PROG climb-exit big pit
'Intel is climbing out of a big pit.'[17]

Directional V-V resultatives with a deictic V2 are less compatible with *zhèngzài* because V2 is less easily interpreted as having an open-ended scale.

(319) *?Tā zhèngzài* ***bān-lái*** *yī gè xiāngzi ne.*
3SG PROG transport-come one CLF box SFP
'He is moving a box here.' (Chen 2023; translation mine)

And directional V-V resultatives with a deictic V2 and a punctual V1 are the least compatible with *zhèngzài*.

(320) **Tā zhèngzài* ***rēng-lái*** *yī kuài shítou ne.*
3SG PROG throw-come one CLF stone SFP
Intended: 'He is throwing a stone here.' (Chen 2023; translation mine)

In contrast, directional SVCs are not subject to the same constraints as directional V-V resultatives. Directional SVCs are compatible with *zhèngzài* iff V1 is durative.

(321) *Tā zhèngzài* ***bān*** *yī gè xiāngzi* ***lái*** *ne.*
3SG PROG transport one CLF box come SFP
'He is moving a box here.' (Chen 2023; translation mine)

(322) *?Tā zhèngzài* ***rēng*** *yī kuài shítou* ***lái*** *ne.*
3SG PROG throw one CLF stone come SFP
'He is throwing a stone here.' (Chen 2023; translation mine)

Thus, by distinguishing directional V-V resultatives from directional SVCs, my proposal allows us to understand why these two constructions have different aspectual properties.

[17] `https://www.dsb.cn/142813.html`

To summarise, in this section, I have presented an account of directional resultatives in Mandarin. I claim that in V-V resultative compounds composed of a manner V1 and a directional V2, V2 is an unaccusative verb that selects two internal arguments: a Locatum and a Location. Furthermore, I have shown that my proposal can also generate directional resultatives with three verbs.

3 Hybrid resultatives

In this section, I give an account of hybrid resultatives, which are best exemplified by V-V resultatives with V2 like *mǎn* or *bǎo* 'full' and similar predicates. These V-V resultatives can be transitive, as in (323) and (324).

(323) *Zhāngsān bǎ yùgāng* ***guàn-mǎn****-le shuǐ.*
Zhangsan BA bathtub pour-full-PFV water
'Zhangsan filled the bathtub full of water.'

(324) *Māma bǎ bǎobao* ***wèi-bǎo****-le fàn.*
mother BA baby feed-full-PFV food
'Mother fed the baby full of food.'

These V-V resultatives can also be unaccusative, as in (325) and (326).

(325) *Yùgāng* ***guàn-mǎn****-le shuǐ.*
bathtub pour-full-PFV water
'The bathtub became full as a result of water pouring into it.'

(326) *Zhāngsān* ***chī-bǎo****-le fàn.*
Zhangsan eat-full-PFV food
'Zhangsan ate himself full with food.'

Resultatives like (326) are sometimes described in the literature as subject-oriented (transitive) resultatives. This is because the result state denoted by V2 *bǎo* 'full' cannot be predicated of the postverbal nominal phrase *fàn* 'meal', but must hold of the surface subject *Zhāngsān* 'Zhangsan'.

I propose that the resultatives above can be analysed as hybrid resultatives that simultaneously denote a change of location and a change of state. On the one hand, hybrid resultatives resemble the change-of-state resultatives we discussed in Chapter 3. A sentence like (323) entails that the bathtub became

full as a result of Zhangsan pouring water into the bathtub, i.e., the bathtub undergoes a change of state from not full to full. In hybrid resultatives, the postverbal nominal phrase is optional, as shown in (327). When this phrase is omitted, hybrid resultatives can be assimilated to the change-of-state resultatives which we discussed in Chapter 3.

(327) *Zhāngsān bǎ yùgāng guàn-mǎn-le* ***(shuǐ)***.
Zhangsan BA bathtub pour-full-PFV water
'Zhangsan filled the bathtub full (with water).'

On the other hand, hybrid resultatives also resemble the pure change-of-location resultatives composed of a manner verb and a directional verb like (328) which we discussed in Section 2 of this chapter. A sentence like (323) also entails that water entered the bathtub as a result of Zhangsan pouring water into the bathtub, i.e., water undergoes a change of location from not being in the bathtub to being in the bathtub.

(328) *Zhāngsān bǎ yáng* ***gǎn-jìn****-le yángjuàn.*
Zhangsan BA sheep drive-enter-PFV sheep.pen
'Zhangsan drove the sheep into the sheep pen.'[18]

As was the case in directional resultatives, V2 in hybrid resultatives also includes some psychological predicates like *zuì* 'drunk', *lèi* 'tired', *fán* 'annoyed' and possibly *nì* 'bored', *guàn* 'accustomed' and *gòu* 'enough'.

(329) *Sàgēn bǎ tā* ***guàn-zuì****-le jiǔ.*
Sagen BA 3F.SG pour-drunk-PFV wine
'Lit. Sagen poured her drunk with wine.'[19]

(330) *Zhāngsān* ***qí-lèi****-le mǎ.*
Zhangsan ride-tired-PFV horse
'Zhangsan rode a horse and as a result {the horse/%Zhangsan} became tired.'

The arguments of these verbs, typically characterised as Experiencer and Subject Matter, can be conceived as Location and Locatum arguments respectively, following Landau (2009). On this view, a sentence like (330) entails that Zhangsan underwent a change of state from not tired to tired and that (the

[19] `https://www.kanunu8.com/book3/8114/179756.html`

intensional representation of) the horse underwent a change of location from not being in Zhangsan's mind to being in Zhangsan's mind. Both the change of state and the change of location came about as a result of Zhangsan riding the horse.

Hybrid resultatives are similar to directional resultatives in that in both classes of resultatives, V2 is an unaccusative verb that select two internal arguments: a Locatum and a Location. The idea that V2 in a hybrid resultative is a two-place predicate was first proposed by Sybesma (1999), although Sybesma does not explicitly state what thematic roles are assigned to the arguments of this two-place predicate, nor does he draw a connection between hybrid resultatives and directional resultatives.

In this section, I present an account of hybrid resultatives that explicitly treats them as a special case of directional resultatives that encode both a change of location and a change of state. I then compare my account with competing proposals.

3.1 Deriving hybrid resultatives

I present the derivation of a transitive hybrid V-V resultative using *guàn-mǎn* 'pour-full' as an example.

(331) *Zhāngsān bǎ yùgāng guàn-mǎn-le shuǐ.*
Zhangsan BA bathtub pour-full-PFV water
'Zhangsan filled the bathtub full of water.'

As noted earlier in Chapter 3, some V2s like *mǎn* 'full' are systematically ambiguous between an adjective with a stative interpretation and an inchoative verb with a change-of-state interpretation (Tham 2015). Whenever V2 is ambiguous between two variants, I assume that it is the inchoative "become" variant of V2 that appears in V-V resultatives.

In the case of *mǎn* 'full', the Locatum argument is optional. When this Locatum argument cannot be realised, *mǎn* 'full' has the semantics given in (332) in which the Locatum argument is existentially closed.

(332) $[\![$*mǎn* 'full'$]\!]=\lambda y_2 \lambda e \exists y_3 \exists s.[\text{BECOME}(e,s) \wedge \text{FULL}(s) \wedge \text{Location}(s)=y_2 \wedge \text{Locatum}(s)=y_3]$

But when the Locatum argument is realised, *mǎn* 'full' has the semantics given in (333) in which the Locatum argument is λ-bound.

(333) $[\![$*mǎn* 'full'$]\!]=\lambda y_3 \lambda y_2 \lambda e \exists s.[\text{BECOME}(e,s) \wedge \text{FULL}(s) \wedge \text{Location}(s)=y_2 \wedge \text{Locatum}(s)=y_3]$

V2 first merges with the null affix in (334) which adds a CCF argument.

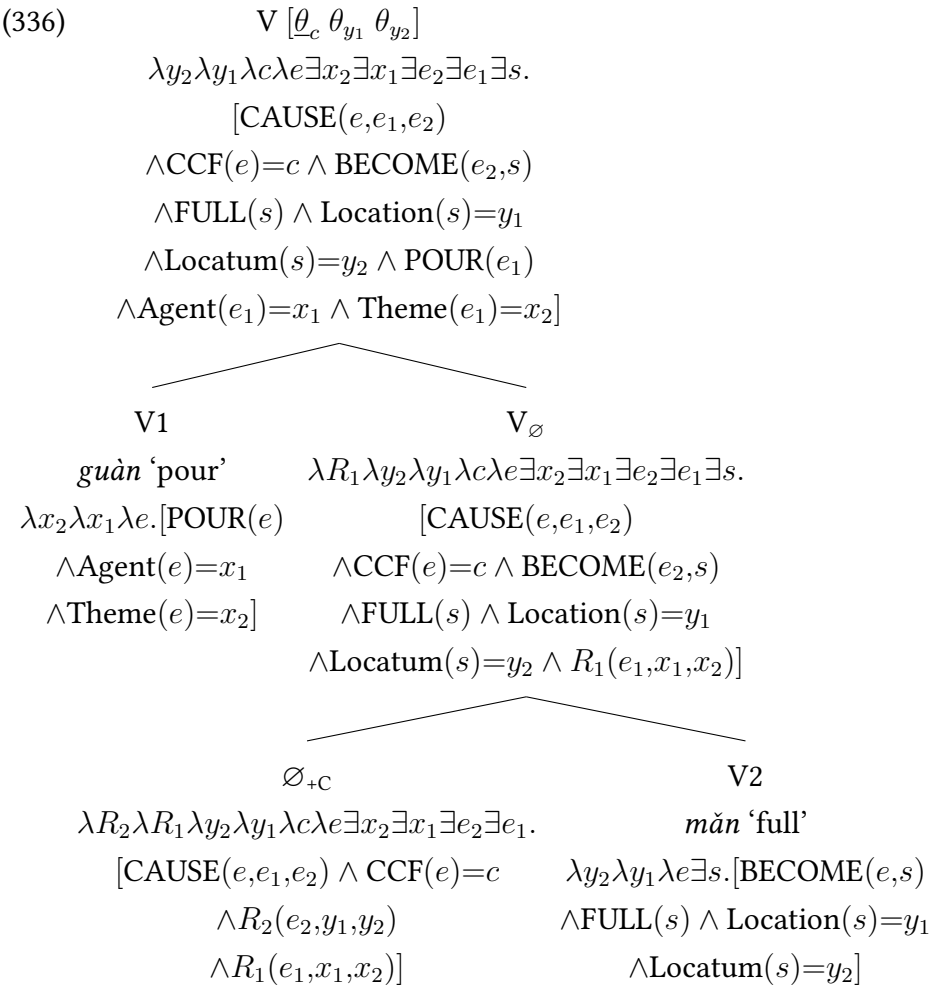
(334) $[\![\varnothing_{+\text{C}}]\!]=\lambda R_2 \lambda R_1 \lambda y_2 \lambda y_1 \lambda c \lambda e \exists x_2 \exists x_1 \exists e_2 \exists e_1.[\text{CAUSE}(e,e_1,e_2) \wedge \text{CCF}(e)=c \wedge \wedge R_2(e_2,y_1,y_2) \wedge R_1(e_1,x_1,x_2)]$

The node formed from the merger of V2 and the null affix then merges with V1. V1 *guàn* 'pour, chase' has the semantics in (335).

(335) $[\![$*guàn* 'pour'$]\!]=\lambda x_2 \lambda x_1 \lambda e.[\text{POUR}(e) \wedge \text{Agent}(e)=x_1 \wedge \text{Theme}(e)=x_2]$

The derivation of a transitive hybrid V-V resultative like *guàn-mǎn* 'pour-full' is given in (336) below:

(336)

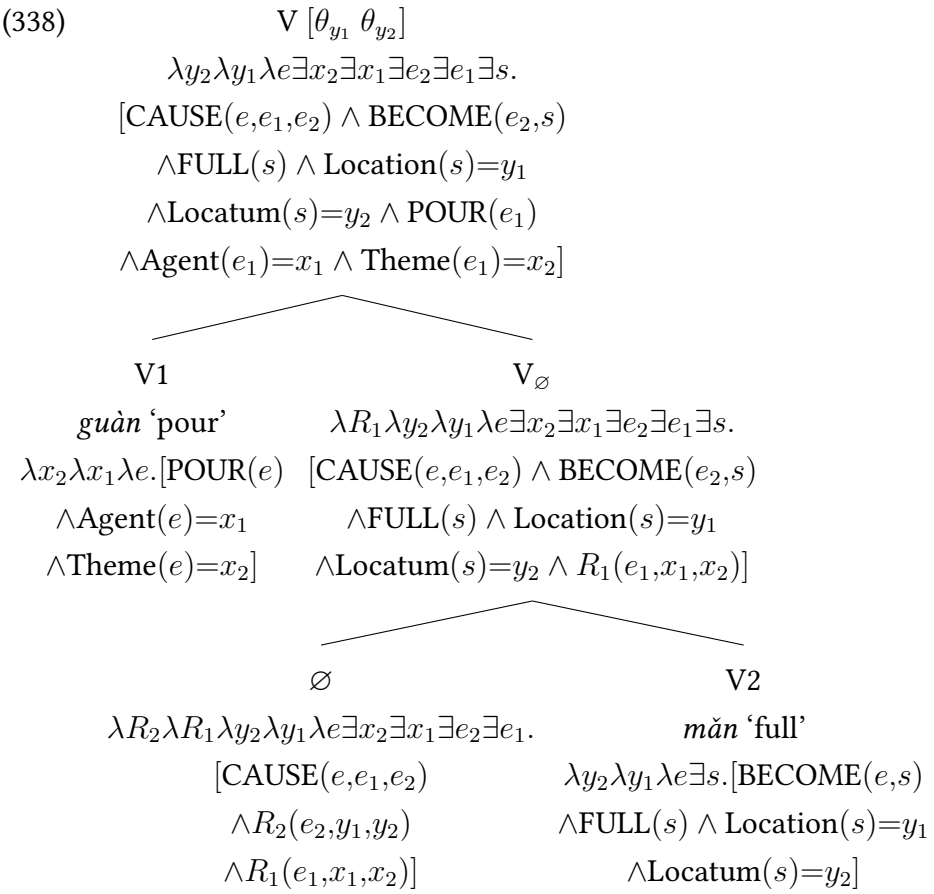


Hybrid resultatives also have unaccusative alternants like (337).

(337) *Yùgāng guàn-mǎn-le shuǐ.*
bathtub pour-full-PFV water
'The bathtub became full as a result of water pouring into it.'

The derivation of an unaccusative hybrid V-V resultative like *guàn-mǎn* 'pour-full' is given in (338) below:

(338)



One prediction that my proposal makes is that the postverbal nominal phrase cannot be realised if V2 does not have a Locatum argument. This prediction is borne out. The unaccusative resultative *chī-bǎo* 'eat-full' can realise a postverbal nominal phrase *fàn* 'meal' because V2 *bǎo* 'full' has a Locatum argument. In contrast, *fàn* 'meal' cannot appear after the resultatives *chī-pàng* 'eat-fat' and *chī-qióng* 'eat-poor' because neither *pàng* 'fat' nor *qióng* 'poor' have Locatum arguments.

(339) *Zhāngsān chī-bǎo-le (fàn).*
Zhangsan eat-full-PFV meal
'Zhangsan ate a meal and as a result he became full.'

(340) *Zhāngsān chī-{pàng/ qióng}-le (*fàn).*
Zhangsan eat-fat poor-PFV meal
'Zhangsan ate (meals) and as a result he became {fat/poor}.'

Another prediction that my proposal makes is that since the arguments of V1 are not mapped onto the θ-grid of the V-V resultative, syntax does not constrain how the arguments of the resultative are interpreted with respect to V1. However, as was the case with directional resultatives discussed in Section 2 of this chapter, there appears to be a strong preference for the Locatum argument of a hybrid resultative to be interpreted as the Theme of V1. Consider the contrast between (341) and (342). In (341), the Locatum argument *fàn* 'meal' is interpreted as the Theme of V1 *chī* 'eat', whereas in (342), *qì* 'gas' cannot be interpreted as the Theme of V1 *chī* 'eat'.

Context: e (Zhangsan ate food) → s (Zhangsan is full of food)

(341) *Zhāngsān chī-bǎo-le fàn.*
Zhangsan eat-full-PFV meal
'Zhangsan became full of food as a result of eating (food).'

Context: e_1 (Zhangsan ate food) → e_2 (food produces gas) → s (Zhangsan is full of gas)

(342) **Zhāngsān chī-bǎo-le qì.*
Zhangsan eat-full-PFV meal/ gas
Intended: 'Zhangsan became full of gas as a result of eating (something).

It is not sufficient for the Locatum argument to be interpreted as a participant in the event denoted by V1. A hybrid resultative is acceptable if the Locatum argument is interpreted as the Theme of V1, but not if it is interpreted as an instrument of V1, as illustrated in (343).
Context: This knife is so blunt that it is practically useless.

(343) *Wǒ {yòng/ *qiē}-fán-le zhè bǎ càidāo.*
I use- cut-annoyed-PFV this CLF knife
'I became annoyed as a result of {using/*cutting with} this knife.'

A hybrid resultative is acceptable if the Locatum argument is interpreted as the Theme of V1, but not if it is interpreted as a subject matter of V1, as illustrated in (344).

Context: This 100-episode TV series is so depressing and emotionally exhausting to watch.

(344) *Wǒ {kàn/ *kū}-lèi-le zhè bù xì.*
I watch- cry-tired-PFV this CLF show
Intended: 'I became tired as a result of {watching/*crying over} this show.'

In the absence of any examples to the contrary, one could assume that there is an absolute requirement for the Locatum argument to be interpreted as the Theme of V1. One could then choose to encode this tendency as a syntactic requirement, as Shibata, Sudo, and Yashima (2004) do. However, a similar tendency is observed in directional resultatives, and there that tendency is not absolute. I suggested that that tendency was better captured by a pragmatic requirement rather than a syntactic requirement. To the extent that hybrid resultatives are a special case of directional resultatives, this tendency should not be encoded in the semantics of hybrid resultatives either.

One question that remains is why the Locatum of V2 can be realised in a hybrid resultative like (345) but not in a simplex sentence like (346).

(345) *Yùgāng guàn-mǎn-le* ***shuǐ***.
bathtub pour-full-PFV water
'The bathtub became full as a result of water pouring into it.'

(346) *Yùgāng mǎn-le* ***(*shuǐ)***.
bathtub full-PFV water
'The bathtub was/became full (of water).'

This is a question that arises not just for my proposal, but for all proposals that analyse the postverbal nominal phrase of a hybrid resultative as the Locatum of V2 (e.g. Shibata et al. 2004; Sybesma 1999).

I can only point out that in Mandarin, it is not unusual for some oblique arguments to surface in a resultative but not in a simplex sentence. For example, as discussed in Chapter 3, the subject matter of V1 *kū* 'cry' can surface as the external argument of the resultative *kū-hóng* in (347) even though it cannot surface in a simplex sentence like (348).

(347) *Zhè bù diànyǐng kū-hóng-le wǒ de yǎnjīng.*
this CLF movie cry-red-PFV 1SG DE eye
'My eyes became red as a result of crying about this movie.'

(348) **Wǒ kū-le zhè bù diànyǐng.*
I cry-PFV this CLF movie
Intended: 'I cried over this movie.'

I leave a full account of oblique arguments in Mandarin for further research.

3.2 Comparison with competing accounts

Having presented a derivation of hybrid resultatives, I compare my proposal with other analyses in the literature that claim that the postverbal nominal phrase in a hybrid resultative is (i) an argument of V1 (Nishiyama 1998), (ii) an argument of V2 (Sybesma 1999), (iii) both (Shibata et al. 2004) or (iv) neither (Williams 2005). Since most extant analyses of Mandarin V-V resultatives do not give a unified account of hybrid resultatives, I will restrict this comparison to unaccusative hybrid resultatives like (330), repeated below as (349), which are commonly described in the literature as subject-oriented transitive resultatives.

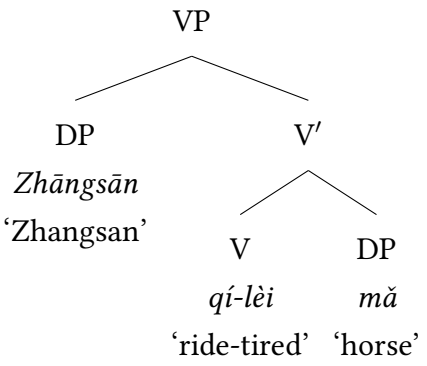
(349) *Zhāngsān **qí-lèi**-le mǎ.*
Zhangsan ride-tired-PFV horse
'Zhangsan rode a horse and as a result {the horse/%Zhangsan} became tired.'

My proposal is closest in spirit to other accounts that analyse the postverbal nominal phrase as an argument of V2 (Shibata et al. 2004; Sybesma 1999). Sybesma (1999) is not very explicit about the thematic role that is assigned to this postverbal nominal phrase, while Shibata et al. (2004) characterise the postverbal nominal phrase as the Subject Matter of a psychological predicate. I analyse the postverbal nominal phrase more generally as a Locatum, which subsumes the Subject Matter of a psychological predicate. My proposal also makes a connection between hybrid resultatives and directional resultatives, by analysing hybrid resultatives as a special case of directional resultatives that encode both a change of location and a change of state.

Two further competing accounts deny that the postverbal nominal phrase is an argument of V2.

The first account of this type claims that the postverbal nominal phrase is introduced by an element external to both V1 and V2. For example, according to Williams (2005), a resultative like *qí-lèi* 'ride-tired' in (349) is a double unaccusative resultative with two objects, as shown in (350). The primary object *Zhāngsān* 'Zhangsan' is merged as the specifier of the resultative and the secondary object *mǎ* 'horse' is merged as the complement.

(350)



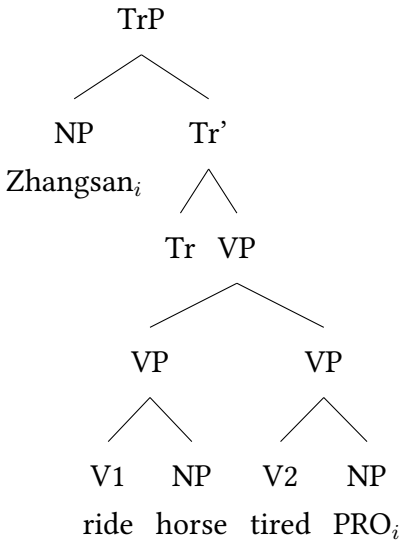
(adapted from Williams 2005:190)

Crucially for Williams, both the primary and secondary objects are arguments of the V-V resultative, not of V1 or V2. In fact, Williams assumes that neither V1 nor V2 projects any arguments or imposes any selectional requirements on the arguments of the V-V resultative. Given this assumption, his proposal cannot explain why the postverbal nominal phrase can be realised only if V2 has a Locatum argument, as illustrated in (351).

(351) *Zhāngsān chī-{bǎo/ *pàng}-le fàn.*
Zhangsan eat-full fat-PFV meal
'Zhangsan ate (meals) and as a result he became {full/*fat}.'

The second competing proposal claims that the postverbal nominal phrase in a hybrid resultative is introduced as the complement of V1 (Nishiyama 1998), as in (352).

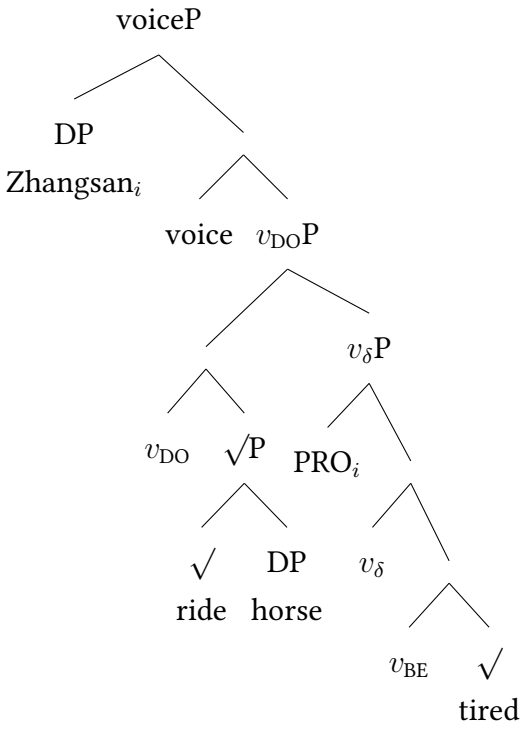
(352)



(adapted from Nishiyama 1998:206)

A variant of this proposal claims that the postverbal nominal phrase is introduced by the root of V1 (J. Lin 2004; Liu 2019), as in (353).

(353)



(adapted from J. Lin 2004:115)

But just like Williams's proposal, these competing proposals cannot explain why the postverbal nominal phrase can be realised only if V2 has a Locatum

argument.

Furthermore, proposals that claim that the postverbal nominal phrase is introduced by the root of V1 predict that only cognate objects or bare nouns that denote a conventionalised Theme of V1 can appear as the postverbal nominal phrase. On this account, we would expect that the postverbal nominal phrase following the resultative *chī-bǎo* 'eat-full' can only be *fàn* 'meal'. But this expectation is not borne out, at least not for all speakers. There are many counterexamples in the literature and in corpus data. For example, it has been claimed in the literature that a subject-oriented reading for *chī-bǎo* 'eat-full' is available with bare nouns other than *fàn* 'meal', such as *jiǎozi* 'dumplings' and *tǔdòu* 'potatoes'.

(354) *chī-bǎo-le jiǎozi*
eat-full-PFV dumpling
'eat dumplings and got full' (Cheng and Huang 1994:204)

(355) *Wǒ chī-bǎo-le tǔdòu.*
I eat-full-PFV potato
'I ate myself full of potatoes.' (Sybesma 1999:51)

A corpus search reveals a wide range of bare nouns denoting objects with different degrees of conventionalisation or prototypicality, including *kǎoròu* 'grilled meat', *nǎi* 'milk', *cǎo* 'grass', *yànmài* 'oats' and *dàmài* 'barley'.

(356) *Tāmen xǐqìyángyáng, chī-bǎo-le kǎoròu.*
they full.of.joy eat-full-PFV grilled.meat
'Full of joy, they ate themselves full of grilled meat.'[20]

(357) *Xiǎoháizi... chī-bǎo-le nǎi jiù guāiguāide shuì.*
child eat-full-PFV milk then obediently sleep
'Children drink themselves full of milk and then obediently go to sleep.'[21]

(358) *Yáng qún chī-bǎo-le cǎo.*
sheep flock eat-full-PFV grass
'The flock of sheep ate themselves full of grass.'[22]

[20] http://bcc.blcu.edu.cn/show/1058550269_0_4_-1_-1/0
[21] http://bcc.blcu.edu.cn/show/1134003015_0_3_-1_-1/0
[22] http://bcc.blcu.edu.cn/show/1351034366_2_5_-1_-1/0

(359) *Mǎ chī-bǎo-le yànmài hé dàmài.*
horse eat-full-PFV oats and barley
'The horse ate itself full of oats and barley.'[23]

Similarly, a subject-oriented reading of *hē-zuì* 'drink-drunk' is available not only when the postverbal object is *jiǔ* 'wine', but also when it is more specific like *pútáojiǔ* '(grape) wine' and *xiāngbīnjiǔ* 'champagne'.

(360) *Wǒ hē-zuì-le pútáojiǔ.*
I drink-drunk-PFV grape.wine
'I drank myself drunk with grape wine.'[24]

(361) *Yī xiē nánrén hé tāmen de fùqīn hē-zuì-le xiāngbīnjiǔ.*
one group man and 3F.PL DE father drink-drunk-PFV champagne
'A few men and [the women's] fathers drank themselves drunk with champagne.'[25]

For some speakers, the postverbal nominal phrase can even be a proper name, as in (362).

(362) *Tāotāo zhuī-lèi-le Yóuyóu le.*
Taotao chase-tired-PFV Youyou SFP
Relevant reading: 'Taotao chased Youyou and as a result Taotao got tired.' (Y. Li 1990)

Thus, the prediction that the postverbal nominal phrase is restricted to cognate objects or bare nouns is not borne out.

That said, it is true that for some speakers, the subject-oriented reading of apparent subject-oriented transitive V-V resultatives becomes unavailable (or less available) when the postverbal argument is not a bare noun, but a full DP. However, it is quite plausible that the unavailability of the subject-oriented reading does not arise due to any syntactic restrictions on the size of the postverbal argument, but rather due to semantic or pragmatic infelicity.

[23] http://bcc.blcu.edu.cn/show/1204962080_1_5_-1_-1/0
[24] http://bcc.blcu.edu.cn/show/1024540668_3_8_-1_-1/0
See also http://bcc.blcu.edu.cn/show/1190357558_1_6_-1_-1/0
[25] https://www.kanunu8.com/book3/8216/181542.html

Consider the contrast between the English sentences in (363) and (364). The resultative *eat full* is followed by a bare noun *chocolate* in (363) and a full DP *five bars of chocolate* in (364). (364) is degraded because the resultative *eat full* suggests that the eating activity culminates in the event of becoming full, but at the same time, the full DP *five bars of chocolate* suggests that the eating activity terminates when a specific quantity of food has been consumed. I would suggest that the (potential) incompatibility between two endpoints for the same activity of eating is what makes (364) less acceptable.

(363) John ate himself full of **chocolate**.

(364) *John ate himself full of **five bars of chocolate**.

In a similar vein, in a Mandarin resultative like *qí-lèi* 'ride-tired', the activity of riding culminates in the event of becoming tired. If the postverbal argument is specific or definite, this argument suggests another termination point for the riding activity, which is at odds with the termination point already supplied by the resultant state.

(365) *Zhāngsān qí-lèi-le (%nà-pī/ %sān-pī/ %nà sān-pī)*
Zhangsan ride-tired-PFV that-CL/ three-CL/ that three-CL
mǎ.
horse
Intended: 'Zhangsan rode (those three) horses and as a result Zhangsan became tired.'

In summary, in this section, I have presented an account of hybrid resultatives in Mandarin. Hybrid resultatives contain an optional argument which is interpreted as the Locatum of V2. They can be analysed as a special case of directional resultatives that encode both a change of location and a change of state.

4 Concluding remarks

Taken together, Chapters 3 and 4 present a unified account of the argument structure of both change-of-state and change-of-location V-V resultatives in Mandarin. Both classes of resultatives contain a null head that inherits all of the arguments of V2 but none of the arguments of V1.

- Change-of-state resultatives, as discussed in Chapter 3, typically contain an unaccusative V2 with a single internal argument: a Theme that undergoes a change of state.
- Pure change-of-location, or directional, resultatives differ from change-of-state resultatives in that they contain an unaccusative V2 with two internal arguments: (i) a Location argument and (ii) a Locatum argument that undergoes a change of location.
- Hybrid resultatives are a combination of change-of-state resultatives and pure change-of-location resultatives in that they contain an unaccusative V2 with two internal arguments: (i) a Location argument that undergoes a change of state and (ii) a Locatum argument that undergoes a change of location.

If my characterisation of hybrid resultatives is on the right track, the existence of such resultatives poses a challenge for decompositional accounts of resultatives that only allow for a single result (Embick 2004; Mateu 2012; Ramchand 2008).

My account of change-of-location resultatives accommodates a range of different resultatives. In particular, I have shown that:

- directional V-V-V resultatives can be derived via recursive application of the null head.
- apparent subject-oriented transitive resultatives in Mandarin can be analysed as a special type of hybrid resultative.
- some resultatives with a psychological predicate as V2 like *wán-wàng* 'play-forget' or *qí-lèi* 'ride-tired' (on a "subject-oriented" reading) can be analysed on a par with spatial change-of-location resultatives, if we analyse the Experiencer arguments in psychological predicates as mental Locations, following Landau (2009).

In the next chapter, I critically evaluate an alternative account of Mandarin resultatives that assumes that such resultatives never inherit any of the arguments of V1 or V2.

Chapter 5

Against the No Argument Theory

1 Introduction

In this chapter and the chapters that follow, I critically evaluate an alternative account of the flexibility of argument realisation in Mandarin V-V resultatives. This account is best exemplified and most fully developed by Williams (2005), though Huang (2006) presents a brief sketch of a similar idea.

According to this account, the reason why V1 does not project its arguments in a V-V resultative is not due to structural properties of V-V resultatives, but because of lexical properties of V1. Specifically, it is claimed that V1 (and Mandarin verbs in general) do not project any arguments at all, whether in simple clauses or in V-V resultatives.

This alternative account seems attractive because the same flexibility of argument realisation in V-V resultatives is also attested in resultative V-*de* and V-*de/bu*-V constructions, at least at first glance. For example, V-V resultatives can omit their agent as in (366) and can exhibit an "inverted" argument realisation pattern as in (367).

(366) *Yīfú* *xǐ-gānjìng-le.*
clothes wash-clean-PFV
'The clothes were washed clean.' (C. Li 2007:229)

(367) *Yīfú* *xǐ-lèi-le* *jiějiě.*
clothes wash-tired-PFV elder.sister
'These clothes made big sister tired by [her] washing [them].'
(Ren 2001; cited in Williams 2005:66)

It appears that the same argument realisation patterns are attested in V-*de* constructions.[1] (In Chapter 6, we will reassess whether V-*de* constructions truly have the same degree of flexibility of argument realisation as V-V resultatives.)

(368) *?Yīfú xǐ de gānjìng-le.*
clothes wash DE clean-PFV
'The clothes [were] washed clean.'

(369) *Yīfú xǐ de jiějiě lèi-le.*
clothes wash DE elder.sister tired-PFV
'These clothes made big sister tired by [her] washing [them].'

The same argument realisation patterns are also available in principle in V-*de/bu*-V constructions. I will illustrate this with the V-*bu*-V construction because it is more productive than the V-*de*-V construction.[2]

(370) *(Zhè xiē) yīfú (zěnme dōu) xǐ-bù-gānjìng.*
this CLF clothes how also wash-BU-clean
'(No matter what, these) clothes could not be washed clean.'

(371) *(Zhè xiē) yīfú (zěnme dōu) xǐ-bù-lèi jiějiě.*
this CLF clothes how also wash-BU-tired elder.sister
'(No matter what, these) clothes could not make big sister tired by [her] washing [them].'

Given the data above, it is tempting to conclude that the flexibility of argument realisation in Mandarin V-V resultatives is not a structural property that is unique to these resultatives, but reflects a lexical property of Mandarin verbs more generally, specifically, that Mandarin verbs do not project any arguments at all. This is the central claim of the No Argument Theory proposed by Williams (2005).

The idea that Mandarin verbs do not project any arguments at all is not new, but has been proposed by Huang (1997) and developed by T.-H. J. Lin (2001).

In this chapter, I critically evaluate the proposal that Mandarin verbs never select any arguments. I then go on to show that this proposal cannot explain why some verbs in simple clauses require certain arguments to be realised.

[1]Note, though, that when V1 omits its external argument in a V-*de* resultative, that V-*de* resultative is often degraded relative to its V-V counterpart. I set this issue to one side.

[2]Williams (2005) points out that inverted V-*de/bu*-V constructions like (371) may be odd for pragmatic reasons, but maintains that such constructions are possible.

2 The alleged unselectiveness of Mandarin verbs (Lin 2001)

In this section, I critically evaluate a proposal by T.-H. J. Lin (2001) which claims that Mandarin verbs never select any arguments.

Lin (2001) is an implementation of the proposal in Huang (1997) that (i) the semantics of a lexical verb in Mandarin can be decomposed into an idiosyncratic meaning component and abstract predicates like DO or CAUSE that specify the event structure of the verb and (ii) these abstract predicates are represented in the syntax.

Proposals like Huang (1997) and Lin (2001) are part of the wider trend towards lexical decomposition or constructivism, in which verbs (or verbal roots) outsource the labour of introducing arguments to functional heads external to the verb (Borer 2005; Ramchand 2008).

Lin motivates his proposal with the observation that Mandarin verbs appear to be unselective with regards to their subjects and objects.

Lin observes that a Mandarin verb apparently need not realise its agent as its subject or its theme as its object, but can realise a location as its subject as in (372) or an apparent instrument as its object as in (373).

(372) *Gāosùgōnglù-shàng kāi-zhe yī liǎng BMW.*
expressway-on drive-IPFV one CLF BMW
'There is a BMW [running] on the expressway.' (T.-H. J. Lin 2001:4)

(373) *xiě zhè zhī bǐ*
write this CLF pen
'write with this pen' (T.-H. J. Lin 2001:203)

Lin observes that the external argument of a Mandarin verb like the verb of placement *fàng* can be omitted.

(374) *Lǎozhāng fàng-le yī běn shū zài zhuō-shàng.*
Laozhang put-PFV one CLF book at table-on
'Laozhang put a book on the table.' (T.-H. J. Lin 2001:105)

(375) *Nà běn shū fàng zài zhuō-shàng.*
that CLF book put at table-on
'*That book put on the table.' (T.-H. J. Lin 2001:105)

In contrast, English verbs do not show a comparable degree of unselectiveness.

(376) *On the expressway drove a BMW.

(377) *I wrote this pen.

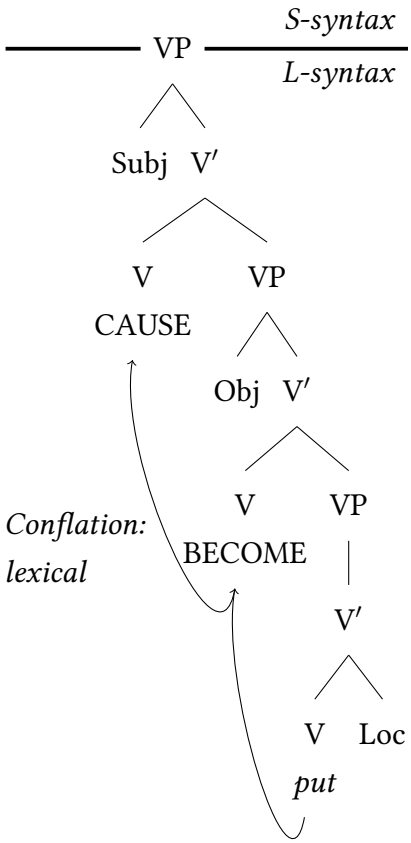
(378) *The book put on the table. (T.-H. J. Lin 2001:105)

Based on these observations, Lin claims that how selective verbs are in a given language reflects the level of grammar at which thematic relations are introduced.

Lin assumes an architecture of the grammar that maintains the distinction between L- and S-syntax, *contra* Chomsky (1995). Lin claims that thematic relations are introduced in L-syntax in English, but are introduced in S-syntax in Mandarin.

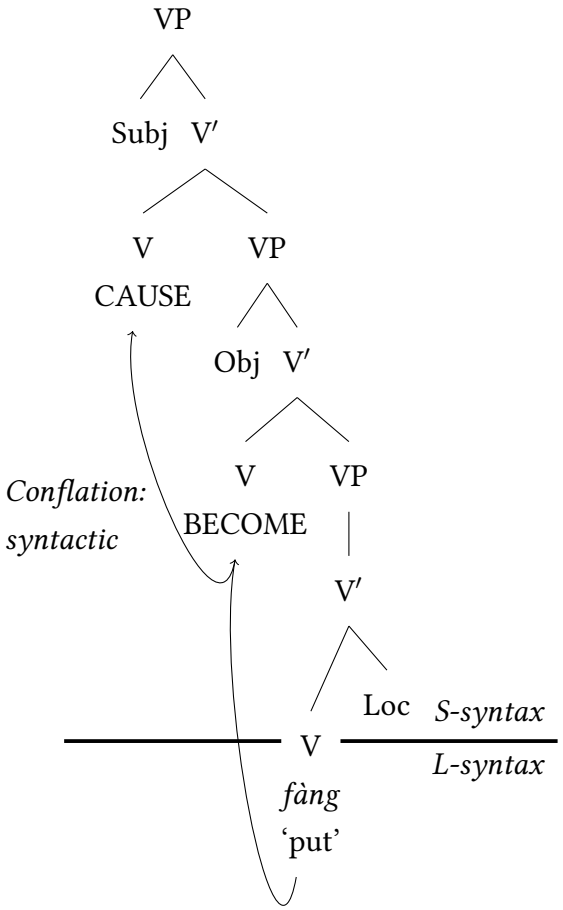
Lin proposes that languages differ according to the Lexicalization Parameter which specifies the level of phrase structure at which verbs and their thematic relations are lexicalised, and hence the level of grammar at which thematic relations are introduced. In English, lexicalisation occurs at the highest VP level, and so thematic relations are introduced in L-syntax. In Mandarin, lexicalisation occurs at the level of the main verb, and so thematic relations are introduced in S-syntax.

(379)



(T.-H. J. Lin 2001:113)

(380)



(T.-H. J. Lin 2001:115)

Lin claims that the external argument and internal argument of a verb are not selected by the verb itself, but are introduced by light verbs. Lin adopts a notion of light verbs as eventuality predicates that introduce a thematic relation between an argument and a lexical verb (Bowers 1993; Kratzer 1996).

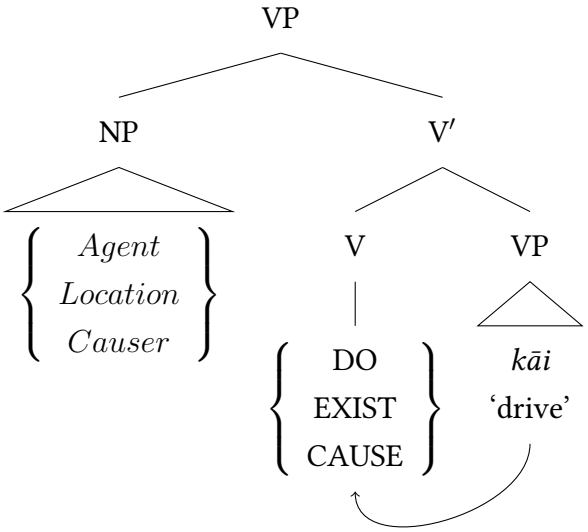
Lin proposes that in Mandarin, different external and internal arguments are introduced by different light verbs. Furthermore, since lexicalisation occurs at the level of the main verb in Mandarin, Mandarin verbs are free to appear with a range of different light verbs, which explains why Mandarin verbs appear to be unselective with regards to their external and internal arguments.

Let us consider the specific light verbs that Lin proposes, beginning with light verbs that introduce external arguments.

According to Lin, the external arguments of Mandarin verbs are introduced

by light verbs like DO, CAUSE, EXIST and so on. DO introduces agents, CAUSE introduces causers and EXIST introduces locations, as shown in (381).

(381)

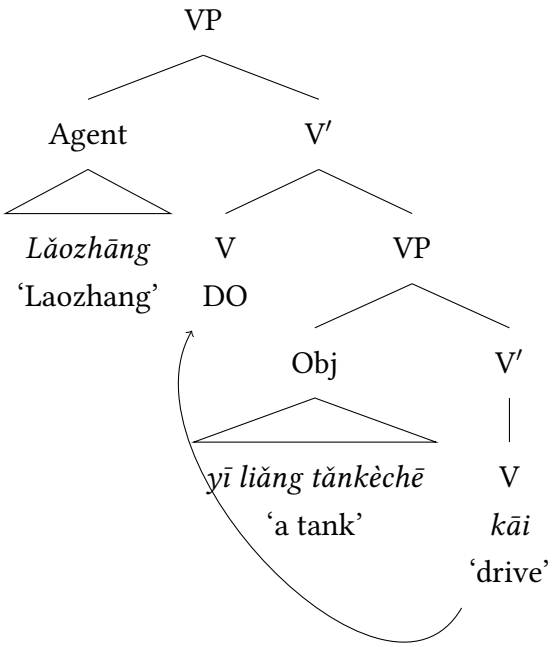


(T.-H. J. Lin 2001:119)

Let us consider each of these three light verbs in turn.[3]

First, according to Lin's proposal, the light verb DO introduces the agent of *kāi* 'drive' in (382). The lexical verb *kāi* 'drive' undergoes conflation with the light verb DO.

(382) *Lǎozhāng kāi-le yī liǎng tǎnkèchē.*
Laozhang drive-PFV one CLF tank
'Laozheng drove a tank.' (T.-H. J. Lin 2001:117)

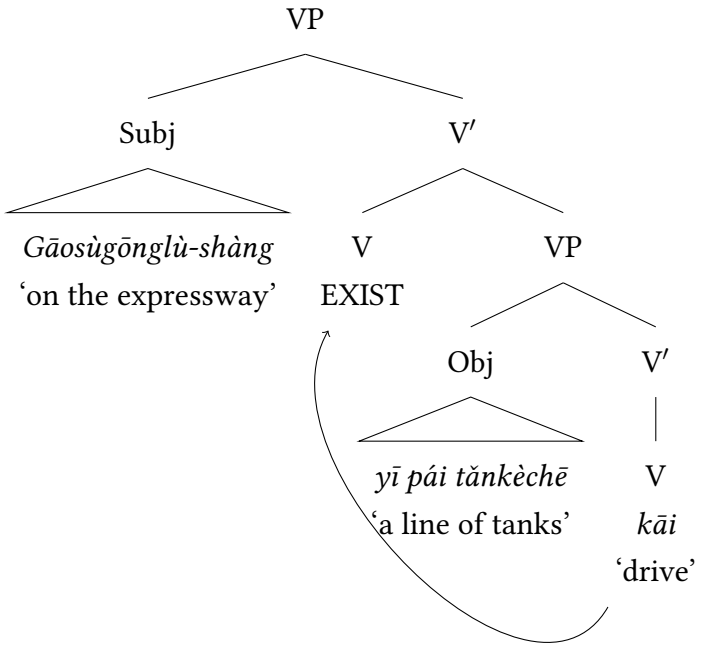


(adapted from T.-H. J. Lin 2001:149)

[3]Lin claims that *kāi* 'drive' can appear with different subjects, but then uses different lexical verbs to illustrate how each light verb introduces different subjects. I use *kāi* 'drive' for consistency and adapt Lin's trees accordingly.

Second, according to Lin's proposal, the light verb EXIST introduces a location as the external argument in (383).[4] The lexical verb undergoes conflation with the light verb EXIST.

(383) *Gāosùgōnglù-shàng kāi-zhe yī pái tǎnkèchē.*
expressway-on drive-IPFV one line tank
'There is a line of tanks on the expressway.' (T.-H. J. Lin 2001:117)



(adapted from T.-H. J. Lin 2001:159)

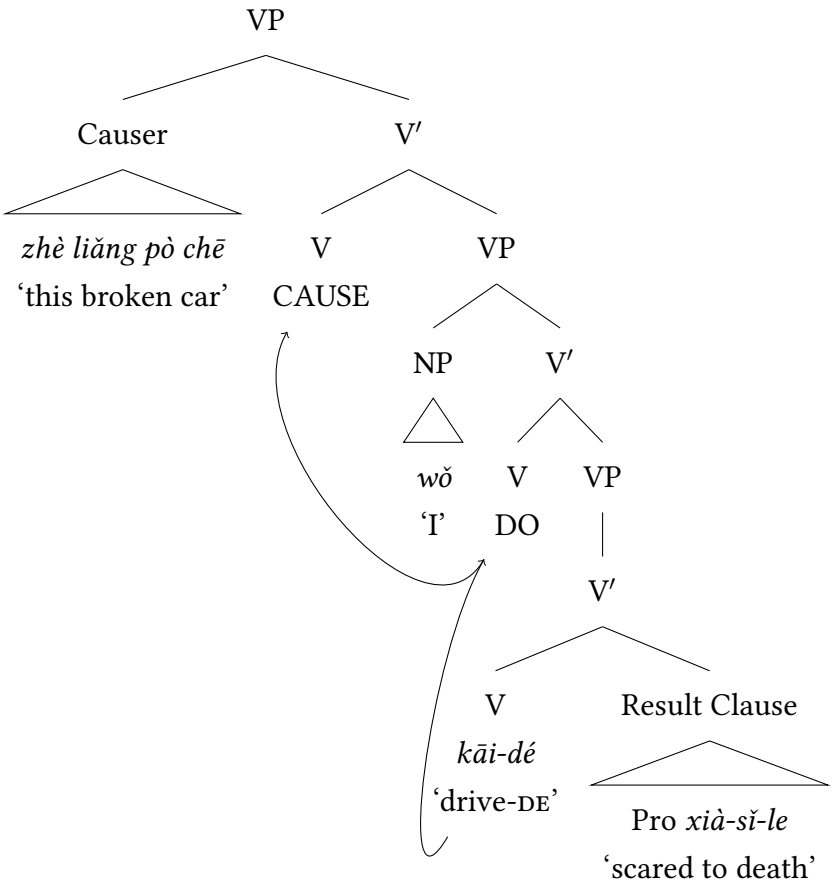
[4]Lin is primarily concerned with cases in which the agent of the lexical verb is omitted, and not so much cases like (iii) where the agent is present. I set sentences like (iii) to one side.

(iii) *Běimén shàng shǒu-zhe yī gè lián.*
Northern.Gate on guard-IPFV one CLF company
'At the Northern Gate a company keeps guard.' (Paul et al. 2020:260)

I also set aside sentences where the agent is realised as a null *pro* subject. In such sentences, *pro* must be licensed by an antecedent in the preceding discourse and is illicit in an out-of-the-blue context.

Lastly, according to Lin's proposal, the light verb CAUSE introduces a causer as the external argument of the V-*de* construction in (384). The lexical verb undergoes conflation with the light verbs DO and CAUSE.

(384) *Zhè liǎng pò chē kāi de wǒ xià-sǐ-le.*
this CLF broken car drive DE I frighten-dead-PFV
'Driving this broken car made me scared to death.'
(T.-H. J. Lin 2001:117)

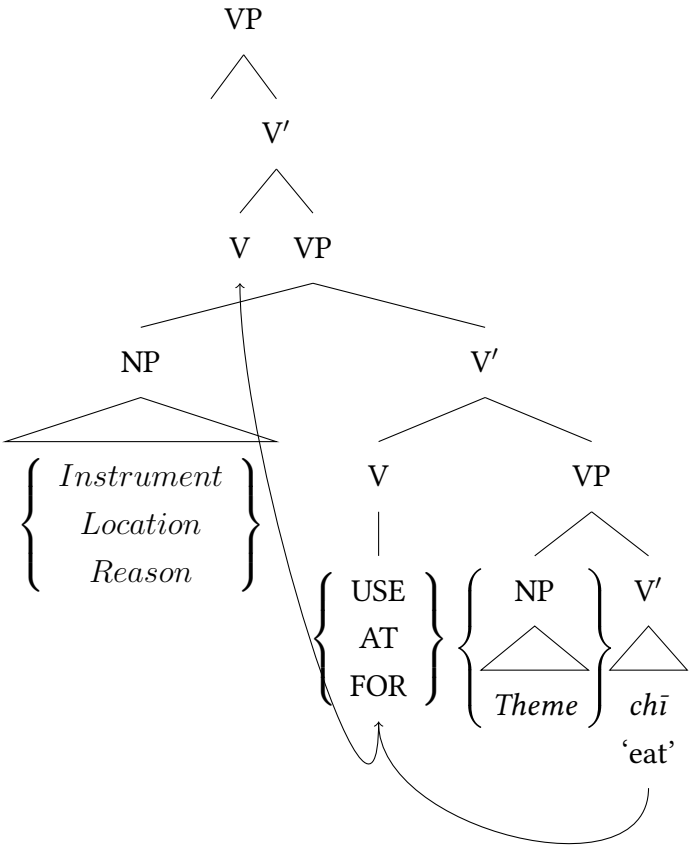


(adapted from T.-H. J. Lin 2001:176)

Having looked at three of the light verbs that Lin claims introduce external arguments, let us look at the light verbs that Lin claims introduce internal arguments.

According to Lin, themes are optionally introduced in the specifier of the lexical VP, but Mandarin verbs can also realise instruments, locations and reasons as so-called "adverbial objects" in the specifiers of the light verbs USE, AT and FOR.

(385)



(T.-H. J. Lin 2001:120)

Let us consider each of these three light verbs in turn.[5]

First, Lin proposes that for some speakers, the light verb USE introduces an instrument as an adverbial object in (386).

(386) *chī dà wǎn*
eat big bowl
‘use a big bowl to eat’ (T.-H. J. Lin 2001:117)

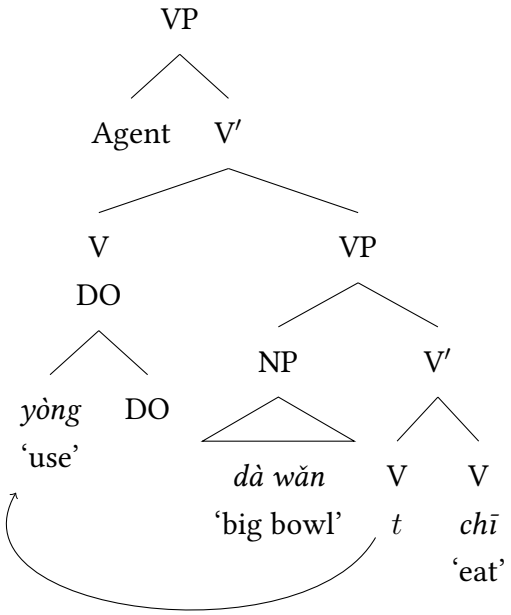
Lin motivates the existence of the light verb USE by observing that a verb can appear with both its theme and an instrument following *yòng* ‘use’ as in (387).

(387) *yòng dà wǎn chī*
use big bowl eat
‘use a big bowl to eat’

[5]As was the case with subjects, Lin claims that *chī* ‘eat’ can appear with different objects, but then uses different lexical verbs to illustrate how each light verb introduces different objects. I have chosen to use *chī* ‘eat’ consistently throughout, and have adapted Lin’s original trees accordingly.

According to Lin, (387) can be analysed as a serial verb construction with the structure in (388), in which *yòng* ‘use’ is incorporated into the light verb DO.

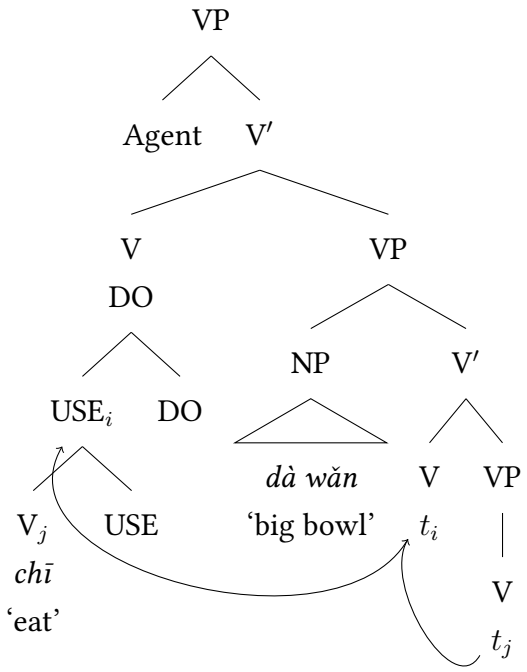
(388)



(adapted from T.-H. J. Lin 2001:226)

A sentence with an instrumental adverbial object like (386) can thus be thought of as containing a light verb USE which is the phonologically null counterpart of *yòng* 'use'. The lexical verb undergoes conflation with USE, which in turn incorporates into the light verb DO which introduces the agent.

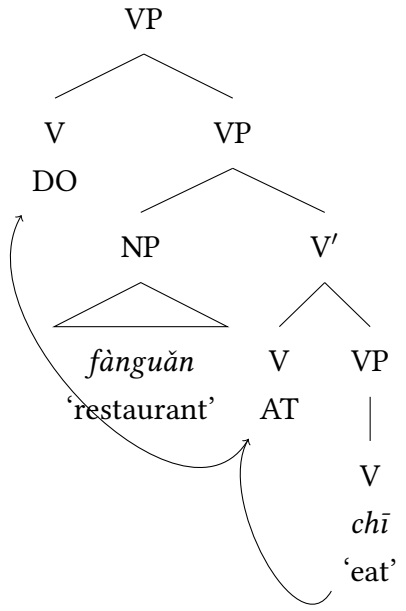
(389)



(adapted from T.-H. J. Lin 2001:229)

Second, Lin proposes that the light verb AT introduces a location or time as an adverbial object similar to how USE introduces a instrumental adverbial object. The lexical verb undergoes conflation with AT, which incorporates into the light verb DO.

(390) *chī fànguǎn*
eat restaurant
'dine in a restaurant' (T.-H. J. Lin 2001:209)



(T.-H. J. Lin 2001:230)

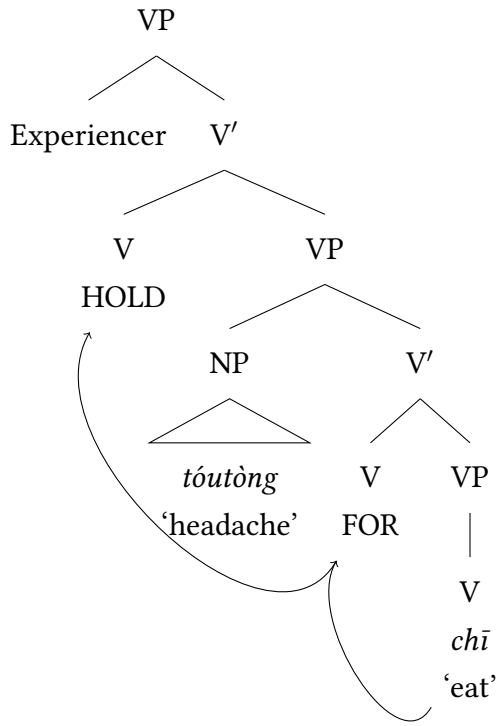
Last, Lin proposes that the light verb FOR introduces a reason as an adverbial object. The lexical verb undergoes conflation with FOR, which incorporates into the light verb HOLD that introduces an experiencer as the external argument.[6]

[6]Lin notes that reason adverbial objects cannot occur in sentences where the agent of the lexical verb is present, as in (iv). He claims that they can only appear in what he calls "stative" sentences like (v). In the remainder of this chapter, I will set such reason adverbial objects to one side.

(iv) **Lǎowáng chī tóutòng.*
Laowang eat headache
Intended: 'Laowang took [medicine] for headache.' (T.-H. J. Lin 2001:219)

(v) *Zhè zhǒng yào shì chī tóutòng de.*
this type medicine is eat headache DE
'This medicine is for curing headache.' (T.-H. J. Lin 2001:220)

(391) *chī tóutòng*
eat headache
'eat for [curing] headache' (T.-H. J. Lin 2001:117)



(adapted from T.-H. J. Lin 2001:232)

However, it is not possible for a verb to appear with both its theme and an adverbial object. This is illustrated with *xiě* 'write' below.[7]

(392) *xiě xìn*
write letter
'write a letter'

(393) *xiě zhè zhī bǐ*
write this CLF pen
'write with this pen' (T.-H. J. Lin 2001:203)

(394) **xiě zhè zhī bǐ xìn*
write this CLF pen letter
'write a letter with this pen' (T.-H. J. Lin 2001:208)

[7] At first glance, the verb *chī* 'eat' can appear with both its theme and its adverbial object as in *chī dà wǎn miàn* 'lit. eat big bowl noodles'. However, it is likely that *dà wǎn* 'big bowl' and *miàn* 'noodles' form a single nominal phrase, i.e., 'a big bowl *of* noodles'.

Lin explains this co-occurrence restriction by pointing out that Mandarin verbs typically only realise one postverbal element, presumably because a Mandarin verb can only assign abstract Case to one such element (Huang 1982a; Y. A. Li 1990).

To summarise, Lin proposes that Mandarin verbs do not select their arguments. He claims instead that the external and internal arguments of a Mandarin verb are introduced by a range of light verbs. The light verbs DO, EXIST and CAUSE introduce agents, locations and causers as external arguments, while USE, AT and FOR introduce instruments, locations and reasons as internal arguments.

3 Against the unselectiveness of Mandarin verbs

Having presented a summary of Lin's proposal in the previous section, I now present a critical evaluation of his proposal.

For Lin's proposal to have empirical content, we would expect that in principle, Mandarin verbs are completely free to appear with – or without – any arguments. Whenever this freedom is in fact not present, Lin's proposal falls short. As it turns out, Lin's proposal overstates the degree to which Mandarin verbs are unselective with regards to their arguments. In fact, Mandarin verbs are quite selective about the arguments they appear with.

The first problem with Lin's proposal is that it incorrectly predicts that all verbs can take a range of external arguments. For a Mandarin verb to appear with an external argument other than its agent, presumably its agent must be omitted. As discussed in Chapter 3, Mandarin has an operation of detransitivisation that allows the agent of a verb to be omitted. It is plausible that when the agent of a verb is omitted in this way, another nominal phrase can surface in subject position. Even so, Lin's claim that all verbs can in principle appear with or without any external argument is an overstatement.

Consider locative subjects which, according to Lin's proposal, can be introduced by the light verb EXIST when the agent of the lexical verb is absent. Lin claims that "[a]ll kinds of action verbs in Mandarin Chinese can take locative subject[s] in an unselective way" (p.143). But this is not the case. While the operation of detransitivisation in Mandarin is available to varying degrees to different speakers, there are many verbs like *dǎ* 'hit' that resist detransitivisa-

tion (Cheng 1989; Y. Zhang 2022), as shown in (395) and (396), and these verbs cannot take a locative subject, as shown in (397).[8]

(395) *Zhāngsān dǎ-le Lǐsì.*
Zhangsan beat-PFV Lisi
'Zhangsan beat Lisi.' (Y. Zhang 2022:170)

(396) **Lǐsì dǎ-le.*
Lisi beat-PFV
Intended: 'Lisi was/is beaten.' (Y. Zhang 2022:169)

(397) **Jia li da-zhe Bill.*
home inside hit-IPFV Bill
Intended: 'Someone is beating Bill at home.' (Y. Zhang 2022:122)

Instead of the claim that all verbs can take locative subjects, a more reasonable generalisation that describes the data is that only verbs that undergo detransitivisation can ever appear with a locative subject. Lin's proposal has nothing to say about why this generalisation holds.

Furthermore, verbs that realise an instrumental adverbial object cannot take a locative subject, or in Lin's terms, EXIST cannot co-occur with USE. In fact, Lin identifies several co-occurrence restrictions among light verbs (fn. 12, p. 290-291). But Lin's proposal does not predict that such restrictions should exist, least of all between light verbs that introduce external arguments like EXIST and those that introduce internal arguments like USE.

(398) *?*Chúfáng-lǐ qiē-le sān bǎ dāo.*
kitchen-in cut-PFV three CLF knife
Intended: 'In the kitchen three knives are used to cut [something].'
(T.-H. J. Lin 2001:291)

(399) **Zhǐ-shàng xiě-{le/ zhe} yī zhī bǐ.*
paper-on write-PFV/ IPFV one CLF pen
Intended: 'On the paper was written [something] with a pen.'

[8] In general, locative subjects are licensed under different conditions depending on whether the verb bears a perfective marker *-le* or an imperfective marker *-zhe*. I set this issue aside; see Y. Zhang (2022) for a detailed discussion. I also set aside the issue of whether these sentences contain an implicit agent; see Paul et al. (2020) and Y. Zhang (2022) for opposing views.

This restriction on locative subjects appearing with instrumental adverbial objects, however, is explained if we assume that an instrument can only be realised in the presence of an agent (Siloni 2002). Since sentences with locative subjects do not contain an agent, an instrument cannot be realised in these sentences.

Lin's proposal overgenerates more severely with the light verb CAUSE, which Lin claims introduces causer subjects. Many simplex change-of-state verbs cannot take a causer subject, as Lin himself points out with verbs like *pò* 'break'. In fact, a change-of-state verb that can take a causer subject in Mandarin is an exception rather than the rule. As has been illustrated repeatedly in Chapters 3 and 4, many intransitive change-of-state verbs in Mandarin lack causative counterparts.

(400) *Chuāngzi pò-le.*
window break-PFV
'The window broke.' (T.-H. J. Lin 2001:33)

(401) **{Lǎozhāng/ Mùtóu/ Táifēng} pò-le chuāngzi.*
Laozhang wood typhoon break-PFV window
Intended: 'Laozhang/ The wood/ The typhoon broke the window.'
(T.-H. J. Lin 2001:33)

Furthermore, it is not possible for these intransitive change-of-state verbs to take a causer subject even if they were to appear in a V-*de* construction.

(402) **Lǎozhāng (pò chuāngzi) pò de mǎn dì dōu shì*
Laozhang break window break DE full floor also there.is
bōlí suìpiàn.
glass fragments
Intended: 'Laozhang broke (the window) and as a result there were glass shards all over the floor.'

Thus, Lin's claim that all verbs are free to take a range of external arguments is an overstatement.

The second problem with Lin's proposal is that it incorrectly predicts that all verbs can take a range of "adverbial objects". This is not the case. Unergative verbs like *xiào* 'laugh' and *kū* 'cry' cannot appear with adverbial objects like locations or times. This is surprising because these unergative verbs do not have a theme argument that could conceivably prevent an adverbial object from surfacing.

(403) *zài {fáng-lǐ/ zǎoshàng} kū*
at room-in morning cry
'cry in the room/ morning' (T.-H. J. Lin 2001:214,217)

(404) **kū {fáng-lǐ/ zǎoshàng}*
cry room-in morning
Intended: 'cry in the room/ morning' (T.-H. J. Lin 2001:215,217)

(405) *zài {xìyuàn/ xiàwǔ} xiào*
at theater afternoon laugh
'laugh in the theater/ afternoon (T.-H. J. Lin 2001:215,217)

(406) **xiào {xìyuàn/ xiàwǔ}*
laugh theater/ afternoon
Intended: 'laugh in the theater/ afternoon (T.-H. J. Lin 2001:215,217)

Lin does not give a convincing explanation as to why this is the case. He claims that only verbs with "high agentivity" can take instrumental adverbial objects, and generalises this requirement to include other adverbial objects like locations and times. He further claims that *xiào* 'laugh' and *kū* 'cry' are verbs of low agentivity and so cannot appear with adverbial objects like locations and times. A more likely explanation is that *xiào* 'laugh' and *kū* 'cry' do not select an internal argument and so cannot appear with any object at all.

Even for verbs that do take adverbial objects, these adverbial objects are subject to restrictions. Consider locative adverbial objects which, according to Lin's proposal, are introduced by the light verb AT. Not all locations can appear as locative adverbial objects, as Lin himself points out.

(407) *zài {fànguǎn/ túshūguǎn} chī fàn*
at restaurant library eat meal
'dine in a restaurant/ library' (T.-H. J. Lin 2001:209,212)

(408) *chī {fànguǎn/ #túshūguǎn}*
eat restaurant library
'dine in a restaurant/library' (T.-H. J. Lin 2001:209,212)

Lin suggests that a locative adverbial object must denote a location that is "canonically or conventionally associated" with the event denoted by a verb. A more likely explanation, however, is that a so-called locative adverbial object does not denote a location because a sentence with such an object cannot be an answer to a *where* question (Y. Zhang 2017).

(409) *Nǐ zuówǎn zài nálǐ chī fàn?*
you last.night at where eat meal
'Where did you eat last night?'

Wǒ zài fànguǎn chī fàn.
I at restaurant eat meal
'I ate at a restaurant.'

#Wǒ chī fànguǎn.
I eat restaurant
Intended: 'I ate at a restaurant.' (Y. Zhang 2017)

The so-called locative adverbial object is more plausibly analyzed as an instance of ellipsis or metonymy that refers to a type of food; this analysis is supported by the fact that a sentence with such an object can be an answer to a *what* question (Y. Zhang 2017).

(410) *Nǐ zuówǎn chī-le shěnme?*
you last.night eat-PFV what
'What did you eat last night?'

(Wǒ chī) fànguǎn.
I eat restaurant
'(I ate) restaurant (food).' (Y. Zhang 2017)

A similar account can be given for instrumental adverbial objects which, Lin claims, are introduced by the light verb USE. These so-called instrumental adverbial objects do not denote an instrument since a sentence with such an object cannot be an answer to a *how* question (Y. Zhang 2017).

(411) *Nǐ dāngshí zěnme chī fàn?*
you at.that.time how eat meal
'How did you eat at that time?'

Wǒ yòng dà wǎn chī fàn.
I use big bowl eat meal
'I used a big bowl to eat.'

#Wǒ chī dà wǎn.
I eat big bowl
Intended: 'I used a big bowl to eat.' (Y. Zhang 2017)

As was the case with so-called locative adverbial objects, the instrumental adverbial object is more plausibly analyzed as an instance of ellipsis or metonymy that refers to a restricted set of food; this analysis is supported by the fact that a sentence with such an object can be an answer to a *which* question (Y. Zhang 2017).

(412) *Nǐ chī-le nǎ gè?*
you eat-PFV which CLF
'Which one did you eat?'

(Wǒ chī-le) dà wǎn.
I eat-PFV big bowl
'(I ate) the big bowl (of food).' (Y. Zhang 2017)

The third and final problem with Lin's proposal is that it incorrectly predicts that all arguments are optional. Lin's proposal incorrectly predicts that external arguments are optional, but we have already seen that many verbs resist detransitivisation. To give a few more examples, verbs of placement and stative verbs cannot appear without an external argument in an out-of-the-blue context that does not license a null subject *pro*.

(413) **Fàng-le yī běn shū zài zhuō-shàng.*
put-PFV one CLF book at table-on
'*Put a book on the table.' (T.-H. J. Lin 2001:126)

(414) **Kāi-zhe hěnduō chē.*
drive-IPFV many car
Intended: 'There were many cars.' (T.-H. J. Lin 2001:195)

(415) **Xǐhuān Mǎlìlián Mènglù.*
like Marilyn Monroe
Intended: '[Some people] like Marilyn Monroe.'

Lin's proposal incorrectly predicts that theme arguments are optional. He repeatedly claims that "the 'logical' object of a transitive verb is not assumed to be obligatory" (p. 234) and "the theme/patient object of a transitive verb in Mandarin is not a selected argument either... It does not have to occur" (p. 249). In particular, he also claims "a verb of placement in Mandarin Chinese doesn't need to occur with the theme object" (p. 156). But this prediction is not borne out, as his own data shows.

(416) **Lǎowáng fàng-le zài zhuō-shàng.*
Laowáng put-PFV at table-on
'*Laowang put on the table.' (T.-H. J. Lin 2001:126)

Lin's proposal incorrectly predicts that Mandarin verbs can appear with no arguments at all. He explicitly makes this claim for verbs of placement, saying that "the theme and the location arguments are not obligatory – in fact, no argument is obligatory for the verb *fàng* 'put', as all of the arguments can be freely replaced" (p. 112). But if Lin's claim is correct, we would expect that *fàng* 'put' can omit all its arguments. This is not the case.

(417) **Fàng-le.*
put-PFV
Intended: '[Someone] put [something somewhere].'

Lin is clearly aware of the overgeneration problem that plagues his analysis, but he can only rule out unattested sentences by stipulation. Let us consider some of the stipulations he is obliged to make.

- EXIST cannot co-occur with the light verb USE.
- AT cannot co-occur with unergative verbs like *xiào* 'laugh' and *kū* 'cry'.
- CAUSE cannot co-occur with unaccusative verbs like *pò* 'break'.

These stipulations cannot be motivated on semantic grounds. Most if not all verbal events are semantically compatible with a location, so there is no semantic reason why some verbs are incompatible with EXIST or AT. Many unaccusative verbs like *pò* 'break' denote events of change, so there is no semantic reason why such verbs are incompatible with CAUSE, especially since the counterparts of *pò* 'break' in English and other languages have transitive alternants.

In order to account for the data, Lin cannot maintain what Ramchand (2008) calls the "naked roots view" in which the verbal root does not contain any syntactic features (Borer 2005). Lin must assume what Ramchand calls the "well-dressed roots view" in which the verbal root contains some syntactic information about its argument structure or at least certain co-occurrence restrictions. As Ramchand points out, this well-dressed roots view is indistinguishable from (or at least can be made compatible with) a traditional view according to which arguments are projected from or syntactically selected by the verb.

To summarise, Lin's proposal rests on a mischaracterisation of Mandarin verbs as being unselective with regards to their arguments. In fact, different verbs have different restrictions on what can appear as arguments, as Lin himself is aware. He ultimately has to stipulate these restrictions, but these stipulations make his proposal fundamentally indistinguishable from proposals that assume that verbs select their arguments.

4 The No Argument Theory of Mandarin resultatives (Williams 2005)

Having argued against the unselectiveness of Mandarin verbs claimed by Lin (2001), I now turn to the No Argument Theory of Mandarin resultatives proposed by Williams (2005). I will also briefly discuss a similar idea proposed by Huang (2006).

Williams (2005) "arrives at similar conclusions [as Lin (2001)] but by a very different route' (fn. 11, p.75). Like Lin, Williams claims that Mandarin verbs never select any arguments. But unlike Lin, Williams focuses on resultatives and does not postulate as wide a range of light verbs as Lin does. Instead, he assumes that agents are introduced by a v_{AG} head and patients are introduced by a configurational rule at the VP level, though he allows for the possibility that patients are introduced by another head.

Williams claims that that the reason why Mandarin resultatives exhibit such a high degree of flexibility of argument realisation is because Mandarin verbs never select any arguments. He also claims that the different argument realisation patterns of resultatives in English and Mandarin can be explained if we assume that English verbs select their arguments but Mandarin verbs do

not.

Williams divides languages into those that have the uniform projection property (UPP) and those that do not. A language has the UPP if its verbs show uniform projection, i.e., they have the same syntactic requirements in simple clauses and in resultatives. Williams claims that whether a language has the UPP reflects the way that thematic relations between a verb and its arguments are introduced in that language.

In languages with the UPP like English, thematic relations are specified as lexical requirements of the verb. Williams refers to this way of introducing thematic relations as a projectionist model of argument structure. For example, the requirement that the English verb *cut* appear with a DP that denotes its patient and another DP that denotes its agent is stated in the semantic denotation of the verb given in (418).[9]

(418) $[\![\textit{cut}]\!] = \lambda y \lambda x \lambda e.[\text{cut}(e) \wedge \text{PAT}(e){=}y \wedge \text{AG}(e){=}x]$

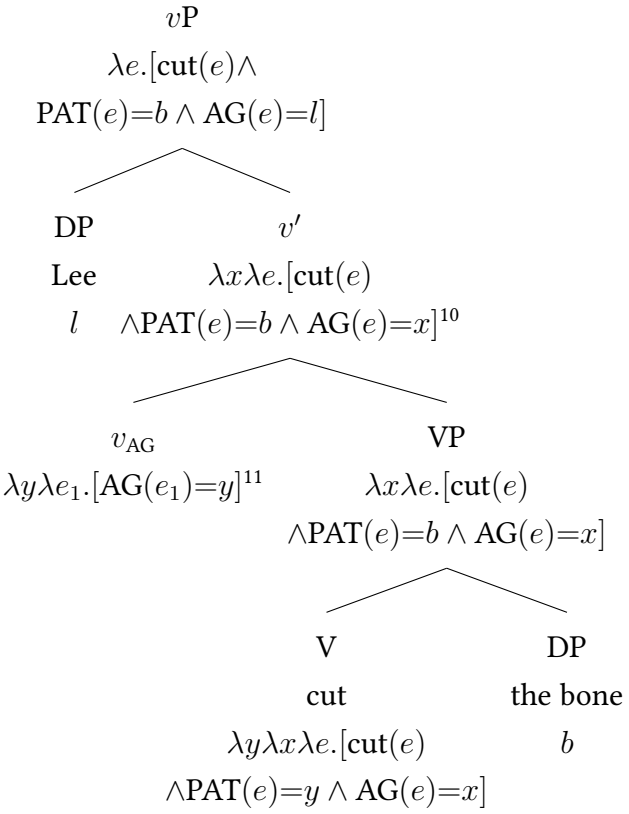
(adapted from Williams 2005:184)

The semantic derivation involving a transitive verb like *cut* in a simple clause like (419) is given in (420). The DP that denotes the patient *the bone* and the DP that denotes the agent *Lee* compose with their respective sisters via Function Application. (For simplicity, I assume that the external argument is introduced in the specifier of v, though it could be introduced in a much higher position.)

(419) Lee cut the bone. (Williams 2015:271)

[9] I use the verb *cut* instead of *pound* in order to maintain consistency with the Mandarin examples that follow. I adapt the semantic denotations and trees in Williams (2005) accordingly.

(420)



In languages without the UPP, like Mandarin, thematic relations are not specified as lexical requirements of the verb, but are introduced by a functional head and/or a rule that applies to a particular structural configuration in which the verb appears ("configurational rule"). Williams refers to this way of introducing thematic relations as a nonprojectionist model of argument structure.

For example, the Mandarin verb *qiē* 'cut' itself does not impose any requirement that it appear with an NP that denotes its patient.

(421) $[\![qiē \text{ 'cut'}]\!] = \lambda e.\text{cut}(e)$ (Williams 2005:75)

Rather, thematic relations are introduced by configurational rules that apply to VP and v'.

[10] Williams assumes that v_{AG} and VP compose according to the rule of Conjunction given below:

(vi) If both $[\![\text{A}]\!]$ and $[\![\text{B}]\!]$ are in type $\langle e, \langle v, \ldots \rangle \rangle$, then:

$[\![[\text{A B}]]\!] = [\![[\text{B A}]]\!] = [\![\text{A}]\!] \overset{+_v}{+_e} [\![\text{B}]\!]$

$A \overset{+_v}{+_e} B = \lambda x \lambda e.[A(x)(e) \wedge B(x)(e)]$ (Williams 2005:36)

[11] Williams assumes that transitive vPs contain an alternant of v, v_{AG}, that (re)introduces the thematic relation of agent.

(vii) $[\![v_{\text{AG}}]\!] = \lambda y \lambda e_1.\text{AG}(e_1)=y$ (Williams 2005:75)

The configurational rule that applies to VP is given below:

(422) $[\![\ [_{\text{VP}}\ \text{V DP}]\ ]\!] = \lambda e.[[\![\text{V}]\!](e) \wedge \text{PAT}(e) = [\![\text{DP}]\!]]$ (Williams 2005:29)

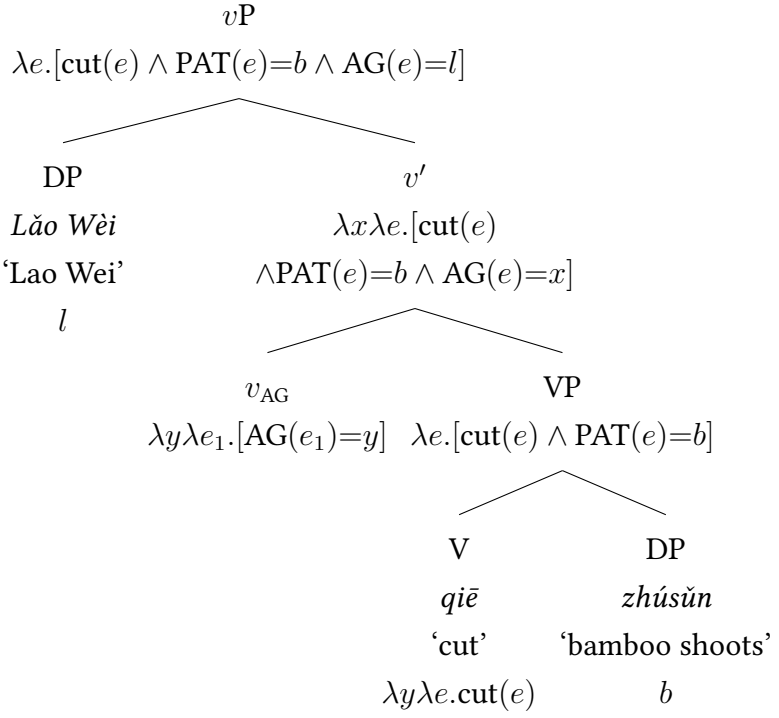
The configurational rule that applies to v' is given below:

(423) $[\![\ [_{v'}\ v\ \text{VP}]\ ]\!] = \lambda x \exists e.[[\![\text{VP}]\!](e) \wedge [\![v]\!](x)(e)]$ (Williams 2005:75)

The semantic derivation of a transitive verb *qiē* 'cut' in a simple clause like (424) is given in (425).

(424) *Lǎo Wèi qiē-le zhúsǔn.*
Lao Wei cut-PFV bamboo.shoots
'Lao Wei cut bamboo shoots.' (Williams 2005:60)

(425)



In short, languages differ in the way that thematic relations are introduced. Thematic relations are specified as lexical requirements in English but not in Mandarin.

(426) $[\![\textit{cut}]\!] = \lambda y \lambda x \lambda e.[\text{cut}(e) \wedge \text{PAT}(e)=y \wedge \text{AG}(e)=x]$

(adapted from Williams 2005:184)

(427) $[\![\textit{qiē}\text{ 'cut'}]\!] = \lambda e.\text{cut}(e)$ (Williams 2005:75)

Consequently, languages differ in the way that arguments of a verb are realised when the verb appears in a different frame, e.g. in a resultative.

In languages like English that have the UPP, a resultative inherits the lexical requirements of the verb. For example, the resultative *cut open* in (428) must realise the agent and patient of the verb *cut*.

(428) Lee cut the bone open. (Williams 2015:270)

According to Williams, this is because in English, predicates like *cut* and *open* introduce thematic relations as lexical requirements.

(429) $[\![\textit{cut}]\!] = \lambda y \lambda x \lambda e.[\text{cut}(e) \wedge \text{PAT}(e){=}y \wedge \text{AG}(e){=}x]$

(adapted from Williams 2005:99)

(430) $[\![\textit{open}]\!] = \lambda y \lambda e.[\text{open}(e) \wedge \text{PAT}(e){=}y]$ (adapted from Williams 2005:96)

Williams assumes that resultatives contain a CAUSE head which introduces the causal relation between the events denoted by their components.

(431) $[\![\textit{CAUSE}]\!] = \lambda R \lambda M \ldots \lambda e \exists e_1 \exists e_2.[\text{CAUSE}(e,e_1,e_2) \wedge M(e_1) \wedge R(e_2) \ldots]$

(Williams 2005:99)

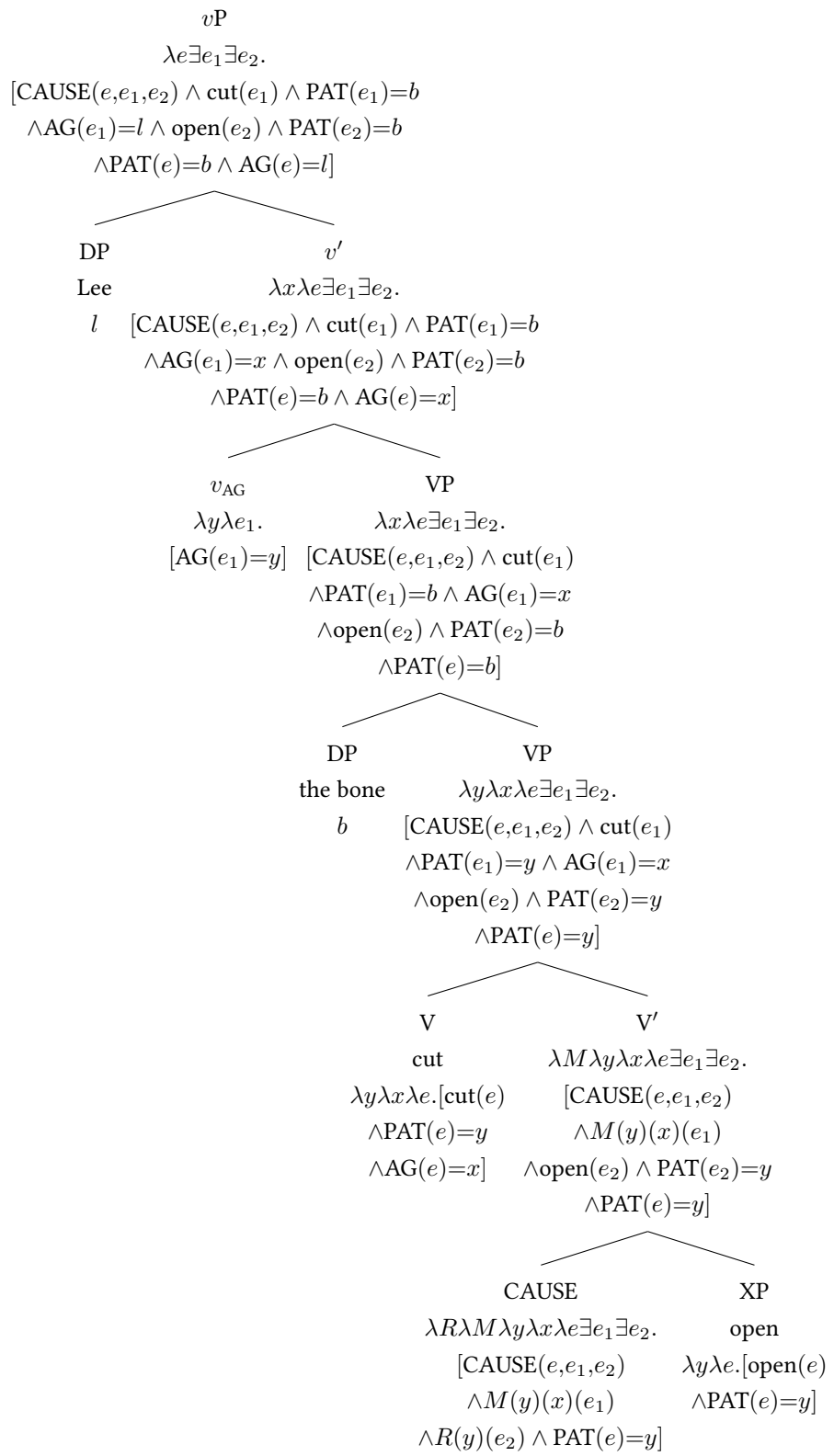
For this particular example in (428), the internal arguments of *cut* and *open* are identified with that of the CAUSE head. For simplicity, Williams builds this operation of argument identification into the semantic denotation of CAUSE, which abstracts over and unifies these arguments.

(432) $[\![\textit{CAUSE}]\!] = \lambda R \lambda M \lambda y \lambda x \lambda e \exists e_1 \exists e_2.[\text{CAUSE}(e,e_1,e_2) \wedge M(y)(x)(e_1) \wedge R(y)(e_2) \wedge \text{PAT}(e){=}y]$

(Williams 2005:99)

The semantic denotation of (428) is given below.

(433)



The lexical requirements of *cut* and *open* are carried up the tree to the semantic denotation of the resultative *cut open*.

In languages like Mandarin that do not have the UPP, a resultative does not inherit the lexical requirements of the verb, because the verb has no such requirements to begin with. For example, the resultative *qiē-dùn* 'cut-dull' in (434) need not realise the patient of the verb *qiē* 'cut'.

(434) *Lǎo Wèi qiē-dùn-le càidāo.*
Lao Wei cut-dull-PFV knife
'Lao Wei made the knife dull by cutting.'
(adapted from Williams 2005:61)

According to Williams, this is because in Mandarin, predicates like *qiē* 'cut' and *dùn* 'dull' do not introduce thematic relations as lexical requirements.

(435) $[\![$*qiē* 'cut'$]\!] = \lambda e.\text{cut}(e)$ (Williams 2005:75)

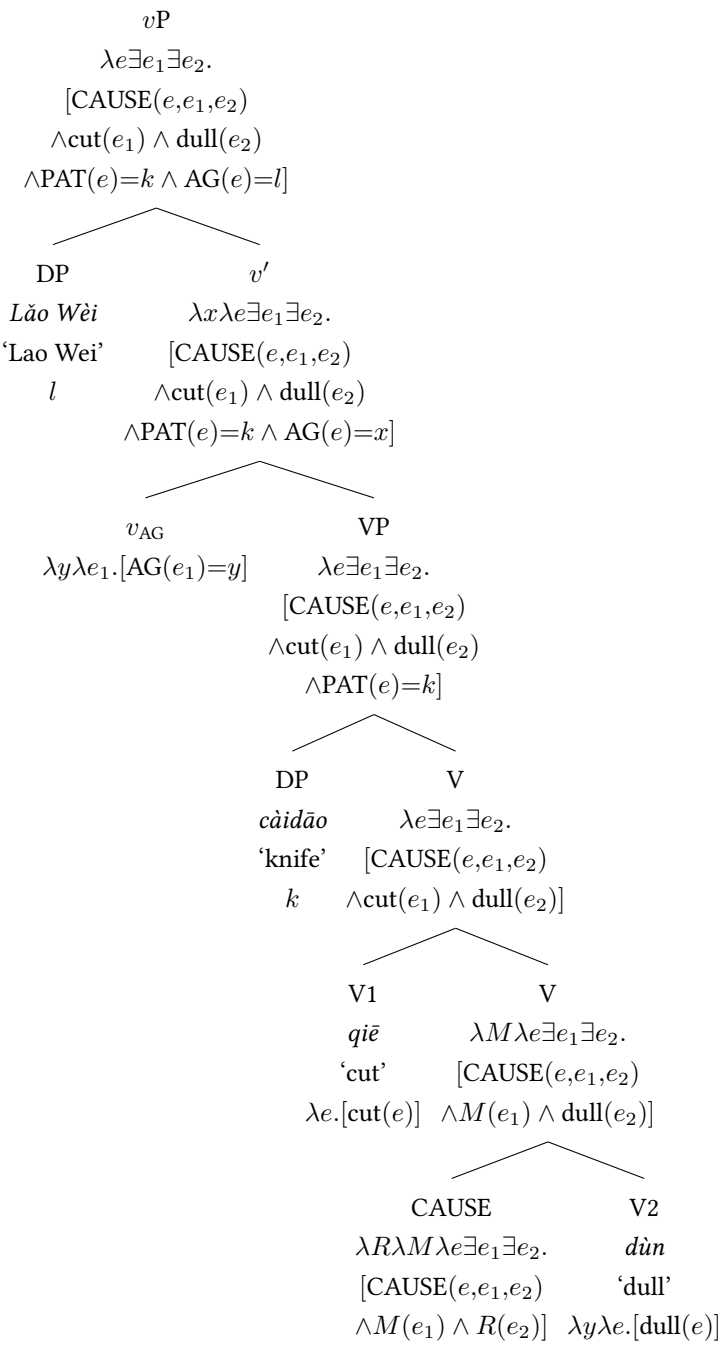
(436) $[\![$*dùn* 'dull'$]\!] = \lambda e.\text{dull}(e)$ (Williams 2005:77)

Williams assumes that Mandarin resultatives contain a CAUSE head which introduces the causal relation between the events denoted by *qiē* 'cut' and *dùn* 'dull' but without imposing any argument identification.

(437) $[\![\textit{CAUSE}]\!] = \lambda R \lambda M \lambda e \exists e_1 \exists e_2 .[\text{CAUSE}(e,e_1,e_2) \wedge M(e_1) \wedge R(e_2)]$
(Williams 2005:77)

The semantic denotation of (434) is given below.

(438)



Williams assumes that in Mandarin resultatives, thematic relations are introduced with respect to the resultative, not to the individual verbs that make up the resultative. According to Williams, this is why V1 and V2 need not realise their arguments when they appear in a Mandarin resultative.

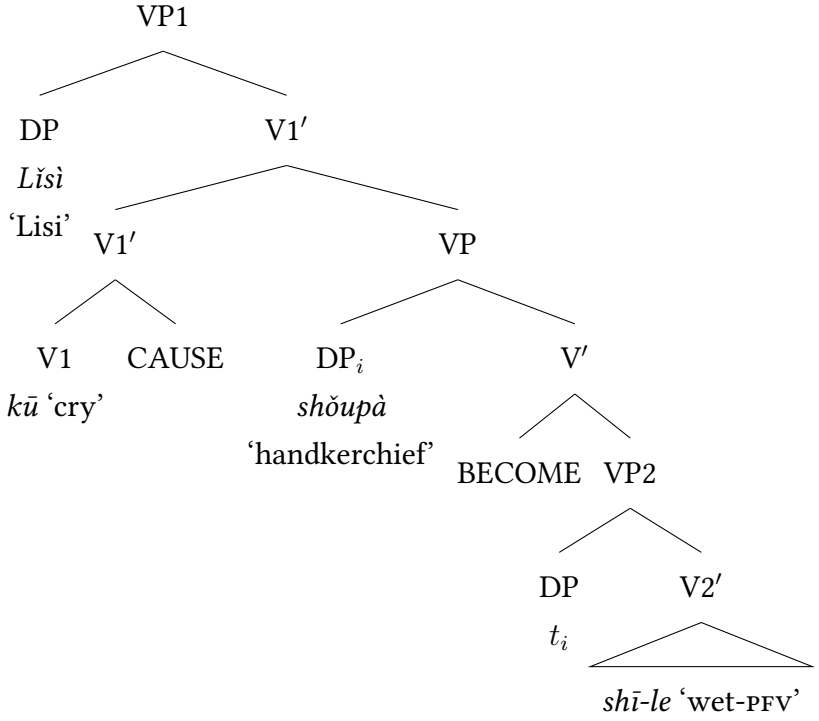
A brief sketch of an idea very similar in spirit to Williams's No Argument

Theory can be found in Huang (2006). Huang assumes that Mandarin resultatives like (439) have a structure as in (440) in which the event structure and argument structure of the resultative is constructed out of light verbs like CAUSE and BECOME.

(439) *Lǐsì kū-shī-le shǒupà.*
Lisi cry-wet-PFV handkerchief
'Lisi cried the handkerchief wet.'

On this account, the manner component V1 undergoes conflation with the light verb CAUSE, but it is the CAUSE head that introduces the external argument of a Mandarin resultative. Furthermore, Huang assumes that in Mandarin, V1 does not bear [+Agent] or [+Theme] features, so there is no requirement for V1 to project its arguments.

(440)



(adapted from Huang 2006:25)

To summarise, Williams and Huang assume that the arguments of a verb are introduced external to the lexical verb. Verbs in English have a lexically specified requirement that their agent and/or theme be realised, whereas verbs in Mandarin do not. These requirements must be satisifed when a verb appears

on its own or in a resultative in English, but no such requirements apply in Mandarin.

5 Against the No Argument Theory of Mandarin resultatives

Having presented a summary of the proposals by Williams (2005) and Huang (2006), I will critically evaluate the No Argument Theory and its implications for resultatives.

The main problem with the proposals in Williams (2005) and Huang (2006) is that verbs sometimes require certain arguments to be realised when they appear in certain constructions or frames even if they impose no such requirement in V-V resultatives. This is a theme I will also revisit in the next two chapters. But in this section, I will show that obligatorily transitive verbs require that their theme argument be realised in simple clauses, and discuss how this poses a problem for the No Argument Theory.

In Mandarin, the intransitive verb *kū* 'cry' cannot appear with a theme argument when it appears in a resultative like *kū-hóng* 'cry-red' or in a simple clause. This is consistent with the characterisation of the Mandarin verb *kū* 'cry' as not having any lexical requirement for a theme argument.

(441) *Wǒ kū-hóng-le yǎnjīng.*
I cry-red-PFV eye
'I cried my eyes red.'

(442) *Wǒ kū-le (*yǎnjīng).*
I cry-PFV eye
'I cried (*my eyes).'

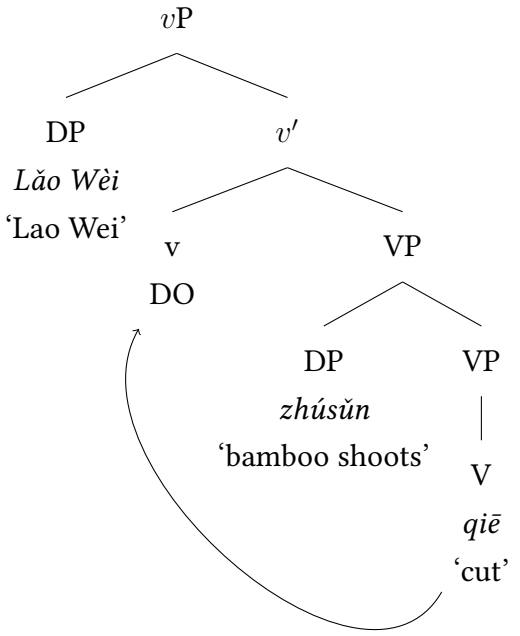
However, the situation is different with the transitive verb *qiē* 'cut'. When *qiē* 'cut' appears in the resultative *qiē-dùn* 'cut-dull', there is no requirement that the theme of *qiē* 'cut' be realised. However, when *qiē* 'cut' appears in a simple clause, the theme of *qiē* 'cut' must be realised. On the face of it, this is inconsistent with the characterisation of the Mandarin verb *qiē* 'cut' as not having any lexical requirement for its theme argument.

(443) *Lǎo Wèi qiē-dùn-le càidāo.*
Lao Wei cut-dull-PFV knife
'Lao Wei made the knife dull by cutting.'
(adapted from Williams 2005:61)

(444) *Lǎo Wèi qiē-le *(zhúsǔn).*
Lao Wei cut-PFV bamboo.shoot
'Lao Wei cut bamboo shoots.' (Williams 2005:60)

It is not clear how Huang (2006) would explain why the theme of *qiē* 'cut' is obligatory in (444). According to his proposal, (444) would presumably have the structure in (445). But if *qiē* 'cut' enters the derivation without any argument structure or syntactic features like [+Agent] or [+Theme] as Huang suggests, it is unclear what compels the theme of *qiē* 'cut' to be realised.

(445)



In the face of sentences like (444), Williams maintains that transitive verbs like *qiē* 'cut' do not specify a lexical requirement for its theme, but instead proposes that such verbs are marked with an [O] feature. According to Williams:

- a verb is marked with an [O] feature iff the event it denotes contains a theme.

- a verb marked with [O] must appear in a VP with a direct object.

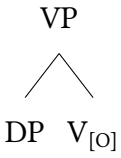
For concreteness, Williams proposes that intransitive verbs, say, Mandarin *kū* 'cry', are marked with a [*O] feature.

Williams proposes the following phrase structure rules:

(446)

(Williams 2005:89)

(447)



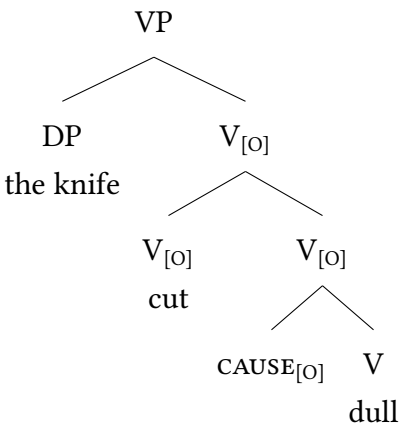
(Williams 2005:89)

Given Williams's phrase structure rules, it is clear that the [O] feature is a selectional feature. It is the verb V, and not the VP, which selects or does not select a DP. In principle, the VP can dominate $V_{[*O]}$ as in (446) or $V_{[O]}$ as in (447), and it can dominate a DP as in (447) or not as in (446). It is the presence of [O] on the verb that determines whether a DP must be contained within the maximal projection of that verb.

Let us now turn to the situation in resultatives. Williams claims that the [O] feature (or, presumably, the [*O] feature) on the verb has no influence on the resultative.

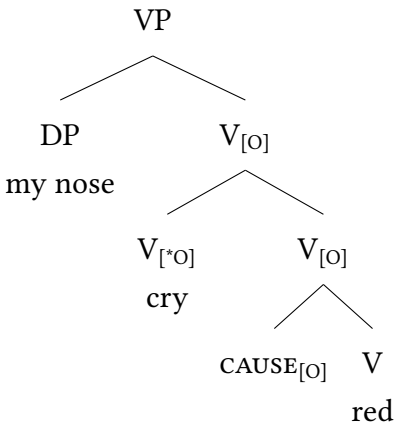
Consider the structure for *qiē-dùn* 'cut-dull' in (448). The Mandarin verb *qiē* 'cut' is marked with an [O] feature, but Williams also assumes that the CAUSE head is marked with an [O] feature. Let us assume that the [O] feature on the CAUSE head gets copied up the tree so that it is visible to the DP that satisfies it.

(448)



Now consider the structure for *kū-hóng* 'cry-red' in (449). The Mandarin verb *kū* 'cry' is marked with an [*O] feature, whereas the CAUSE head is marked with an [O] feature which presumably gets copied up the tree. In this case, we must assume that the [*O] feature on *kū* 'cry' does not get copied up the tree.

(449)



(448) and (449) are both licit structures that differ only in whether V1 bears an [O] or [*O] feature. But if [O] is satisfied in the configuration shown in (448), then it is hard to see how [*O] could be satisfied in the same configuration in (449).

We have seen that the [*O] expresses a requirement that a particular verb appear in a VP without a DP. How is it that this requirement gets suspended when the verb *kū* 'cry' appears in a resultative? Williams needs to state a constraint along the lines of (450):

(450) In languages without the UPP, when a verb appears in a resultative, its selectional features need not be satisfied.

But if such a statement is required to describe the properties of features like [O] and [*O], we would expect this statement to hold true across the board, i.e., not just in resultatives, but in simple clauses as well. Such a statement makes clear that what defines a language without the UPP is not the absence of lexical requirements, but the absence of the effects of these lexical requirements in resultatives. But this is a restatement of the facts, not an explanation.

To summarise, the No Argument Theory fails to offer a principled explanation as to why obligatorily transitive verbs must project their internal argument when they appear in simple sentences.

6 Concluding remarks

In this chapter, I have argued against analyses of Mandarin V-V resultatives in Williams (2005) and Huang (2006) that rest on the assumption that Mandarin verbs never select their arguments.

Proposals like Lin (2001), Williams (2005) and Huang (2006) that assume that Mandarin verbs never select their arguments fail to account for why obligatorily transitive verbs must project their internal argument when they appear in simple sentences.

In the next chapter, I show that obligatorily transitive verbs in Mandarin must project their internal argument when they appear in V-*de* constructions (but not in V-*de/bu*-V constructions), which suggests that the assumption that Mandarin verbs never select their arguments cannot be correct.

Chapter 6

Implications for resultative V-*de* and V-*de/bu*-V constructions

1 Introduction

In this thesis, I have proposed that the reason why V1 does not project its arguments in Mandarin V-V resultatives is because Mandarin V-V resultatives are compounds. In contrast, the No Argument Theory claims that Mandarin verbs never project their arguments in simple clauses, Mandarin V-V resultatives or other constructions.

In the previous chapter, I showed that the No Argument Theory makes the wrong predictions about the argument structure of Mandarin verbs in simple clauses. In this chapter, I compare the predictions that my proposal makes about the argument structure of resultative V-*de* and V-*de/bu*-V constructions against those made by the No Argument Theory.

2 Resultative V-*de* constructions

2.1 Introduction

My proposal predicts that since resultative V-*de* constructions are not compounds, an obligatorily transitive V1 in such constructions must project its internal argument. In contrast, the No Argument Theory developed in Williams (2005) predicts that Mandarin verbs never project any arguments in V-V resul-

tatives or in resultative V-*de* constructions. In this section, I show that the No Argument Theory cannot account for the properties of resultative V-*de* constructions headed by a transitive V1. I then show how these properties are naturally predicted by my proposal.

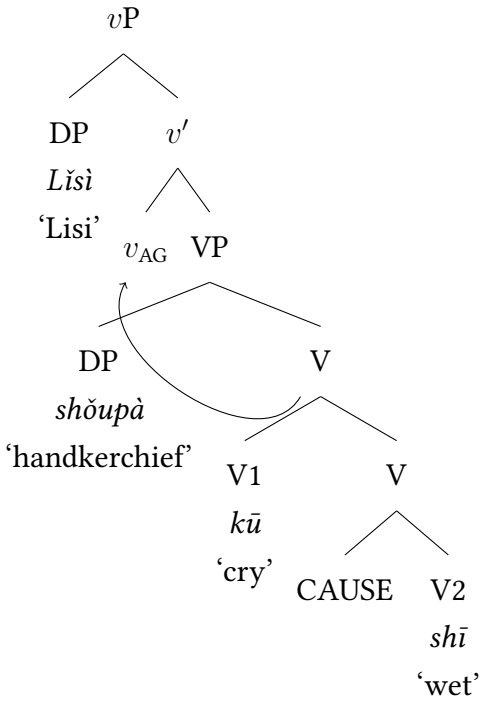
2.2 Criticism of Williams (2005) and Huang (2006)

In this subsection, I show that the No Argument Theory cannot account for the properties of resultative V-*de* constructions headed by a transitive V1.

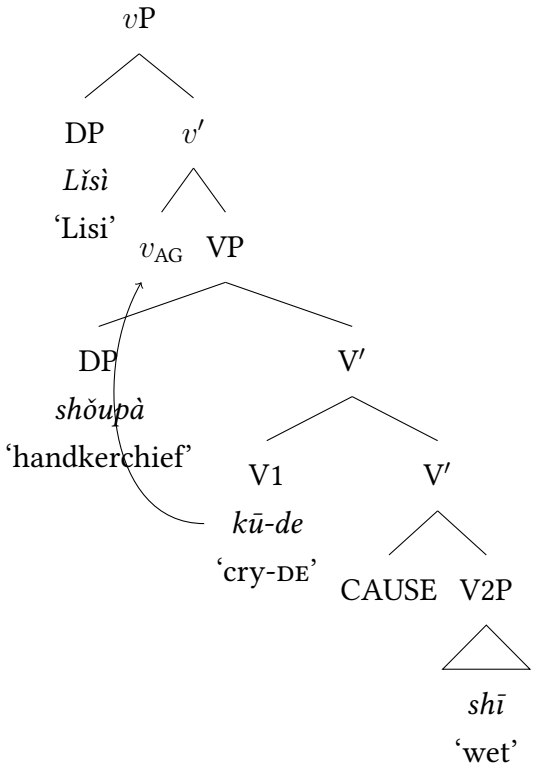
Recall from our discussion in the previous chapter that Williams (2005) assumes that thematic relations are introduced with respect to the resultative, not to the individual verbs that make up the resultative. According to Williams, this is why V1 and V2 need not realise their arguments when they appear in a Mandarin resultative.

Williams assumes that V-V resultatives and resultative V-*de* constructions both have complementation structures as in (451) and (452) which differ in the size of the result component. He assumes that in V-V resultatives, the result component is a head, whereas in resultative V-*de* constructions, the result component is a phrase.

(451) *Lǐsì kū-shī-le shǒupà.*
Lisi cry-wet-PFV handkerchief
'Lisi cried the handkerchief wet.'

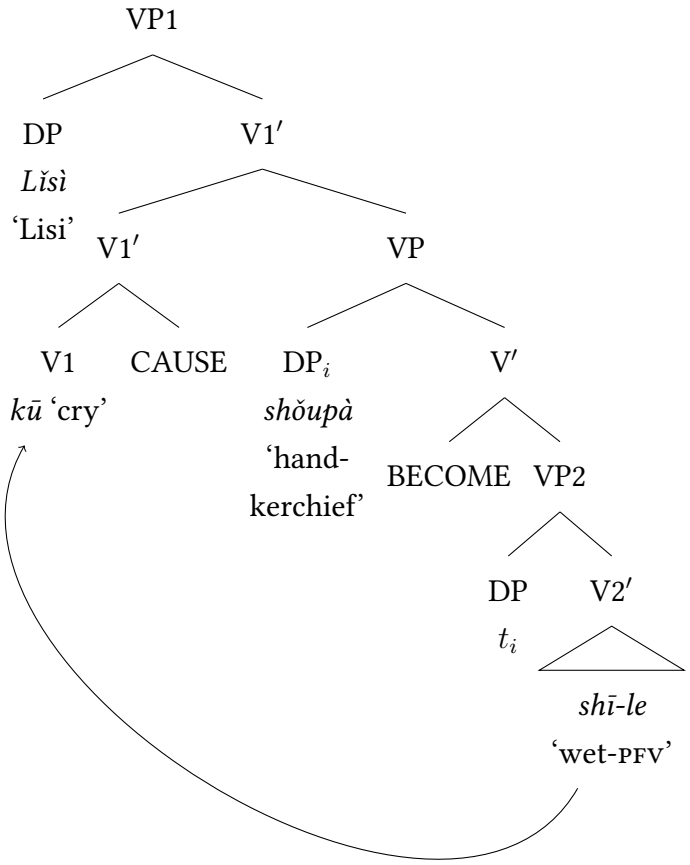


(452) *Lǐsì kū de [shǒupà shī-le].*
Lisi cry DE handkerchief wet-PFV
'Lisi cried the handkerchief wet.'

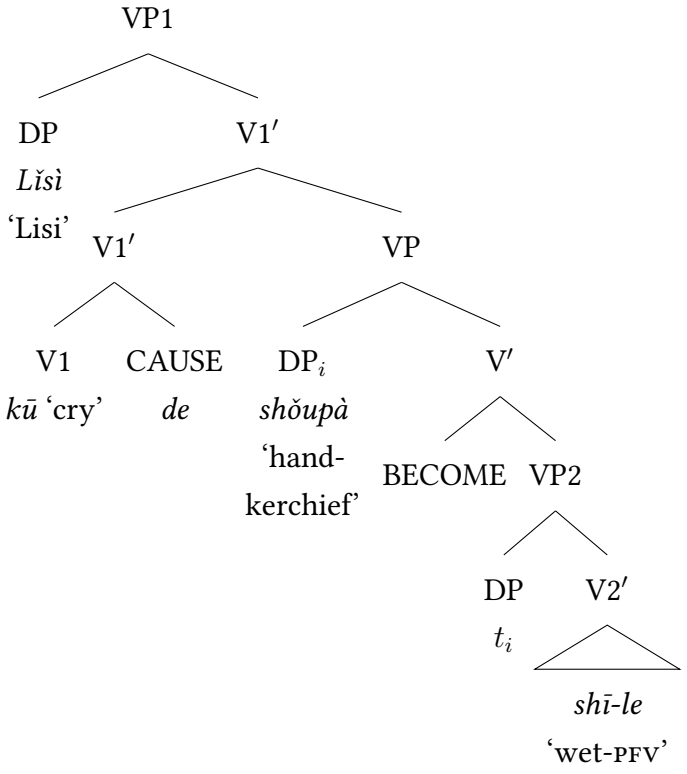


Similarly, Huang (2006) assumes that V-V resultatives and resultative V-*de* constructions both have complementation structures which differ in the size of the result component.

(453) *Lǐsì kū-shī-le shǒupà.*
Lisi cry-wet-PFV handkerchief
'Lisi cried the handkerchief wet.'



(454) *Lǐsì kū dé [shǒupà shī-le].*
Lisi cry DE handkerchief wet-PFV
'Lisi cried the handkerchief wet.'



(adapted from Huang 2006:25)

As discussed in the previous chapter, these proposals appear attractive because the same flexibility of argument realisation in V-V resultatives is also attested in resultative V-*de* constructions, at least at first glance. For example, V1 can omit its external argument in both V-V resultatives like (455) and V-*de* resultatives like (456).[1] (Where relevant, I will indicate that V1 is transitive using a white box.)

(455) *Yīfú* xǐ *-gānjìng-le.*
clothes wash-clean-PFV
'The clothes got clean from washing [i.e. being washed].'
(Williams 2005)

[1] As noted in the previous chapter, when V1 omits its external argument in a V-*de* resultative, that V-*de* resultative is often degraded relative to its V-V counterpart. I set this issue to one side.

(456) *?Yīfú* **xǐ** *de gānjìng-le.*
clothes wash DE clean-PFV
'The clothes got clean from washing [i.e. being washed].'

The fact that Mandarin verbs can omit their external arguments when they appear in V-V resultatives is not altogether surprising since they can often do so in simple sentences like (457). Even so, as discussed in Chapter 3, the omission of an external argument is more readily attested in V-V resultatives than in simplex verbs (Cheng 1989).

(457) *Yīfú* **xǐ** *-le.*
clothes wash-PFV
'The clothes [were] washed.'

As shown in (458), omission of an obligatory internal argument leads to severe degradation.

(458) **Lǎo Wèi* **qiē** *-le (càidāo).*
Lao Wei cut-PFV knife
Intended: 'Lao Wei cut something (with a knife).'

And yet it appears that V1 can omit its obligatory internal argument in both V-V resultatives like (459) and V-*de* resultatives like (460).

(459) *Lǎo Wèi (qiē zhúsǔn)* **qiē** *-dùn-le càidāo.*
Lao Wei cut bamboo.shoot cut-dull-PFV knife
'Lao Wei cut (bamboo shoots) and as a result the knife became dull.'

(460) *Lǎo Wèi (qiē zhúsǔn)* **qiē** *de [càidāo dùn-le].*
Lao Wei cut bamboo.shoot cut DE knife dull-PFV
'Lao Wei cut (bamboo shoots) and as a result the knife became dull.'

On either Williams's or Huang's proposal, the size of the result component does not affect whether V1 projects any arguments. Both proposals predict that V1 does not project any arguments in either V-V resultatives or resultative V-*de* constructions.

According to such proposals, the postverbal DP (or DP2) of a resultative V-*de* construction need not be interpreted as the internal argument of V1.

When V1 is intransitive as in (461), DP2 *yǎnjīng* 'eye' cannot be interpreted as the internal argument of V1 *kū* 'cry' because V1 has no internal argument. (Where relevant, I will indicate that V1 is intransitive using a black box.)

(461) *Mǎlì* **kū** *de [yǎnjīng hóng-le].*
Mary cry DE eye red-PFV
'Mary cried her eyes red.'

But these proposals go one step further and claim that even when V1 is obligatorily transitive, DP2 need not be interpreted as the internal argument of V1. For example, in (462), the DP *càidāo* 'knife' cannot be interpreted as the internal argument of V1 *qiē* 'cut'. Stated differently, the fact that an otherwise obligatory internal argument of V1 is not (overtly) realised in a resultative V-*de* construction does not result in ungrammaticality. This is to be expected if we assume, as Williams and Huang do, that V1 never projects any arguments.

(462) *Lǎo Wèi (qiē zhúsǔn)* **qiē** *de [càidāo dùn-le].*
Lao Wei cut bamboo.shoot cut DE knife dull-PFV
'Lao Wei cut (bamboo shoots) and as a result the knife became dull.'

But Williams's and Huang's proposals fail to explain why V-*de* constructions like (463) are degraded in an out-of-the-blue context as compared to (464). In (463), the V-*de* construction is headed by an obligatorily transitive V1 and DP2 is interpreted as the internal argument of V1, as indicated by the dotted line. (463) is ungrammatical in response to an all-focus question. In contrast, the V-*de* construction headed by an intransitive V1 in (464) is acceptable in an out-of-the-blue context. (The sentences below are adapted from examples in X. Zhang 2020.)

Zěnme le?
how LE
'What happened?'

(463) **Mǎlì* **rǎn** *de [tóufà hóng-le].*
Mary dye DE hair red-PFV
Intended: 'Mary dyed her hair red.'

(464) *Mǎlì* **kū** *de [yǎnjīng hóng-le].*
Mary cry DE eye red-PFV
'Mary cried her eyes red.'

This observation that resultative V-*de* constructions headed by a transitive V1 like (463) are degraded has been independently made by T.-H. J. Lin (2001) for

a range of different V1s. He observes in a footnote that the V-*de* resultative in (465) is degraded compared to its V-V counterpart in (466).

(465) *Lǎozhāng dǎ de [chuāngzi pò-le].*
Laozhang hit DE window break-PFV
'Laozhang hit (the window such that) the window broke.'
(T.-H. J. Lin 2001:35)

(466) *Lǎozhāng dǎ -pò chuāngzi.*
Laozhang hit-break window
'Laozhang broke the window.' (T.-H. J. Lin 2001:34)

He says that sentences like (465) are "somewhat unnatural as independent sentences", i.e., they are degraded in an out-of-the-blue context. He suggests that this is because "the objects of the transitive verb... are not syntactically realized". Such sentences become "acceptable if we assume that there are phonetically null objects in the sentences" that have an antecedent, as in (467). Lin does not indicate where these null objects are in the structure of a resultative V-*de* construction.

(467) *Lǎozhāng (yīzhí dǎ chuāngzi,) dǎ de [chuāngzi pò-le].*
Laozhang continuously hit window hit DE window break-PFV
'Laozhang (kept hitting the window, and eventually) hit the window broke[n].' (T.-H. J. Lin 2001:34)

The contrast between (463) and (464) is completely unexpected on Williams's and Huang's account. If V1 is truly indifferent as to whether its internal argument is present or absent, as they claim, why does a V-*de* construction become degraded when the internal argument of V1 is overtly realised?

Furthermore, there is no comparable contrast between the V-V resultative counterparts of (463) and (464).

Zěnme le?
how LE
'What happened?'

(468) *Mǎlì* **rǎn** *-hóng-le tóufà.*
Mary dye-red-PFV hair
'Mary dyed her hair red.'

(469) *Mǎlì* **kū** *-hóng-le yǎnjīng.*
Mary cry-red-PFV eye
'Mary cried her eyes red.'

The No Argument Theory cannot explain the contrast between resultative V-*de* constructions headed by a transitive V1 and their V-V resultative counterparts.

2.3 The syntax and semantics of resultative V-*de* constructions

In the previous subsection, I showed that the No Argument Theory cannot account for why resultative V-*de* constructions headed by a transitive V1 are degraded. In the remainder of this section on resultative V-*de* constructions, I will develop an alternative account of these facts. But before I can do so, I need to propose a syntactic and semantic analysis of resultative V-*de* constructions.

I follow the literature in making a distinction between resultative V-*de* constructions like (470) and descriptive V-*de* constructions that do not have a resultative meaning like (471) (Huang 1988). I set descriptive V-*de* constructions to one side.

(470) *Wǒ pǎo de hěn lèi.*
I run DE very tired
'I ran until I became tired.'

(471) *Wǒ pǎo de hěn kuài.*
I run DE very fast
'I run very fast.' (Huang 1988:274)

I begin by discussing the syntax of resultative V-*de* constructions. I follow the consensus in the literature by assuming that the constituent following *de* is a sentence (Huang 1988; Huang, Li, and Li 2009; C. Li 2015) since it can contain a preposed object or topic before the subject.

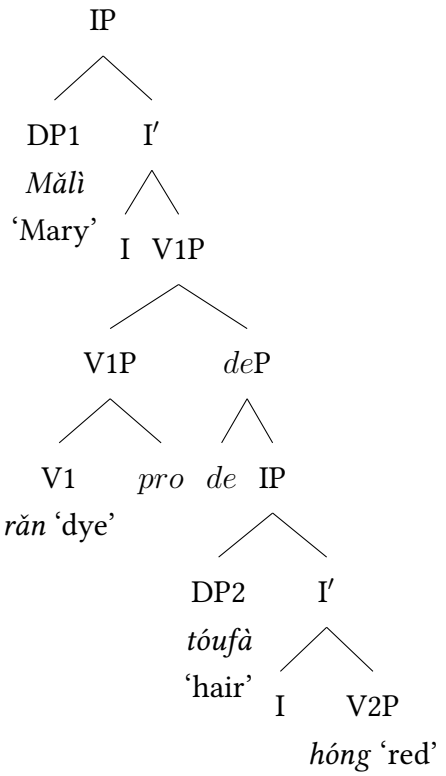
(472) *Yǒuyǒu kū de [shěnme huór Táotáo dōu bù xiǎng gàn].*
Youyou cry DE what work Taotao all not want do
'Youyou cried and as a result Taotao didn't want to do any work.'
(Y. Li 1998:287)

If the constituent following *de* does not contain an overt subject as in (473), I will assume that it contains a phonologically null subject *pro*. This assumption will suffice for our current purposes, although I do not rule out the possibility that the constituent following *de* in (473) could be analysed as something smaller like a VP.

(473) *Wǒ pǎo de [pro lèi-le].*
I run DE tired-PFV
'I ran until I became tired.'

I propose that V-*de* resultatives are built in syntax as in (474). The manner-denoting V1 merges with its internal argument (if present), and the result-denoting *de*-phrase is adjoined to V1P.

(474) *Mǎlì* **rǎn** *de [tóufà hóng-le].*
Mary dye DE hair red-PFV
Intended: 'Mary dyed her hair red.'

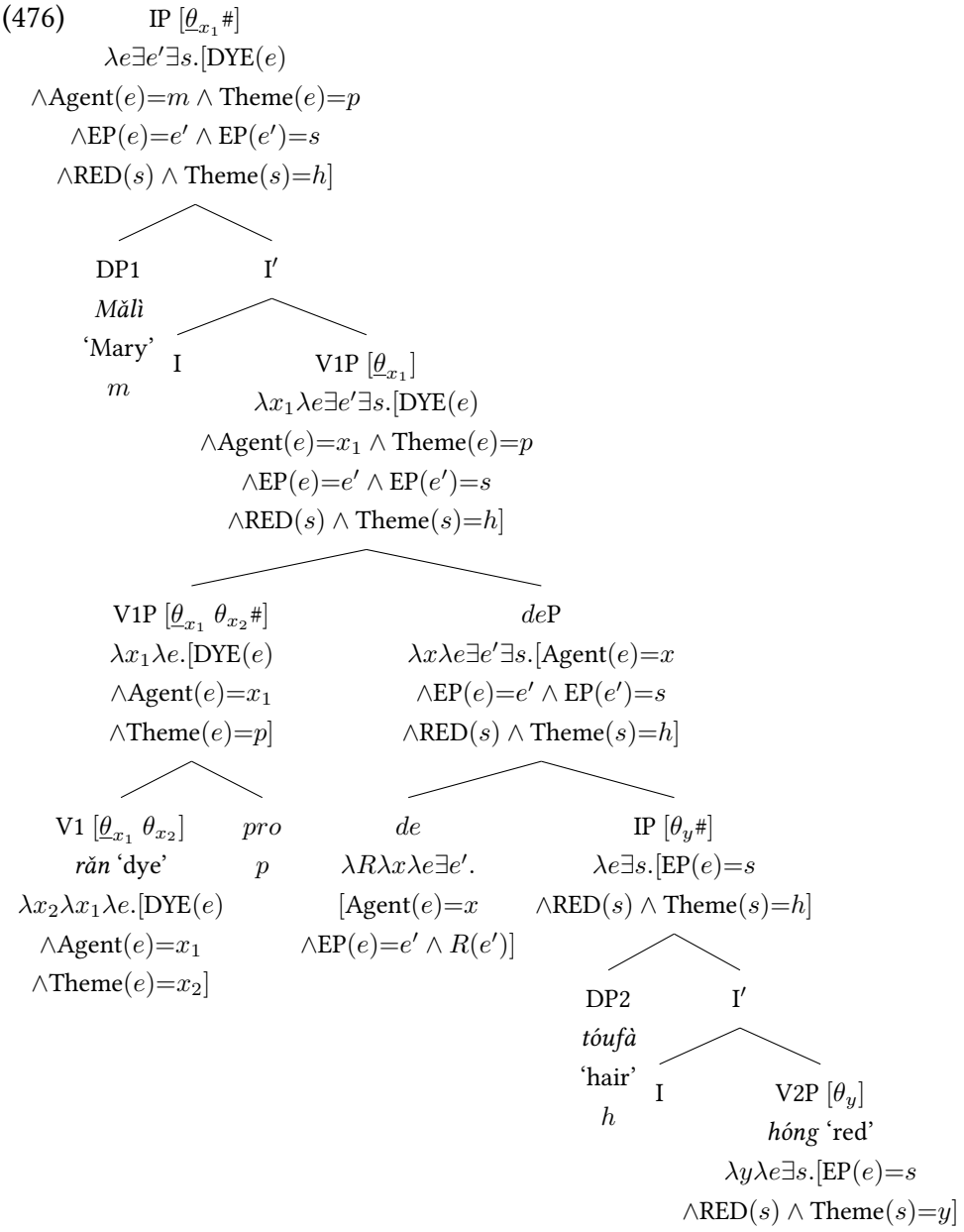


I propose that semantically, *de* takes an event e' and returns another event e that culminates in e'. ('EP' stands for 'end point'.) I also assume that *de* has an unsaturated argument position so that the denotations of the *de*-phrase and the verb phrase it modifies are of the same semantic type.

(475) $[\![de]\!]=\lambda R\lambda x\lambda e\exists e'.[\text{Agent}(e)=x \wedge \text{EP}(e)=e' \wedge R(e')]$

I provide the semantic derivation of a resultative V-*de* construction in (476). The λ-bound event participant arguments of V1 and V2 must be immediately mapped onto θ-roles because the V1 and V2 are merged in – and thus visible to – the (phrasal) syntax module.

(476)



To summarise, in this subsection, I have proposed an analysis of resultative V-*de* constructions. I claim that syntactically, the *de*-phrase is adjoined to V1P and that semantically, the *de*-phrase is an event modifier that adds a culmination point to the event it modifies.

2.4 The argument structure of resultative V-*de* constructions

Having presented a syntactic and semantic analysis of resultative V-*de* constructions, I return to the argument structure of these constructions. In par-

ticular, I will give an account of why (477) is degraded relative to (478) in an out-of-the-blue context.

Zěnme le?
how LE
'What happened?'

(477) **Mǎlì* **rǎn** *de [tóufà hóng-le].*
Mary dye DE hair red-PFV
Intended: 'Mary dyed her hair red.'

(478) *Mǎlì* **kū** *de [yǎnjīng hóng-le].*
Mary cry DE eye red-PFV
'Mary cried her eyes red.'

The degraded status of (477) can be attributed to the fact that in an out-of-the-blue context, the internal *pro* argument of V1 *rǎn* 'dye' is linked to an antecedent on its right. This violates the general pattern of anaphoric dependence (GPAD) proposed by E. Williams (1997), which prohibits a pronoun from referring to an antecedent to its right (unless the pronoun is in a clause that is subordinate to the clause containing its antecedent, which is not relevant for our current purposes).

Consider the contrast between (479) and (480). The DP *John* in (479) bears main sentential stress, which indicates that it is a focused constituent and thus is new to the discourse. The GPAD prohibits this variable from being the antecedent of the pronoun *his* to its left. In (480), however, the DP *John* is destressed, indicating that it is not a focused constituent, and that its referent has already been given in the preceding discourse. Thus, *his* can refer to the earlier instance of *John* in the discourse, which appears to the left of the pronoun.

(479) *His$_i$ mother likes JOHN$_i$.

(480) His$_i$ mother LIKES John$_i$.

This fact allows us to explain why a V-*de* resultative headed by an obligatorily transitive V1 is degraded: when the internal argument of a transitive V1 is *pro*, *pro* cannot refer to an antecedent to its right. Thus, I predict that V-*de*

resultatives headed by a transitive V1 are degraded relative to their V-V counterparts when these constructions are uttered in an out-of-the-blue context. I also predict that these V-*de* resultatives improve in a context in which *pro* has an antecedent in the preceding discourse. Both these predictions are borne out. The following sentences were presented to 15 native Mandarin speakers from mainland China who rated each sentence on a scale from 1 (bad) to 7 (good).

Context: Your friend enters the room, looking like they have something to say.
You:

Zěnme le?
how LE
'What happened?'

Your friend:

(481) **Mǎlì* **rǎn** *de [tóufà hóng-le].*
Mary dye DE hair red-PFV
Intended: 'Mary dyed her hair red.' (n=15, mean=1.8, SD=0.9)

(482) *Mǎlì* **kū** *de [yǎnjīng hóng-le].*
Mary cry DE eye red-PFV
'Mary cried her eyes red.' (n=15, mean=6.1, SD=1.2)

(483) *Mǎlì* **rǎn** *-hóng-le tóufà.*
Mary dye-red-PFV hair
'Mary dyed her hair red.' (n=15, mean=5.3, SD=1.7)

(484) *Mǎlì* **kū** *-hóng-le yǎnjīng.*
Mary cry-red-PFV eye
'Mary cried her eyes red.' (n=15, mean=5.8, SD=1.1)

All 15 consultants without exception reported a contrast between (481) and (482).

It has been reported in the literature, however, that V-*de* resultatives with transitive V1 like (485) and (486) are grammatical.

(485) *Bǎoyù* **zhuī** *de [Dàiyù qìchuǎnxūxū].*
Baoyu chase DE Daiyu pant
'Baoyu chased Daiyu and as a result Daiyu gasped.'
(N. Zhang 2001:217)

(486) *Wǔsōng* **dǎ** *de [lǎohǔ liúxuě-le].*
Wusong beat DE tiger bleed-PFV
'Wusong beat the tiger so that it bled.' (N. Zhang 2001:192)

But sentences like these are often presented in the literature without context. This is important because (485) and (486) make reference to characters in two famous Chinese literary classics, so it is plausible that speakers accept these sentences because they readily accommodate the referents of DP2.[2] As I will now show, when comparable sentences are presented in an out-of-the-blue context, V-*de* resultatives with a transitive V1 are degraded.

The following sentences were rated by the same 15 speakers who rated (481-484).

Context: Your parents recently had a baby who sleeps in the same bed as them. One day, you enter the kitchen at 5 am and bump into your father, who looks annoyed.
You:

Zěnme le?
how LE
'What happened?'

Father:

(487) **Bǎobao* **tī** *de [māma xǐng-le].*
baby kick DE mother awake-PFV
'The baby kicked (Mother) and as a result Mother became awake.'
(n=15, mean=2.9, SD=1.3)

(488) *Bǎobao* **nào** *de [māma xǐng-le].*
baby make.noise DE mother awake-PFV
'The baby made noise and as a result Mother became awake.'
(n=15, mean=4.9, SD=2.0)

(489) *Bǎobao* **tī** *-xǐng-le māma.*
baby kick-awake-PFV mother
'The baby kicked (Mother) and as a result Mother became awake.'
(n=15, mean=6.0, SD=1.4)

[2]I did not test the acceptability of these sentences with my consultants because I would not have been able to compare these sentences with reasonable counterparts. These V-*de* resultatives do not have plausible counterparts where transitive V1 is replaced by an intransitive V1, nor do they have grammatical V-V resultative counterparts.

(490) *Bǎobao* **nào** *-xǐng-le* *māma.*
baby make.noise-awake-PFV mother
'The baby made noise and as a result Mother became awake.'
(n=15, mean=6.0, SD=1.4)

10 out of 15 consultants reported a contrast between (487) and (488). This contrast is smaller than the one presented earlier between (481) and (482). This is presumably because speakers accommodate Mother into the context. Indeed, when Mother is explicitly referred to in a contextual question, the V-*de* resultative headed by a transitive V1 is judged by the same 15 consultants as somewhat more acceptable. The difference in ratings between (491) and (492) is 1.6, which is smaller than the difference in ratings between (487) and (488), which is 2.0.

Context: Your parents recently had a baby who sleeps in the same bed as them. One day, you enter the kitchen at 5 am and bump into your parents. Your mother looks annoyed.
You:

Māma zěnme le?
mother how LE
'What happened to Mother?'

Father:

(491) *??Bǎobao* **tī** *de [māma xǐng-le].*
baby kick DE mother awake-PFV
'The baby kicked (Mother) and as a result Mother became awake.'
(n=15, mean=3.3, SD=1.6)

(492) *Bǎobao* **nào** *de [māma xǐng-le].*
baby make.noise DE mother awake-PFV
'The baby made noise and as a result Mother became awake.'
(n=15, mean=4.9, SD=1.8)

(493) *Bǎobao* **tī** *-xǐng-le* *māma.*
baby kick-awake-PFV mother
'The baby kicked (Mother) and as a result Mother became awake.'
(n=15, mean=5.2, SD=1.6)

(494) *Bǎobao* **nào** *-xǐng-le* *māma.*
baby make.noise-awake-PFV mother
'The baby made noise and as a result Mother became awake.'
(n=15, mean=5.4, SD=1.6)

If the V-*de* resultative in (491) contains *pro*, why does the sentence not improve more dramatically in a context where Mother is already mentioned in the contextual question? As a comparison, I asked 5 native English speakers to judge comparable sentences in English on a scale from 1 (bad) to 7 (good). The comparable English sentence in (497) improves significantly when Mother is given in the context.

You: What happened?
Dad:

(495) *The baby **kicked** her until Mother woke up. (n=5, mean=2.6, SD=1.3)

(496) The baby **cried** until Mother woke up. (n=5, mean=7.0, SD=0.0)

You: What happened to Mother?
Dad:

(497) The baby **kicked** her until Mother woke up. (n=5, mean=5.0, SD=1.0)

(498) The baby **cried** until Mother woke up. (n=5, mean=6.2, SD=1.8)

A reasonable hypothesis is that this is due to the fact that *pro* in Mandarin has fewer referential possibilities than an overt pronoun (Huang 1984). In a pragmatically neutral context, *pro* in the object position of an embedded clause cannot corefer with a matrix subject (499-500) or a topic (501-502). No such restrictions apply when *pro* is in the embedded subject position or when *pro* is replaced with an overt pronoun.

(499) *Zhāngsān$_i$ shuō [{ta$_i$/ e$_i$} bù rènshì Lǐsì].*
Zhangsan say he not know Lisi
'Zhangsan said that [he] did not know Lisi.'
(adapted from Huang 1984:537)

(500) *Zhāngsān$_i$ shuō [Lǐsì bù rènshì {ta$_i$/ *e$_i$}].*
Zhangsan say Lisi not know him
'Zhangsan said that Lisi did not know [him].'
(adapted from Huang 1984:537)

(501) *Zhāngsān$_i$, tā$_i$ shuō [{ta$_i$/ e$_i$} méi kànjiàn Lǐsì].*
Zhangsan he say he no see Lisi
'Zhangsan$_i$, he$_i$ said that he$_i$ didn't see Lisi.'
(adapted from Huang 1984:558)

(502) *Zhāngsān$_i$, tā$_i$ shuō [Lǐsì méi kànjiàn {ta$_i$/ *e$_i$}].*
Zhangsan he say Lisi no see him
'Zhangsan$_i$, he$_i$ said that Lisi didn't see [him$_i$].'
(adapted from Huang 1984:558)

Given that *pro* in V-*de* resultatives headed by a transitive V1, as in (491), is in object position, it may be that this *pro* is relatively limited in its ability to refer to a topic. This could be why (491) does not improve dramatically in a context where Mother is already mentioned in the contextual question.[3]

As an interim summary, my proposal predicts that an obligatorily transitive V1 must project its internal argument in V-*de* resultatives but not V-V resultatives. It follows then that V1 in a V-*de* resultative headed by an obligatorily transitive V1 must project a phonologically null internal argument. In an out-of-the-blue context, this null element cannot refer to an antecedent to its right, which explains why these V-*de* resultatives are degraded in such a context but improve when they are uttered in a context in which this null element has an antecedent in the preceding discourse.

2.5 Addressing possible counterarguments

I now address two possible objections to my analysis of V-*de* resultatives headed by an obligatorily transitive V1 in particular. The first objection is that if an obligatorily transitive V1 must project its internal argument, why can't this internal argument be realised overtly? For example, in (503), even though V1 *qiē* 'cut' is transitive and DP2 *càidāo* 'knife' cannot be interpreted as the internal

[3] As shown earlier in (503), it is not possible to replace *pro* in a V-*de* resultative like (491) with an overt pronoun.

argument of V1, the internal argument of V1, *zhúsǔn* 'bamboo shoots', cannot be realised overtly.

(503) **Lǎo Wèi* **qiē** *zhúsǔn de [càidāo dùn-le].*
Lao Wei cut bamboo.shoot DE knife dull-PFV
Intended: 'Lao Wei cut bamboo shoots and as a result the knife became dull.'

There are two possible responses to this first objection. One response is to claim that *de* must be phonologically hosted by V1 to its left (Huang 1988; Y. A. Li 1990; Tang 1997; C. Li 2015). In other words, V1 and *de* form a phonological unit even if, as I claim, they do not form a syntactic constituent.[4] If so, when the internal argument of an obligatorily transitive V1 intervenes between *de* and V1, it must be phonologically null. Another response is to appeal to the Postverbal Constraint in Mandarin which often prevents two or more overt constituents from following the verb (Huang 1982a; Sybesma 1999 *et seq.*; see Lai 2021 for a recent review).

In either case, we would predict that the internal argument of an obligatorily transitive V1 need not be realised as *pro*, but can alternatively be realised as another phonologically null element such as a trace of movement. This prediction is borne out, as shown in (504).

(504) *Māma bǎ háizi$_i$* **dǎ** *t_i dé [pìgǔ hóng-le].*
mother BA child hit DE buttocks red-PFV
'Mother affected the child by hitting it until [the child's] buttocks became red.'

The second potential objection is that if the internal argument of V1 is the complement of V1, the *de*-phrase must be an adjunct of V1P, contrary to the

[4]The claim that V1 and *de* form a phonological unit would also explain why an interjection like *ya* cannot intervene between V1 and *de* as in (viii), but can appear after V1 and *de* as in (ix).

(viii) **Bǎobao kū* ***ya*** *de māma xǐng-le.*
baby cry YA DE mother awake-PFV
'The baby cried and as a result Mother became awake.'

(ix) *Bǎobao kū de* ***ya*** *māma xǐng-le.*
baby cry DE YA mother awake-PFV
'The baby cried and as a result Mother became awake.'

dominant view in the literature that the *de*-phrase is a complement of V1. The main piece of evidence given in support of this dominant view is that a *de*-phrase can contain an A-not-A alternative question (505).

(505) *Tā pǎo dé [(rén) lèi-bù-lèi]?*
he run DE person tired-not-tired
'Is he tired because of the running?' (Y. A. Li 1990:57)

It is widely assumed that A-not-A questions are formed via covert movement of a question operator, and that this movement operation is sensitive to islands (Huang 1982b *et seq.*). Since adjuncts are islands and complements are not, the fact that an A-not-A question operator can move out of a *de*-phrase is taken as evidence that the *de*-phrase must be a complement.

However, there is some debate as to whether A-not-A question formation is island-sensitive, and hence whether A-not-A questions are formed via covert movement. It has been claimed that embedded A-not-A questions can take matrix scope if they are embedded in complement clauses but not when they are in islands. But it is unclear whether A-not-A questions that are embedded in complement clauses can indeed take matrix scope, i.e., whether the A-not-A question operator can undergo long-distance movement. This apparent long-distance interpretation of the A-not-A question is available only for a small group of matrix verbs like *xiǎng/kàn* 'think', *shuō* 'say', and *juédé* 'feel' that allow a parenthetical reading (506), but not with other matrix verbs like *xǐhuān* 'like' or *yǐwéi* '(mistakenly) think' (507) (Li and Thompson 1979, cited in Hagstrom 2017; McCawley 1994).

(506) *Nǐ* ***juédé*** *[tā huì-bù-huì shēngqì]?*
you feel he will-not-will get.angry
'Do you think he will be angry?' (Huang 1991:123)
Or: 'Will he be angry, do you think?'
(parenthetical reading, McCawley 1994)

(507) **Lǐsì* ***xǐhuān*** *[wǒmen hē-bù-hē píjiǔ]?*
Lisi like we drink-not-drink beer
'Does Lisi like for us to drink beer?' (McCawley 1994)

Suppose we assume, contrary to the dominant view, an analysis of A-not-A questions along the lines of Jia (2015) according to which the A-not-A question

operator does not move, but generates a set of binary propositions in situ. If so, one cannot conclude that the *de*-phrase must be a complement simply because it can contain an A-not-A question.

On the other hand, my analysis makes two predictions that are unexpected according to the dominant view. First, my analysis predicts that V1 can be independently modified to the exclusion of the adjunct *de*-phrase. As shown in Chapter 2, this prediction is borne out.

(508) *Bǎobao* ***zài jiā lǐ*** *kū de [línjū xǐng-le].*
baby at home inside cry DE neighbour awake-PFV
'The baby cried at home until the neighbours woke up [next door].'

Second, my analysis predicts that A-movement out of a *de*-phrase is blocked, whereas the dominant view predicts that A-movement out of a *de*-phrase is possible. On this point, my proposal makes the right prediction, as I will now show. The judgements on which I base my conclusions were obtained from 5 native Mandarin speakers from mainland China who rated each sentence on a scale from 1 (bad) to 7 (good).

Let us first consider V-V resultatives. In an unaccusative V-V resultative, the internal argument of the resultative can undergo A-movement to the surface subject position (509).

(509) *[Wǒ de bízi]$_i$ kū-hóng-le t_i.*
1SG DE nose cry-red-PFV
'My nose became red as a result of crying.' (n=5, mean=7.0, SD=0.0)

The sentence-initial DP in (509) is a subject and not a topic because it can be replaced with a question constituent.

(510) *Shéi de bízi kū-hóng-le t_i?*
who DE nose cry-red-PFV
'Whose nose became red as a result of crying?'
(n=5, mean=7.0, SD=0.0)

If V-*de* resultatives indeed have the same basic structure as V-V resultatives, we would expect that the unaccusative V-V resultative in (509) would have a V-*de* counterpart in which the subject of the *de*-phrase also undergoes A-movement to subject position (511). But (511) is degraded.

(511) *??Wǒ de bízi kū de hóng-le.*
1SG DE nose cry DE red-PFV
'My nose became red as a result of crying.' (n=5, mean=4.0, SD=1.9)

To the extent that some speakers accept (511), it is not clear that the sentence-initial DP in (511) is indeed a subject and not a topic because speakers judge (512) to be degraded, in which the initial DP is a wh-phrase.

(512) *??Shéi de bízi kū de hóng-le?*
who DE nose cry DE red-PFV
Intended: 'Whose nose became red as a result of crying?'
(n=5, mean=3.6, SD=0.5)

This in turn suggests that the V-*de* resultative in (511) is more plausibly analysed as containing a base-generated topic in sentence-initial position, a null subject and a pro in DP2 that refers to the topic.

(513) *[Wǒ de bízi]$_i$ pro kū de pro$_i$ hóng-le.*
1SG DE nose cry DE red-PFV
'My nose became red as a result of crying.'

The contrast between (509)/(510) and (511)/(512) supports the conclusion that the *de*-phrase is an adjunct rather than a complement.

Having addressed both possible objections, I can maintain both my analysis of V-*de* resultatives headed by an obligatorily transitive V1 and my claim that in a V-*de* construction headed by an obligatorily transitive V1, V1 must project its internal argument.

2.6 Summary

In this section, I showed that the No Argument Theory cannot explain why resultative V-*de* constructions headed by a transitive V1 are degraded relative to their V-V resultative counterparts. I proposed a syntactic and semantic account of resultative V-*de* constructions which assumed that a transitive V1 invariably projects its arguments in these constructions. My proposal predicts the contrasts between resultative V-*de* constructions headed by a transitive V1 and their V-V resultative counterparts.

If my analysis of resultative V-*de* constructions is on the right track, then I can defend the claim that in resultative V-*de* constructions, V1 must project its

internal argument. Since there are no corresponding contrasts in V-V resultatives, we can maintain that in V-V resultatives, V1 does not project its internal argument. Hence, whether V1 projects its arguments in a Mandarin resultative depends on the structure of the resultative in which V1 appears.

3 V-*de/bu*-V constructions

3.1 Introduction

In the previous section, I showed that the No Argument Theory cannot explain why V1 must project its internal argument in resultative V-*de* constructions but not in V-V resultatives. In this section, I consider V-*de/bu*-V constructions like (514) and (515).

(514) *Lǎo Wèi tī-**dé**-duàn nà tiáo mùbǎn.*
Lao Wei kick-DE-snap that CLF plank
'Lao Wei **can** make that plank snap by kicking.'
'It is physically possible that, in a situation where Lao Wei kicks the plank, his kicking manages to make the plank split.'
(Williams 2005:256-257)

(515) *Lǎo Wèi tī-**bù**-duàn nà tiáo mùbǎn.*
Lao Wei kick-BU-snap that CLF plank
'Lao Wei **cannot** make that plank snap by kicking.'
'It is not physically possible that, in a situation where Lao Wei kicks the plank, his kicking manages to make the plank split.'
(Williams 2005:256-257)

I have shown in Chapter 2 that the components of a V-*de/bu*-V construction are inaccessible to syntactic operations, and therefore V-*de/bu*-V constructions do not have an internally complex syntactic structure. This proposal predicts that V1 need not project its arguments in V-*de/bu*-V constructions because such constructions are compounds. Indeed, in V-*de/bu*-V constructions, V1 need not project its arguments. V1 can omit its agent as in (516) or, crucially, V1 can omit its theme as in (517).

(516) *(Zhè xiē) yīfú (zěnme dōu) xǐ-bù-gānjìng.*
this CLF clothes how also wash-not-clean
'(No matter what, these) clothes could not be washed clean.'

(517) *Lǎo Wèi (zěnme dōu) qiē-bù-dùn zhè bǎ càidāo.*
Lao Wei how also cut-BU-dull this CLF knife
'(No matter what,) Lao Wei could not make this knife dull by cutting [something].'

In this section, I present a syntactic and semantic account of V-*de/bu*-V constructions and show that the predictions made by this account are borne out. I then compare my account with two alternative accounts of V-*de/bu*-V constructions and show that these alternatives make incorrect predictions.

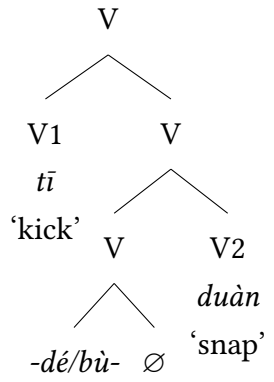
3.2 The syntax and semantics of V-*de/bu*-V constructions

In this subsection, I present a syntactic and semantic account of V-*de/bu*-V constructions and show that the predictions made by this account are borne out.

I propose that the elements *de* and *bu* are merged and interpreted in situ. I propose that a V-*de/bu*-V construction like *tī-de/bù-duàn* 'kick-DE/BU-snap' in (518) has the syntactic structure in (519).

(518) *Lǎo Wèi tī-dé/bù-duàn nà tiáo mùbǎn.*
Lao Wei kick-DE/BU-snap that CLF plank
'Lao Wei can/not make that plank snap by kicking.'(Williams 2005:256)

(519)



According to this structure, *de/bu* is merged as the sister of ∅. (Incidentally, this is an analytical option that Williams entertains and then rejects because the modal operator *de/bu* would not c-command the V1-V2 complex.)

I propose that V-*de/bu*-V constructions contain the same ∅ head in V-V resultatives which introduces a macroevent e containing a causing event e_1

and a caused event e_2. (For concreteness, I assume a form of ∅ that selects a transitive V1 and an intransitive V2 and introduces a CCF.)

(520) $[\![\varnothing_{+\mathrm{C}}]\!]=\lambda R_2\lambda R_1\lambda y\lambda c\lambda e\exists x_2\exists x_1\exists e_2\exists e_1.[\mathrm{CAUSE}(e,e_1,e_2) \wedge \mathrm{CCF}(e)=c \wedge R_2(e_2,y) \wedge R_1(e_1,x_1,x_2)]$

I assume that *de* is a modal operator with the semantic denotation below, modified from Tham (2012). The arguments of the predicate selected by *de* are explicitly introduced under the scope of the modal operator.

(521) $[\![de]\!] = \lambda P\lambda R_2\lambda R_1\lambda y\lambda c\lambda e\lambda w\exists w'.[R(w,w') \wedge P(R_2,R_1,y,c,e) \text{ in } w']$

The semantic denotation of *bu*, also modified from Tham (2012), is the negation of that of *de*.

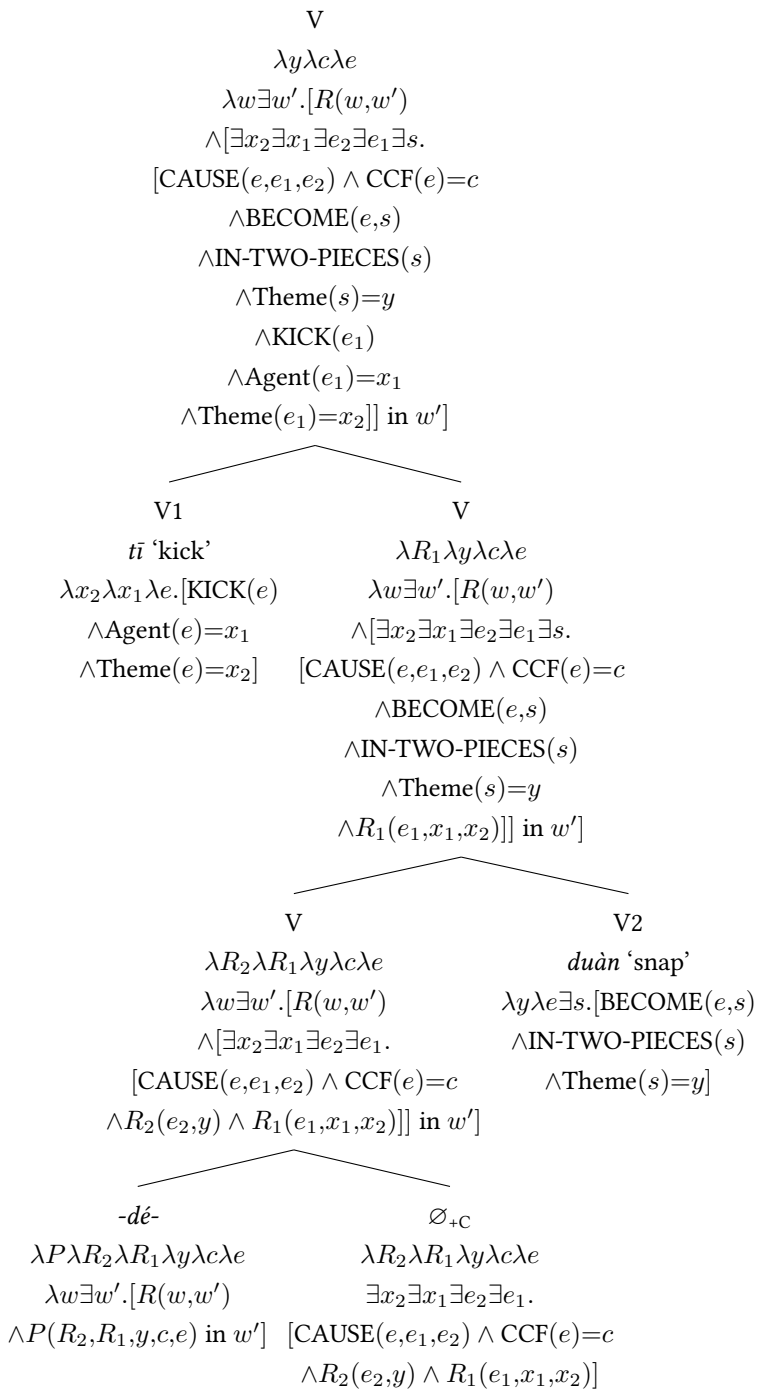
(522) $[\![bù]\!] = \lambda P\lambda R_2\lambda R_1\lambda y\lambda c\lambda e\lambda w\neg\exists w'.[R(w,w') \wedge P(R_2,R_1,y,c,e) \text{ in } w']$

It is possible to analyse the negative potential form *bu* as being composed of the simple negation marker *bù* with the semantic denotation in (523) and a null allomorph of the positive potential form *de*. Evidence for this analysis comes from the forms of the negative potential marker in other Chinese languages where the counterpart of *de* is overtly realised.

(523) $[\![bù]\!] = \lambda Q.\neg Q$

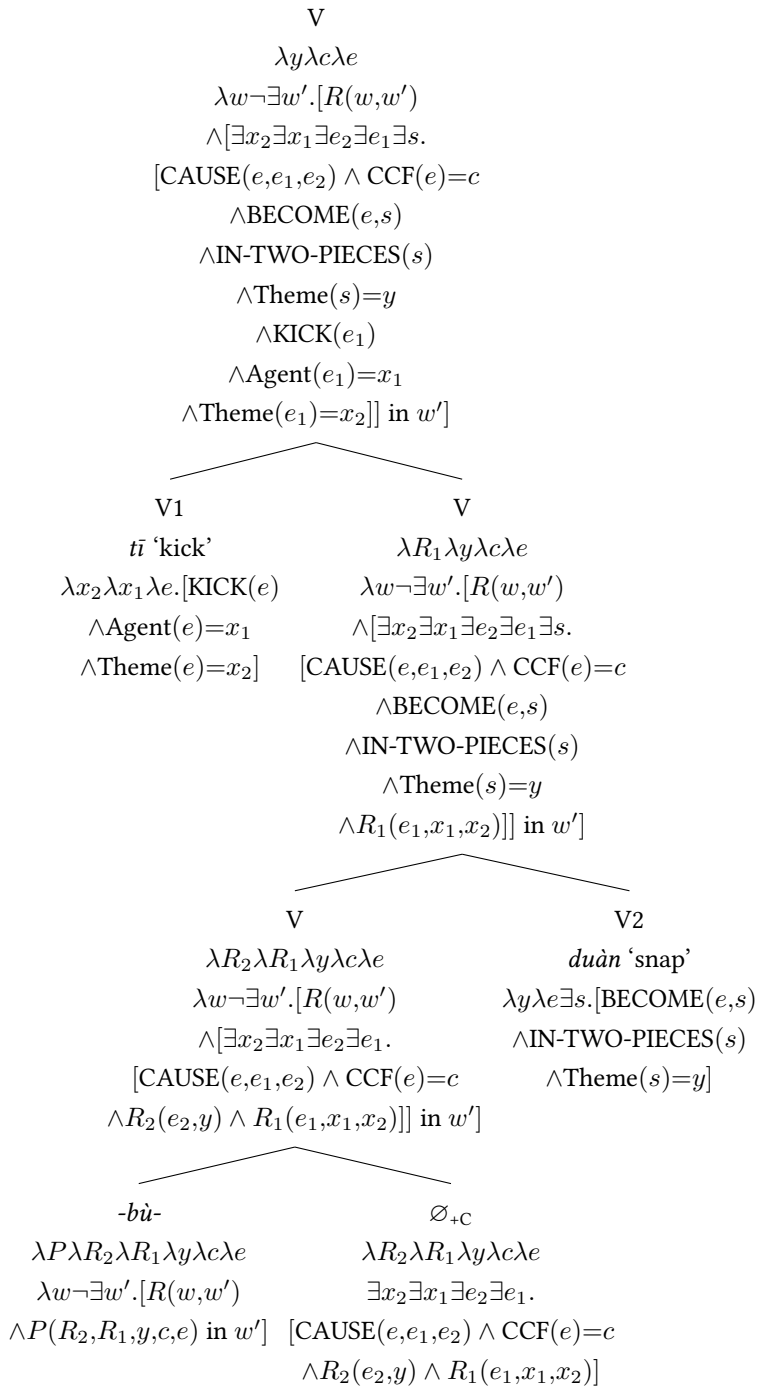
The following tree shows the semantic derivation of *tī-dé-duàn* ‘kick-DE-snap’.

(524)



The following tree shows the semantic derivation of *tī-bù-duàn* 'kick-BU-snap'.

(525)



My proposal makes four predictions.

First, my proposal predicts that the distribution of *de/bu* is restricted to V-V compounds (or complex predicates more generally). If *de/bu* were generalised modal operators with a semantic denotation like the one given in (526) by Tham

(2012), we might expect *de/bu* to have a wider distribution.

(526) $[\![de]\!] = \lambda P \lambda w \exists w' \exists e.[R(w,w') \wedge P(e) \text{ in } w']$ (Tham 2012)

However, according to the semantic denotations for *de/bu* that I proposed, *de/bu* semantically selects for predicates P that themselves select two predicates R_1 and R_2.

(527) $[\![dé]\!] = \lambda P \lambda R_2 \lambda R_1 \lambda y \lambda c \lambda e \lambda w \exists w'.[R(w,w') \wedge P(R_2,R_1,y,c,e) \text{ in } w']$

(528) $[\![bù]\!] = \lambda P \lambda R_2 \lambda R_1 \lambda y \lambda c \lambda e \lambda w \neg \exists w'.[R(w,w') \wedge P(R_2,R_1,y,c,e) \text{ in } w']$

A corollary of this prediction is that the V-V compounds from which V-*de/bu*-V constructions are derived should be independently attested. This is the case in general, but there are some apparent exceptions, notably involving V-V compounds with V2 *qǐ* '*lit.* rise'. For example, the sentences in (529) and (530) with the V-*de/bu*-V constructions *duì-dé-qǐ* 'match-DE-rise' and *duì-bù-qǐ* 'match-BU-rise' are acceptable, but the corresponding sentence in (531) with the V-V compound *duì-qǐ* 'match-rise' is not.

(529) *Zhāngsān duì-dé-qǐ Lǐsì.*
Zhangsan match-DE-rise Lisi
'Zhangsan could match up to Lisi.' / 'Zhangsan did not let Lisi down.'

(530) *Zhāngsān duì-bù-qǐ Lǐsì.*
Zhangsan match-BU-rise Lisi
'Zhangsan cannot match up to Lisi.' / 'Zhangsan let Lisi down.'

(531) **Zhangsan dui-qi-le Lisi.*
Zhangsan match-rise-PFV Lisi
Intended: 'Zhangsan matched up to Lisi.'

It is worth noting though that the V-V compound *duì-qǐ* 'match-rise' is independently attested in sentences like (532).

(532) *Tāmen duì-qǐ-le ànhào.*
they match-rise-PFV secret.signal
'They matched up their secret signals [i.e., they established a secret language that others would not understand].'[5]

[5] Adapted from `https://baijiahao.baidu.com/s?id=1760873550502054131`.

It is plausible that the V-*de/bu*-V constructions *duì-dé-qǐ* 'face-DE-rise' and *duì-bù-qǐ* 'face-BU-rise' are derived from the V-V compound *duì-qǐ* 'match-rise', but the relation between the V-*de/bu*-V constructions and the underlying V-V compound is obscured due to the abstract and idiomatic meanings involved. Moreover, it is not unusual for the output of a morphological process to have an idiomatic meaning. It is less likely – though not impossible – for similar idiomatic readings to arise if V-*de/bu*-V constructions were built in (phrasal) syntax instead of in morphology.

Second, my proposal predicts that the modal operator *de/bu* takes scope over the entire compound. At first glance, it may seem that *de/bu* takes scope only over V2 and not V1 because negative V-*bu*-V constructions have an actuality implicature which positive V-*de*-V constructions typically lack. What this means is that (533) can be uttered felicitously whether Lao Wei kicked the plank in the actual world or not, whereas (534) is less felicitous if Lao Wei does not kick the plank in the actual world.

(533) *Lǎo Wèi tī-**bù**-duàn nà tiáo mùbǎn.*
Lao Wei kick-BU-snap that CLF plank
'Lao Wei cannot make that plank snap by kicking.'
Or: 'Lao Wei did not manage to make that plank snap by kicking it.
(adapted from Williams 2005:256-257)

(534) *Lǎo Wèi tī-**dé**-duàn nà tiáo mùbǎn.*
Lao Wei kick-DE-snap that CLF plank
'Lao Wei can make that plank snap by kicking.'
Not: 'Lao Wei managed to make that plank snap by kicking.'
(adapted from Williams 2005:256-257)

However, the presence of an actuality implicature in negative V-*bu*-V constructions does not imply that the modal operator does not take scope over V1. Actuality implicatures or entailments have been observed in ability modals more generally. For example, in Hindi, ability modals have an actuality entailment in the perfective aspect but not in the imperfective aspect (Bhatt 1999).

(535) *Yusuf havaii-jahaaz uṛaa sak-**aa** (#lekin us-ne havaii-jahaaz*
Yusuf air-ship fly can-PFV but he air-ship
nahĩĩ uṛaa-yaa)
NEG fly-PFV
'Yusuf could fly the airplane, but he didn't fly the airplane.'
(Bhatt 1999:176)

(536) *Yusuf havaii-jahaaz uṛaa sak-**taa** **hai/thaa** (lekin vo*
Yusuf air-ship fly can-IPFV be.PRS/be.PST but he
havaii-jahaaz nahĩĩ uṛaa-taa hai/thaa)
air-ship NEG fly-IPFV be.PRS/be.PST
'Yusuf is/was able to fly airplanes but he doesn't/didn't fly airplanes.'
(Bhatt 1999:176)

Why ability modals give rise to actuality entailments is an open question in the literature (Portner 2009:211). However, the Hindi examples suggest that these entailments do not arise as a result of the ability modal taking sublexical scope over part of the verb *uṛaa* 'fly'. As such, the presence of actuality implicatures in V-*bu*-V constructions does not constitute evidence for the claim that de and bu take scope only over V2.

Williams speculates that the actuality implicature in (533) arises due to pragmatic rather than semantic reasons. I agree with Williams, and will attempt to provide a plausible pragmatic account.

Consider a context in the actual world in which Lao Wei kicked the plank but the plank did not snap. The negated sentence in (537) is felicitous in this context, but the negative V-*bu*-V construction in (538) is also felicitous and more informative, because it says that Lao Wei does not make the plank snap by kicking it in all of the relevant possible worlds.

(537) *Lǎo Wèi méi tī-duàn nà tiáo mùbǎn.*
Lao Wei not kick-snap that CLF plank
'Lao Wei did not make that plank snap by kicking.'

(538) *Lǎo Wèi tī-**bù**-duàn nà tiáo mùbǎn.*
Lao Wei kick-BU-snap that CLF plank
'Lao Wei can make that plank snap by kicking.'
Or: 'Lao Wei did not manage to make that plank snap by kicking it.
(adapted from Williams 2005:256-257)

In contrast, consider a context in the actual world in which Lao Wei made that plank snap by kicking it. The positive sentence in (539) is felicitous in this context, but the positive V-*de*-V construction in (540) does not add any additional information because it is clear that there exists a possible world – i.e., the actual world – in which Lao Wei makes the plank snap by kicking it. If we assume that (540) is weakly blocked by (539) in contexts where Lao Wei actually kicked the plank, then (540) is more felicitous in contexts where Lao Wei did not kick the plank. In other words, the absence of the actuality implicature in (540) arises as an "elsewhere" effect. It is this effect that explains why positive V-*de*-V constructions typically do not have an actuality implicature.

(539) *Lǎo Wèi tī-duàn-le nà tiáo mùbǎn.*
Lao Wei kick-snap-PFV that CLF plank
'Lao Wei made that plank snap by kicking.'

(540) *Lǎo Wèi tī-**dé**-duàn nà tiáo mùbǎn.*
Lao Wei kick-DE-snap that CLF plank
'Lao Wei can make that plank snap by kicking.'
Not: 'Lao Wei managed to make that plank snap by kicking.'
(adapted from Williams 2005:256-257)

This pragmatic account of the actuality implicature also explains why the positive V-*de*-V construction is much less productive than the negative V-*bu*-V construction, since the latter can be used in more contexts than the former. Cheng and Sybesma (2003) cite a corpus study by Liu which found 42 occurrences of the positive V-*de*-V construction versus 1,211 occurrences of the negative V-*bu*-V construction in a corpus of 1,145,000 characters.

Third, my proposal predicts that any material that is external to the V-*de/bu*-V construction is interpreted outside the scope of the modal operator, as has been observed by Williams (2014). A modal operator *de/bu* in an embedded clause cannot take scope over a matrix verb.

(541) *Wǒ **xiāngxìn** [Lǎo Wèi tī-**dé**-duàn nà tiáo mùbǎn].*
I believe Lao Wei kick-DE-snap that CLF plank
'I believe that Lao Wei can make that plank snap by kicking it.'
(believe > *de/bu*)
Not: 'I can believe that Lao Wei made that plank snap by kicking it.'
(*de/bu* > believe)

A modal operator *de/bu* in a *bǎ*-construction cannot take scope over *bǎ*. In a *bǎ*-construction like (542), the DP following *bǎ* (*nà tiáo mùbǎn* 'that plank') must denote an entity that is affected by the event denoted by the lexical verb (*tī-duàn* 'kick-snap').

(542) *Lǎo Wèi* ***bǎ*** *nà tiáo mùbǎn tī-duàn-le.*
Lao Wei BA that CLF plank kick-snap-PFV
'Lao Wei affected that plank by kicking and snapping it.'

In principle, a *bǎ*-construction like (543) with an embedded V-*de/bu*-V construction could have two readings. If *de/bu* were interpreted within the scope of *bǎ* as in (i), the sentence would be infelicitous because it is hard to see how that plank could have been affected simply by Lao Wei's (in)ability to kick and snap it. If *bǎ* were interpreted within the scope of *de/bu* as in (ii), the sentence would be felicitous. But the fact that (543) is ungrammatical suggests that reading (ii) is not available. (543) only has the infelicitous reading in (i) in which *bǎ* takes scope over *de/bu*.

(543) *#Lǎo Wèi* ***bǎ*** *nà tiáo mùbǎn tī-****dé/bù****-duàn.*
Lao Wei BA that CLF plank kick-DE/BU-snap
Intended: (i) 'Lao Wei affected that plank by being (un)able to kick it and snap it.' (*#bǎ* > *de/bu*)
Not: (ii) 'Lao Wei was able to affect the plank by kicking and snapping it.' (*de/bu* > *bǎ*)

For similar reasons, a modal operator *de/bu* in a *bèi*-construction cannot take scope over *bèi*.

In a *bèi*-construction like (544), the subject of the *bèi*-clause (*nà tiáo mùbǎn* 'that plank') must denote an entity that is affected by the event denoted by the lexical verb (*tī-duàn* 'kick-snap').

(544) *Nà tiáo mùbǎn* ***bèi*** *Lǎo Wèi tī-duàn-le.*
that CLF plank BEI Lao Wei kick-snap-PFV
'That plank was affected by Lao Wei kicking and snapping it.'

Again, in principle, a *bèi* construction like (545) with an embedded V-*de/bu*-V construction could have two readings. If *de/bu* was interpreted within the scope of *bèi* as in (i), the sentence would be infelicitous because it is hard to see how that plank could have been affected simply by Lao Wei's (in)ability to

kick and snap it. If *bèi* were interpreted within the scope of *de/bu* as in (ii), the sentence has a slightly more acceptable interpretation. But the fact that (545) is ungrammatical suggests that reading (ii) is not available. (545) only has the infelicitous reading in (i) in which *bèi* takes scope over *de/bu*.

(545) *#Nà tiáo mùbǎn* ***bèi*** *Lǎo Wèi tī-**dé/bù**-duàn.*
that CLF plank BEI Lao Wei kick-DE/BU-snap
(i) 'That plank was affected by Lao Wei being (un)able to kick it and snap it.' (*#bèi* > *de/bu*)
(ii) 'That plank was able to be affected by Lao Wei kicking and snapping it.' (*de/bu* > *bèi*, reading unavailable)

A modal operator cannot take scope over a manner adverb that modifies the V-*de/bu*-V construction.

(546) *#Lǎo Wèi **qīngéryījǔ-de** tī-**dé/bù**-duàn nà tiáo mùbǎn.*
Lao Wei effortlessly kick-DE/BU-snap that CLF plank
(i) 'Lao Wei was effortlessly (un)able to kick and snap that plank.' (#effortlessly > *de/bu*)
(ii) 'Lao Wei was (un)able to effortlessly kick and snap that plank.' (*de/bu* > effortlessly, reading unavailable)
(adapted from Williams 2014:321)

Finally, and crucially, my proposal predicts that the modal operator *de/bu* takes scope not just over the compound, but also over all the arguments of the compound. This prediction is borne out. Williams (2005) shows that in (547), the external argument *sān gè rén* 'three people' can be interpreted as referring to three non-specific people within the scope of the modal operator. On this interpretation, it is not possible to refer to these three people anaphorically using the continuation in (548). The availability of this interpretation is explained if we assume that the external argument is projected by ∅ within the scope of the modal operator.

(547) *Sān gè rén jiù tuī-dé-dǎo nà liǎng chē.*
three CLF people then push-DE-topple that CLF car
'(A group of) three people could make that car topple by pushing.'
(Williams 2005:258)

(548) *#... yīnwèi tāmen sān tiāntiān chī rénshēn.*
because 3PL three daily eat ginseng
'...because those three guys eat ginseng every day.' (Williams 2005:259)

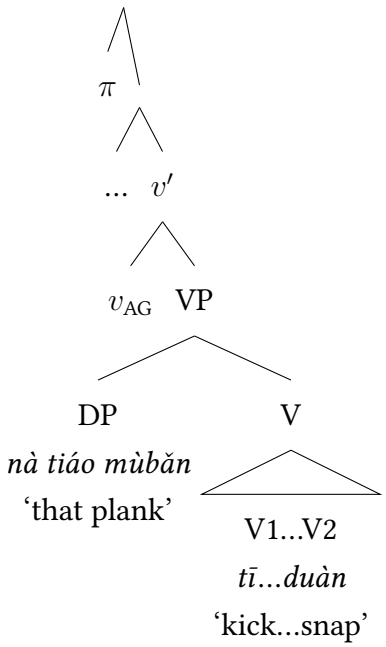
To summarise, in this subsection, I have presented a syntactic and semantic account of V-*de/bu*-V constructions and shown that the predictions made by my account are borne out.

3.3 Against competing accounts of V-*de/bu*-V constructions

In the previous subsection, I presented an account of the syntax and semantics of V-*de/bu*-V constructions which assumed that *de/bu* is a modal operator that is base-generated and interpreted in situ. Since I assume that the arguments of the V-*de/bu*-V construction are projected by the null head ∅ within the compound itself, my account naturally predicts that these arguments would be interpreted within the scope of the modal operator.

In contrast, accounts like the No Argument Theory that assume that the arguments of the V-*de/bu*-V compound are introduced outside the compound must assume that the modal operator is interpreted in a position that is higher than these arguments as in (549), where π is the modal operator.

(549)



(adapted from Williams 2005:258)

There are two logical possible approaches to achieve this:

The first approach is to assume that the modal operator is base-generated in situ but raises to a position above the arguments of the V-*de/bu*-V compound

where it is interpreted.

The second approach is to assume that the modal operator is base-generated and interpreted in a position above the arguments of the V-*de/bu*-V compound, but lowers to a position between V1 and V2.

In this subsection, I critically evaluate these two approaches and show that they run into problems.

3.3.1 Against a raising account of *de/bu*

The first competing account that I will critically evaluate is that the *de/bu* element is base-generated in situ but raises to a higher position where it is interpreted. A sketch of this account is given in Cheng and Sybesma (2003), but I will focus on the implementation given in Wu (2004).

In Mandarin, most modals appear preverbally (or outside the verbal projection). I illustrate this with *néng* 'to be able to'.

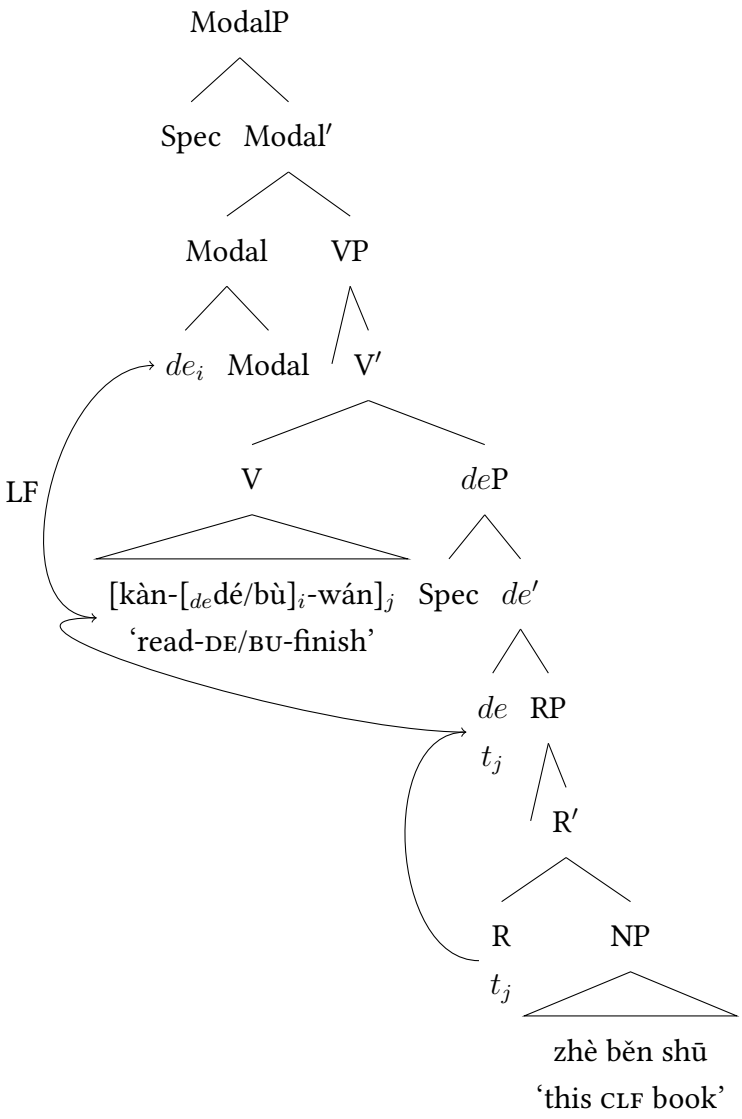
(550) *Tā* ***néng*** *tī-duàn* *nà* *tiáo* *mùbǎn.*
s/he can kick-snap that CLF plank
'S/he can make that plank snap from kicking.'

But in the V-*de/bu*-V construction, the *de/bu* element appears, rather exceptionally, within the verbal complex.

(551) *Tā* *tī-**dé**-duàn* *nà* *tiáo* *mùbǎn.*
s/he kick-DE/BU-snap that CLF plank
'S/he can make that plank snap from kicking.'

Wu (2004) proposes that *de/bu* excorporates from the V-*de/bu*-V construction and undergoes successive covert head movement before merging with the preverbal modal operator.

(552) *Lǐsì* *kàn-dé/bù-wán* *zhè* *běn* *shū.*
Lisi read-DE/BU-finish this CLF book
'Lisi can(not) finish reading this book.' (adapted from Wu 2004:281)



(Wu 2004:302)

Wu points out that *de/bu* cannot be interpreted in situ because it must take scope over V1.

Wu's account does not show the modal operator taking scope over the external argument, but it is possible to modify her account to achieve this, say, by assuming that the external argument reconstructs to a VP-internal position at LF.

The main conceptual challenge posed by this account is how the raised modal operator *de/bu* takes scope over the V-*de/bu*-V construction and its arguments but not over anything that intervenes between the construction and

its external argument.

Wu claims that elements like the quantificational adverb *dōu* 'all, also, even' and (in some cases) *zhǐ* 'only' are merged above a high modal operator and are thus interpreted outside the scope of both modal operators. This claim is plausible because these elements can precede an overt high modal like *néng* 'can'.

(553) *Lǎo Wèi* ***{dōu/ zhǐ}*** ***néng*** *tī-duàn nà tiáo mùbǎn.*
Lao Wei even/ only can kick-snap that CLF plank
'{Even} Lao Wei is {only} able to make that plank snap by kicking.'

But this explanation cannot apply to other elements like *bǎ* and *bèi* which cannot precede an overt high modal.

(554) **Lǎo Wèi* ***bǎ*** *nà tiáo mùbǎn* ***néng*** *tī-duàn.*
Lao Wei BA that CLF plank can kick-snap
Intended: 'Lao Wei is able to make that plank snap by kicking.'

(555) **Nà tiáo mùbǎn* ***bèi*** *Lǎo Wèi* ***néng*** *tī-duàn.*
that CLF plank BEI Lao Wei can kick-snap
Intended: 'That plank is able to be kicked and snapped by Lao Wei.'

Instead, Wu claims that *bǎ* and *bèi* are interveners which prevent the low modal *de/bu* from raising to merge with the high modal. According to Wu, these intervention effects explain why sentences with a high modal *néng* 'to be able to' (and thus no LF movement) are grammatical while those with a low modal *de/bu* (and thus LF movement) are not.

The high modal is compatible with *bǎ* but the low modal is not.

(556) *Tā* ***(bù-)néng*** ***bǎ*** *nà tiáo mùbǎn tī-duàn.*
s/he NEG-can BA that CLF plank kick-snap
'S/he can(not) make that plank snap from kicking.'

(557) **Tā* ***bǎ*** *nà tiáo mùbǎn tī-****dé/bù****-duàn.*
s/he BA that CLF plank kick-DE/BU-snap
'S/he can(not) make that plank snap from kicking.' (Williams 2014:321)

The high modal is compatible with *bèi* but the low modal is not.

(558) *Nà tiáo mùbǎn **(bù-)néng bèi** tā tī-duàn.*
that CLF plank NEG-can BEI s/he kick-snap
'That plank can(not) be made by her/him to snap from kicking.'

(559) **Nà tiáo mùbǎn **bèi** tā tī-**dé/bù**-duàn.*
that CLF plank BEI s/he kick-DE/BU-snap
'That plank can(not) be made by her/him to snap from kicking.'

Wu claims that manner adverbs like *qīngéryījǔ-de* 'effortlessly' also block the LF movement of *de/bu*.

(560) *Nà tiáo mùbǎn, tā **(bù-)néng qīngéryījǔ-de***
that CLF plank s/he NEG-can effortlessly
tī-duàn.
kick-DE/BU-snap
'That plank, s/he can(not) effortlessly make snap from kicking.'

(561) **Nà tiáo mùbǎn, tā **qīngéryījǔ-de** tī-**dé/bù**-duàn.*
that CLF plank s/he effortlessly kick-DE/BU-snap
'That plank, he can(not) effortlessly make snap from kicking.'
(Williams 2014:321)

There are three problems with Wu's proposal.

First, excorporation of *de/bu* is unexpected given that V-*de/bu*-V constructions are compounds which are inaccessible to syntactic operations.

Second, it is not clear why *bǎ*, *bèi* and manner adverbs should be analysed as interveners. These elements do not share any features with the modal operators that would block movement.

Last, Wu's proposal incorrectly predicts that V-*de/bu*-V constructions can never be modified by a manner modifier like *mànmànde* 'slowly'.

(562) *Zuò zài shāfā de Chéngxiāo **mànmànde** zhēng-**bù**-kāi*
sit at sofa DE Chengxiao slowly open.eye-BU-open
yǎnjīng le.
eye SFP
'Sitting on the sofa, Chengxiao slowly became unable to open his eyes.'[6]

[6] https://www.jianshu.com/p/5b8467d46b63

(563) *Nǐ yǐjīng **mànmànde** zhǎo-**bù**-dào zìjǐ de mèngxiǎng*
you already slowly search-BU-reach self DE dream
le.
SFP
'You have already slowly become unable to find your own dream.'[7]

Thus, a raising account of *de/bu* is untenable.

3.3.2 Against a lowering account of *de/bu*

The second approach assumes that the modal operator is base-generated and interpreted in a position outside the V-*de/bu*-V construction, but undergoes lowering to a position between V1 and V2.

The first way to implement this lowering operation is to assume that *de/bu* is an infix. However, there is no evidence that the negative potential marker *bu i*s an infix. For example, the negative potential marker cannot appear after the first syllable of a disyllabic verb.

(564) **Wǒ pī-**bù**-píng tā.*
I criti-BU-cise her/him
Intended: 'I cannot criticise her/him.'

The second way to implement this lowering operation is to assume that *de/bu* is a suffix that undergoes a postsyntactic operation of morphological merger with its host V1 to appear between V1 and V2 (C. Wang 2017).

According to Wang, *de* and *bu(de)* are suffixes, as evidenced by sentences like (565) and (566).

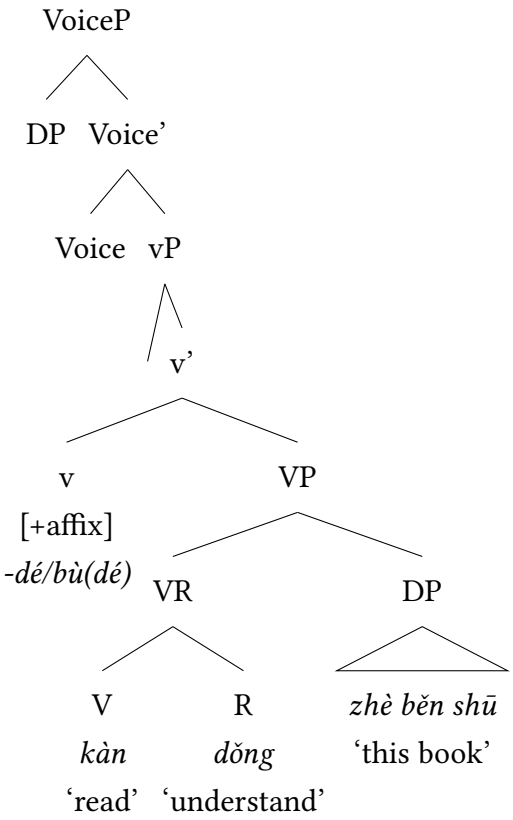
(565) *Zhè běn shū kàn-**dé**.*
this CLF book read-DE
'This book can be read.' (C. Wang 2017:648)

(566) *Zhè běn shū kàn-**bùdé**.*
this CLF book read-BUDE
'This book couldn't be read.' (C. Wang 2017:648)

Wang gives the structure for the V-*de/bu*-V construction in (567).

[7] http://bcc.blcu.edu.cn/show/18278801_5_9_-1_-1/0/

(567) *Tā kàn-dé/bù-dǒng zhè běn shū.*
he read-DE/BU-understand this CLF book
'He can(not) understand this book (from reading).' (C. Wang 2017:648)



Since *de* and *bu(de)* are suffixes that need a host, they undergo a postsyntactic operation of morphological merger which results in *de/bu* appearing linearly after V1. The reason why *de/bu* does not appear linearly after the entire V1-V2 complex is presumably because elements that undergo morphological merger must be linearly adjacent to each other.

Wang motivates this operation of morphological merger by observing, as Wu (2004) does, that the V-*de/bu*-V construction is incompatible with elements like *bǎ*, *bèi* and manner adverbs. Wang claims that these elements block the operation of morphological merger because they intervene between *de/bu* and V1.

There are two problems with Wang's analysis.

First, it is possible for *bude* to appear after V-V, i.e., there are sentences in which *bude* does not appear to undergo morphological merger with a V1-V2 complex, but instead appears linearly after V1 and V2. On Wang's account of

V-*bu*-V constructions, such sentences are not predicted to exist.

(568) *Huáwéi T1201 Java dǎ-kāi-**bùdé**, zěnme bàn?*
Huawei T1201 Java hit-open-BUDE how do
'Java can't [be] opened on [my] Huawei T1201 [mobile phone]. What should I do?'[8]

(569) *Wèi, jíshǐ qì-bù-guò yě qiā-sǐ-**bùdé** yō.*
hey even angry-BU-go.over also strangle-dead-BUDE INTERJ
'Hey, even if you can't get over your anger, you still can't strangle [them] to death.'[9]

(570) *Zhè xiǎo shé fēitóngxiǎokě, wànwàn shāo-sǐ-**bùdé**.*
this small snake no.small.matter absolutely burn-dead-BUDE
'This small snake is no small matter; it absolutely must not [be] burned to death.'[10]

Second, Wang's proposal incorrectly predicts that the modal operator would not take scope over the external argument of the V-V compound since he assumes that *de* or *bu(de)* is merged just above V1. *De* or *bu(de)* would take scope over the external argument if it were merged above Voice, but then it would no longer be adjacent to V1 and thus would not be able to undergo morphological merger with V1.

Thus, a lowering account of *de/bu* is untenable as well.

3.4 Summary

In this section, I have presented a syntactic and semantic account of V-*de/bu*-V constructions which assumes that *de/bu* is a modal operator that is base-generated and interpreted in situ. I show that this account correctly predicts that the modal operator takes scope above the arguments of the V-*de/bu*-V compound but below any other material external to the compound.

My account is inconsistent with the No Argument Theory which assumes that the arguments of a V-*de/bu*-V construction are introduced outside the compound. The No Argument Theory must assume that the modal operator in a V-*de/bu*-V construction is interpreted in a position outside of the construction

[8] https://zhidao.baidu.com/question/454558098.html
[9] http://bcc.blcu.edu.cn/show/1143179820_6_9_-1_-1/0/
[10] http://bcc.blcu.edu.cn/show/1276811425_2_5_-1_-1/0/

and, in particular, above the external argument. I have evaluated two accounts of the V-*de/bu*-V construction that are consistent with the No Argument Theory and shown that these accounts are untenable.

4 Concluding remarks

In this chapter, I have presented syntactic and semantic accounts of resultative V-*de* and V-*de/bu*-V constructions which build upon my account of V-V resultatives presented in Chapter 2.

My account of V-V resultatives as compounds built in morphology allows me to draw a distinction between them and resultative V-*de* constructions, which are built in syntax. My account can thus explain why V1 must project its arguments in resultative V-*de* constructions but not in V-V resultatives. Competing accounts that assume that both resultative V-*de* constructions and V-V resultatives are built in syntax cannot explain this contrast.

My account of V-V resultative compounds also makes available an analysis of V-*de/bu*-V constructions according to which the *de/bu* modal operator is merged and interpreted in situ. Such an account has a number of advantages over competing accounts that place the *de/bu* element above V1. But my account can only work if the arguments of a V-*de/bu*-V construction are introduced in the compound, not above it, as Williams's No Argument Theory assumes. Therefore, to the extent that my account of V-*de/bu*-V constructions is better than the alternatives, my account also provides another argument against the No Argument Theory.

Chapter 7

Cross-linguistic extensions

1 Introduction

In the previous chapters, I have developed the claim that in Mandarin, V1 must project its arguments in a non-compound resultative but need not do so in a compound resultative. This explains why compound resultatives in Mandarin are more flexible than non-compound resultatives in terms of their argument realisation patterns. In this chapter, I show that this proposal is applicable to languages other than Mandarin.

The empirical observation that compound resultatives are more flexible than non-compound resultatives cross-linguistically is not new. For example, C. Li (2007) observes that compound resultatives in languages like Mandarin and Japanese can have a subject-oriented reading while non-compound resultatives in languages like English, German and Swedish cannot.[1] Li also observes that compound resultatives in languages like Mandarin and possibly Igbo (but not Japanese) can have an "inverted" argument realisation pattern while non-compound resultatives in English, German and Swedish cannot. In this chapter, I will account for these observations in terms of whether V(1) must project its arguments.

I begin by discussing Germanic languages like English and Dutch which only have non-compound resultatives. Although Germanic resultatives do not

[1] Li does not provide an account of this empirical observation. He suggests that only compound resultatives have subject-oriented readings because "realization as a compound and thus as a single word enables the subject and the result compound to establish a relation more easily", but does not elaborate further.

have the same structure as Mandarin V-*de* resultatives, the verb in a Germanic resultative is merged in syntax, just like V1 in Mandarin V-*de* resultatives. Thus, I predict that the verb must project its arguments in a Germanic resultative as it does in a simple sentence.

I then discuss Japanese which has both compound and non-compound resultatives. I predict that in Japanese, V1 must project its arguments in a non-compound resultative but need not do so in a compound resultative. I show why a No Argument Theory of Japanese resultatives cannot account for this result.

2 Non-compound resultatives in Germanic languages

In this section, I consider resultatives in Germanic languages like English and Dutch. In these languages, the result-denoting component is phrasal. It can be an AP or a PP.

English:

(571) John painted the door [**beautifully green**]. (after Neeleman 1994:4)

(572) John hammered the nail [**into the wall**]. (after Neeleman 1994:4)

Dutch:

(573) *dat Jan de deur* ***[mooi groen]*** *verft*
that John the door beautifully green paints
'that John painted the door beautifully green'
(Neeleman 1994:4, translations mine)

(574) *dat Jan de spijker* ***[in de muur]*** *slaat*
that John the nail into the wall hammers
'that John hammers the nail into the wall'
(Neeleman 1994:4, translations mine)

The fact that the result-denoting component can be phrasal indicates that these resultatives are built in syntax rather than morphology. Therefore, my proposal predicts that the (first) verb must project its arguments.

In this section, I present a syntactic and semantic account of non-compound resultatives in Germanic languages and then show that the prediction that the verb must project its arguments is borne out.

2.1 The syntax and semantics of non-compound resultatives in Germanic languages

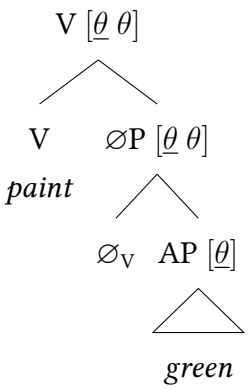
In this subsection, I present a syntactic and semantic account of non-compound resultatives in Germanic languages. Non-compound resultatives in Germanic languages do not have the same structure as non-compound V-*de* resultatives in Mandarin. The consensus in the literature is that the result-denoting component of a Germanic resultative is in complement position, and is not an adjunct like the *de*-phrase in Mandarin V-*de* resultatives. Nevertheless, both Germanic resultatives and Mandarin V-*de* resultatives are built in the syntax.

My account draws upon the proposals made by Neeleman and Van de Koot (2002, 2019). I present the analysis for English, but the same account applies to Dutch.

I assume that English non-compound resultatives are complex predicates with the syntactic structure in (575). For comparison, I present the syntax of a Mandarin V-V resultative in (576).

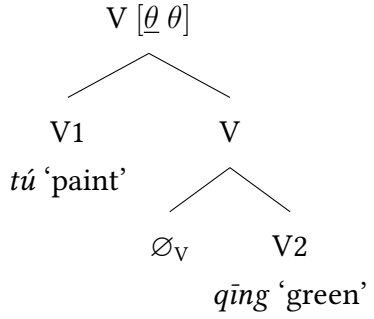
English:

(575)



Mandarin:

(576)



English non-compound resultatives and Mandarin compound resultatives have the same syntactic structure, except that the null head is merged in syntax in English non-compound resultatives but is merged in morphology in Mandarin compound resultatives. Consequently, in (575), mapping of semantic arguments onto θ-grids occurs before the top VP node, as indicated by the θ-grids on the intermediate nodes, whereas in (576), the semantic arguments of the resultative are mapped to a θ-grid only in the top V node. As we shall see shortly, this difference has direct implications for the flexibility of argument realisation in phrasal resultatives.

But before discussing how the semantic arguments of the components of a Germanic resultative are mapped onto θ-grids, let me first present the semantic derivation of a Germanic resultative. This derivation proceeds in two steps: the ∅ head merges with the result predicate to form a ∅P, which then merges with V.

The semantic denotation of the ∅ head has the general form in (577). It introduces a macroevent e containing two subevents, a causing subevent e_1 and a caused subevent e_2 that culminates in a resultant state s. It also introduces two arguments: a CCF c and an undergoer y that becomes the holder of the resultant state s. The subscript +C+B indicates that ∅ introduces the CCF and the 'become' event e_2.

(577) $[\![\varnothing_{\text{+C+B}}]\!] = \lambda R_2 \lambda R_1 \lambda y \lambda c \lambda e \exists e_2 \exists e_1 \exists s.[\text{CAUSE}(e,e_1,e_2) \wedge \text{CCF}(e)=c \wedge \text{BECOME}(e_2,s) \wedge R_2(s,y) \wedge R_1(e_1,\dots)]$

I assume that the CCF is projected as the external argument of ∅ while the undergoer is projected as its internal argument. It follows then that the resultant state must hold of the internal argument of ∅.

For simplicity, I assume a family of ∅ heads that combine with V of different arities.[2] A resultative like *sing hoarse* that is headed by an unergative or optionally transitive verb contains a null head $\varnothing_{+C+B,1}$ which identifies the sole argument of V with its CCF argument.

(578) $[\![\varnothing_{+C+B,1}]\!] = \lambda R_2 \lambda R_1 \lambda y \lambda c \lambda e \exists e_2 \exists e_1 \exists s.[\text{CAUSE}(e,e_1,e_2) \wedge \text{CCF}(e)=c \wedge \text{BECOME}(e_2,s) \wedge R_2(s,y) \wedge R_1(e_1,c)]$

A resultative like *paint green* that is headed by a transitive verb contains a null head $\varnothing_{+C+B,1+2}$ which identifies the arguments of V with its own CCF and undergoer arguments.

(579) $[\![\varnothing_{+C+B,1+2}]\!] = \lambda R_2 \lambda R_1 \lambda y \lambda c \lambda e \exists e_2 \exists e_1 \exists s.[\text{CAUSE}(e,e_1,e_2) \wedge \text{CCF}(e)=c \wedge \text{BECOME}(e_2,s) \wedge R_2(s,y) \wedge R_1(e_1,c,y)]$

An unaccusative resultative like *freeze solid* that is headed by the unaccusative alternant of *freeze* contains the unaccusative alternant of $\varnothing_{+C+B,1+2}$, which I represent as $\mathcal{R}(\varnothing_{+C+B,1+2})$. $\mathcal{R}(\varnothing_{+C+B,1+2})$ identifies the sole argument of V with its undergoer argument.

[2] Alternatively, one could assume that there is a single null head that composes with V of different arities according to a more complex composition rule that applies specifically to resultative formation.

(580) $[\![\mathcal{R}(\varnothing_{+C+B,1+2})]\!] = \lambda R_2 \lambda R_1 \lambda y \lambda e \exists e_2 \exists e_1 \exists s.[\text{CAUSE}(e,e_1,e_2) \wedge$
$\text{BECOME}(e_2,s) \wedge R_2(s,y) \wedge R_1(e_1,y)]$

The semantics of the resultative can then be derived by repeated applications of Function Application.

I present the semantic derivation of a transitive resultative *paint green* headed by a transitive V. In the first step, shown in (582), ∅ merges with the result predicate, in this case the AP *green*. The AP *green* enters the derivation with the semantics in (581).

(581) $[\![\textit{green}]\!] = \lambda z \lambda s.[\text{GREEN}(s) \wedge \text{Theme}(s) = z]$

The semantics of ∅P is compositionally derived from the semantics of the ∅ head and the result AP by Function Application.

(582)

∅P
$\lambda R_1 \lambda y_2 \lambda y_1 \lambda e \exists e_2 \exists e_1 \exists s.$
$[\text{CAUSE}(e,e_1,e_2) \wedge \text{CCF}(e)=y_1$
$\wedge \text{BECOME}(e_2,s) \wedge \text{GREEN}(s)$
$\wedge \text{Theme}(s)=y_2 \wedge R_1(e_1,y_1,y_2)]$

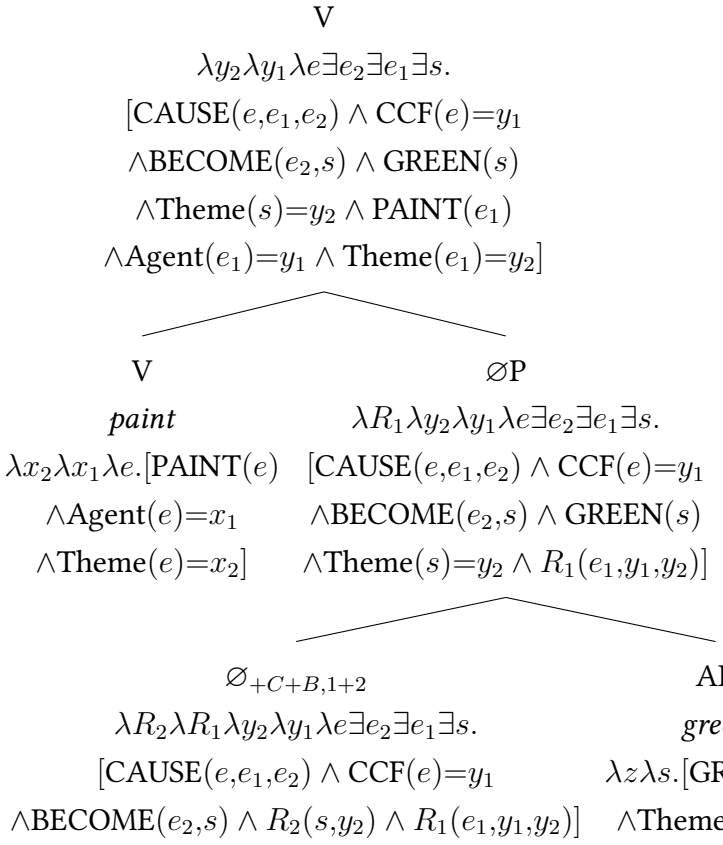
$\varnothing_{+C+B,1+2}$	AP
$\lambda R_2 \lambda R_1 \lambda y_2 \lambda y_1 \lambda e \exists e_2 \exists e_1 \exists s.$	*green*
$[\text{CAUSE}(e,e_1,e_2) \wedge \text{CCF}(e)=y_1$	$\lambda z \lambda s.[\text{GREEN}(s)$
$\wedge \text{BECOME}(e_2,s) \wedge R_2(s,y_2) \wedge R_1(e_1,y_1,y_2)]$	$\wedge \text{Theme}(s)=z]$

In the second step, shown in (584), ∅P merges with V. The transitive V *paint* enters the derivation with the semantics in (583).

(583) $[\![\textit{paint}]\!] = \lambda x_2 \lambda x_1 \lambda e.[\text{PAINT}(e) \wedge \text{Agent}(e) = x_1 \wedge \text{Theme}(e) = x_2]$

The semantics of the top VP node is compositionally derived from the semantics of ∅P and V *paint*.

(584)



Having presented the semantic derivation of the resultative *paint green*, I now discuss how the semantic arguments of the components of the resultative are mapped onto θ-roles in θ-grids.

I assume that θ-roles are syntactic features that encode a requirement that a particular argument be realised in the syntax. Since θ-roles are syntactic features, mapping of semantic arguments onto θ-roles can only occur in the syntax.

Before a predicate enters the syntactic derivation, there is no requirement for its semantic arguments to be realised in the syntax. For example, in a Mandarin V-V compound resultative, the components of the resultative are assembled in the morphological submodule of the grammar before the top V node is inserted into the (phrasal) syntactic submodule. Thus, the semantic arguments of the resultative are mapped onto a θ-grid only at the top V node. Semantic arguments within the compound that are not present in the top V-node undergo existential closure.

In contrast, since non-compound resultatives are built in the syntax, map-

ping of the semantic arguments of the components of a non-compound resultatives must take place before the top V node. The components of a non-compound resultative are required to project their arguments in the syntax and there is no way for this requirement to be circumvented.

Typically, the semantic arguments of a predicative head are mapped onto θ-roles at the point at which a lexical item enters the syntactic derivation, i.e., the terminal node. The θ-roles are copied from the terminal node up the tree until they are satisfied. This state of affairs satisfies the principle of Inclusiveness. I give the formulation of this principle as it is stated in Neeleman and Van de Koot (2002) in (585).

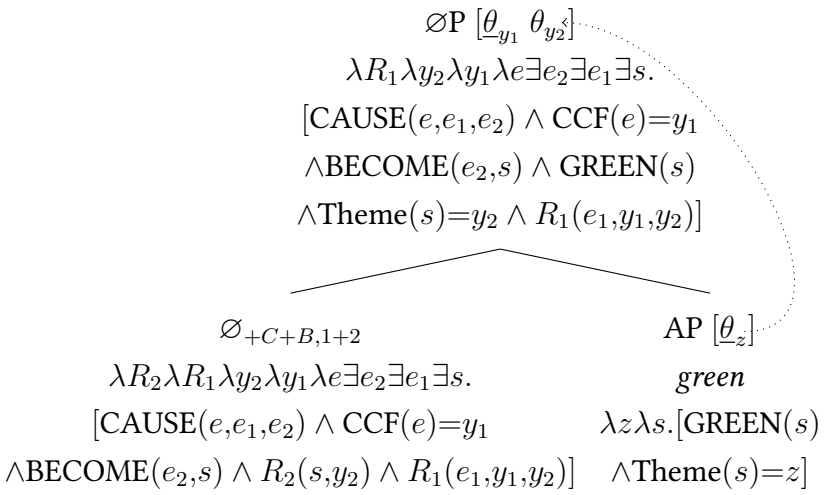
(585) Inclusiveness:

> The syntactic properties of a nonterminal node are fully recoverable from its daughters and those of a terminal node from its lexical entry.

But in the formation of a non-compound resultative, the semantic arguments of a predicative head are mapped onto θ-roles in its first projection (a node of the same category that immediately dominates it). This operation of "delayed mapping" also satisfies the principle of Inclusiveness.

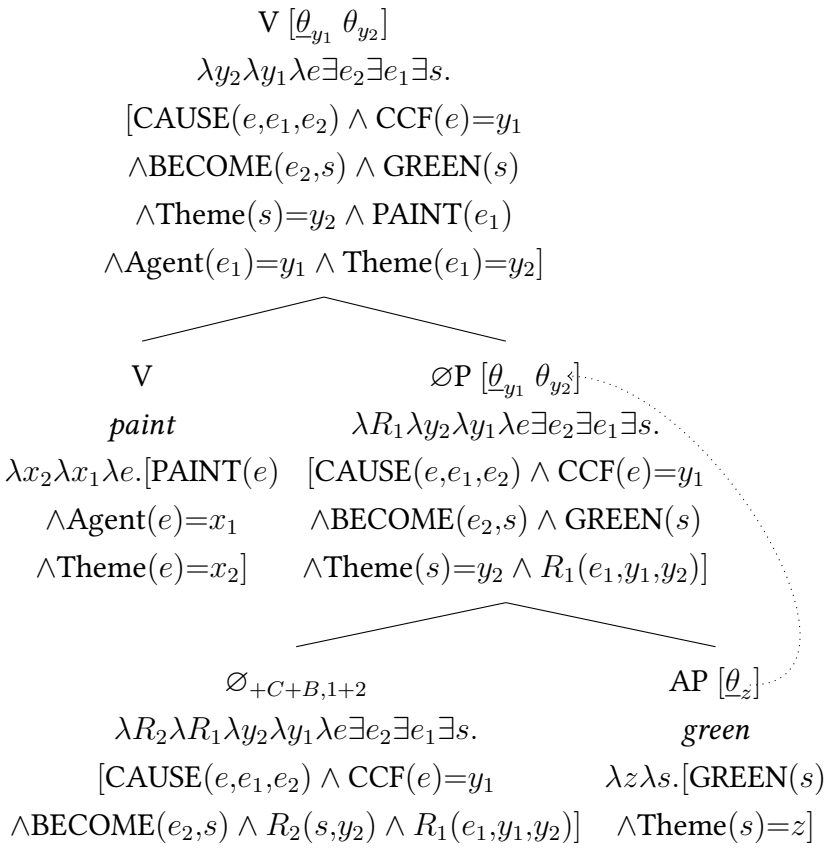
Delayed mapping takes place in each compositional step of resultative formation. In the first step of composition, ∅ composes with the AP *green*. The semantic arguments of ∅ undergo delayed mapping onto its first projection, with its CCF argument y_1 projected externally and its undergoer argument y_2 projected internally. The semantic argument of the secondary predicate is then integrated into the θ-grid of the node that directly dominates it, as indicated by the dotted arrow. This integration step must be consistent with the semantics of the intermediate node, which identifies the sole argument of the secondary predicate with the internal argument of ∅. Consequently, the sole θ-role of the secondary predicate must be identified with the internal θ-role of the intermediate node.

(586)



In the second step of composition, ∅P composes with V. The semantic arguments of V undergo delayed mapping onto the top VP node, and the semantic arguments of the intermediate node are integrated into the θ-grid of the top node. This integration step must be consistent with the semantics of the top VP node, which means that the external and internal θ-roles of V must be identified with the external and internal θ-roles of the top VP node respectively.

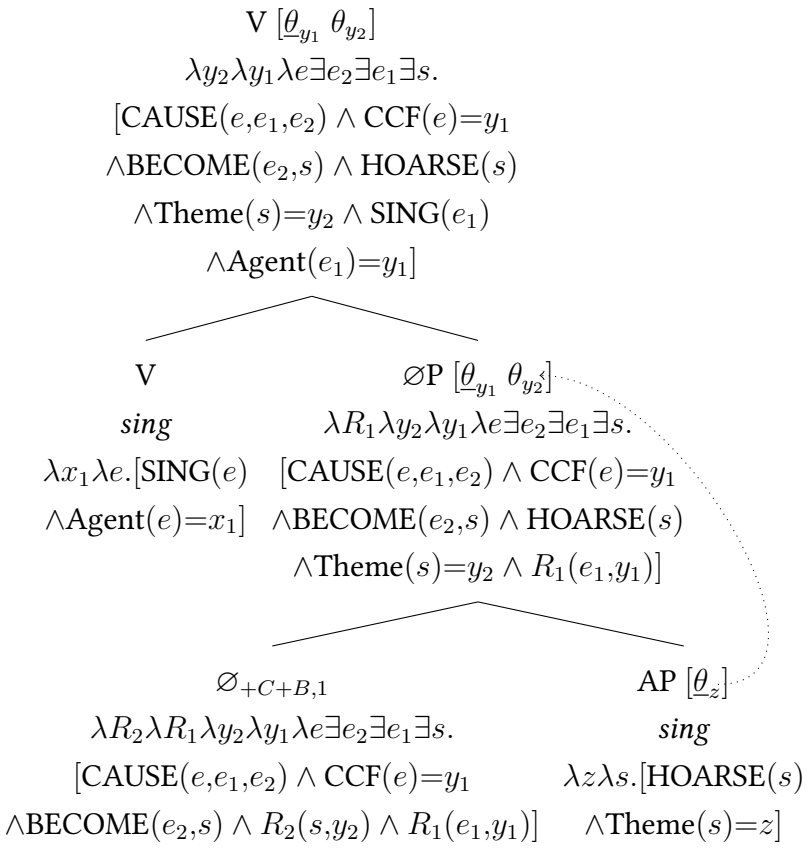
(587)



Abstracting away from the technical details, the upshot of this account is that the semantic arguments of the components of a non-compound resultative must be realised in the syntax. Although the mapping of semantic arguments of V onto θ-grids is "delayed" (by one node), it must happen. And once a semantic argument has been mapped to a θ-role, the requirement that that semantic argument be realised in the syntax cannot be deleted.

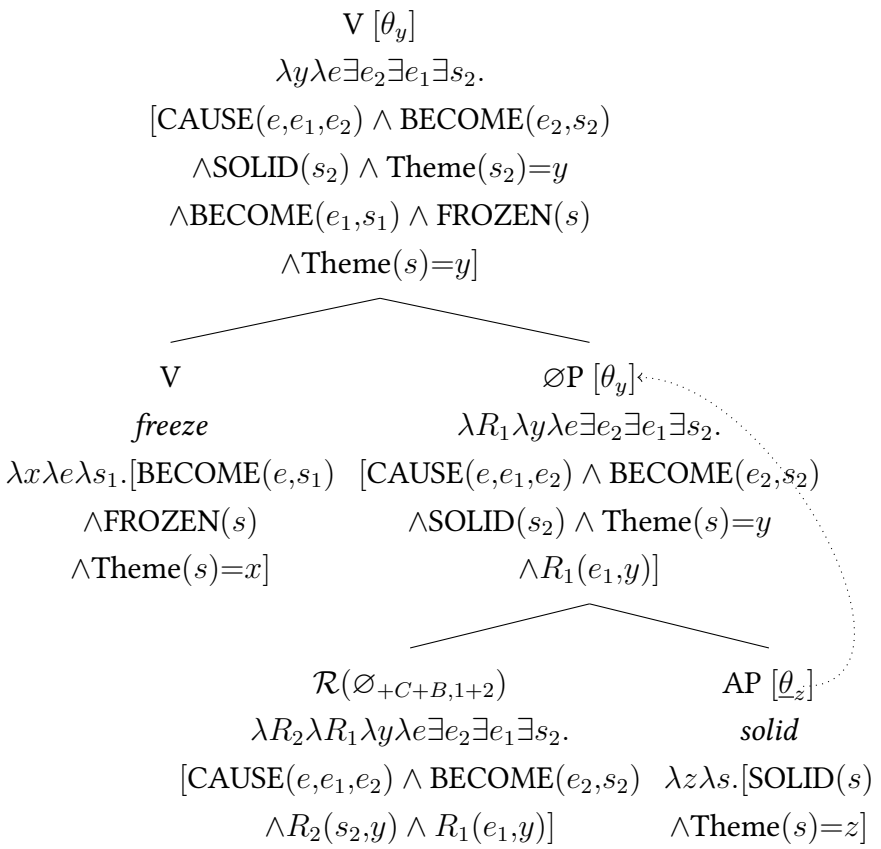
For completeness, I present the semantic derivations for resultatives headed by verbs of different arity. A transitive resultative with an unergative verb contains the null head $\varnothing_{+C+B,1}$. The agent of V must be projected externally.

(588) John sang his throat hoarse. (unergative V)



An unaccusative resultative with an unaccusative verb contains $\mathcal{R}(\varnothing_{+C+B,1+2})$, the unaccusative alternant of $\varnothing_{+C+B,1+2}$. The theme of V must be projected internally.

(589) The river froze solid. (unaccusative V)



To summarise, in this subsection, I have given a syntactic and semantic account of non-compound resultatives in Germanic languages. My account predicts that the semantic arguments of the components of a non-compound resultative must be realised in the syntax. Crucially for what follows, in a non-compound resultative, the (first) verb must project its arguments, i.e., its external and internal arguments must be identified with the external and internal arguments of the resultative respectively.

2.2 Implications for the Direct Object Restriction

The account of Germanic resultatives in the previous subsection has implications for a condition that applies to the argument structure of resultatives

known as Simpson's Law (Simpson 1983) or the Direct Object Restriction (Levin and Rappaport Hovav 1995). The Direct Object Restriction (DOR) states that "a resultative phrase may be predicated of the immediately postverbal NP, but may not be predicated of a subject or of an oblique complement" (Levin and Rappaport Hovav 1995:34).

Building upon the insights in Williams (2005), I suggest that the DOR be decomposed into two distinct conditions.

The first condition is what I will call a weak version of the DOR given in (590), which states a restriction in terms of the argument structure of the resultative.

(590) *Weak DOR:*

> In a resultative complex predicate, the resultant state must hold of the internal argument of the resultative.

The weak DOR in (590) is effectively the formulation of the DOR that Williams (2005) adopts. Given the analyses of resultative complex predicates that I have adopted so far, we would expect that all resultative complex predicates – compounds or otherwise – obey the weak DOR. In unaccusative resultatives, the internal argument of the resultative is the sole argument, so the weak DOR is trivially satisfied. In transitive resultatives, if the null head introduces a CCF argument, the CCF argument is projected externally and is distinct from the Theme argument of the resultative, which is projected internally and is the holder of the resultant state.

The second condition is what I will call a strong version of the DOR given in (591), which states a restriction in terms of the argument structure of V(1).

(591) *Strong DOR:*

> In a resultative complex predicate, the resultant state must hold of the internal argument of V(1) where present, and may not hold of the external argument of V(1).

Not all resultative complex predicates obey the strong DOR. We can understand this if we think of the strong DOR as a combination of two conditions: (i) the weak DOR and (ii) a requirement that V(1) project its arguments, i.e., the external and internal arguments of V(1) be identified with the external and internal arguments of the resultative respectively.

Let us begin by considering the case of Mandarin V-V resultatives. Since Mandarin V-V resultatives are compound resultatives, V(1) does not project its arguments. Hence, even if we expect Mandarin V-V resultatives to obey the weak DOR, we would not expect them to obey the strong DOR. Indeed, Mandarin V-V resultatives violate the strong DOR in three ways. First, in a transitive resultative, the internal argument of an obligatorily transitive V1 can be omitted and the resultant state can hold of some other argument, as in (592).

(592) *Wǒ qiē-dùn-le càidāo.*
I cut-dull-PFV knife
'I cut [something] and as a result the knife became dull.'

Second, in a transitive resultative, the internal argument of an obligatorily transitive V1 can be projected as the external argument of a resultative and the resultant state can hold of some other argument, as in the inverted resultative in (593).

(593) *Yīfú xǐ-lèi-le jiějiě.*
clothes wash-tired-PFV elder.sister
'These clothes made big sister tired by [her] washing [them].'
(Ren 2001; cited in Williams 2005:66)

Lastly, in an intransitive resultative, the result state can hold of the external argument of V1, as in (594).

(594) *Māma kū-xǐng-le.*
mother cry-awake-PFV
'Mother cried herself awake.'

Now let us consider the case of Germanic resultatives. Since Germanic resultatives are not compounds, the verb must project its arguments. Hence, we would expect that Germanic resultatives obey the strong DOR, and that the Germanic counterparts of the Mandarin V-V resultatives in (592)-(594) are ruled out.[3] In the next two subsections, I will review the evidence that shows that this expectation is borne out in English and Dutch.

[3]I set aside the additional prediction that in non-compound resultatives, the (first) verb must project an obligatory external argument where present. This prediction appears to be borne out in English. But in general, it is not trivial to identify a class of verbs that has an obligatory external argument cross-linguistically. A similar problem does not arise for internal arguments, since it seems that causative verbs have an obligatory internal argument cross-linguistically.

2.3 Non-compound resultatives in English

Since English resultatives are non-compounds, I predict that the (first) verb must project its arguments, and hence English resultatives must obey the strong DOR. In this subsection, I show that this prediction is borne out.

First, in a transitive resultative, when the verb is obligatorily transitive like those given in (595), the internal argument of the verb cannot be omitted, leaving the result state to be predicated of some other argument, as in (596) (Carrier and Randall 1992). It is crucial that the verb is obligatorily transitive and not optionally transitive, which is why I only consider causative verbs here.

(595) (a) The bears **frightened** *(the hikers).

(b) The baby **shattered** *(the porringer).

(c) The magician **hypnotized** *(the volunteers).

(d) John **broke** *(the stick).

(examples a-c from Carrier and Randall 1992:187, d after Neeleman 1994:141)

(596) (a) *The bears **frightened** the campground empty.

(b) *The baby **shattered** the oatmeal into portions.

(c) *The magician **hypnotized** the auditorium quiet.

(d) *John **broke** his hands tired.

(examples a-c from Carrier and Randall 1992:187, d after Neeleman 1994:141)

Second, in a transitive resultative, the internal argument of an obligatorily transitive verb cannot be projected as the external argument of the resultative, leaving the result state to be predicated of some other argument, as in (597).

(597) The stick **broke** John's hands tired.

Lastly, in an unaccusative resultative, the result state must hold of the internal argument of the verb, as in (598), and not of the external argument of the verb, as in (599) (Simpson 1983).

(598) [The river]$_i$ **froze** t_i solid.

(599) *John **ran** tired.

Thus, English non-compound resultatives obey the strong DOR.

2.4 Non-compound resultatives in Dutch

The prediction that non-compound resultatives must obey the strong DOR is also borne out in Dutch.

First, in a transitive resultative, when the verb is obligatorily transitive, the internal argument of the verb cannot be omitted, leaving the result state to be predicated of some other argument (Neeleman 1994). In Dutch, the verbs *breken* 'to break' and *schamen* 'to be ashamed of' are obligatorily transitive; in particular, *schamen* 'to be ashamed of' must take a reflexive as its object.

(600) *dat Jan de stok* ***breekt***
that John the stick breaks
'that John breaks the stick' (Neeleman 1994:141, translations mine)

(601) **dat Jan graag* ***breekt***
that John happily breaks
'*that John happily breaks' (Neeleman 1994:141, translations mine)

(602) *dat Jan zich* ***schaamt***
that John himself is.ashamed.of
'that John is ashamed (of himself)'
(Neeleman 1994:141, translations mine)

(603) **dat Jan niet graag* ***schaamt***
that John not happily is.ashamed.of
Intended: 'that John is not happily ashamed'
(Neeleman 1994:141, translations mine)

When the verb in a Dutch resultative is obligatorily transitive, the internal argument of the resultative must be interpreted as the theme of the verb.

(604) *dat Jan de stok in stukken* ***breekt***
that John the stick to pieces breaks
'that John breaks the stick to pieces'
(Neeleman 1994:141, translations mine)

(605) *dat Jan zich dood* ***schaamt***
that John himself to.death is.ashamed.of
'that John is ashamed (of himself) to death'
(Neeleman 1994:141, translations mine)

An obligatory internal argument cannot be omitted, leaving the result state to be predicated of some other argument.

(606) **dat Jan zijn handen moe* ***breekt***
that John his hands tired breaks
Intended: 'that John breaks [something] and as a result his hands became tired'
(Neeleman 1994:141, translations mine)

(607) **dat Jan zijn moeder dood* ***schaamt***
that John his mother to.death is.ashamed.of
Intended: 'that mother died (figuratively) as a result of John being ashamed (of himself)'
(Neeleman 1994:141, translations mine)

Second, in a transitive resultative, the internal argument of an obligatorily transitive verb cannot be projected as the external argument of the resultative, leaving the result state to be predicated of some other argument.

(608) **dat de stok Jan's handen moe* ***breekt***
that the stick John's hands tired breaks
Intended: 'that John's hands become tired as a result of breaking the stick'

Lastly, in an intransitive resultative, the result state must hold of the internal argument of the verb, as in (609), and cannot hold of the external argument of the verb, as in (610).

(609) *De vaas is stuk* ***gebroken****.*
the vase is to.pieces broken
'The vase has broken into pieces.'
(Neeleman and Van de Koot 2002:21; translation mine)

(610) **Jan heeft moe* ***gewerkt****.*
John has tired worked
Intended: 'John has worked himself tired.'

Thus, just like English non-compound resultatives, Dutch non-compound resultatives obey the strong DOR. These facts follow from the requirement in both languages that the (first) verb must project its arguments in non-compound resultatives.

3 Compound and non-compound resultatives in Japanese

Having looked at Germanic languages which only have non-compound resultatives, let us now turn to Japanese, which has both compound and non-compound resultatives. Japanese has two distinct forms that express resultative meaning. The first form is what I will call V-V resultatives.

(611) *John-ga* *Bill-o* *naguri-korosi-ta.*
John-NOM Bill-ACC hit-kill-PST
'John hit Bill dead.' (adapted from Y. Li 1993:493)

The second form is what I will call *ku/ni*-resultatives in which the result phrase is marked with *-ku* or *-ni*.

(612) *John-ga* *kabe-o* *buruu-ni* *nut-ta.*
John-NOM wall-ACC blue-NI paint-PST
'John painted the wall blue.' (Washio 1997:4)

(613) *John-ga* *kabe-o* *ao-ku* *nut-ta.*
John-NOM wall-ACC blue-KU paint-PST
'John painted the wall blue.' (Washio 1997:2)

In this section, I will show that V-V resultatives are compounds while *ku/ni*-resultatives are not, in line with the consensus in the literature. If my account is on the right track, I predict that in Japanese, V1 must project its arguments in a *ku/ni*-resultative but need not do so in a compound resultative. It follows then that Japanese *ku/ni*-resultatives should obey the strong DOR while Japanese V-V resultatives should not. This contrast between V-V resultatives and *ku/ni*-resultatives is completely unexpected given the No Argument Theory, which must assume that across all constructions, Japanese verbs either always project their arguments or never do.

3.1 The syntax of Japanese V-V resultatives

In this subsection, I show that Japanese V-V resultatives are compounds. I begin by sketching a proposal for Japanese V-V resultatives based on the proposal for Mandarin V-V resultatives which I developed in Chapter 3.

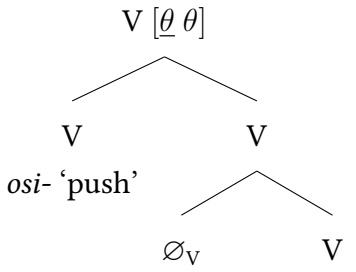
I claim, following the consensus in the literature, that Japanese V-V resultatives like *osi-taosi-* 'push-topple' in (614) are compounds. I assume that such

V-V compounds should be analysed as resultatives rather than coordinative compounds, i.e., Japanese V-V resultatives have a structure as in (615) that is identical to that of a Mandarin V-V resultative like *tuī-dǎo* 'push-fall' in (616).

(614) *John-ga Bill-o osi-taosi-ta.*
John-NOM Bill-ACC push-topple-PST
'John pushed Bill down.' (Nishiyama 1998:175)

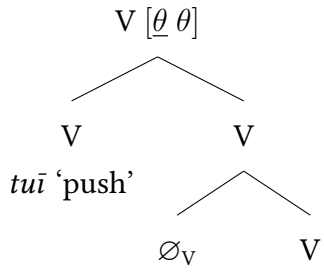
Japanese:

(615)



Mandarin:

(616)

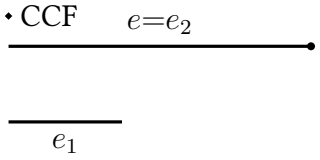


As is the case with a Mandarin V-V resultative like *tuī-dǎo* 'push-fall', the relation between the events denoted by the components of a Japanese V-V resultative like *osi-taosi-* 'push-topple' is that of causation as defined by Lewis (1973): (i) the pushing event did not follow the toppling event and (ii) if the pushing event had not occurred, the toppling event would not have occurred either. However, I claim that unlike ∅ in Mandarin V-V resultatives, which can optionally introduce a CCF, ∅ in Japanese V-V resultatives can never introduce a CCF as an external argument. ∅ in Japanese V-V resultatives only introduces the macroevent e containing the causing subevent e_1 and the caused subevent e_2.

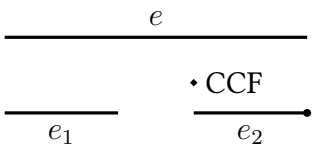
(617) $[\![\varnothing]\!] = \lambda R_2 \lambda R_1 \lambda y_2 \lambda y_1 \lambda e \exists x_2 \exists x_1 \exists e_2 \exists e_1 .[\text{CAUSE}(e,e_1,e_2) \wedge R_2(e_2,y_1,y_2) \wedge R_1(e_1,x_1,x_2)]$

In a transitive V-V resultative in Japanese like *osi-taosi-* 'push-topple', it is V2 that introduces a CCF. This has two implications. The first implication is that the macroevent e must be identical to the caused subevent e_2, as shown in (618). This is because by definition, the CCF must be a participant in the causing event e_1; the actions of the CCF cannot follow e_1, as shown in (619).

(618)



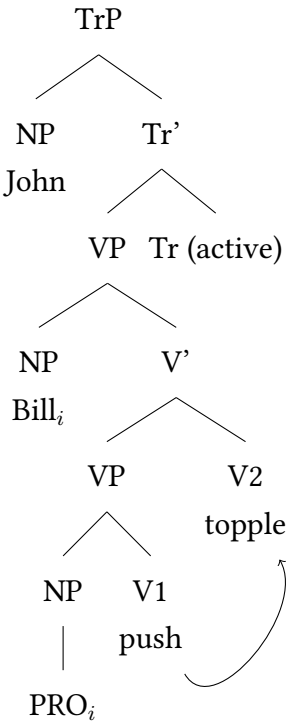
(619)



The second implication is that V2 must take its transitive form (here *taosi-* 'topple') and cannot be substituted with its unaccusative alternant (here *taore-* 'fall'). Thus, the transitivity of a Japanese V-V resultative is determined by the transitivity of V2, as observed by Hasegawa (1999).

My proposal stands in opposition to the proposal by Nishiyama (1998) that Japanese V-V resultatives are derived from serial verb constructions. According to Nishiyama, the Japanese V-V resultative *osi-taosi-* 'push-topple' in (614) has the structure in (620).

(620)



(Nishiyama 1998:185)

The consensus view in the literature is that Japanese V-V resultatives are compounds. One piece of evidence in support of this view comes from substitution with *soo si-* 'do so'. (621) shows that V1 in a V-V resultative cannot be substituted with *soo si-* 'do so' to the exclusion of V2. This result is consistent with the claim that V-V resultatives are compounds.

(621) *John-ga Bill-o osi-taosi-te, Mary-mo [soo si]-taosi-ta.
John-NOM Bill-ACC push-topple-TE Mary-also so do-topple-PST
'John pushed Bill down and Mary did so too.'
(adapted from Nishiyama 2008:323)

Another piece of evidence comes from subject honorification. Honorification is marked by adding an honorific prefix *o-* before the verb stem and *-ni nar-* '-NI become-' after the verb stem. V1 in a V-V resultative cannot bear honorific marking to the exclusion of V2 as in (622); V1 and V2 must be marked as a single unit as in (623).

(622) *Sensee-ga Bill-o ***o**-osi-**ni** ***nari**-taosi-ta.
teacher-NOM Bill-ACC HON-push-NI become-topple-PST
'The teacher pushed Bill down.' (adapted from Nishiyama 2008:323)

(623) Sensee-ga Bill-o ***o**-osi-taosi-**ni** ***nat**-ta.
teacher-NOM Bill-ACC HON-push-topple-NI become-PST
'The teacher pushed Bill down.' (adapted from Nishiyama 2008:323)

The main piece of evidence in support of the view that V-V resultatives are compounds comes from modification tests. Nishiyama's proposal predicts that V1 and V2 can be independently modified by temporal and locational modifiers, whereas my proposal predicts that they cannot. As it turns out, the proposal that Japanese V-V resultatives are compounds makes the correct predictions. V1 *nagur-* 'hit' can be independently modified by a temporal or locational modifier when V1 is independent from V2 as in (625) and (626), but not when V1 appears in a V-V resultative like (624).[4]

[4]The reason why (625) and (626) are slightly degraded is because these sentences have multiple parses, not all of which are felicitous in the context. The verbs in these sentences could be interpreted as denoting a sequence of events in which John first hit Bill and then killed him by stabbing him. Such an interpretation is inconsistent with the given context. Even if these verbs are interpreted as denoting a single event, these sentences are felicitous if the modifier is interpreted as taking scope over V1 (x), but not if the modifier is interpreted as taking scope over V1 and V2 (xi).

Context: On Saturday, John beats Bill in the kitchen in their shared home. Bill stumbles out of the kitchen into his bedroom and dies there on Sunday.

(x) *John-ga Bill-o [{doyoubi-ni/ daidokoro-de} nagut-te] korosi-ta.*
John-NOM Bill-ACC Saturday-NI kitchen-DE hit-TE kill-PST
'John killed Bill by hitting him (on Saturday/in the kitchen).'

Context: On Saturday, John beats Bill in the kitchen in their shared home. Bill stumbles out of the kitchen into his bedroom and dies there on Sunday.

(624) *John-ga Bill-o (*doyoubi-ni/ *daidokoro-de) naguri-korosi-ta.*
John-NOM Bill-ACC Saturday-NI kitchen-DE hit-kill-PST
'John killed Bill as a result of hitting him (on Saturday/in the kitchen).'

(625) *John-ga Bill-o (?doyoubi-ni/ ?daidokoro-de) nagut-te*
John-NOM Bill-ACC Saturday-NI kitchen-DE hit-TE
korosi-ta.
kill-PST
'John killed Bill by hitting him (on Saturday/in the kitchen).'

(626) *John-ga Bill-o (?doyoubi-ni/ ?daidokoro-de) nagut-te*
John-NOM Bill-ACC Saturday-NI kitchen-DE hit-TE
sin-ase-ta.
die-CAUS-PST
'John caused Bill to die by hitting him (on Saturday/in the kitchen).'

To summarise, the results of modification tests support my claim that Japanese V-V resultatives are compounds.

3.2 The syntax of Japanese non-compound resultatives

In this subsection, I show that Japanese *ku/ni*-resultatives are not compounds. I claim that Japanese *ku/ni*-resultatives like *katikati-ni koorase-* 'freeze solid' in (627) have the structure in (628) in which the *ku/ni*-phrase (hereafter "XP") is a complement of V1.

(xi) *#John-ga Bill-o [{doyoubi-ni/ daidokoro-de} nagut-te korosi-ta].*
John-NOM Bill-ACC Saturday-NI kitchen-DE hit-TE kill-PST
'John killed Bill by hitting him (on Saturday/in the kitchen).'

There are also slight differences in judgements depending on the word order. (xiii) is more degraded than (xii) because the infelicitous sequential interpretation in (xiii) is more salient. I speculate that this is because (xiii) contains a null *pro* that favours this sequential interpretation.

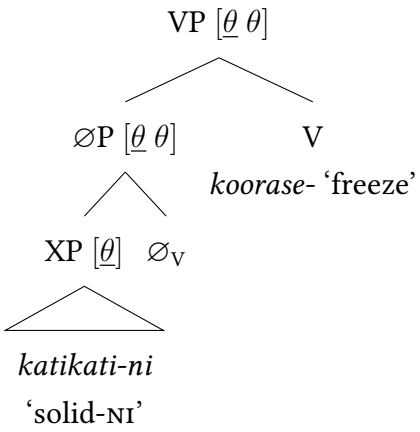
(xii) *John-ga Bill-o (?doyoubi-ni/ ?daidokoro-de) nagut-te korosi-ta.*
John-NOM Bill-ACC Saturday-NI kitchen-DE hit-TE kill-PST
'John killed Bill by hitting him (on Saturday/in the kitchen).'

(xiii) *John-ga [{??doyoubi-ni/ ??daidokoro-de} Bill-o nagut-te] [pro korosi-ta].*
John-NOM Saturday-NI kitchen-DE Bill-ACC hit-TE kill-PST
'John killed Bill by hitting him (on Saturday/in the kitchen).'

(627) *Boku-wa aisukuriimu-o katikati-ni koorase-ta.*
I-TOP ice.cream-ACC solid-NI freeze.TR-PST
'I froze the ice cream hard.' (Washio 1997:5)

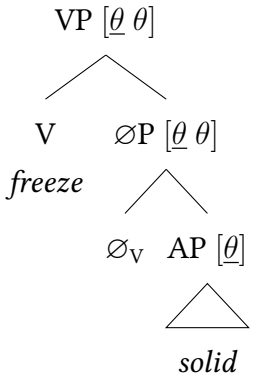
Japanese:

(628)



English:

(629)



The structure of a Japanese *ku/ni*-resultative is identical to that of an English resultative like *freeze solid* in (629) except for two differences. First, a Japanese *ku/ni*-resultative is head-final whereas an English resultative is head-initial. Second, in a Japanese *ku/ni*-resultative, V1 cannot be intransitive.

(630) **Karera-wa kutu-no soko-o boroboro-ni hasit-ta.*
they-TOP shoe-GEN sole-ACC threadbare run-PST
'They ran the soles of their shoes threadbare.' (Washio 1997:20)

(631) **Boku-wa zibun-o kutakuta-ni odot-ta.*
I-TOP self-ACC tired-NI dance-PST
'I danced myself tired.' (Washio 1997:20)

One possible analysis of this restriction is that V1 in Japanese is always a change-of-state verb, and the *ku/ni*-phrase supplies the culmination point of the event denoted by V1. But this cannot be correct. In the Japanese sentence in (632), the verb *ni-* 'boil' denotes a homogeneous activity, and assigning a culmination point to such an activity seems odd.

(632) *John-wa niku-o yawaraka-ku ni-ta.*
John-TOP meat-ACC soft-KU boil-PST
'John boiled the meat soft.' (Washio 1997:9)

Recall that I proposed that in English resultatives, there are two null heads that combine with V of different arities – one for transitive V1 (633) and one for unergative (or optionally transitive) V1 (634). We can model the inability for V1 to be intransitive by stipulating that Japanese only has one of these two null heads – it has a null head for transitive V1 but not for unergative V1.

(633) $[\![\varnothing_{+C+B,1+2}]\!] = \lambda R_2 \lambda R_1 \lambda y_2 \lambda y_1 \lambda e \exists e_2 \exists e_1 \exists s.[\text{CAUSE}(e,e_1,e_2) \wedge \text{CCF}(e)=y_1 \wedge \text{BECOME}(e_2,s) \wedge R_2(s,y_2) \wedge R_1(e_1,y_1,y_2)]$

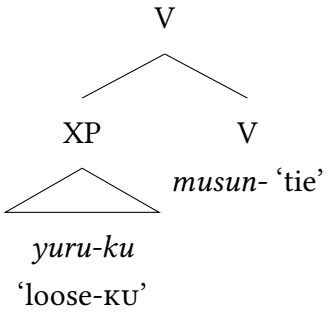
(634) $[\![\varnothing_{+C+B,1}]\!] = \lambda R_2 \lambda R_1 \lambda y_2 \lambda y_1 \lambda e \exists e_2 \exists e_1 \exists s.[\text{CAUSE}(e,e_1,e_2) \wedge \text{CCF}(e)=y_1 \wedge \text{BECOME}(e_2,s) \wedge R_2(s,y_2) \wedge R_1(e_1,y_1)]$

Note that sentences like (635) should not be analysed on a par with Japanese *ku/ni*-resultatives. In (635), the XP *yuru-ku* 'loose-KU' can only be interpreted as an adverb and not as a resultative secondary predicate, i.e., his shoelaces did not become loose as a result of him tying them. I follow Washio in assuming that sentences like (635) contain "spurious resultatives".

(635) *Kare-wa kutu-no himo-o yuru-ku musun-da.*
he-TOP shoe-GEN lace-ACC loose-KU tie-PST
'He tied his shoelaces loose.' (Washio 1997:18)

A sentence like (635) would have the structure in (636).

(636)



When the XP is an adverb, a manner modifier can intervene between the verb and the XP.

(637) *Kare-wa kutu-no himo-o* ***(yukkuri)*** *yuru-ku* ***(yukkuri)***
he-TOP shoe-GEN lace-ACC slowly loose-KU slowly
musun-da.
tie-PST
'He slowly tied his shoelaces loosely.'

An XP can sometimes be ambiguous between a resultative secondary predicate and an adverb. For example, sentences with the XP *kirei-ni* 'clean-NI' readily allow an intervening manner modifier, suggesting that both the resultative and adverbial parses of this sentence are readily available.

(638) *Kare-wa teeburu-o* ***(yukkuri)*** *kirei-ni* ***(yukkuri)*** *hui-ta.*
he-TOP table-ACC slowly clean-NI slowly wipe-PST
'He slowly wiped the table clean(ly).'

But the XP in the following sentences can only be interpreted as a resultative secondary predicate and not an adverb. These sentences can therefore only have the structure in (628).

(639) *John-wa niku-o yawaraka-ku ni-ta.*
John-TOP meat-ACC soft-KU boil-PST
'John boiled the meat soft.' (Washio 1997:9)

(640) *Hanako-ga gurasu-o konagona-ni wat-ta.*
Hanaka-NOM glass-ACC pieces-NI break-PST
'Hanako broke the glass into pieces.' (Hasegawa 1999)

If my proposed structure for Japanese *ku/ni*-resultatives is correct, I predict that when the XP is a resultative secondary predicate, a manner modifier cannot intervene between the verb and the XP. This prediction is borne out.[5]

(641) *John-wa niku-o* ***(yukkuri)*** *yawaraka-ku* ***(*yukkuri)*** *ni-ta.*
John-TOP meat-ACC slowly soft-KU slowly boil-PST
'John slowly boiled the meat soft.'

(642) *Boku-wa aisukuriimu-o* ***(yukkuri)*** *katikati-ni* ***(*yukkuri)***
I-TOP ice.cream-ACC slowly solid-NI slowly
koorase-ta.
freeze-PST
'I slowly froze the ice cream hard.'

[5]That said, the XP can be scrambled away from the verb, but this fact should not be taken as evidence that V and XP do not form a constituent.

(xiv) ***(konagona-ni)*** *Hanako-ga* ***(konagona-ni)*** *gurasu-o wat-ta.*
pieces-NI Hanaka-NOM pieces-NI glass-ACC break-PST
'Hanako broke the glass into pieces.'

(643) *Hanako-ga gurasu-o **(yukkuri)** konagona-ni **(*yukkuri)***
Hanaka-NOM glass-ACC slowly pieces-NI slowly
wat-ta.
break-PST
'Hanako slowly broke the glass into pieces (e.g. with a tiny hammer).'

Having shown that at least some sentences with a verb and a *ku/ni*-marked phrase are resultatives, I now show that the *ku/ni*-marked phrase is phrasal.

For resultatives that are clearly resultative, a scalar XP can be modified with *totemo* 'very' and *hijouni* 'extremely'.

(644) *John-wa niku-o **{totemo/ hijouni}** yawaraka-ku ni-ta.*
John-TOP meat-ACC very/ extremely soft-KU boil-PST
'John boiled the meat very/extremely soft.'

XPs can be modified with nouns.

(645) *Boku-wa aisukuriimu-o **iwa-no you-ni** katikati-ni koorase-ta.*
I-TOP ice.cream-ACC rock-GEN form-NI solid-NI freeze-PST
'I froze the ice cream hard as a rock.'

XP can be independently coordinated.

(646) *John-wa niku-o **(yukkuri)** {yawaraka-ku/ kutakuta-ni}*
John-TOP meat-ACC slowly soft-KU worn.out-NI
***(*yukkuri)** ni-ta.*
slowly boil-PST
'John slowly boiled the meat {soft/worn out}.'

(647) *John-wa niku-o yawaraka-ku kutakuta-ni ni-ta.*
John-TOP meat-ACC soft-KU worn.out-NI boil-PST
'John boiled the meat soft and worn out.'

Thus, Japanese *ku/ni*-resultatives are not compounds.

3.3 The argument structure of Japanese resultatives

Since *ku/ni*-resultatives are not compounds, V1 must project its arguments. Hence, *ku/ni*-resultatives must obey the strong DOR. This prediction is borne out.

First, in a transitive *ku/ni*-resultative, when the verb is obligatorily transitive, its internal argument cannot be omitted, leaving the result state to be predicated of some other argument, as in (648).

(648) *John-ga {hake-o/ kao-o/ te-o/ huku-o}
John-NOM brush-ACC/ face-ACC/ hand-ACC/ clothes-ACC
{buruu-ni/ ao-ku} nut-ta.
blue-NI/ blue-KU paint-PST
Intended: 'John painted something (e.g. the wall) and as a result his {brush/ face/ hands/ clothes} became blue.'

Second, in a transitive *ku/ni*-resultative, the internal argument of an obligatorily transitive verb cannot be projected as the external argument of the resultative, leaving the result state to be predicated of some other argument, as in (649).

(649) *Sono kabe-ga John-o kutakuta-ni nut-ta.
that wall-NOM John-ACC dead.tired-NI paint-PST
Intended: 'That wall caused John to become tired as a result of painting it.'

Lastly, in an unaccusative *ku/ni*-resultative, the result state must hold of the internal argument of V1, as in (650), and not the external argument of V1, as in (651).

(650) Ike-ga katikati-ni koot-ta.
pond-NOM solid-NI freeze.INTR-PST
'The pond froze solid.' (Takami 1998)

(651) *Taroo-ga kutakuta-ni hasit-ta.
Taro-NOM dead.tired-NI run-PST
'Taro ran tired.' (Takami 1998)

Since Japanese V-V resultatives are compounds, it is predicted that V1 need not project its arguments. Hence, V-V resultatives should not obey the strong DOR. This prediction is borne out.

First, in a transitive V-V resultative, the internal argument of an obligatorily transitive V1 can be omitted and the resultant state can hold of some other argument. In a simple clause, *kubi* 'neck' must be realised as the object of *sime-* 'choke', but in a V-V resultative in (652), *kubi* 'neck' can be omitted.[6]

[6]I did not find an example of an "inverted" transitive V-V resultative in which the internal argument of an obligatorily transitive V1 is projected as the external argument of a resultative and the resultant state can hold of some other argument. This could be because the CCF of an inverted resultative is typically inanimate, and most Japanese causatives are incompatible

(652) *John-wa niwatori-o sime-korosi-ta.*
John-TOP chicken-ACC choke-kill-PST
'John choked the chicken to death.' (Nishiyama 1998:194)

Second, in an unaccusative V-V resultative, the result state can hold of the external argument of V1, as in (653).

(653) *Taroo-ga hasiri-tukare-ta.*
Taro-NOM run-get.tired-PST
'Taro got tired by running.' (Hasegawa 1999)

It appears that Japanese *ku/ni*-resultatives obey the strong DOR but Japanese V-V resultatives do not. Taken together, the facts presented above support my claim that V1 must project its arguments in a non-compound resultative but need not do so in a compound resultative.

3.4 Against a No Argument Theory of Japanese resultatives

The contrast between Japanese V-V resultatives and *ku/ni*-resultatives is completely unexpected on the No Argument Theory.

Recall from Chapter 5 that Williams divides languages into those that have the uniform projection property (UPP) and those that do not. A language has the UPP if its verbs show uniform projection, i.e., they have the same syntactic requirements in simple clauses and in resultatives.

Since Japanese verbs show uniform projection in simple clauses and in *ku/ni*-resultatives, we might conclude that Japanese has the UPP. However, at the same time, verbs do not show uniform projection in simple clauses and in V-V resultatives, which would lead us to conclude that Japanese does not have the UPP. Thus, we cannot determine whether the UPP is or is not a property of Japanese.

Suppose that the UPP is not a property of a language as a whole, but is a property that applies to individual lexical items. Williams makes this claim for Igbo. As Williams argues, the fact that most Igbo verbs do not show uniform

with inanimate causers (Yamaguchi 1998).

(xv) *{John/ *jisin}-ga kabin-o kowasi-ta.*
John earthquake-NOM vase-ACC break-PST
'{John/*The earthquake} broke the vase.' (adapted from Yamaguchi 1998)

projection does not preclude the possibility that some Igbo verbs do show uniform projection. Reformulating the UPP in this way greatly reduces its predictive power. However, even this reformulation of the UPP cannot be maintained once we consider languages like Japanese.

We have seen that the Japanese verb *nur-* 'paint' must project its obligatory theme as the internal argument of a *ku/ni*-resultative, which is why (654) is ungrammatical. In terms of Williams's proposal, we would assume that *nur-* 'paint' shows uniform projection, since it must project its theme internally when it appears in a simple clause and when it appears in a resultative.

(654) **John-ga {hake-o/ kao-o/ te-o/ huku-o}*
John-NOM brush-ACC/ face-ACC/ hand-ACC/ clothes-ACC
{buruu-ni/ ao-ku} nut-ta.
blue-NI/ blue-KU paint-PST
Intended: 'John painted something (e.g. the wall) and as a result his {brush/ face/ hands/ clothes} became blue.'

We have seen that the Japanese verb *sime-* 'choke' need not project its obligatory theme as the internal argument of a V-V resultative, as illustrated in (655). As mentioned in the previous subsection, *kubi* 'neck' must be realised as the object of *sime-* 'choke' in a simple clause, but *kubi* 'neck' can be omitted in a V-V resultative. In terms of Williams's proposal, we would assume that *sime-* 'choke' does not show uniform projection, since it must project its theme internally when it appears in a simple clause but not when it appears in a resultative.

(655) *John-wa niwatori-o sime-korosi-ta.*
John-TOP chicken-ACC choke-kill-PST
'John choked the chicken to death.' (Nishiyama 1998:194)

However, we run into a contradiction when we consider the verb *hasir-* 'run'. *Hasir-* 'run' must project its agent as the external argument of a *ku/ni*-resultative, which is why (656) is ungrammatical. In terms of Williams's proposal, we would assume on the basis of (656) that *hasir-* 'run' shows uniform projection, since it must project its agent externally when it appears in a simple clause and when it appears in a resultative.

(656) **Taroo-ga kutakuta-ni hasit-ta.*
Taro-NOM dead.tired-NI run-PST
'Taro ran tired.' (Takami 1998)

But the same verb *hasir-* 'run' need not project its agent as the external argument of a V-V resultative, as illustrated in (657). In terms of Williams's proposal, we would assume on the basis of (657) that *hasir-* 'run' does not show uniform projection, since it must project its agent externally when it appears in a simple clause but not when it appears in a resultative.

(657) *Taroo-ga* *hasiri-tukare-ta.*
Taro-NOM run-get.tired-PST
'Taro got tired by running.' (Hasegawa 1999)

Based on (656) and (657), we cannot determine whether the UPP is a property of the verb *hasir-* 'run'. I conclude that what Williams calls the UPP is more plausibly analysed as a property of a structure, not of a particular language or even of a particular lexical item.

4 Summary

In this chapter, I defended the generalisation that V(1) must project its arguments in a non-compound resultative but need not do so in a compound resultative. I showed that this generalisation is valid in languages other than Mandarin. Non-compound resultatives in English and Dutch obey the strong DOR because the (first) verb must project its arguments. In Japanese, non-compound resultatives obey the strong DOR but compound resultatives do not, because V1 must project its arguments in a non-compound resultative but need not do so in a compound resultative. If my account is on the right track, I can maintain that there is a meaningful distinction between compound and non-compound resultatives cross-linguistically.

Chapter 8

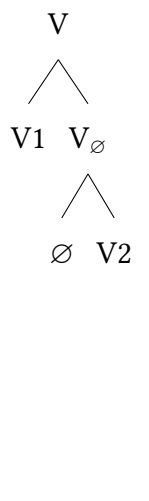
Conclusion

1 Summary

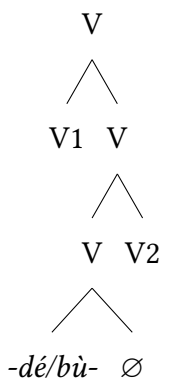
The central claim of this thesis is that compound resultatives have more flexible argument realisation patterns than non-compound resultatives. This is evident when we compare Mandarin V-V resultatives, which are remarkably flexible, with English resultatives, for example, which are not.

I have proposed that Mandarin V-V resultatives have such flexibility of argument realisation *because* such resultatives are compounds built in morphology rather than syntax. In general, morphological compounds need not inherit the argument structures of their components. I proposed that Mandarin V-V resultatives have the structure in (658) containing a null affix ∅ that inherits all the arguments of V2 but none of the arguments of V1. I derived a range of V-V resultatives in which V2 denotes a change of state and/or location. Since a V-V resultative does not inherit any of the arguments of V1, there is no syntactic requirement for any of the arguments of the resultative to be interpreted as arguments of V1. Nevertheless, there is an interpretive restriction on causatives generally, namely the Onset Condition, which requires that the CCF argument of the resultative be interpreted as denoting a participant in the event denoted by V1.

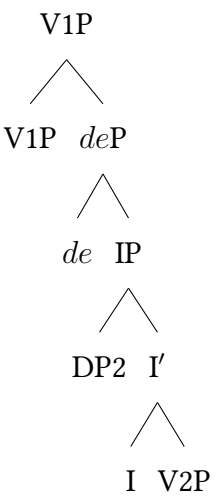
(658) V-V:



(659) V-*de/bu*-V:



(660) V-*de*:



I compared V-V resultatives to two other constructions in Mandarin: V-*de/bu*-V constructions and resultative V-*de* constructions. I analysed V-*de/bu*-V constructions as compounds with the structure in (659), and proposed that, just like in V-V resultative compounds, V1 need not project its arguments in V-*de/bu*-V compounds either. In contrast, I analysed resultative V-*de* constructions as non-compounds built in syntax with the structure in (660), and predicted that an obligatorily transitive V1 must project its internal argument in such constructions. I showed that both predictions are borne out.

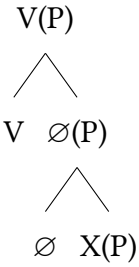
It may be possible to generalise this difference between compound and non-compound resultatives in Mandarin to resultatives in other languages. I have shown that V1 need not project its internal argument in Japanese compound V-V resultatives, but must do so in Japanese non-compound *ku/ni*-resultatives as well as in non-compound resultatives in English and Dutch.

That said, the difference between compound and non-compound resultatives is only one dimension of variation across resultatives cross-linguistically. In the remainder of this chapter, I will discuss two other dimensions of cross-linguistic variation in resultatives and identify a promising direction for future research.

2 Typology of resultatives

I assume that all resultatives have the structure in (661) which contains a null head ∅.

(661)



Resultatives can vary along three dimensions:

1. whether the resultative is a compound,
2. whether X can be a verb, and
3. if X can be a verb, whether a transitive resultative can have an intransitive X.

We have already considered the first dimension of variation, which is whether the resultative is a compound. Mandarin and English differ along this dimension. Mandarin V-V resultatives are compounds whereas English resultatives are not.

(662) *Zhāngsān chàng-yǎ-le sǎngzi.*
Zhangsan sing-hoarse-PFV throat
'Zhangsan sang his throat hoarse.'

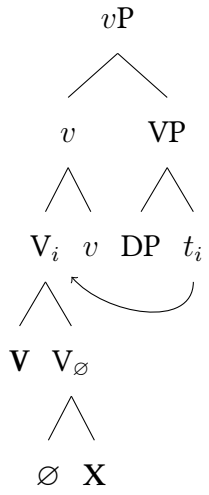
(663) John sang his throat hoarse.

We can model this as a requirement for the null head to be merged in morphology, as in Mandarin V-V resultatives, or in syntax, as in English resultatives. This dimension of variation not only correlates with whether V1 projects its arguments, as I have shown in this thesis, but also has implications for the surface word order of V and X, as shown by Williams (2005).

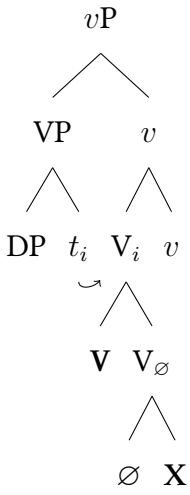
Based on data from over 20 languages across nine language families, Williams observes that in compound resultatives, V invariably precedes X, whereas in

non-compound resultatives, V may either precede XP (in VO languages) or follow XP (in OV languages). Williams explains that this is because in compound resultatives, the entire compound raises to v to the left in VO languages, as in (664), or to the right in OV languages, as in (665), thus preserving the relative order of V and X. In non-compound resultatives, however, V either raises to v to the left in VO languages, as in (666), or to the right in OV languages, as in (667), yielding different relative orders of V and XP.

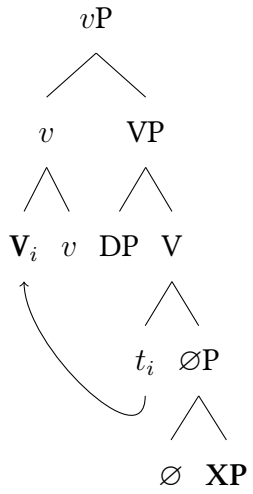
(664) Compound resultative in VO language:



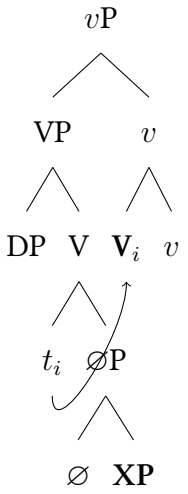
(665) Compound resultative in OV language:



(666) Non-compound resultative in VO language:



(667) Non-compound resultative in OV language:



The second dimension of variation is whether X can be a verb. Mandarin and

English also differ along this dimension. Mandarin V-V resultatives can take a change-of-state verb as X.

(668) *Zhāngsān dǎ-pò-le huāpíng.*
Zhangsan hit-break-PFV vase
'Zhangsan broke the vase by hitting it.'

English resultatives cannot take a change-of-state verb as X.[1]

(669) *John hit the vase break.

Consider the minimally different case of Saramaccan, an English-Portuguese creole spoken in Suriname and French Guiana. Like English *break*, Saramaccan *boóko* has transitive-unaccusative alternants.

(670) *A boóko dí báta léi mi.*
3SG break DET bottle show 1SG
'He broke the bottle, showing me how to do it.' (Kramer 2002:206)

(671) *Dí báta boóko.*
DET bottle break
'The bottle broke.' (Kramer 2002:58)

Like English resultatives, Saramaccan resultatives are not compounds. But in Saramaccan, X can be a verb like *boóko*.

(672) *A náki dí báta boóko (*ẽ).*
3SG hit DET bottle break 3SG
'He hit and broke the bottle.' (Kramer 2002:212)

We can model this dimension of variation by assuming that the null head can select verbs in Mandarin (and Saramaccan) but not English.[2]

We would expect that there exists a language that has compound resultatives in which X can only be an adjective (i.e., a compounding counterpart of English). I cannot find a clear example of such a language, though Niuean

[1] Another unrelated language that patterns with English is Hocąk, a Siouan language spoken in the Midwestern United States (Rosen 2016).

[2] Alternatively, we could assume a "serialisation parameter" that applies not just to resultative complex predicates, but more broadly to other "serial verb constructions". For example, this serialisation parameter could be formulated in terms of whether a head in the extended verbal projection like v or I can license multiple Vs in a given language (Collins 1997, 2002; Stewart 1998).

seems like a possible candidate (Massam 2013; Massam, Bild-Enkin, Rozin, and Tisma 2011). Perhaps such a language is ruled out by the Righthand Head Rule, which states that "the head of a morphologically complex word [is] the right-hand member of that word" (E. Williams 1981:248). According to this rule, if X is an adjective, then a compound resultative must inherit the syntactic category of X and also be an adjective. But a compound resultative presumably cannot be an adjective because it denotes a non-stative event.

The third dimension of variation is, if X can be a verb, whether a transitive resultative can have an intransitive X. In intransitive resultatives, X must also be intransitive – this seems to be the case in all languages that I am aware of. But there is some cross-linguistic variation when it comes to transitive resultatives. Mandarin and Japanese V-V resultatives differ along this dimension. In a Mandarin transitive V-V resultative, X can be an intransitive change-of-state verb.

(673) *Zhāngsān dǎ-pò-le huāpíng.*
Zhangsan hit-break-PFV vase
'Zhangsan broke the vase by hitting it.'

But in a Japanese transitive V-V resultative, X cannot be an intransitive change-of-state verb.[3]

(674) *John-ga coat-o ki-kuzusi-ta.*
John-NOM coat-ACC wear-make.out.of.shape.TR-PST
'John wore the coat and it got out of shape.' (Nishiyama 1998:202)

(675) **John-ga coat-o ki-kuzure-ta.*
John-NOM coat-ACC wear-get.out.of.shape.INTR-PST
Intended: 'John wore the coat and it got out of shape.'
(Nishiyama 1998:200)

[3]This restriction on Japanese resultatives is sometimes cast in terms of the Transitivity Harmony principle (Kageyama 1993), which states that V1 and V2 must match in terms of transitivity. But examples like (xvi) violate this principle, since V1 *ki-* 'wear' is transitive and V2 *kuzure-* 'get out of shape' is intransitive.

(xvi) *Coat-ga ki-kuzure-ta.*
coat-NOM wear-get.out.of.shape.INTR-PST
'The coat was worn and got out of shape.' (Nishiyama 1998:202)

A possibly more accurate characterisation of this restriction is that the transitivity of a Japanese V-V resultative is determined by the transitivity of V2 (Hasegawa 1999).

In the next section, I will offer an explanation for the third dimension of cross-linguistic variation that we observe in resultatives.

3 Implications for intransitive change-of-state verbs

I conjecture that the difference between Mandarin and Japanese V-V resultatives with regards to the transitivity of V2 in transitive resultatives arises due to the interaction between the nature of intransitive change-of-state verbs in the respective languages and the null head in resultatives.

3.1 Intransitive change-of-state verbs

There are competing accounts as to whether an intransitive change-of-state verb like *break* in (677) is a basic form or is derived from its causative counterpart *break* in (676).

(676) John **broke** the window.

(677) The window **broke**.

Among linguists who assume that intransitive change-of-state verbs are derived via detransitivisation, opinions are divided as to whether this process of detransitivisation is one of expletivisation (Horvath and Siloni 2011,1; Levin and Rappaport Hovav 1995; Reinhart 2002) or reflexivisation (Beavers and Koontz-Garboden 2013; Chierchia 2004; Koontz-Garboden 2009). I represent the operations of expletivisation and reflexivisation using the symbols $\mathcal{E}$ and $\mathcal{R}$ respectively. According to the former view, an intransitive change-of-state verb like *break* is derived from its transitive counterpart via deletion of the external CCF argument, as shown in (679). According to latter view, an intransitive change-of-state verb is derived via identification of the external argument of a transitive predicate with one of its internal arguments, as shown in (680).

(678) $[\![\textit{break}.\textsc{tr}]\!]=\lambda y\lambda c\lambda e\exists s.[\text{CCF}=c \wedge \text{BECOME}(e,s) \wedge \text{IN-PIECES}(s) \wedge \text{THEME}(s)=y]$

(679) $[\![\textit{break}.\textsc{intr}]\!]=\mathcal{E}([\![\textit{break}.\textsc{tr}]\!])=\lambda y\lambda e\exists s.[\text{BECOME}(e,s) \wedge \text{IN-PIECES}(s) \wedge \text{THEME}(s)=y]$

(680) $[\![$*break*.INTR$]\!]=\mathcal{R}([\![$*break*.TR$]\!])=\lambda y\lambda e\exists s.[\text{CCF}=y \wedge \text{BECOME}(e,s) \wedge \text{IN-PIECES}(s) \wedge \text{THEME}(s)=y]$

Let us consider the situation in Mandarin and Japanese. In Mandarin, intransitive change-of-state verbs derived from adjectives systematically lack transitive counterparts (Tham 2013).

(681) *Zhāngsān hěn pàng.*
Zhangsan very fat
'Zhangsan is (very) fat.'

(682) *Zhāngsān pàng-le.*
Zhangsan fat-PFV
'Zhangsan became fat.'

(683) **Māma pàng-le Zhāngsān.*
mother fat-PFV Zhangsan
'Mother fattened Zhangsan up.'

In Mandarin, many intransitive change-of-state verbs that are not derived from adjectives also lack transitive counterparts.

(684) **Lǎozhāng pò-le chuāngzi.*
Laozhang break-PFV window
Intended: 'Laozhang broke the window.' (T.-H. J. Lin 2001:33)

(685) *Chuāngzi pò-le.*
window break-PFV
'The window broke.' (T.-H. J. Lin 2001:33)

I hypothesise that when deadjectival intransitive change-of-state verbs systematically lack transitive counterparts in a particular language, all intransitive change-of-state verbs in that language, deadjectival or otherwise, have the semantic denotation as in (686) which contains a become event and the resultant state. This idea is not new, but has been proposed by Tham (2013) for Mandarin intransitive change-of-state verbs.

(686) $[\![$*pò* 'break'$]\!]=\lambda y_2\lambda e\exists s.[\text{BECOME}(e,s)\wedge\text{IN-PIECES}(s)\wedge\text{Theme}(s)=y_2]$

In Japanese, deadjectival change-of-state verbs typically occur in transitive and unaccusative pairs.

(687) *Kaze no ikioi-ga yowamar-u.*
wind GEN force-NOM weaken-PRS
'The wind force weakens (drops).' (Sugioka 2022)

(688) *Kaze-ga ikioi-o yowame-ru.*
wind-NOM force-ACC weaken-PRS
'The wind weakens its force.' (Sugioka 2022)

In Japanese, change-of-state verbs that are not derived from adjectives also typically occur in transitive and unaccusative pairs.

(689) *Kare-ga gensoku-o kuzusi-ta.*
he-NOM principle-ACC collapse-PST
'He broke an established principle.' (Matsumoto 2000:188)

(690) *Gensoku-ga kuzure-ta.*
principle-NOM [collapse]-PST
'The established principle was broken.' (Matsumoto 2000:188)

I propose that the transitive alternant of a change-of-state verb like *kuzusi-* 'make out of shape' has the semantic denotation in (691) which contains a CCF argument, a become event and the resultant state:

(691) $[\![$*kuzusi* 'make out of shape'$]\!]=\lambda y_2 \lambda y_1 \lambda e \exists s.[\text{CCF}(e)=y_1 \wedge$
$\text{BECOME}(e,s) \wedge \text{OUT-OF-SHAPE}(s) \wedge \text{Theme}(s)=y_2]$

It is possible to assume that the unaccusative alternant has a semantic denotation similar to that of Mandarin *pò* 'break'. However, I hypothesise that when deadjectival change-of-state verbs do not systematically lack transitive counterparts in a language, the unaccusative alternant of a change-of-state verb in that language, deadjectival or otherwise, is derived via reflexivisation of its transitive counterpart.

(692) $[\![$*kuzure* 'get out of shape'$]\!]=\lambda y_2 \lambda e \exists s.[\text{CCF}(e)=y_2 \wedge \text{BECOME}(e,s) \wedge$
$\text{OUT-OF-SHAPE}(s) \wedge \text{Theme}(s)=y_2]$

Again, the idea that some intransitive change-of-state verbs have a CCF while others do not is not new, but has been proposed by Koontz-Garboden (2005).

3.2 Null head in resultatives

Having set forth my assumptions about the nature of intransitive change-of-state verbs in Mandarin and Japanese, I will now turn to the null head ∅.

I propose that ∅ can in principle introduce (i) the macroevent e containing the causing subevent e_1 and the caused subevent e_2, (ii) a CCF and (iii) the become event e_2. In this case, X supplies the resultant state s of the become event e_2. (For concreteness, I assume a form of ∅ that selects a transitive V(1) whose arguments are existentially closed.)

(693) $[\![\varnothing_{\text{+C+B}}]\!]=\lambda R_2\lambda R_1\lambda y_2\lambda y_1\lambda e\exists x_2\exists x_1\exists e_2\exists e_1\exists s.[\text{CAUSE}(e,e_1,e_2) \wedge \text{CCF}(e)=y_1 \wedge \text{BECOME}(e_2,s) \wedge R_2(s,y_2) \wedge R_1(e_1,x_1,x_2)]$

Alternatively, if X can supply the resultant state and the become event, then ∅ need only introduce the macroevent and the CCF.

(694) $[\![\varnothing_{\text{+C}}]\!]=\lambda R_2\lambda R_1\lambda y_2\lambda y_1\lambda e\exists x_2\exists x_1\exists e_2\exists e_1.[\text{CAUSE}(e,e_1,e_2) \wedge \text{CCF}(e)=y_1 \wedge R_2(e_2,y_2) \wedge R_1(e_1,x_1,x_2)]$

And if X can supply the resultant state, the become event and the CCF, then ∅ need only introduce the macroevent.

(695) $[\![\varnothing]\!]=\lambda R_2\lambda R_1\lambda y_2\lambda y_1\lambda e\exists x_2\exists x_1\exists e_2\exists e_1.[\text{CAUSE}(e,e_1,e_2) \wedge R_2(e_2,y_1,y_2) \wedge R_1(e_1,x_1,x_2)]$

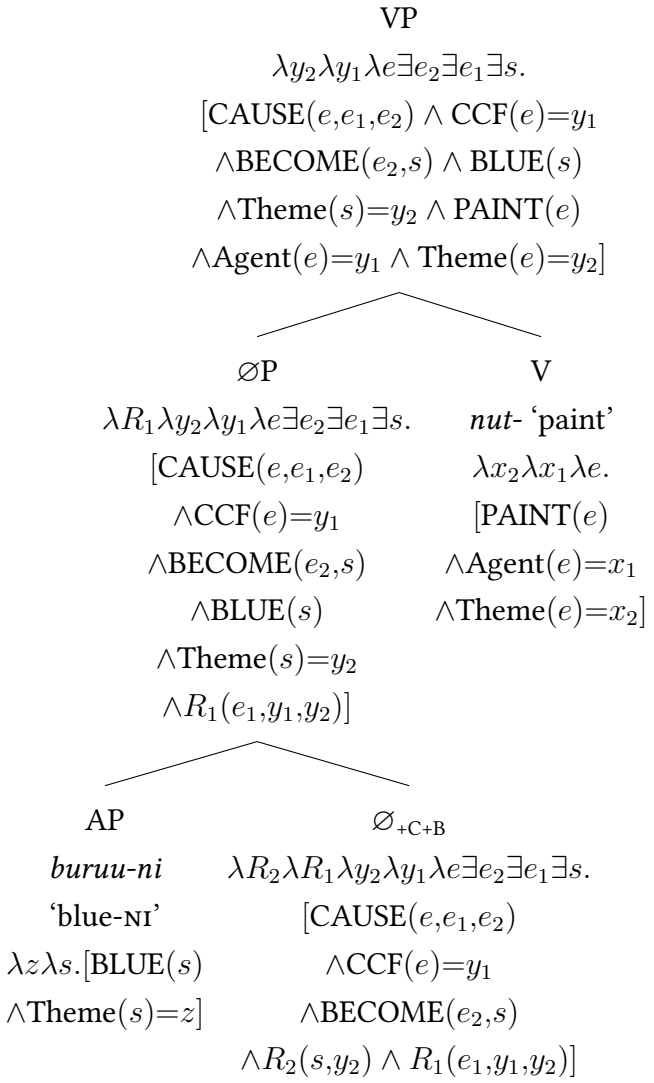
It may be possible to view this proposal in light of the distinction between satellite-framed and verb-framed complex predicates (Talmy 1975, 2000). According to this proposal, a satellite-framed resultative complex predicate is headed by a ∅ head that introduces the CCF, while a verb-framed resultative complex predicate is headed by a ∅ head that does not introduce the CCF.

3.3 One CCF per event

It is not possible for the null head to add a CCF argument if X already has a CCF argument. This is because by the very definition of a CCF, a resultant state cannot have more than one CCF. The null head can introduce a CCF iff no CCF is already present.

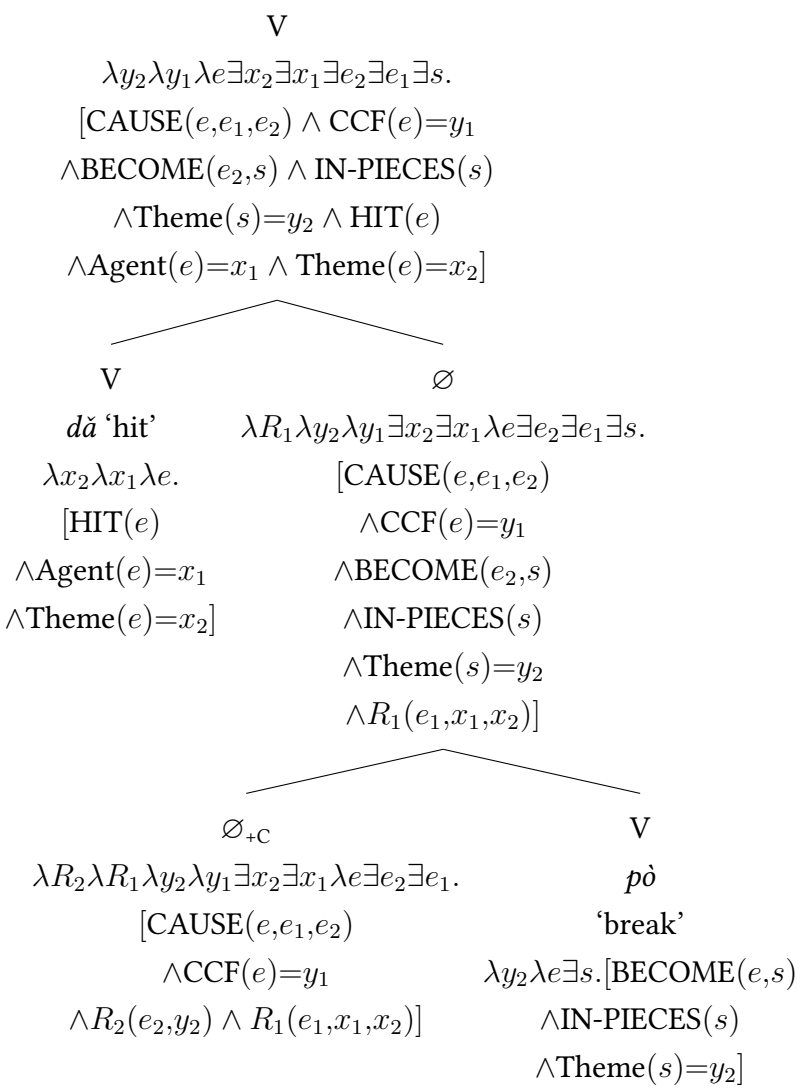
The null head $\varnothing_{\text{+C+B}}$ can introduce a CCF if X is an adjective because (simplex) adjectives do not have a CCF. This is the case in a Japanese transitive *ku/ni-* resultative. Here, X is an adjectival phrase that supplies the resultant state. It must therefore combine with the form of the null head that can supply the macroevent, a CCF and a become event.

(696)



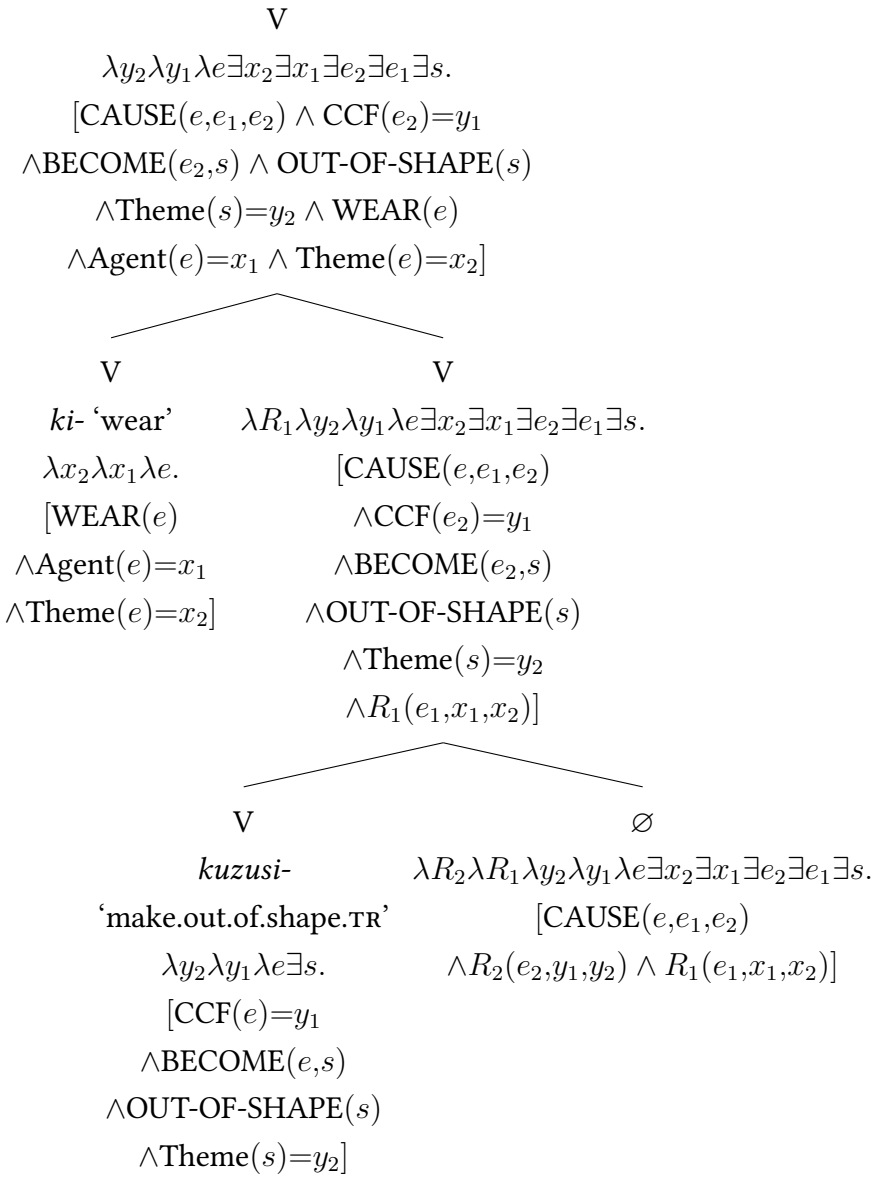
The null head $\varnothing_{+C}$ can introduce a CCF if X is an intransitive change-of-state verb in Mandarin because such verbs typically lack a transitive counterpart and so, by hypothesis, lack a CCF. Indeed, one reason why V-V resultatives are so productive in Mandarin is because the null head is possibly the only way in Mandarin to introduce a CCF argument to an intransitive change-of-state verb that lacks a transitive counterpart. Here, X supplies the become event and the resultant state. It must therefore combine with the form of the null head that can supply the macroevent and the CCF.

(697)



The null head $\varnothing_{+C}$ cannot introduce an additional CCF if X is a transitive change-of-state verb which already has a CCF. This is the case in a Japanese transitive V-V resultative. Here, X is a causative verb that supplies the resultant state, the become event and the CCF. It must therefore combine with the form of the null head that only the macroevent.

(698)



The key question that arises is this: why then can a null head not introduce a CCF if X is an intransitive change-of-state verb in Japanese? Suppose we had assumed that intransitive change-of-state verbs in Japanese have the same semantic denotation as their Mandarin counterparts. If so, Japanese intran-

sitive change-of-state verbs would not have a CCF, and nothing in principle would stop a null head from introducing a CCF to it. However, if we assume that Japanese intransitive change-of-state verbs have a reflexivised CCF argument, as suggested earlier, then we correctly predict that a null head cannot introduce an additional CCF to an intransitive change-of-state verb in Japanese which already has a CCF.

3.4 Cross-linguistic extensions

If this conjecture is on the right track, then we would expect to see similar patterns in other languages where X can be a verb. This expectation seems to be borne out.

Thai is a language that patterns with Mandarin in that deadjectival intransitive change-of-state verbs systematically lack transitive counterparts.

(699) *tʰána: ʔû:an*
Thana fat
'Thana is fat.'

(700) *tʰána: ʔû:an lɛ́:w*
Thana fat PFV
'Thana became fat.'

(701) **mɛ̂: ʔû:an tʰána:*
mother fat Thana
Intended: 'Mother fattened Thana up.'

Some intransitive change-of-state verbs that are not derived from adjectives like *tɛ̀:k* 'break' and *tɯ̀:n* 'wake' also lack transitive counterparts.

(702) *tɕɛ:kan tɛ̀:k*
vase break
'The vase broke.'

(703) **tʰána: tɛ̀:k tɕɛ:kan*
Thana break vase
Intended: 'Thana broke the vase.'

Unlike Mandarin V-V resultatives, however, Thai resultatives are not compounds. In Thai transitive resultatives, X can be an intransitive change-of-state verb.

(704) *tʰána: tʰúp tɕɛ:kan tè:k*
Thana hit vase break
'Thana broke the vase by hitting it.'

Saramaccan patterns with Japanese in that deadjectival change-of-state verbs systematically have transitive counterparts (Kramer 2002).[4]

(705) *Dí pási mbaái.*
DET road wide
'The road is wide.'
Or: 'The road was widened.' (Kramer 2002:56)

(706) *Déé woókoma mbaái dí pási.*
DET workman wide DET road
'The workmen widened the road.' (Kramer 2002:56)

In Saramaccan, change-of-state verbs that are not derived from adjectives typically also come in transitive and unaccusative alternants, many of which take the same form. Some examples include *boóko* 'break', *sínki* 'sink', *jó* 'melt', *jabí* 'open' and *púu* 'pull' (Veenstra 2004).

(707) *A jabí dí dóò.*
3SG open DET door
'He opened the door.' (Veenstra 2004:274)

(708) *Di dóò jabí.*
DET door open
'The door opened.' (Veenstra 2004:274)

Unlike Japanese V-V resultatives, however, Saramaccan resultatives are not compounds. But just as in Japanese transitive V-V resultatives, X in Saramaccan transitive resultatives must be transitive and cannot be intransitive (Veenstra 2004).

In Saramaccan transitive resultatives, X can be a transitive change-of-state verb like *kíi* 'kill' which is "definitely not unaccusative".

(709) *De sikópu hen kíi.*
3PL kick 3SG kill
'They kicked him dead.' (Veenstra 2004:274)

[4]Refer to Kramer (2002:57-60) for a discussion about the availability of the unaccusative interpretation of a change-of-state verb.

Furthermore, in Saramaccan transitive resultatives, X cannot be an intransitive change-of-state verb. In Saramaccan, *púu* 'pull' is an alternating change-of-state verb while *kaí* 'fall' is a non-alternating, unaccusative change-of-state verb. Both *púu* 'pull' and *kaí* 'fall' can appear as X in intransitive resultatives.

(710) *A boóko púu.*
3SG break pull
'It broke off.' or 'It was broken off.' (Veenstra 2004:275)

(711) *Dí wósu boóko kaí.*
DET house break fall
'The house is fallen apart.' (Veenstra 2004:275)

But only *púu* 'pull' can appear as X in a transitive resultative. This shows that X in a transitive resultative must be transitive and cannot be intransitive.

(712) *A boóko hen púu.*
3SG break 3SG pull
'He broke it off.' (Veenstra 2004:275)

(713) **A boóko hen kaí.*
3SG break 3SG fall
Intended: 'He broke it off.' (Veenstra 2004:275)

To summarise, the following table shows the typology of resultatives along three dimensions:

		compound	non-compound
verbal X	intransitive X	Mandarin V-V	Thai
	transitive X	Japanese V-V	Saramaccan
non-verbal X		?	English

If the suggested account of the typology of resultatives is on the right track, then further work on resultatives could shed light on variation in the nature of intransitive change-of-state verbs cross-linguistically.

In this thesis, I have proposed that compound resultatives are more flexible than non-compound resultatives because compound resultatives are built in morphology while non-compound resultatives are built in syntax. I have shown how my proposal explains the difference in argument realisation patterns in Mandarin V-V resultatives and V-*de/bu*-V compounds on the one hand

and resultative V-*de* constructions on the other. I have also shown how my proposal could be generalised to account for compound and non-compound resultatives in languages other than Mandarin. Finally, I concluded with a conjecture concerning the typology of resultatives that I believe is worthy of further investigation.

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