

# Causal VVs in Mandarin

Alexander Williams

## 1 Introduction

Many verbal predicates in Mandarin have two parts that can be separated by at most the markers of the positive and negative potential form, *dé* and *bu* (Chao 1968, Hashimoto 1971, Thompson 1973, Li and Thompson 1981). Call such predicates VVs (Lu 1977), committing to nothing with this name. VVs come in various types, to be surveyed briefly in §3. This chapter will concentrate on VVs which I will call causal (Li and Thompson 1981), such as those in (1) and (2). These imply a causal relation between two distinct events, those of the first and second verb. For example, (1a) implies that a kicking caused a snapping and (2a) implies that a chilling caused an illness.<sup>1</sup>

- (1) a. tā tī duàn -le nà tiáo mùbǎn  
3s kick snap -PFV that CLS plank  
'He made that plank snap by kicking [it].'  
b. nà píng jiǔ hē zuì -le wǒ  
that bottle wine drink drunk -PFV 1s  
'That bottle of wine made me drunk from [my] drinking [it].'
- (2) a. nà ge hái zi dòng bìng -le  
that CLS child chill be ill -PFV  
'That kid got ill from [his] being cold.' (Ma 1987:439)  
b. wǒ zǒu fá -le  
1s walk weary -PFV  
'I got weary from [my] walking.'

In this chapter I survey the interpretation and syntax of causal VVs, focussing on the former. I begin by establishing the terms of discussion in §2 and distinguishing non-causal VVs in §3. I then discuss the relations between the two parts of the causal VV in §4 and the interpretation of the potential form in §5. Section 6 concerns the interpretation of the subject and object—the most theoretically provocative aspect of this construction—with §7 reviewing two accounts of the data. I finally turn to further aspects of VV syntax in §8, before concluding.

This review relies heavily on many ground-breaking studies, particularly Chao 1968, Hashimoto 1971, Thompson 1973, Li and Thompson 1981, Lü 1986, Ma 1987, Huang 1988 and 1992, Li 1990 and 1995, and Sybesma 1999. I hope I have not distorted the insights in these works too greatly.

## 2 Talking about causal VVs

A causal VV is a predicate with two parts, a *means predicate* M, and a *result predicate* R. As I define the construction, the occupants of M and R are free morphemes that can themselves serve as the sole

---

<sup>1</sup>Interlinear glosses use these abbreviations: 1s/2s/3s 'first/second/third person singular pronoun,' CLS 'noun classifier,' LE 'sentence final le,' NPOT 'negative potential infix,' PPOT 'positive potential infix,' NMOD 'suffix marking an adnominal modifier,' DE 'verbal suffix introducing manner or extent complements', and PFV 'perfective.' I use hyphens only to indicate that a morpheme is intrinsically an affix or a clitic. My scheme of translation is described in §2.

predicate of a simple clause. In (1a) M is *tī* ‘kick’ and R is *duàn* ‘snap,’ verbs which occur on their own in (3). I will refer to the smallest constituent containing both M and R abbreviatorily as MR. M and R can be audibly separated at most by the markers of the positive and negative potential forms, *dé* and *bu*; see §5. Suffixes, such as the perfective *-le* or experiential *-guo*, immediately follow R.

- (3) a. *tā tī -le nà tiáo mùbǎn*  
 3s kick -PFV that CLS plank  
 ‘He kicked that plank.’  
 b. *nà tiáo mùbǎn duàn -le*  
 that CLS plank snap PFV  
 ‘That plank snapped.’

Semantically, a causal VV entails that some individual changes, entering a result condition defined by R. The overt phrase that identifies this individual *controls* R. In (1a) the surface object (O) controls R, since (1a) says that the plank winds up snapped. In (2a) the surface subject (S) controls R, since (2a) says that the kid got sick. These are *o-control* and *s-control* VVs, respectively.

A causal VV also entails that its change came about by means of the event of M. In general this seems to imply that the M event caused that of R; see §4.1. But no overt morpheme signals any relation among events.

Finally, S and O may be understood as identifying participants in the event of M. Interpreting (1a) we may take S and O to name the agent and patient of the kicking, for example; see §6.2.

Causal VVs are similar to English resultatives, like “he pounded it flat.” Some causal VVs also have a close translation in a parallel English resultative: (1a) can be translated as “he kicked the plank apart”. But others do not. Neither “that bottle of wine drank me intoxicated” for (1b), nor “the child chilled sick” for (2a) are acceptable English. My glosses will therefore follow a fixed format: o-control VVs are glossed as ‘S made O R from M’ing,’ and s-control VVs as either ‘S got R from M’ing’ or ‘S R’ed from M’ing.’ Further aspects of an intended reading I will sometimes put in square brackets. The result will rarely be idiomatic, especially in the use of *from*. But it will allow for uniformity and will avert two unwarranted suggestions: first, that o-control and s-control VVs differ in the semantic relation they impose on the means event; second, that the subject in an o-control VV must name the agent of its means event (see §6.2).

### 3 Noncausal VVs

VVs are a diverse lot; different sorts of predicates occur in the potential form. Here I briefly describe the two major subclasses that are most similar to causal VVs, but are commonly considered distinct. Each resists a paraphrase which says that the event of the first part caused that of the second.

Directional VVs are the most clearly distinct. Here the second part of the predicate includes one or more verbs of directed motion, such as *guò* ‘cross’, *huí* ‘return’, or *lái* ‘come’.<sup>2</sup> Unlike other VVs, directionals may include several morphemes in their second part, as in (5) or (6); and when the second part includes *lái* ‘come’ or *qù* ‘go’, it may be separated from the first by perfective *-le* or by an object noun phrase, as in (6).<sup>3</sup>

<sup>2</sup>It may be incorrect to designate the directional morphemes in this syntactic context as *verbs*. But they are at least morphemes with the same basic form and meaning as a morpheme which does, in fact, occur as an independent verb.

<sup>3</sup>Mandarin is not alone in making directional verb complexes more separable than causal verb complexes. The Oceanic languages, for example, include similar examples (Crowley 2002). In Ambae (Hyslop 2001) causal verb complexes take only a single marking of modality and agreement, whereas directionals, while demonstrably monoclausal, require marking on each verb.

- (4) tā zǒu jìn yī ge qiúchǎng le  
3s walk enter one CLS ballpark LE  
'S/he walked into a ballpark.' (Li and Thompson 1981:60)
- (5) tā bǎ shūbaō fàng xià qù  
3s BA bookbag put descend go  
'He put the bookbag down.'
- (6) tā duān -le yī wǎn tāng shàng lái -le  
3s carry -PFV one bowl soup up come -LE  
'S/he carried a bowl of soup up.' (Li and Thompson 1981:63)

Semantically, it is natural to say that directional VVs describe a movement, with the first part describing its manner and the second describing its direction or path. Movement is a kind of change, but there seems to be a semantic difference between directional and causal VVs. Inasmuch as they describe the manner and direction of a movement, the two parts of a directional VV never describe a *sequence* of events; but a causal VV clearly may, as in (2a).<sup>4</sup>

A second major subclass of VVs comprises the “phase” (Chao 1968) and “achievement” (Li and Thompson 1981) VVs. Chao 1968 defines phase complements with (7–9) among other examples. Here the second verb “express[es] the phase of an action in the first verb rather than some result in the action or goal” (Chao 1968:446). In particular it specifies that the event was successful or complete.

- (7) wǒ kàn bu jiàn nǐ  
1s look NPOT perceive 2s  
'I cannot see you.'
- (8) wǒ chī wán -le nà wǎn tāng  
1s eat NPOT finish that bowl soup  
'I finished eating that bowl of soup.'
- (9) Lǎo Wèi mǎi dào -le sān zhāng piào  
LW buy arrive -PFV three CLS ticket  
'Lao Wei got hold of three tickets.'

Li and Thompson (1981:55) differ from Chao in classing (9) as an “achievement” VV. They do not much discuss the nature of this category, but give *kàn qīngchū* ‘see clearly’ as a second example, (10).

- (10) wǒ kàn bu qīngchū nǐde liǎn  
1s look NPOT clear your face  
'I cannot see your face clearly.'

The distinction is not sharp. In both phase and achievement VVs, the second part seems to imply completion or success in the event of the first, not causation between two distinct events. (8) says that my eating of the soup is complete, not that it caused a distinct event of completion; (10) says that I can't see your face clearly (hence successfully) not that my looking can't make your face clear; and (9) says that Wei's purchase of tickets was successful, not that Wei's purchase effected their arrival. In any case Chao observes that some of his “phase complements . . . become aspect suffixes” (1968:446).

Besides these, there are VVs that occur only in the potential form, such as (11), and various sorts of VVs in which one or both of the parts do not occur independently as verbs with the same

<sup>4</sup>Compare Goldberg 1995 on caused motion constructions and Rappaport Hovav and Levin 2001 on “noncausative resultatives.”

meaning, including both (11) and (12). These do not bear directly on the analysis of compositional VVs, except in suggesting that the semantic scope of the potential morpheme includes the entire complex predicate; see §5.

- (11) zùo bu liǎo  
sit NPOT LIAO  
‘cannot seat’ (Li and Thompson 1981:67)
- (12) kàn bu pò  
look NPOT break  
‘cannot be unconcerned about’ (Chao 1968:438)

## 4 Semantic relations between M and R

### 4.1 Event modifiers and logical form

We distinguish causal VV as those which imply a causal relation between the M and R events. But this description is preliminary. It decides neither the logical form of causal VVs nor the exact content of the relation between the events of M and R. The pretheoretical constraint is only that the relation imply causation, not that it be causation. Much still remains for investigation. Here I begin with initial evidence for the logical form of causal VVs from the interpretation of adverbs.

No adverb can intervene between M and R. But an adverb may immediately precede the verb phrase. Such an adverb cannot, however, describe the event of R. Thus *hěn* ‘very’ is bad in (13).

- (13) tā (\*hěn) xiě téng -le shǒuzhǐ  
3s very write hurt -PFV finger  
‘S/he made [his/her] fingers hurt (very much) from writing.’ (adapted from Light 1977)

Nor, it appears, can such an adverb modify the event of M. This is clearest when the verb expresses a gradable property, as in (14). On their own gradable predicates can be modified by adverbs of degree such as *taì* ‘too’ or *feícháng* ‘extremely’. But in a VV they cannot be.

- (14) a. nà wǎn dòufu (\*taì) là kū -le haízi  
that bowl tofu (\*too) spicy cry -PFV child  
‘That bowl of tofu made the kid cry from being (too) spicy.’
- b. tā -de shéntǐ (\*feíchang) lài kuǎ -le  
3s -NMOD health (\*extremely) tired collapse LE  
‘His health collapsed from [his] being (extremely) tired.’ (Wu et al. 1986:261)

Judgments are less sharp when M is eventive, but for a simple reason. It is often less obvious what the difference would be between modifying the whole VV, or just M. Notice that a flattening may be called loud because it was done by means of a loud pounding; so if one understands “*Al pounded the cutlet flat loudly*” as implying that the pounding was loud, this does not show immediately that *loudly* is a predicate of the pounding; it may instead be a predicate of the flattening (a change that ends in flatness) with the loudness of the pounding merely inferred. The same point applies to causal VVs in Mandarin. Still, the sentences in (15) are distinctly odd; and if the event of M could be modified by adverbs they should be unremarkable.

- (15) a. lěng fēng (\*hūhū-de) chuī bìng -le tā  
cold wind howlingly blow ill -PFV 3s  
‘A cold wind made him/her ill from blowing (howlingly).’ (L. Li 1980:100)

- b. Nà píng jiǔ (\*gūlu-gūlu-de) hē zuì -le wǒ  
 that bottle wine ‘glug-glug-ingly’ drink drunk -PFV 1s  
 ‘That bottle of wine made me drunk from [my] drinking [it] (gluggingly).’

The one clear role for verb phrase adverbs is modifying the change expressed by MR. (16) has a clear interpretation says that the exhaustion of big sister was gradual.

- (16) yīfú jiànjàn-de xǐ lài -le jiějiě  
 clothes gradually wash tired -PFV elder sister  
 ‘The clothes gradually made big sister tired from [her] washing [them].’ (adapted from Ren 2001:326)

From this it is reasonable to conclude that MR is not a predicate of the event of M, (17a), nor a predicate of the event of R, (17b), since adverbs should be able to describe these events if it were.<sup>5</sup> Rather, MR must be a predicate of an event of change, (18), which is described neither by M nor by R. This may be important to the analysis of thematic relations in causal VVs; see §7.

- (17) a. \* $\llbracket \text{MR} \rrbracket = \lambda e_m \exists e_r. \llbracket M \rrbracket(\dots)(e_m) \ \& \ \llbracket R \rrbracket(\dots)(e_r) \ \& \ \mathbb{C}(e_m, e_r) \dots$   
 b. \* $\llbracket \text{MR} \rrbracket = \lambda e_r \exists e_m. \llbracket M \rrbracket(\dots)(e_m) \ \& \ \llbracket R \rrbracket(\dots)(e_r) \ \& \ \mathbb{C}(e_m, e_r) \dots$   
 (18)  $\llbracket \text{MR} \rrbracket = \lambda e_c \exists e_m \exists e_r. \llbracket M \rrbracket(\dots)(e_m) \ \& \ \llbracket R \rrbracket(\dots)(e_r) \ \& \ \mathbb{K}(e_c, e_m, e_r) \dots$

The events of M and R are related somehow to the event of change, symbolized by  $\mathbb{K}$  in (18): the change ends with the event of R and comes about ‘by means of’ the event of M. It may be that these two aspects of the relation are distinct conjuncts in the logical form—perhaps “Change( $e_c, e_r$ ) & Means( $e_c, e_m$ )” (cf. Goldberg and Jackendoff 2004), where “Change” relates a change to its end (cf. Pietroski 2005:181)—in which case they might be contributed by different parts of the syntactic analysis. The means relation seems similar to causation. But it is clear that the two should not be identified, at least because the means relation involves some sort of “directness” that causation does not require. For thoughts on the means relation see Thomson 1977, Dowty 1979, Bennett 1994, and Pietroski 2000 and 2005.

## 4.2 Combinations of M and R

The causal VV is productive in Mandarin: many combinations are attested and new combinations are readily formed. Still, not every possible combination of verbs is equally natural. In particular, a certain combination may be judged unnatural because the implied causal relation seems insufficiently direct. For instance Yafei Li judges (19a) unacceptable (1995:261), and yet (19b) is acceptable. But as we will see, several restrictions exhibited by resultatives in other languages are notably absent from causal VVs in Mandarin.

- (19) a. \*jiānkǔ-de gōngzuò bìng dǎo -le Taotao le  
 tough work ill topple -PFV T. LE  
 ‘The tough work made Taotao fall over from illness.’ (Li 1995:261)  
 b. zhè píng jiǔ zuì hóng -le Zhāngsān -de yǎnjīng  
 that bottle liquor drunk red -PFV Zh. -NMOD eye  
 ‘That bottle of liquor made Zhangsan’s eyes red.’ (Sybesma 1999:17)

<sup>5</sup>In (17) “ $\mathbb{C}$ ” stands for whatever relates the events of M and R, according to the two-event analysis in (17). “ $\llbracket \alpha \rrbracket$ ” stands for ‘the semantic interpretation of  $\alpha$ .’ The lambdas mark arguments of a function, rather like elements of a “Theta Grid.” “ $\lambda v. \phi$ ” names a function that, if applied to  $d$ , outputs  $\phi$ , though with all unbound instances of  $v$  in  $\phi$  replaced by  $d$ . “ $f(a)$ ” stands for the application of a function to an argument. I use subscripted  $e$ ’s as variables over events, and  $x, y, z$  as variables over individuals. Predicates are rendered as functions here, so that  $\lambda e. \phi$  is a predicate of events. The first two chapters of Heim and Kratzer 1998 provide an excellent primer on this notation and its linguistic use.

### 4.2.1 Strong resultatives and scales

The meanings of M and R need not be closely related. In particular, R need not name a necessary, or even characteristic, result of an M event. It is not characteristic of kicking that it results in a snap, of crying that it results in waking, of writing that it results in soreness, or of sitting that it results in a collapse. Yet the sentences in (1a) and (20–22) are nonetheless fine.

- (20) tā kū xīng -le Lǐsì  
3s cry wake -PFV L.  
‘S/he made Lisi wake up from crying.’ (Huang 1992:126)
- (21) tā xiě téng -le shǒuzhǐ  
3s write sore -PFV finger  
‘He made his fingers sore from writing.’ (Light 1977)
- (22) pàngzi zuò tā -le yǐzi  
fatty sit collapse -PFV chair  
‘The fat man made the chair collapse from sitting.’ (Hashimoto 1971)

Thus Mandarin abounds in what Washio 1997 calls “strong” resultatives. Washio observes that some other languages, such as Japanese, permit only “weak” resultatives. In these, M “strongly implies” a particular result, and R implies a state characteristically associated with that result.<sup>6</sup>

Wechsler 2005 proposes a semantic constraint on R, applying to just those resultatives where O is a “semantic argument of the verb” in M. He says that R must express a gradable property with a maximum degree, (23).<sup>7</sup> Wechsler argues that this follows from the “starting premise [...] that telicity is a constructional feature of resultatives.”

- (23) Wechsler’s Claim  
In resultatives where O is a “semantic argument of the verb” in M, R must express a gradable property with a maximal degree.

In English (23) finds support in contrasts like (24). Cleanliness has a maximum degree, a limit past which a thing can get no cleaner. But there is no limit in principle on dirtiness. Things can always get dirtier. In accord with (23), (24b) is unacceptable.

- (24) a. He wiped the table clean.  
b. # He wiped the table dirty.

In (25) the property named by R does not have a maximum degree, as things can always get wetter. But this is not a counterexample for Wechsler, due to the limited domain of his claim. (23) only governs cases where O is not a “semantic argument” of M, and this is not so in (25).

- (25) He cried his handkerchief wet.

In Mandarin, however, predicates without a maximum degree, such as ‘dirty’, ‘bad’, ‘sick’, ‘wet’, ‘angry’ or ‘tired’, are common in R. And importantly, this is true even when O is understood to name the theme of the M event, and so is apparently a “semantic argument.” (26) is one example of several in this chapter.

<sup>6</sup>As an example, Washio gives the Japanese verbs *ni* ‘boil’ versus *tatai* ‘pound’, in relation to *yawaraka* ‘soft’. Japanese permits the combination ‘boil soft,’ but not ‘pound soft.’ According to Washio, this is because boiling *x*, but not pounding *x*, strongly implies a result in *x*, and a result that correlates strongly with softness. He fits this under the broader generalization: Japanese allows only weak resultatives.

<sup>7</sup>Wechsler refers to resultatives where O is a “semantic argument of the verb” in M as “Control resultatives.”

- (26) zhè yīfú nǐ yòu xǐ zāng -le  
 this clothing you again wash dirty -PFV  
 ‘Again you made these clothes dirty from washing.’ (Yuan 2001:400)

Such sentences seem to contradict (23) directly. But the generalization might be salvaged, if one accepts a particular definition of “semantic argument.”<sup>8</sup> The definition must allow one to say that O in Mandarin is not a “semantic argument” of the verb in M, even when it is understood to name the agent or patient of its event. Most likely, this would have to mean that the *understood* thematic relation is not *semantic*. That is, the relation is not stated in the semantic representation output by the grammar, but merely reflects one plausible inference a hearer may make.

This proposal is not itself implausible. Indeed, it is defended on other grounds by, among others, Sybesma (1999) and Williams (2005, 2008a); see §7.1.1. For Wechsler, however, the question is whether the need for this more grammatical notion of “semantic argument” comports with his broader theory, which purports to derive the claim in (23) from the premise that resultatives are telic. If it does, and (23) is thereby underwritten by this more grammatical notion of “semantic argument”, then data like (26) support the claim that thematic relations to M are not semantic in Mandarin causal VVs. If it does not, then the case against Wechsler’s Claim from Mandarin sentences like (26) is strengthened.

#### 4.2.2 Categories of the verbs

The verb in M may be transitive (27) or intransitive (28).

- (27) tā qiē kāi -le dùzi  
 3s cut open -PFV abdomen  
 ‘S/he made the abdomen open from cutting.’
- (28) Zhāngsān kū shī -le shǒpà  
 Zh. cry wet -PFV handkerchief  
 ‘Zhangsan made the handkerchief wet from crying.’ (Huang 1992:125)

In saying that a verb is transitive, I mean that when the verb exhausts the predicate of a simple clause, that clause is *in the general case* transitive, with a subject and an object; mutatis mutandis, for intransitive verbs. What counts as the “general case” is of course a theoretical choice. But I assume it will exclude, among many others, recipe contexts, imperatives, and pluractional coordinate constructions such as the English “he smacked and smacked.” This caveat, while ordinary, will be important to remember in §6.2.

When M is intransitive and O furthermore controls R, M often houses a verb whose event involves an agent, as in (28). But this is not always true. There are causal VVs with a nonagentive intransitive in M, either eventive (29) or stative (30); (14a), (19b), and (74) below are additional examples with stative M. Notice that in (14a), (29) and (30) the surface S names the logical subject of M, and this logical subject is not an agent.

- (29) mì yú xià hēi -le tiāndì  
 dense rain fall black PFV earth  
 ‘The dense rain made the earth dark from [its] falling.’  
 (L. Li 1980, quoting from Zhou Libo’s *Baofeng Zhouyu*)
- (30) Zhāngsān zuì hóng -le ta -de yǎnjīng  
 Zh. drunken red -PFV 3s -NMOD eye  
 ‘Zhangsan made his eyes red from being drunk.’ (Sybesma 1999:17)

<sup>8</sup>There is a second way (23) could be insulated from (26). One could simply remove Mandarin from the domain of (23), by stipulating that telicity is not a “constructional feature” of its resultatives. But this is unattractive.

This is not possible in every language. The M verb in an English resultative cannot be stative, and cannot be unaccusative when O controls R. But (29) and (30) show that these English facts do not result from general constraints on semantic or conceptual structure.<sup>9</sup> In particular, they show that the agent of a change cannot be semantically identified with the agent of its means event, an identification otherwise suggested by the grammar of resultatives in English (Williams 2009, 2010). The constraints exhibited by English must therefore be parochial and syntactic; a verb that projects its argument to O in a simple clause cannot project it to S in a resultative; see §7.1.1.

Let us turn now to R. Typically a verb in R is intransitive, and typically an intransitive verb in R is stative or nonagentive. Yet sometimes this is not obviously so. The verb *kū* ‘weep’ is natural in R, as in (14a) for example, and it is at least reasonable to class the weeper as the agent of the weeping, hence to class *kū* as an unergative verb (though see Gu 1992).

Transitive verbs can also be found in R. This is common with VVs of the “phase” or “achievement” type. But it is also possible in VVs that might reasonably be judged causal, (31).

- (31) a. *tā chāng huì -le nà shǒu gē*  
 3s sing know that CLS song  
 ‘He knows that song from singing.’ (Li 1999:479)
- b. *tā wèn míngbái -le zhège wèntí*  
 3s ask understand -PFV this question  
 ‘S/he understood this question from asking it.’ (Li 1990:204)
- c. *tā bǎ wǒ xià wàng -le wǒ xiǎng shuō -de huà*  
 3s BA 1s startle forget -PFV 1s want say -NMOD speech  
 ‘S/he made me forget what I wanted to say from startling.’ (Li 1999:474)

Yet the contrast in (32) is nonetheless notable (Mei 1991): *sǐ* ‘die’ but not *shā* ‘kill’ occurs in R. Many languages (e.g. Khmer, Ijo, Japanese, ꠕHoan, Paamese, Ambae)—including earlier stages of Chinese (Mei 1991, Shi 2002)—require the transitive verb in analogous constructions (Nishiyama 1998, Collins 2001, Crowley 2002), at least when the resultative clause is itself transitive. But not modern Mandarin.<sup>10</sup>

- (32) *jǐngchá dǎ sǐ/\*shā -le tǔfēi*  
 police strike die/\*kill -PFV bandit  
 ‘The police made the bandit die from [them] striking [him].’ (Mei 1991:119)

Jointly, the above facts illustrate that the verb in R may be transitive or intransitive, whether M is transitive or intransitive. The choice of verbs is also independent of whether the clause hosting the VV is transitive or intransitive. In this way Mandarin is unlike languages whose resultatives exhibit “transitivity harmony,” such as Japanese, ꠕHoan, and earlier stages of Chinese. In such languages, a resultative complex predicate in a transitive clause will have a transitive verb-form in R.

## 5 The potential form

### 5.1 Basic form

Mandarin VVs may occur in either of two *potential forms*, the positive and the negative. The positive form has *dé* between M and R, (33). The negative has *bu* in the same position, (34); this

<sup>9</sup>Contrast the view attributed to Van Valin in Levin and Rappaport Hovav 1995:71–2. See also Dowty 1972, and Williams 2010 for critical discussion.

<sup>10</sup>Cross-linguistically, it is not unusual to find words meaning ‘kill’ behaving exceptionally when they serve as R in a resultative. Both Igbo and Akha, for example, put intransitive verbs in R, except that they use ‘kill’ instead of ‘die’. Also, it is not uncommon for ‘kill’ to be used as an intensifier, as ‘die’ is used in Mandarin.



is the general marker of negation for nonperfective predicates. In this context I will gloss *dé* and *bu* as PPOT and NPOT, respectively.

(33) Positive potential form: S V<sub>M</sub> *dé* V<sub>R</sub> O

(34) Negative potential form: S V<sub>M</sub> *bu* V<sub>R</sub> O

The form *de* also occurs as a verbal enclitic in the family of *V-de* constructions, where a clause or VP following *de* describes either the extent (35a) or manner (35b) of the verbal event.<sup>11</sup>

- (35) a. *tā hǎn -dé wǒmén dōu lùoxià -le yǎnlèi*  
 3s scream -DE we all fall -PFV tear  
 ‘He screamed so much that we all shed tears’ (ex. L. Li 1963:405, tr. AW)
- b. *tā pǎo -de hěn kuài*  
 3s run -DE very fast  
 ‘He ran/runs very fast’ (Huang 1988)

Yet the potential form seems not to be an instance of any *V-de* construction, for several reasons. First, in the latter construction *de* cannot be replaced by *bu*. Second, the application of A-not-A question formation differs between the two constructions: for potentials it yields “M *de* R, M *bu* R?”, while for *V-de* constructions it yields “M *de* ... X *bu* X?”. Third, in a *V-de* construction but not a potential form, a noun phrase can intervene between *de* and the second predicate, as in (35a). Fourth, the second predicate can include adverbs in a *V-de* construction, but not in the potential form of a causal VV.

## 5.2 Basic meaning

The meaning of the potential form is modal. To a first approximation, the positive form says that the event of the VV is possible, while the negative form says that it isn’t. So for causal VVs such as (36) and (37), the positive form implies that it is possible for an M event (one of Wei kicking the plank) to bring about the R result (one of the plank snapping), while the negative form implies that it is not (Li and Thompson 1981: 56–7). More idiomatic translations are given with the examples.

- (36) *Lǎo Wèi tī dé duàn nàtiáo mùbǎn*  
 L.W. kick PPOT snap that plank  
 ‘Lao Wei can make that plank snap by kicking.’
- (37) *Lǎo Wèi tī bu duàn nàtiáo mùbǎn*  
 L.W. kick NPOT snap that plank  
 ‘Lao Wei cannot make that plank snap by kicking.’

The modality is circumstantial and physical. It concerns what is possible given the physical constitutions of the event participants, the expected circumstances of the M event, and the laws of nature. For example, (36) and (37) say what is possible or impossible given the constitutions of Wei and the plank, the expected circumstances of the kick, and the laws of nature. The modality cannot be epistemic, deontic, or buletic, for example (Light 1977, Liu 1980). In excluding these modalities, the potential forms contrast with the modal verbs, such as *néng* ‘can’ (pace Gu 1992, Wu 2002). (38) might be a statement about what is physically possible, but it might also be about what is permitted by some relevant set of ethical rules or practical goals.

<sup>11</sup>As discussed in Lamarre 2001, this syncretism is found in some Sinitic languages but not others. Standard Mandarin uses one form, *-de*, for the potential construction, the manner construction of (35b), and the extent construction of (35a). The same pattern is found in some Wu and Gan languages. Min languages use a distinct form for each of the three functions. And in between these two extremes we find various other syncretisms, with one notable gap. Apparently no Sinitic language conflates the categories of potential and extent to the exclusion of manner.

- (38) tā dāngrán (bù) néng tī duàn nàtiáo mùbǎn  
 3s of course (NEG) can kick snap that plank  
 ‘Of course he can(not) make that plank snap by kicking.’

### 5.3 Event modifiers

The potential forms are further distinguished from constructions with modal verbs in disallowing adverbial modifiers. One can say that someone kicked the plank in two *effortlessly*, (39). But to say whether this is possible requires a modal verb, (40). One cannot use the potential form (41).

- (39) nàtiáo mùbǎn, tā qīngéryìjǔ-de tī duàn -le  
 that plank 3s effortlessly kick snap -PFV  
 ‘That plank, he effortlessly made snap from kicking.’
- (40) nàtiáo mùbǎn, tā (bù) néng qīngéryìjǔ-de tī duàn  
 that plank 3s (NEG) can effortlessly kick snap  
 ‘That plank, he can(not) effortlessly make snap from kicking.’
- (41) \*nàtiáo mùbǎn, tā qīngéryìjǔ-de tī dé/bù duàn  
 that plank 3s effortlessly kick PPOT/NPOT snap  
 ‘That plank, he can(not) effortlessly make snap from kicking.’

Plausibly, (41) shows that event adverbs cannot be construed inside the scope of the potential modality. If they could be, (41) could mean roughly what (40) does. But outside the scope of the modal, they will make for nonsense, since an event modifier cannot describe the proposition that something is possible.<sup>12</sup> If this is correct, it suggests that the base position of the morpheme carrying the potential meaning, call it POT, is very low. Given common assumptions about semantic composition, it must be lower than the lowest possible position for adverbs. Contrarily, (40) suggests that modal verbs such as *néng* ‘can’ must be generated above the position of adverbs. This is a challenge for any theory that proposes to generate the two modal morphemes, PPOT and *néng*, in the same position.

The potential form similarly precludes the *ba*- and *bei*-constructions (Chao 1968:347–8).

- (42) \*tā bǎ nàtiáo mùbǎn tī dé/bù duàn  
 3s BA that plank kick PPOT/NPOT snap  
 ‘S/he can(not) make that plank snap from kicking.’
- (43) \*nàtiáo mùbǎn bèi tā tī dé/bù duàn  
 3s BA that plank kick PPOT/NPOT snap  
 ‘That plank can(not) be made snap from kicking by him/her.’

This can be given the same explanation as the impossibility of event adverbs. The phrase after *bǎ*, or also before *bèi*, is understood to name an individual affected by the event of the verb phrase. Suppose that this is a consequence of an Affectee relation stated in the semantics, that Affectee is a thematic relation to an event, and that it is introduced by structure outside of MR. If these three suppositions are all true, then (42) and (43) can be taken to show that this thematic structure must be construed outside and not inside the scope of the potential modality. The result is unacceptable, because a relation to events does not have in its domain the proposition that something is possible.

The syntactic upshot would again be that POT, the structure that introduces potential modality, is very low. It would have to be lower than whatever structure introduces the Affectee relation in

<sup>12</sup>In principle it is possible that the potential modal is not a propositional operator, but a function from an eventive predicate to a stative predicate that expresses a dispositional property. The problems in this section would then be recast as problems of applying to a state a predicate whose domain is dynamic events.

*ba-* and *bei-*constructions. Generalizing, we could then say that POT is generated below *any* event modifier, whether it expresses an event quality or a thematic relation.

This account of (42) and (43) is attractive; it formalizes a common intuition that potentials are bad with *ba* because a possibility cannot have an affected patient (Li and Thompson 1981:476–478). But one of its premises is controversial: it assumes that the understood Affectee relation is stated by structure outside of MR. Contrary to this, it has often been assumed that the Affectee relation is introduced by something within the verbal predicate itself (A. Li 1990, Y. Li 1995, Sybesma 1999, among others; contrast Huang 1992). And in this light the picture becomes very different. With the verb in the scope of the modal, any relations it introduces are also in the scope of modality; so the problem cannot be getting the Affectee relation within the scope of modality.

Rather, there must be a problem in associating the *ba-* and *bei-*phrases with this relation. Either these phrases are generated near the verbs, and the potential form blocks them from raising to their surface position; or they are generated far from the verbs, but the potential form somehow blocks semantic transmission of the Affectee relation. But why *should* the potential form should create this opacity? To me no good answer is obvious, since raising and control over modals are otherwise common. And without a good answer the suggestion that the Affectee relation is introduced with the VV predicate, rather than outside it, is not viable, since it cannot explain (42) or (43).

Consequently, the incompatibility of the potential form with *ba* and *bei* may be taken to provide some evidence that these constructions involve structure separate from the VV predicate that introduces a thematic relation.

## 5.4 Episodic uses

In many languages ability constructions have a non-modal use that I will call *episodic*. They are used to convey, not whether or not a certain kind of event is possible, but whether or not one such event actually obtained on a certain occasion (Bhatt 1999, Enfield 2001, Piñon 2003, Hacquard 2006, Davis et al. 2010). Consider English *able to*. One can use (44a) to convey that Al did pound the cutlets flat, and (44b) to convey that he did not. What this use of (44b) conveys is not the modal proposition that Al lacked a certain ability. For Al may lack the ability to pound the cutlets flat and nevertheless do so by pure chance, or he might fail in spite of his abilities.

- (44) a. John was able to pound the cutlets flat last night.  
b. John was unable to pound the cutlets flat last night.

It seems that the Mandarin potential form can also be used episodically. (36) can be used to convey that, on a particular occasion under discussion, Wei did not actually snap the plank by kicking, whether due to inability or in spite of his abilities.

For some ability constructions, in some languages, the distinction between episodic and modal uses is arguably a semantic ambiguity (Bhatt 1999, Piñon 2003, Hacquard 2006). But there are reasons to think that, in Mandarin, the potential form is not ambiguous.

First, the potential form never permits eventive modifiers that are possible outside the potential form. This makes sense if the constituent to which such adverbs attach (say, the verbal cluster) is always semantically modal, not episodic. Second, negative potentials always involve *bu*, and not *mei* (you); modal and stative predicates are negated with *bu*, while perfective eventive predicates take *mei* (you); so if (37) did have a semantic interpretation that was episodic, asserting the negative perfective meaning there was no event of kicking the plank apart, one might expect *mei*.

- (45) tā meiyǒu tī duàn -le ∅  
3s NEG kick snap -PFV it  
'S/he did not make it snap from kicking.'

Third, the episodic reading is readily accessible only with negative potentials. It is marginal or absent with positive potentials and yes/no questions. My consultants are reluctant to understand (46) as asking whether the plank did in fact get split.

- (46) zuì dà -de mùbǎn, tā tī dé duàn tī bu duàn?  
 most big -NMOD plank 3s kick PPOT snap kick NPOT snap  
 ‘Can s/he make the biggest plank snap by kicking?’

This asymmetry is surprising if the episodic reading is semantic. But it makes sense if the only the modal reading is. Saying that someone lacks the ability to do X plank strongly suggests that he hasn’t done X. Saying that he does have the ability to do X, however, does not suggest with equal strength that he has done X.

## 5.5 Scope of negation

It has been said that the scope of *bu* in the negative potential form is “exclusively rightward” (Light 1977:29; see also Li and Thompson 1981:57 and Liu 2008:116, among others). This is not correct. But the error has a good explanation in implicatures that the negative potential is likely to trigger.

To see the error, attend first to the silent ‘predicates’ in the construction. There are at least two of these, the modal operator and the ‘result’ relation between M and R. Both clearly are within the scope of negation. The negative potential asserts something like (47), and not anything like the alternatives in (48). Negation has scope over the modal, and since the modal has scope over the causal relation, negation has scope over the terms of that relation, namely the events described both M and R.

- (47) It is NOT possible that there is a result relation between an M and a R event.  
 (48) a. \*It is possible that there is NOT a result relation between an M and a R event.  
 b. \*It is possible that an M event results in there NOT being a R event.  
 c. \*It is possible that M event results in an event that is NOT described by R.

Now turn to M itself. The negative potential form does not entail either that an M event has transpired or that an M event alone is possible. Thus (37) is compatible with Wei not kicking the plank, and is also not contradicted by adding that Wei cannot even kick that plank due to of a deformation in his legs.<sup>13</sup>

So it is a mistake to say that the scope *bu* is “exclusively rightward.” However, negative potential VVs are likely to trigger the *conversational implicature* that an M event is possible, or even actual. In these implicatures M makes a contribution outside the scope of negation, since it is outside of what is asserted. But inside what is asserted negation still has scope over every part of the VV.

To see the source of the likely implicature, notice that (49b) is asymmetrically entailed by (49a). In addition, the use of (49b) will suggest (49a) as a stronger alternative, given their overlap in form. The use of (49b) will therefore often trigger the implicature that (49a) is not true, hence that Al *can* pound the cutlet. For if the speaker presumed the opposite, he would have made this stronger statement, (49a), absent overriding reasons to refrain from being informative. The point applies equally to causal VVs in Mandarin.

- (49) a. It is not possible that Al pounds the cutlet  
 b. It is not possible that Al pounds the cutlet flat

<sup>13</sup>It is a good thing that this implication is not an entailment, as it is unclear how a logical form supporting the implication could be compositionally derived.

If understood episodically, the negative potential form may trigger a still stronger implicature. Consider again (37), used to convey that Wei did not actually kick apart the plank. This may, in turn, conversationally implicate that Wei did at least kick the plank. For if the speaker believed that he did not even do that, he would have made this stronger statement, all else equal.

This implicature is made more likely by an additional suggestion associated with the episodic use of ability constructions in language after language. The episodic use characteristically implies that the reported outcome was not certain; it describes an effort that either succeeded or failed. Thus one would not use either sentence in (44) if Al hadn't even been trying to pound the cutlets flat, or if this were as easy as blinking. Likewise (37), understood episodically, suggests that an effort was made to snap the plank by kicking. And this in turn suggests that, most likely, there was kicking.

So again, M here makes a contribution that is outside the scope of the negation in what is asserted. But within what is asserted, *bu* has M in its scope.

## 5.6 Resistance to the potential form

Example (50) has a verb in M whose event lacks an agent and the sentence is acceptable. But often the potential form is odd when M's event is nonagentive. Lu (1977:281,309) treats (51) as unacceptable; and (52), the positive counterpart to (50), is somewhat strange if understood on the modal reading.

- (50) zhèige huāpíng diē bu suì  
 this vase fall NPOT shatter  
 'This vase cannot shatter from falling'
- (51) \* tā è bu bìng  
 3s hunger NPOT ill  
 'He cannot fall ill from hunger' (example and judgment from Lu 1977)
- (52) ? zhèige huāpíng diē dé suì  
 this vase fall PPOT shatter  
 'This vase can shatter from falling'

It may be, however, that the oddity is not grammatical. Perhaps it reflects the de facto triviality of the statement: of course a vase can shatter from a fall, and of course a man cannot fail to die from hunger. The oddity of (52) would then have the same account as that of (53), which is well-formed but seems to presuppose something unusual.

- (53) ? My rottweiler is able to bark.

This is plausible insofar as one can construct a scenario where (51), for example, is fine. Suppose there were a kind of frog that can survive in good health for any length of time without any food by entering a hibernative state.<sup>14</sup> Then (51) can describe one of these frogs.

## 6 The interpretation of S and O

### 6.1 S and O relative to R

R may be controlled by the surface O or by the surface S. This difference seems to have a semantic aspect. Many authors (e.g., Wang 1958, Huang 1988 and 1992, Li 1990 and 1995) have observed a complementary relation between control of R and the presence of an agent of change. When control

<sup>14</sup>A feat of survival more amazing than this is performed annually by the terrestrial wood frog of Canada. Every winter the wood frog freezes, with as much as 65% of its total body water turning to ice. There is no breathing, blood flow, or detectable brain activity. Yet normal function can return within two hours of a thaw.

of R is by the surface O, the subject is interpreted as naming the agent of the event of the verb phrase; that is, as naming the so-called *causer* of the change it describes. Indeed this may be its only thematic relation (Ma 1987, Huang 1992, *pace* Li 1995), as in (54) or (55) or (56).

- (54) zhè jiàn shì kù hóng -le Lǐsì -de yǎnjīng  
 this CLS matter cry red -PFV L. -NMOD eye  
 ‘This matter made Lisi’s eyes red from crying.’ (Huang 1988:296)
- (55) chī jǐ dùn miàntiáo yě chī bu qióng tā  
 eat several meal noodle also eat NEG.POT poor 3s  
 ‘Eating a few meals of noodles won’t make him poor from eating.’  
 (Lü 1986:7, quoting Jiang Zilong, *Weichi Huizhang*)
- (56) tā lèi kuǎ -le shìbīng -de shéntǐ  
 3s tired collapse -LE soldier -DE health  
 ‘S/he made the soldiers’ health collapse from [their] being tired.’

But when the surface S controls R, no noun phrase is understood as a causer of the stated change, even when S itself refers to the presumed agent of the M event. With or without the postverbal noun phrase jiǔ ‘liquor,’ (57) says explicitly only that Wei got drunk, not that he is responsible for bringing this change about, not that he *made himself* drunk.

- (57) Lǎo Wèi hē zuì -le (jiǔ)  
 L.W. drink drunken -LE liquor  
 ‘Lao Wei is drunk from drinking (liquor).’

I will assume that this common observation is correct. There is a causer in the semantics just in case O controls R. I will call this *Causer Complementarity*.<sup>15</sup> Pointing to this same distinction, some authors have described o-control VVs as “causative” and s-control VVs as “resultative” (Chang 1998, Liu 2008). These terms might suggest that there is an additional difference in the semantic relation between the events of M and R, “cause” in one case and “result” in the other. But I presume that the relation between events is the same in both clauses, as there is no clear evidence for a difference. I return to the theoretical consequences of Causer Complementarity in §7.2 below.

There are three sorts of cases where control of R is unambiguous. First, in a *ba*- or *bei*-construction: there, control of R is always by the phrase naming the so-called “affectee,” namely the phrase immediately following *bǎ* or immediately preceding *bei*. Thus (58) and (59) cannot have the meaning in my glosses, even though the *ba*- and *bei*-phrases there do name the patient of the washing.

- (58) \*jiějiě bǎ nà pén yīfu xǐ lèi -le  
 elder sister BA that tub laundry wash tired -PFV  
 ‘Big Sister washing that load of laundry made her tired.’
- (59) \*nà pén yīfu bèi jiějiě xǐ lèi -le  
 that tub laundry BEI elder sister wash tired -PFV  
 ‘That load of laundry getting washed by Big Sister made her tired.’

Second, as observed by Zhan (1989:109) and stressed by Li 1995, control is unambiguous when R is a transitive verb, as in (31). The surface S names the logical subject of R and the surface O names its logical object. When such a VV is in a *ba*-construction, control of R is by the “affectee” phrase immediately following *bǎ*; a second understood argument of R may follow the verbs (60).

<sup>15</sup>Some further justification for this assumption is given in Williams 2010.

- (60) Taotao bǎ Youyou chāng wàng -le yaò shuō -de huà  
 T. BA Y. sing forget -PFV want say -NMOD speech  
 ‘Taotao made Youyou forget what she wanted say by singing.’ (Li 1995:272)

The third case I will come to in the next subsection. Yafei Li observes that control of R goes to O in any transitive VV where the interpretation of both S and O relative to the M verb is the reverse of what might be expected.

## 6.2 S and O relative to M

The interpretation of S and O with respect to the verb in M is of special interest. For it may not match the interpretation of the S and O in a simple clause with the same verb (Lü 1986, Ma 1987, Y. Li 1990, Tan 1991, Huang 1992, Gu 1992, Wang 1995, Ren 2001).

In (61) M is *zá* ‘pound’. The sentence entails that there was a pounding. One way to interpret S and O relative to that pounding is as naming the pounder and the pounded, respectively. This interpretation matches (62), a simple clause whose predicate is just *zá* ‘pound’ alone; here again, S names the pounder and O names the pounded.

- (61) tā zá píng -le nà kuài ròu  
 3s pound level -PFV that CLS meat  
 ‘He made that meat flat by pounding it.’  
 (62) tā zá -le nà kuài ròu  
 3s pound -PFV that CLS meat  
 ‘He made that meat flat by pounding it.’

I will say that S and O in (61) are therefore *selected*. S is selected in a causal VV when we take the referent of S to have thematic relation  $\Theta$  to the event of the means verb V, and  $\Theta$  is the very relation assigned to S in a clause whose predicate is simple, comprising nothing but V. Likewise for O. Thus when S and O are selected, as in (61), a transitive verb in M will seem to find itself in the same thematic context, the same pairing of grammatical and thematic relations, as it does when on its own, (62).

Interestingly S and O may be *unselected* in Mandarin even when the verb in M is transitive. In (63) M is *qiē* ‘to cut’. S is once again selected, for just as in (64) it names the cutter. But now O is *unselected*. Its referent is the knife. And whatever relation knife has to the cutting (it was used to cut and was made dull by this) this cannot serve to interpret O in (64). There O must name what is cut (Ma 1987:428). The same point can be made with (65) and (66) or countless other examples.<sup>16</sup>

- (63) tā hái qiē dùn -le nǐde càidāo  
 3s also cut dull -LE your food knife  
 ‘Wei also made your cleaver dull from cutting.’ (adapted from Ma 1987:428)

<sup>16</sup>Lin (2001) discusses dialects of Mandarin, said to be mainly from Taiwan, where many verbs *do* allow (e.g.) an instrumental interpretation for the direct object in a simple clause, even when the patient interpretation is normal. (See also Huang, Li and Li 2009.) He discusses examples like (1).

- (1) tā xiě -le máobǐ  
 3s write -PFV brush  
 ‘S/he wrote with a brush.’ (acceptable in some dialects of Mandarin)

Yet Lin writes (2001:201) that “those who speak [mainland] Chinese Mandarin [...] don’t accept the instrument object” in the simple clause context (see also Lin 2001:305); a judgment with which my consultants agree, along with Ma (1987:428). Cases like (1) are at best sporadic outside of the dialects Li focusses on, with the general case still represented by (63) versus (64): accepting (63) or (65) does not entail accepting (64) or (66). And this is enough to make the important point. A causal VV whose object names (e.g.) the instrument of the M event may nevertheless have in M a transitive verb whose object in simple clauses is always understood as the patient, and never as the instrument. The pattern of interpretation relative to M need not match that of any simple clause with the same verb.

- (64) tā qiē -le nǐde càidāo  
 Wei cut -PFV your food knife  
 ‘S/he cut your knife.’  
 \*‘There was a cutting by him/her with your knife as its instrument.’  
 \*‘There was a cutting by him/her that affected your knife.’
- (65) Lǎo Wèi taí zhǒng -le jiānbǎng  
 Old Wei carry swollen -PFV shoulder  
 ‘Wei made his shoulders swollen from carrying.’
- (66) \*Lǎo Wèi taí -le jiānbǎng  
 Old Wei carry -PFV shoulder  
 ‘Wei carried [something] with his shoulders.’

Such sentences may occur in contexts that make clear, or even salient, what the patient of the means event actually is. But this is not syntactically or even pragmatically necessary: *wǒ qiē dùn -le* ‘I made it dull from cutting’ can be an answer to ‘What’s with the knife?’.

Unselected O’s are found in English resultatives as well, (67). But in English they are possible only under the same conditions that license the verb in M itself to occur in an unergative clause, as *sing* does in (68) (Dowty 1979: 222, Carrier and Randall 1992:187, Levin and Rappaport Hovav 1995:39, Williams 2008a, but note Boas 2003:113 and Williams 2005:102–114). Mandarin does not impose this same condition. O may unselected even under conditions where the verb in M would not occur acceptably in an unergative context (Williams 2005, 2008a). Thus (63) and (65) are fine in spite of (69), which is unacceptable as glossed, and acceptable only if understood as having a *pro* object.<sup>17</sup>

- (67) Ozzy will sing his throat hoarse.
- (68) Ozzy will sing.
- (69) \*tā qiē/taí -le  
 he cut/carry -PFV  
 ‘He cut/carried.’

Both O and S are unselected in (70). M is *xǐ* ‘wash’. The sentence entails that some washing brought on a change in Sister: she got tired. One way to understand the sentence has O naming the washer and S naming the washed. But these interpretations are not available to O and S in a clause whose predicate is exhausted by *xǐ*, (71).

- (70) nà pén yīfu xǐ leì -le jiějie  
 that tub clothes wash tired -PFV elder sister  
 ‘That load of laundry made Sister tired from washing.’ (adapted from Ren 2001:326)
- (71) nà pén yīfu xǐ -le jiějie  
 that tub clothes wash -PFV elder sister  
 ‘That load of laundry washed Sister.’  
 \*‘Sister washed that load of laundry.’

Note that in (70), S and O, while unselected, still name the washer and the washed. These are the *core roles* for *xǐ* ‘wash,’ the thematic relations associated with S and O when the verb exhausts the clausal predicate, as in (71). But S and O are again unselected in (54) and (55) above, where S does not name a core role for M at all. Whatever relation its referent might have to the event of M, this is not a relation which interprets either S or O in a simple clause with the verb from M, (72).

<sup>17</sup>This is not a Mandarin singularity. Igbo is exactly the same: a transitive verb in M never needs to find a patient argument in the object of the resultative clause (Williams 2005, 2008a). Resultatives in Igbo, an SVO language, also involve two inseparable verbs, as in Mandarin.



- (72) a. # zhè jiàn shì kū -le Lǐsì -de yǎnjīng  
 this CLS matter cry -PFV L. -NMOD eye  
 ‘This matter cried Lisi’s eyes.’  
 b. # chī jǐ dùn miàntiáo chī -le tā  
 eat several meal noodle eat -PFV 3s  
 ‘Eating a few meals of noodles ate him.’

S may also be unselected when it controls R (Ma 1987), just like O when it controls R. Example (73) need not be understood as a question about the cutter or the cut.<sup>18</sup> And in (74) S does not name a participant in the event of M: whatever relation there might be between ‘his health’ and the expressed state of fatigue, it is not a relation that can interpret S in (75).

- (73) nǎ bǎ cǎidāo qiē dùn -le?  
 which CLS food knife cut dull -PFV  
 ‘Which knife is dull from cutting?’  
 (74) tā -de shéntǐ lèi kuǎ -le  
 3s -NMOD health tired collapse LE  
 ‘His health collapsed from being tired.’ (Wu et al. 1986:261)  
 (75) # tā -de shéntǐ lèi -le  
 3s -NMOD health tired LE  
 ‘His health is tired.’

It is useful to redescribe these facts from the vantage of the verb. The verb in M need not keep the same thematic company it keeps when on its own. It need not enter the same pattern of thematic relations in the two environments, relative to the same pragmatic and semantic contexts. In general when *qiē* ‘cut’ or *taí* ‘carry’ are on their own, they occur in the company of an S naming the agent and an O naming the patient of their event. But the same is not true when they occupy M, (63,65). Core relations may go uninstantiated, or may be instantiated in unexpected places by an unselected S or O. To have a label for this fact, say that in Mandarin verbs do not *project uniformly* in causal VVs.

Yafei Li (1990, 1995, 1998) adds importantly to these observations. He discusses cases where interpretation relative to M is *not* free, exemplified by (76). It is no longer free when the surface S (here *Youyou*) controls M and there is a second noun phrase after the verbal cluster (here *Taotao*). (Notice, this category includes the VVs with a transitive verb in R, (31).) In cases like this the surface S must taken to name the agent of the M event and the postverbal phrase must be taken to name its theme (or patient). Thus (76) can be used to convey (76a) but not (76b).

- (76) Youyou zhuī leì -le Taotao  
 Y. chase tired -PFV T.  
 a. ‘Youyou got tired from chasing Taotao.’  
 b. \* ‘Youyou got tired from being chased by Taotao.’

So interpretation relative to the M is sometimes fixed, when S controls R and there is a postverbal argument. But otherwise it is free. With remarkable generality, the thematic relation imposed on O (or S) in a simple clause whose verb is V may go unrealized when V is in M, or associated instead with S (or O).

<sup>18</sup>The subject of (73) is interrogative to show that the clause is intransitive. It is not a transitive clause with a null subject and a fronted object (Ma 1987), since in general interrogative phrases cannot be fronted in Mandarin. Unlike English, Mandarin broadly allows predicates of change to occur in unaccusative clauses (with nonmodal meaning), even if they entail the involvement of an agent (Teng 1975, Tan 1991).

## 7 Explaining the interpretations of S and O

### 7.1 S and O relative to M

As Yafei Li has importantly emphasized (1990, 1995, 1999), the facts of §6.2 are surprising if argument structure projects *from the verb*.<sup>19</sup> Generally within the tradition of GB and Minimalism (among several other frameworks) a verb with lexical arguments is required to project them, and to project them in the same way regardless of context. So if we say this for verbs in Mandarin—having the washer-subject and washed-object pattern of (71) project from *xǐ* ‘wash’, for example—a question arises. Why doesn’t a verb project the same argument structure from M as it does when it the sole predicate of a simple clause?

I will discuss two kinds of answer, picking at two different premises of this common perspective. First, argument structure does not project *from the verb* in Mandarin. Second, argument structure does project from the verb, but the principles of projection are different than we thought, exhibiting an unexpected sensitivity to the verb’s context. I will discuss particular instances of these ideas, from Williams (2005, 2008a) and Li (1990, 1995) respectively. But each can be modified in obvious ways to produce variants<sup>20</sup>; and chapter 2 of Huang, Li and Li 2009 discusses roughly the same two approaches. Both share one important premise I take for granted: the morphemes in M and R also occur outside of causal VVs with precisely the same lexical properties.

#### 7.1.1 No arguments

An answer of the first kind is offered in the “No Argument Theory” of Williams (2005, 2008a), which modifies ideas from Huang 1992 and Sybesma 1999 in the context of Carlson 1984, Schein 1993, and Kratzer 1996.

In agreement with Lin 2001, Williams proposes that Mandarin verbs typically lack semantic arguments. What introduces a thematic relation is not the verb but something else in its context (Carlson 1984, Dowty 1989, Schein 1993, Kratzer 1996, Pietroski 2005). So the verbs *qiē* ‘cut’ and *xǐ* ‘wash’, for example, simply denote an event predicate as in (77) and (78).

$$(77) \quad \llbracket \text{qiē ‘cut’} \rrbracket = \lambda e. \textit{Cutting}(e)$$

$$(78) \quad \llbracket \text{xǐ ‘wash’} \rrbracket = \lambda e. \textit{Washing}(e)$$

As a consequence (to be derived in detail just below) the meaning of causal VV states no thematic relations to the events of M ( $e_m$ ) or R ( $e_r$ ). It states thematic relations only to the event of change ( $e_c$ ) expressed by MR, as in (79). Thus (70), which says that the laundry made sister tired from washing, has the interpretation in (80). Here  $\mathbb{K}$  again stands for whatever relates the event of change to those of M and R.

$$(79) \quad \exists e_c \exists e_m \exists e_r. \text{Agent}(e_c, \llbracket S \rrbracket) \ \& \ \text{Patient}(e_c, \llbracket O \rrbracket) \ \& \ \mathbb{K}(e_c, e_m, e_r) \ \& \ \llbracket M \rrbracket(e_m) \ \& \ \llbracket R \rrbracket(e_r)$$

$$(80) \quad \exists e_c \exists e_m \exists e_r. \text{Agent}(e_c, \text{laundry}) \ \& \ \text{Patient}(e_c, \text{sister}) \ \& \ \mathbb{K}(e_c, e_m, e_r) \\ \& \ \textit{Washing}(e_m) \ \& \ \textit{Exhaustion}(e_r)$$

<sup>19</sup>It is worth being explicit about what this means. An *argument structure* is a pattern that pairs grammatical with thematic relations. Example (1) below exhibits an argument structure where S names the agent of carrying and O names its patient. An argument structure *projects from the verb* if the lexical features of the verb alone suffice to license the occurrence of the pattern, relative to only highly general rules of grammar, rules that do not refer to specific syntactic subcategories. We then say that the verb has lexical arguments. Importantly, a verb does not have or project lexical arguments simply in virtue of occurring in clauses which exhibit a certain argument structure.

(1) He carried a rucksack.

<sup>20</sup>For instance, one can transpose Williams’s theory from the syntax to the lexicon; or say that verbs don’t project when combined with another verb; or modify Li’s rules of argument projection. Of course the results may be implausible.

(80) says that the laundry is the agent of a change and big sister is its patient. This change is wrought by means of washing, but it is not itself a washing. So (80) says nothing about who washed what. Any understood relations are the result of plausible inferences. And this is why interpretation relative to M is flexible, according to Williams. It is not that causal VVs are ambiguous, but rather that they have one interpretation that is general, in leaving relations to the means event unspecified.<sup>21</sup>

The interpretation of S and O is treated the same whether they are selected or unselected, and whether or not they fill core roles of the M verb. No thematic relation to the event of M is ever stated. (61) and (63) are interpreted as in (81) and (82).

$$(81) \quad \exists e_c \exists e_m \exists e_r. \text{Agent}(e_c, x) \ \& \ \text{Patient}(e_c, \text{meat}) \ \& \ \mathbb{K}(e_c, e_m, e_r) \\ \& \ \text{Pounding}(e_m) \ \& \ \text{Flatness}(e_r)$$

$$(82) \quad \exists e_c \exists e_m \exists e_r. \text{Agent}(e_c, \text{Wei}) \ \& \ \text{Patient}(e_c, \text{knife}) \ \& \ \mathbb{K}(e_c, e_m, e_r) \\ \& \ \text{Cutting}(e_m) \ \& \ \text{Dullness}(e_r)$$

Under this analysis a causal VV states no thematic relation to the R event either. But with Parsons (1990:119) we can assume that the patient of a change is the holder of its end state; this seems inevitable (cf. Huang 1992, Y. Li 1995). The stated patient relation to the event of change thus has control of R as a semantic (though not formal) consequence, and a stated thematic relation to R would be truth-conditionally redundant. In (87) O names the patient of  $e_c$  and thus controls R as a semantic consequence. According to (80) sister is the patient of a change that ends in exhaustion, and this entails that sister ends up exhausted.

Let's now return to the derivation of the central claim. How does stripping the verb of arguments lead to the nonspecific logical form in (79)?

If the verb lacks arguments, thematic relations are instead introduced by some structure in its context. This may be either a syntactic terminal, something like (83) (Kratzer 1996), or an interpreted grammatical relation, something like (84).

$$(83) \quad \text{a.} \quad \llbracket [v \ \text{AGT}] \rrbracket = \lambda x \lambda e. \text{Agent}(e, x)$$

$$\text{b.} \quad \llbracket [v \ \text{PAT}] \rrbracket = \lambda x \lambda e. \text{Patient}(e, x)$$

$$(84) \quad \text{a.} \quad \llbracket [VP \ \text{DP} \ \bar{V}] \rrbracket = \lambda e. \llbracket \bar{V} \rrbracket(e) \ \& \ \text{Agent}(e, \llbracket \text{DP} \rrbracket)$$

$$\text{b.} \quad \llbracket [\bar{V} \ \text{V} \ \text{DP}] \rrbracket = \lambda e. \llbracket \text{V} \rrbracket(e) \ \& \ \text{Patient}(e, \llbracket \text{DP} \rrbracket)$$

Thematic structures such as these combine with a local event predicate, introducing a relation to its event. The local event predicate may include just a single verb, as in (62), (64) and (71). Then the thematic structure introduces a relation to the event of that verb—the pounding, the cutting, the carrying, the washing—as in (85). (71) means (86), to which  $\text{xí}$  contributes only the *Washing*.

$$(85) \quad \exists e. \text{Agent}(e, \llbracket \text{S} \rrbracket) \ \& \ \text{Patient}(e_c, \llbracket \text{O} \rrbracket) \ \& \ \llbracket \text{V} \rrbracket(e)$$

$$(86) \quad \exists e. \text{Agent}(e, \llbracket \text{S} \rrbracket) \ \& \ \text{Patient}(e_c, \llbracket \text{O} \rrbracket) \ \& \ \text{Washing}(e)$$

But in a causal VV the local event predicate will be MR, as in (87). So the thematic relations imposed on the underlying S and O are to its event of change—the pounding flat, the cutting dull, the carrying swollen, the washing tired. This entails no relation to the M event, since it is not the same as the change.

<sup>21</sup>Tan 1991 and Sybesma 1999 also propose that the underlying O in a causal VV is assigned no thematic relation to M. But they do not say this for S, unlike me. In addition I do not accept their reasons. Tan simply stipulates that a verb in M contributes just one of its lexical arguments. For Sybesma the semantics is a general consequence of his *syntax* for resultatives, a “small clause” syntax in which O does not c-command M. Since he applies this syntax to English as well, following Hoekstra 1988, he assumes that here too O is not restricted relative to M. I believe this extension to be incorrect, and do not endorse the “small clause” syntax for reasons sketched in §8.1.

$$(87) \quad \exists e. \text{Agent}(e, \llbracket S \rrbracket) \ \& \ \text{Patient}(e, \llbracket O \rrbracket) \ \& \ \llbracket \text{MR} \rrbracket(e_c)$$

A thematic relation to the M event could only come from structure within MR. But with Thompson (1973), Huang (1988, 1992), Li (1990, 1995) and many others, Williams assumes that MR contains no argument positions. Thus it denotes as in (88), giving us (89) for the smallest constituent containing *xǐ lei* ‘wash tired’. Plugging (89) into (87), we now derive (80) as promised.

$$(88) \quad \llbracket \text{MR} \rrbracket = \lambda e_c \exists e_m \exists e_r. \mathbb{K}(e_c, e_m, e_r) \ \& \ \llbracket M \rrbracket(e_m) \ \& \ \llbracket R \rrbracket(e_r)$$

$$(89) \quad \llbracket xǐ \ lei \rrbracket = \lambda e_c \exists e_m \exists e_r. \mathbb{K}(e_c, e_m, e_r) \ \& \ \text{Washing}(e_m) \ \& \ \text{Exhaustion}(e_r)$$

Notably, this account depends in no way on the fact that causal VVs express a causal relation between events. It depends only their structure. Interpretation relative to M is open, simply because the M verb combines immediately with something *other than* a structure that introduces a thematic relation. In principle this could happen in a distinct construction, so we expect we might find similar effects elsewhere. Sentences like (90) perhaps satisfy this expectation. Here *kuā* ‘praise’ occurs in a V-*de* construction without the ‘Praisee’ it requires when on its own. See Lin 2001 for extensive discussion of related points.

- (90)    *wǒ kuā    Lǎo Wèi -de    mǎ   pì,    kuā   -dé   lián tā taìtai yě   bùhǎoyìsi   -le*  
          1s   smack Lao Wei -NMOD horse rump, praise -VDE even 3s wife   also embarrassed -LE  
          ‘Flattering Lao Wei, I praised [him] such that even his wife got embarrassed.’

The difference between Mandarin and English is then this: in English verbs typically have arguments. These project in resultatives as they do elsewhere, and consequently the interpretation of S and O matches what it is in simple clauses with the same verb. Thus the semantic relations that Mandarin distributes across several items of the syntax, English encodes in one (the verb).

Not every fact from §6.2 receives a grammatical account under the No Argument Theory, however. If M has no arguments to assign, there can be no constraints on their assignment. So the theory implies that, whenever interpretation relative to M seems to be fixed, this does not follow from the grammar. It reflects conceptual or pragmatic pressures. Here is one suggestion along these lines, from Williams 2005 (p. 139), to explain why interpretation is fixed in sentences like (76).

Both (76a) and (76b) say that Youyou got tired. But when S controls R there is no causer (§6.1). Neither sentence ascribes agency of this change to anyone: Youyou got tired but noone made her tired. This ‘no-causer’ perspective seems natural for (76a), where exhaustion comes from Youyou’s own actions: if she gets tired chasing Taotao, we need not say that she *made* herself tired. But the same ‘no-causer’ perspective seems conceptually less natural for (76b). Here the exhaustion results from the actions of someone else, and the responsible party is even identified explicitly in the sentence: Taotao. If Youyou gets tired because she got chased, it is odd to mention Taotao, intending thereby to convey that Taotao’s chasing is what brought on Youyou’s exhaustion, but then to refrain from saying that Taotao is the agent of that change. The more appropriate statement would seem to be (91). The judgment that sentences like (76b) are unacceptable may then reflect these interpretive pressures, and nothing grammatical.

- (91)    *Taotao zhuī   lei   -le   Youyou*  
          T.        chase tired -PFV Y.  
          ‘Taotao made Youyou tired from [Taotao] chasing [Youyou].’

### 7.1.2 Overrideable rules of projection

An answer of the second kind is given by Yafei Li (1990, 1995, 1998, 1999).

Li assumes that verbs do project arguments. Each verb is associated with a list of thematic relations. For example, *xǐ* ‘wash’ has a list with two relations, call them Agent and Patient. These

are ordered by the “Thematic Hierarchy” or *TH* (Jackendoff 1972, Grimshaw 1990, among others). By default, projection of arguments respects this ordering: higher thematic relations go to higher grammatical relations. Thus when *xǐ* ‘wash’ is on its own in a transitive clause, Agent goes to S and Patient goes to O.

But the default is “overridden” in one case (Li 1995). For Li, the operation that combines two verbs to form a causal VV may add further thematic relations, namely Causer and Causee. The Causer brings about the change that ends with the R event and the Causee undergoes it.<sup>22</sup> The projection of these relations is constrained categorically: without exception, Causer goes to S and Causee goes to O. But in the company of Causer and Causee, the grammar does not also constrain the assignment of relations contributed by M. These can be assigned without regard for the TH, which is “overridden.” As a result, with O controlling R, (92) is ambiguous between (92a) and (92b). When the projection of M’s arguments violates the TH, (92b), Li calls it “anomalous.”

- (92) Taotao zhuī lèi -le Youyou  
 T. chase tired -PFV Y.  
 a. ‘Taotao made Youyou tired from [Taotao] chasing [Youyou].’  
 b. ‘Taotao made Youyou tired from [Youyou] chasing [Taotao].’

When no Causer relation is added, however, the default case returns. Relations to M must again project in accord with the TH and anomalous projection is out. This is what accounts for the fixed interpretation of (76). Here S controls R. This happens only in the absence of a Causer (§6.1). And absent a Causer, says Li, the TH reigns: Agent of M must go to a higher slot than Patient.

This system deals directly with the contrast between s-control (76) and o-control (92), both cases where S and O are understood to instantiate core roles in the event of M. But Li (1995, 1998, 1999) does not directly address cases where the putative arguments of M are simply unrealized, as in (56), (54), (63), (65) or (74). Here the theory needs a codicil, allowing the lexical arguments of verbs not to project in the context of a causal VV (cf. Tan 1991). Nonprojection being a subcase of anomalous projection, it may seem that this allowance is merely a consequence of suspending the TH in the presence of a Causer. But it is not, since an argument may go unprojected even when no Causer is present, as in (73) or (74). The needed codicil is therefore a second and independent stipulation. This compromises the elegance of Li’s theory somewhat, inasmuch as it would be preferable for nonprojection and anomalous projection to have the same explanation.

As for the difference between Mandarin and English, Li (1999) proposes that English does not assign Causer and Causee roles in the grammar (“at LF”), and therefore the TH is not overridden: the verb in M projects its arguments here as it does elsewhere. In Williams 2010 I argued that, without these roles in the grammar of English resultatives, it is impossible to explain the “Direct Object Restriction,” to which we now turn.

## 7.2 S and O relative to R

Causer Complementarity is the observation that a causal VV assigns S the role of Causer if and only if O controls R. One can view this pattern as equivalent to the *direct object restriction* (Williams 2005, 2010; see also Sybesma 1999).

- (93) Direct Object Restriction (DOR)  
 The phrase that controls R in a resultative is always the underlying direct object of the clause. (Williams 1980, Simpson 1983, Levin and Rappaport 1995)

<sup>22</sup>These terms are used in Li 1998 and Huang 1992, though Li 1995 prefers the terms “Cause” and “Affectee.” The names don’t matter much. I take these to be the agent and patient of the change expressed by MR.

We say that a subject is an ‘underlying object’ when (if not only when) its surface privilege depends on the absence of an agent for the event of its verb phrase, as in (94) for example. Add an agent for the same event, and the same interpretation must instead be realized by a surface object.<sup>23</sup>

- (94) a. The twig snapped.  
b. He snapped the twig.

On the same grounds, we can describe the surface S as an underlying object in any s-control VV, like (2a) or (57) or (74); see among others Ma (1987:425–6), Huang (1992:128–9) and Sybesma (1999:38–44). It occupies S on the surface only because no argument is assigned an agent relation to the event of the verb phrase, which is here the event of change (not the event of M). Since the agent of the event of change is the so-called causer, we see that Causer Complementarity is tantamount to the DOR. In an s-control VV, the surface S controls R only because, in the absence of a causer, it is an object ‘underlyingly.’<sup>24</sup> (See §8.2 for more on the syntax of this.)

Furthermore, if Causer and Causee are just different names for Agent and Patient in relation to an event of change, the DOR is merely an instance of the most basic generalization in the theory of argument structure: Agent is assigned to an S and Patient is assigned to an underlying O (Williams 2005, 2010).

A different perspective is common in the literature, following Yafei Li (1990, 1995, 1998, 1999). For Li verbs in M project thematic relations, and when the (grammatically determined) interpretation of a VV does not involve a Causer, they project in accord with the TH. So if M projects Agent and Patient, it assigns these roles to the underlying S and underlying O, respectively. On these grounds, Li identifies the controller of R in (57) as the underlying S, since it is understood as naming the agent of drinking. And if this is correct, then Mandarin VVs do not categorically respect the DOR.

But of course there is room for doubt. The conclusion is warranted only if Li is right that the underlying grammatical relation of S in an s-control VV is indeed entailed by the understood relation between its referent and the event of M; and recall, this is not the case either in o-control VVs ((54), (55), (70)) or in s-control VVs where S is unselected ((73), (74)).

Regardless of this dispute, we must account for those cases that comply with the DOR unambiguously. Li deals directly with these cases in Mandarin, via the assignment of Causer and Causee relations. These go to S and O respectively, and this entails that O controls R, since, sensibly, Li’s grammar requires the Causee to be identified with the argument of R. But this account does not carry over to languages like English. There is a class of constructions in English that are correctly described by the DOR; these are called the “resultatives” by some (Simpson 1983, Levin and Rappaport Hovav 1995, Rothstein 2004, Williams 2010) and the “causative resultatives” by others (Rappaport Hovav and Levin 2001; cf. Wecshler 1997). In this class are unambiguous sentences like (95). But for Li these cannot be explained by saying that these sentences have Causer and Causee in their logical forms (Li 1999); for if they did, the TH would be overridden as it is in Chinese. Accepting Li’s account thus requires finding a different account of the DOR-compliant data for English-like languages. Whether or not this is possible (and in Williams 2010 I argue it is not) it is unattractive to have different explanations for the two languages.

- (95) Rocky’s fists pounded the frozen meat bloody.  
a. ‘The frozen meat got bloody from being pounded by Rocky’s fists’  
b. \*‘Rocky’s fists got bloody from pounding the frozen meat’

<sup>23</sup>This is not to say that whenever a verb form occurs in both transitive and intransitive clauses, the intransitive clause is unaccusative. Intransitives with *march* or *burp*, for example, are plausibly unergative.

<sup>24</sup>Of course one must say whether ‘underlying objects’ in this neutral sense actually raise to subject in syntax. But this is a separate and more general question. The DOR is, or at least entails, a generalization that can be stated even in a nontransformational theory.

Lastly there is the fact that in *ba*- and *bei*-constructions R is always controlled always by the *ba* or *bei* noun phrase. This follows neatly if being the “Affectee” of a VV predicate implies being the patient of the event of MR—an event of change, as I have argued—given that this in turn entails control of R (see §7.1.1), or is at least stipulated to coincide with it (Y.Li 1995). The strongest hypothesis consistent with this explanation is that the “Affectee” relation *is* the Patient relation. Notice, no explanation of this form is available if MR were to denote a predicate of the M event, as in (17a). For then a Patient relation to the MR would *be* a patient relation to the event of M, and this plainly entails no particular relation to R (Williams 2010, contra Rappaport Hovav and Levin 2001 and Rothstein 2004).

## 8 Syntax

### 8.1 Position of O

One main difference among syntactic analyses of causal VVs is the position of O, in cases where O controls R. (96), (97) and (98) abstract over the base structures of three common types of analysis, ignoring word order and any silent material. Here S and O are the phrases that will become the surface subject and object.  $V_M$  and  $V_R$  are the verbs in M and R.

- (96) Outside Object (OO) Syntax: [ S [ O [  $V_M$   $V_R$  ] ] ]  
(Thompson 1973, Huang 1988 and 1992, Y. Li 1990 and 1995)
- (97) Inside Object (IO) Syntax: [ S [  $V_M$  [ O  $V_R$  ] ] ]  
(Sybesma 1999, cf. Hoekstra 1988)
- (98) Outside and Inside Object (OIO) Syntax: [ S [  $O_k$  [  $V_M$  [  $\epsilon_k$   $V_R$  ] ] ] ]  
(Lu 1977, cf. Hale and Keyser 1993)

Excluded from this list are analyses with ternary branching (99) (cf. Carrier and Randall 1992) or analyses with a DP that c-commands M but not R (100). Neither type is common in the literature on Mandarin, so I will not discuss them. But for analyses of the (100) type applied to other languages, see Déchaine 1993 and Nishiyama 1998.<sup>25</sup>

- (99) [ S [  $V_M$   $V_R$  O ] ]
- (100) [ S [ [  $V_M$  O ] ...  $V_R$  ... ] ]

The class of OO analyses includes both those where MR is a single lexical item (Thompson 1973, Y. Li 1990) and those where it has syntactic structure but includes no argument noun phrases (Huang 1992). In either version it deals handily with three basic facts of the VV. First, the verbal suffix *-le* attaches to the right of R, not M. This suffix, it is common to presume, is generated outside the verb phrase. Given (96), the smallest category containing M and R is of category V, just like its parts. Association of *-le* with a *proper part* of this category would therefore be nonlocal, an A-over-A violation in the domain of affix lowering or verb raising. Second, separation of M and R by a DP is impossible. Given (96) this could only be achieved by head movement of M or R out of the verbal category (V or *v*) that contains both; but such movement is plausibly regarded as nonlocal, again an A-over-A violation, hence illicit. Third, no adverb can combine with R. This follows from the assumption that adverbs combine with phrases, but not directly with heads, an assumption that, while problematic theoretically, has good observational justification.

These same facts pose a greater challenge to the IO syntax of (97). Consider first the question of adverbs and R. The IO syntax puts the R verb in a phrase where it finds its own argument. As a rule such a phrase, comprising a head with an argument, will permit an adjunct. So there will need

<sup>25</sup>The syntax in (100), favored by Déchaine 1993 and Nishiyama 1998, would make it very difficult to explain why O, here the sister of M, is sometimes unselected and not interpreted as the patient of its event.

to be an account, not required by the competitor OO syntax, of why this phrase does not permit an adjunct. Second, to explain the association of *-le* under an IO syntax, and also the surface adjacency of the verbs, R will presumably have to move and adjoin to M. But this will in turn require an account of what requires this raising in Mandarin. This account will need to be consistent with the facts of languages such as Thai or Edo, whose resultatives have verbs in both M and R, yet separate them with O. Finally, absent any account of why the R phrase should resist adverbs, the hypothesis that the R verb moves will also have to explain why this movement cannot strand adverbs, when in general head movement out of a modified phrase is possible. This is a tall order, one that I don't believe has been met; though see Déchaine 1993, Sybesma 1999, and Stewart 2001 for important efforts.

The two challenges of adverbs and *-le* beset the OIO analysis of in precisely the same way as they beset the IO analysis. However the OIO analysis has no difficulty with word order, since the internal O that is a sister to R is null by assumption.

For these reasons, the OO syntax seems to have an explanatory edge in Mandarin. For arguments that the OO syntax is right for resultative constructions in all languages, see Williams 2008b and 2010.

Nevertheless, the IO and OIO analyses have a deep motivation: the presumption that R has at least one argument, and that an argument must be saturated by the sister of the predicate. The latter is an assumption that has been pervasive throughout the Chomskyan grammatical tradition; to deny it is to commit to an importantly different theory of grammar.<sup>26</sup> But short of this there remain two routes away from the conclusion that R must combine immediately with a noun phrase. One can deny that R has any arguments, with Williams 2005: then R has no argument to project, immediately or otherwise. Or with Thompson 1973 and Y. Li 1990 one can build VVs in the lexicon: then there is no question of R itself having *any* sister in the syntax, since MR is itself a syntactic primitive.

## 8.2 Position of S

Another point of difference is the treatment of S in cases where S controls R. As discussed in §7.2, some take this surface S to be a subject underlyingly as well (Y. Li 1995) while others take it to be an underlying object (Huang 1988 and 1992, Sybesma 1999).

In part this repeats a broader disagreement about unaccusativity: should we employ raising to subject in unaccusatives, intransitive clauses with nonagentive meaning? But there is more to it, since an s-control VV may have another noun phrase following the two verbs, as in (31), (76) or (101), which repeats (57).

- (101)    Lǎo Wèi hē      zuì      -le jiǔ  
           L.W.     drink drunken -LE liquor  
           'Lao Wei is drunk from drinking liquor.'

For those who take the controller of R to be a subject underlyingly, such as Li, there is nothing structurally interesting about this postverbal argument. It is the direct object in a transitive clause. But for those who take the surface S to be an underlying object, this must be a second object, structurally lower than the first. Clauses like (101) must be treated as a double object unaccusatives.

The use of double object unaccusatives is not unique to this discussion. Chappell 1999 analyzes sentences like (102) as such. More relevantly, Huang (1992:135) proposes a double object analysis of the VP in transitive constructions like (103), known as *ba*-constructions with a retained object. Both *jùzi* 'tangerine' and *pí* 'skin' are generated within the VP, the former in its specifier and the latter in its complement. It is plausible to say the same for *Lǎo Wèi* and *jiǔ* 'liquor' in (101).

<sup>26</sup>For various executions of this Chomskyan theme in the area of resultatives, see for example Hashimoto 1971, Hoekstra 1988, and Kratzer 2005. The alternative type of theory, which allows arguments to be generated a distance from their predicate, allows function composition as a rule of interpretation, and thus has less need of movement (see e.g. Steedman 2001).



- (102) tā sǐ -le mǔqīn  
 3s die -PFV mother  
 ‘He had his mother die on him.’
- (103) Zhāngsān bǎ jùzi bō -le pí  
 Z BA tangerine peel -PFV skin  
 ‘Zhangsan peeled the tangerine of its skin.’ (Huang 1992:135)

### 8.3 Silent predicates

The meaning of a causal VV has at least two parts that do not come from the ordinary meaning of its component verbs: the “causal” relation between M and R, and the “causer” relation borne (sometimes or always) by S when O controls R. For those who build VVs in syntax, either relation might be introduced by some primitive or rule of syntax.

Exactly what introduces the causal relation has not been the focus of much dispute. It might be a semantic rule that interprets the combining of M with R, as it is in the analyses of resultatives offered by Hale and Keyser 1993, Bittner 1999, Rothstein 2001 and 2004, or Kratzer 2005. Alternatively it might be some silent head of verbal category contained within MR.

The choice may interact with hypotheses about what is the *head* of MR. Some linguists assume that an expression which denotes a predication of one of its syntactic parts (as a verb phrase denotes a predication of its object) should be headed by another syntactic part that introduces the predicate (such as the verb). If this were true in every case, then what introduces the causal relation in MR should be a syntactic part of MR and should be its head; thus it could not be a semantic rule. But this position is tenuous and the question of headedness in VVs remains open.

There has been clearer debate about what introduces the causer relation. Huang (1988, 1992) advanced the idea that o- and s-control VVs stand in the relation of causative to inchoative predicates (see also Ma 1987). In response Li (1995:259–64) considers the hypothesis that the former add a silent verb with the meaning of the periphrastic causative *shǐ* ‘make’. This he correctly rejects for wrongly allowing adverbs to take unattested scopes, and wrongly allowing causal VVs to express ‘indirect causation’ (compare Fodor 1970).

Yet it remains possible, contra Li, that what adds the “causer” is not like the verb *shǐ*, syntactically or semantically. It may instead be, for instance, a ‘functional’ structure that introduces an Agent relation, like the *v* head of Kratzer 1996, or like the semantic rules of Carlson 1984 and Pietroski 2005. The causer is then the agent of the change expressed by MR (Williams 2010). Under this hypothesis we have the correct expectations. We expect direct causation (the directness of being the agent of an event, namely the change) and do not expect variable scopes for VP adverbs, since the thematic structure does not introduce an additional event (see also Pietroski 2005:178–99 contra Fodor 1970).

### 8.4 Relation to V-*de* resultative

Sentence (104) is a *de*-resultative: a verb V suffixed with *de* is followed by a full phrase expressing a result of the V event. Compare this to the seemingly synonymous VV in (54) above.

- (104) zhè jiàn shì kū -de Lǐsì -de yǎnjīng hóng -le  
 this CLS matter cry -DE L. -NMOD eye red -PFV  
 ‘This matter made Lisi’s eyes red from crying.’ (Huang 1988)

Huang (1988, 1992) sees *de*-resultatives and causal VVs as instances of the same structure, basically (105). The two constructions differ just in the size of X. In a causal VV X is just a verb, (105a), while in a *de*-resultative it is clause with a null subject, controlled by the nearest noun phrase, (105b). Raising of V over O results in the surface word order in the *de*-resultative, and *dé* itself is just a morphological reflex of the structure, contributing nothing of its own.

- (105) [ S [ O [ V X ] ] ]  
 a. [ this matter [ Lisi's eyes<sub>k</sub> [ cry red ] ] ]  
 b. [ this matter [ Lisi's eyes<sub>k</sub> [ cry [  $\epsilon_k$  red ] ] ] ]

Huang's suggestion seems to have echoes in other languages. There are languages in which two constructions, both with seemingly resultative form and meaning, differ in the syntactic capacity of R. Crowley discusses cases like this in Oceanic languages, Paamese in particular (2002:55,83): one construction puts inflection on the verb in R, while the other does not. Vietnamese is arguably similar (Williams 2008b). Likewise Japanese has one resultative where an infinitival verb phrase (Iwasaki 2002) expressing result precedes the inflected verb expressing means, and a second where two bare verbs are compounded (Matsumoto 1996, Washio 1997). In Williams 2008b I argued that variation in the size of R, between head- and phrase-sized expressions, explains variation in the word order of resultatives across languages, provided one assumes an OO syntax across the board.

Nonetheless, it may be that the *de*-resultative does differ from the causal VV in more than just the size of the result predicate. Sybesma (1999:30–3) argues that there is no *de*-construction with causal (result) meaning, but only a *de*-construction that expresses the more general meaning of “extent.” If we understand this construction as causal, says Sybesma, this reflects only an inference: the situation that makes true the stated “extent” relation, we infer, also involves a causal relation. The extent construction furthermore differs slightly from the causal VV in that its “extent” relation, unlike the relation between M and R, is introduced by a terminal, “Ext<sub>0</sub>,” in the syntax. Sybesma, who assumes an IO syntax for causal VVs (106a), thus offers (106b) for the *de*-construction.

- (106) a. [ S [ V<sub>M</sub> [ O V<sub>R</sub> ] ] ]  
 b. [ S [ V [ Ext<sub>0</sub> [ O XP ] ] ] ]

## 9 Conclusion

The Mandarin VV is a rich topic, and this chapter has only indexed some of its facets. It is also a difficult topic methodologically, since crucial judgments of acceptability in this area are often delicate; it is even harder than usual to decide whether they reflect syntactic, semantic, pragmatic or conceptual factors. These troubles are outweighed, however, by the special importance that the clear data have to the general theory of causatives, complex predicates, and argument structure. Causal VVs in Mandarin are fundamentally like resultatives in other languages, yet they also permit some things that the others forbid. This forces a move towards greater generality on some dimension of universal grammar (that is, linguistic theory). But which? This will have to be settled with further comparative work, not only verbal grammar but also on its acquisition.

## References

- [Bennett(1994)] Bennett, Jonathan. 1994. The “namely” analysis of the “by”-locution. *Linguistics and Philosophy* 17:29–51.  
 [Bhatt(1999)] Bhatt, Rajesh. 1999. Ability modals and their actuality entailments. In *WCCFL 17 Proceedings*, ed. K.N. Shahin, S. Blake, and E.-S. Kim, 17–34. Somerville, MA: Cascadia Press.  
 [Bittner(1999)] Bittner, Maria. 1999. Concealed causatives. *Natural Language Semantics* 7:1–78.  
 [Borer(1994)] Borer, Hagit. 1994. The projection of arguments. *University of Massachusetts Occasional Papers in Linguistics* 17.  
 [Borer(2003)] Borer, Hagit. 2003. Exo-skeletal and endo-skeletal explanation: Syntactic projections and the lexicon. In *The nature of explanation in linguistic theory*, ed. J. Moore and M. Polinsky, chapter 3. CSLI.  
 [Carlson(1984)] Carlson, Greg. 1984. Thematic roles and their role in semantic interpretation. *Linguistics* 22:259–279.

- [Carrier and Randall(1992)] Carrier, Jill, and Janet H. Randall. 1992. The argument structure and syntactic structure of resultatives. *Linguistic Inquiry* 23:173–233.
- [Chang(1998)] Chang, Claire H.-H. 1998. V-V compounds in mandarin Chinese: Argument structure and semantics. In *New approaches to Chinese word formation*, ed. J.L. Packard. Berlin: Mouton de Gruyter.
- [Chao(1968)] Chao, Yuenren. 1968. *A grammar of spoken Chinese*. Berkeley: University of California Press.
- [Chappell(1999)] Chappell, Hilary. 1999. The double unaccusative construction in Sinitic languages. In *External possession*, ed. D. Payne and I. Barshi, 195–228. Philadelphia: John Benjamins.
- [Cheng and Huang(1994)] Cheng, Lisa Lai-shen, and C.-T. James Huang. 1994. One the argument structure of resultative compounds. In *In honor of William S.-Y. Wang: Interdisciplinary studies on language and language change*, ed. M.Y. Chen and O.J.L. Tzeng, 188–221. Taipei: Pyramid Press.
- [Chomsky(1981)] Chomsky, Noam. 1981. *Lectures on Government and Binding*. Dordrecht: Foris.
- [Collins(2002)] Collins, Chris. 2002. Multiple verb movement in  $\neq$ Hoan. *Linguistic Inquiry* 33:1–29.
- [Crowley(2002)] Crowley, Terry. 2002. *Serial verbs in Oceanic: A descriptive typology*. Oxford: Oxford University Press.
- [Davis et al.(2010)] Davis, Louie, Matthewson, Paul, Silva, and Peterson] Davis, Henry, Meagan Louie, Lisa Matthewson, Ileana Paul, Amélia Reis Silva, and Tyler Peterson. 2010. Perfective aspect and actuality entailments: a cross-linguistic approach. *The Proceedings of SULA 5: The Semantics of Under-Represented Languages in the Americas*.
- [Déchaine(1993)] Déchaine, Rose-Marie. 1993. Predicates across categories. Doctoral Dissertation, University of Massachusetts at Amherst.
- [Dowty(1979)] Dowty, David. 1979. *Word meaning and Montague Grammar*. Dordrecht: Reidel.
- [Dowty(1989)] Dowty, David. 1989. On the semantic content of the notion of ‘thematic role’. In *Properties, types and meanings*, ed. G. Chierchia et al., volume 2: Semantic issues, 69–130. Dordrecht: Kluwer.
- [Enfield(2003)] Enfield, Nigel. 2003. *Linguistic epidemiology: Semantics and grammar of language contact in mainland southeast Asia*. New York: Routledge Curzon.
- [Fodor(1970)] Fodor, J.A. 1970. Three reasons for not deriving “kill” from “cause to die.”. *Linguistic Inquiry* 1:429–48.
- [Goldberg(1995)] Goldberg, Adele. 1995. *Constructions*. Chicago: University of Chicago Press.
- [Grimshaw(1990)] Grimshaw, Jane. 1990. *Argument structure*. Cambridge, MA: The MIT Press.
- [Gu(1992)] Gu, Yang. 1992. The syntax of resultative and causative compounds in Chinese. Doctoral Dissertation, Cornell University.
- [Hacquard(2006)] Hacquard, Valentine. 2006. Aspects of modality. Doctoral Dissertation, Massachusetts Institute of Technology.
- [Hale and Keyser(1993)] Hale, Kenneth, and Samuel J. Keyser. 1993. On argument structure and the lexical expression of syntactic relations. In *The view from building 20*. Cambridge, MA: The MIT Press.
- [Hashimoto(1971)] Hashimoto, Anne Yue. 1971. Mandarin syntactic structures. *Unicorn* 8:1–146.
- [Heim and Kratzer(1998)] Heim, Irene, and Angelika Kratzer. 1998. *Semantics in generative grammar*. Cambridge, MA: The MIT Press.
- [Hoekstra(1988)] Hoekstra, Teun. 1988. Small clause results. *Lingua* 74:101–39.
- [Huang(1988)] Huang, C.-T. James. 1988. *Wo pao de kuai* and Chinese phrase structure. *Language* 64:274–311.
- [Huang(1992)] Huang, C.-T. James. 1992. Complex predicates in Control. In *Control and grammar*, ed. R.K. Larson, S. Iatridou, U. Lahiri, and J. Higginbotham, 109–147. Dordrecht: Kluwer.
- [Huang(1997)] Huang, C.-T. James. 1997. On lexical structure and syntactic projection. *Journal of Chinese Languages and Linguistics* 3:45–89.
- [Huang et al.(2009)] Huang, Li, and Li] Huang, C.-T. James, Audrey Li, and Yafei Li. 2009. *The syntax of Chinese*. Cambridge: Cambridge University Press.
- [Hyslop(2001)] Hyslop, Catriona. 2001. *The Lolovoli dialect of the North-East Ambae language, Vanuatu*. Canberra: Pacific Linguistics.
- [Iwasaki(2002)] Iwasaki, Shoichi. 2002. *Japanese*. Philadelphia: John Benjamins.
- [Jackendoff(1972)] Jackendoff, Ray. 1972. *Semantic interpretation in generative grammar*. Cambridge, MA: The MIT Press.
- [Kratzer(1996)] Kratzer, Angelika. 1996. Severing the external argument from its verb. In *Phrase structure and the lexicon*, ed. J. Rooryck and L. Zaring, 109–37. Dordrecht: Kluwer.

- [Kratzer(2005)] Kratzer, Angelika. 2005. Building resultatives. In *Events in syntax, semantics, and discourse*, ed. C. Maienborn and A. Wöllstein-Leisten, 177–212. Tübingen: Niemayer.
- [Lamarre(2001)] Lamarre, Christine. 2001. Verb complement constructions in Chinese dialects: Types and markers. In *Sinitic grammar*, ed. H. Chappell, 85–120. Oxford: Oxford University Press.
- [Larson(1991)] Larson, Richard. 1991. Some issues in verb serialization. In *Serial verbs*, ed. C. Lefebvre, 185–210. Philadelphia: Benjamins.
- [Levin and Rappaport-Hovav(1995)] Levin, Beth, and Malka Rappaport-Hovav. 1995. *Unaccusativity*. Cambridge, MA: The MIT Press.
- [Li and Thompson(1981)] Li, Charles N., and Sandra A. Thompson. 1981. *Mandarin Chinese: A functional reference grammar*. Los Angeles: University of California Press.
- [Li(1963)] Li, Linding. 1963. Sentences with a complement including the morpheme ‘de’. [Dai ‘de’ zi -de buyu ju]. *Zhongguo Yuwen* 1963:396–410.
- [Li(1980)] Li, Linding. 1980. Sentence types containing the verb-complement construction [Dongbu-ge jushi]. *Zhongguo Yuwen* 1980:93–103.
- [Li(1990)] Li, Yafei. 1990. On V-V compounds in Chinese. *Natural Language and Linguistic Theory* 8:177–207.
- [Li(1995)] Li, Yafei. 1995. The thematic hierarchy and causativity. *Natural Language and Linguistic Theory* 13:255–82.
- [Li(1998)] Li, Yafei. 1998. Chinese resultative constructions and the UTAH. In *New approaches to Chinese word formation*, ed. J.L. Packard, 285–310. Berlin: Mouton de Gruyter.
- [Li(1999)] Li, Yafei. 1999. Cross-componential causativity. *Natural Language and Linguistic Theory* 17:445–87.
- [Light(1977)] Light, Timothy. 1977. Some potential for the resultative: The need for analytical redundancy. *Journal of the Chinese Language Teachers Association* 12:27–41.
- [Lin(2001)] Lin, Tzong-hong. 2001. Light verb syntax and the theory of phrase structure. Doctoral Dissertation, University of California at Irvine.
- [Liu(1980)] Liu, Yuehua. 1980. A study on the use of potential complements [Keneng buyu yongfa-de yanjiu]. *Zhongguo Yuwen* 1980:246–256.
- [Lü(1986)] Lü, Shuxiang. 1986. The flexibility of Chinese sentence grammar [Han-yu jufa -de linghuo-xing]. *Zhongguo Yuwen* 1986:1–9.
- [Ma(1987)] Ma, Xiwen. 1987. Some sentence patterns relevant to verbs in the verb-result construction [Yu dongjie-shi dongci youguan-de mou xie jushi]. *Zhongguo Yuwen* 1987:424–441.
- [Marantz(1997)] Marantz, Alec. 1997. No escape from syntax: Don’t try morphological analysis in the privacy of your own lexicon. *UPenn Working Papers in Linguistics* 4:201–226.
- [Matsumoto(1995)] Matsumoto, Yo. 1995. *Complex predicates in Japanese*. Stanford, CA: CSLI.
- [Mei(1991)] Mei, Culin. 1991. Viewing the development of the verb-complement construction from the perspective of “dong-sha” and “dong-si” in the Han Dynasty [Cong handai-de “dong, sha”, “dong, si” lai kan dongbu jie-gou-de fazhan]. In *Yuyanxue luncong*, volume 16, 112–136. Shanghai: Xinzhiishi Chubanshe.
- [Nishiyama(1998)] Nishiyama, Kunio. 1998. V-V compounds as serialization. *Journal of East Asian Linguistics* 7:175–217.
- [Pietroski(2000)] Pietroski, Paul. 2000. *Causing actions*. Oxford: Oxford University Press.
- [Pietroski(2005)] Pietroski, Paul. 2005. *Events and semantic architecture*. Oxford: Oxford University Press.
- [Piñon(2003)] Piñon, Christopher. 2003. Being able to. In *WCCFL 22 Proceedings*, ed. G. Garding and M. Tsujimura, 384–397. Somerville, MA: Cascadia Press.
- [Rappaport-Hovav and Levin(2001)] Rappaport-Hovav, Malka, and Beth Levin. 2001. An event structure account of English Resultatives. *Language* 77:766–796.
- [Ren(2001)] Ren, Ying. 2001. A structural analysis of verbs in the verb-result construction where the subject and object can change positions [Zhu-bin ke huan wei dongjieshi shuyu jie-gou fenxi]. *Zhongguo Yuwen* 2001:320–8.
- [Rothstein(2001)] Rothstein, Susan. 2001. *Predicates and their subjects*. Dordrecht: Kluwer.
- [Rothstein(2004)] Rothstein, Susan. 2004. *Structuring events*. Oxford: Blackwell Publishing.
- [Schein(1993)] Schein, Barry. 1993. *Plurals and events*. Cambridge, MA: The MIT Press.
- [Shi(1994)] Shi, Dingxu. 1994. The structure and properties of potential resultative compounds. In *Proceedings of the sixth North American Conference on Chinese Linguistics*, ed. J. Camacho and L. Choueiri, 159–169. Los Angeles: University of Southern California GSIL.

- [Shi(2002)] Shi, Yuzhi. 2002. *The establishment of Modern Chinese grammar: The formation of the resultative verb construction and its effects*. Philadelphia: John Benjamins.
- [Simpson(1983)] Simpson, Jane. 1983. Resultatives. In *Papers in Lexical-Functional Grammar*, ed. L. Levin, M. Rapoport, and A. Zaenen. Indiana University Linguistics Club.
- [Steedman(2001)] Steedman, Mark. 2001. *The syntactic process*. Cambridge, MA: The MIT Press.
- [Stewart(2001)] Stewart, Osamuyimen Thompson. 2001. *The serial verb construction parameter*. New York: Garland Publishing.
- [Sybesma(1999)] Sybesma, Rint. 1999. *The Mandarin VP*. Dordrecht: Kluwer.
- [Tan(1991)] Tan, Fu. 1991. Notion of subject in Chinese. Doctoral Dissertation, Stanford University.
- [Teng(1975)] Teng, Shou-hsin. 1975. *A semantic study of transitivity relations in Chinese*. Berkeley: University of California Press.
- [Thompson(1973)] Thompson, Sandra. 1973. Resultative verb compounds in Mandarin Chinese: a case for lexical rules. *Language* 42:361–379.
- [Thomson(1977)] Thomson, Judith. 1977. *Acts and other events*. Ithaca, NY: Cornell University Press.
- [Wang(1995)] Wang, Hongqi. 1995. Studies on the valence of resultative complement constructions [Dongjieshi shubu jiegou peijia yanjiu]. In *Studies on valent grammar in Modern Chinese [Xiandai hanyu peijia uufa yanjiu]*, 144–167. Beijing: Beijing Daxue Chubanshe.
- [Wang(1958)] Wang, Li. 1958. *Hanyu shikao*. Beijing: Science Press.
- [Washio(1997)] Washio, Ryuichi. 1997. Resultatives, compositionality and language variation. *Journal of East Asian Linguistics* 6:1–49.
- [Wechsler(1997)] Wechsler, Stephen. 1997. Resultative predicates and control. In *Texas Linguistic Forum* 38, 307–321.
- [Wechsler(2005)] Wechsler, Stephen. 2005. Resultatives under the ‘event-argument homomorphism’ model of telicity. In *The syntax of aspect*, ed. N. Erteschik-Shir and T. Rapoport, 255–273. Oxford: Oxford University Press.
- [Williams(2005)] Williams, Alexander. 2005. Complex causatives and verbal valence. Doctoral Dissertation, University of Pennsylvania.
- [Williams(2008a)] Williams, Alexander. 2008a. Patients in Igbo and Mandarin. In *Event structures in linguistic form and interpretation*, ed. J. Dölling, T. Heyde-Zybatow, and M. Schäfer, 3–30. Berlin: Mouton de Gruyter.
- [Williams(2008b)] Williams, Alexander. 2008b. Word order in resultatives. In *WCCFL 26 Proceedings*, ed. H. Haynie and C. Chang, 507–15. Somerville, MA: Cascadilla Press.
- [Williams(2009)] Williams, Alexander. 2009. Themes, cumulativity, and resultatives: Comments on Kratzer 2003. *Linguistic Inquiry* 40:686–700.
- [Williams(2010)] Williams, Alexander. 2010. Objects in resultatives. In review.
- [Williams(1980)] Williams, Edwin. 1980. Predication. *Linguistic Inquiry* 11:203–238.
- [Wu et al.(1986)Wu, Mei, and Ren] Wu, Jingrong, Ping Mei, and Xiaoping Ren. 1986. *Concise Chinese-english dictionary*. Beijing: Oxford University Press and The Commercial Press.
- [Wu(2002)] Wu, Teresa Ching-Huei. 2002. On *de/bu* and the syntactic nature of resultative verbal compounding. Paper delivered at GLOW.
- [Yuan(2001)] Yuan, Yulin. 2001. The determination of valence in verb-result constructions: A reductionist analysis [Shujie-shi peijia de kongzhi: Huanyuan fenxi]. *Zhongguo Yuwen* 2001:399–410.
- [Yue(2001)] Yue, Anne. 2001. The verb complement construction in historical perspective with special reference to cantonese. In *Sinitic grammar*, ed. H. Chappell, 232–265. Oxford: Oxford University Press.
- [Zhan(1989)] Zhan, Renfeng. 1989. A semantic study of the “verb + resultative complement” construction [Dongjieshi duanyu-de biao shu wenti]. *Zhongguo Yuwen* 1989:105–11.