

Objects in Resultatives

Alexander Williams

1 Introduction

Resultatives, like English (1) and (2) or Mandarin (3),¹ have been a source of influential ideas about semantic analysis and its relation to basic syntax. Yet it seems to me that a common premise about their semantics, namely that the object enters thematic relations only to the two lexical predicates in the construction, has made it impossible to explain their grammar.

- (1) Al pounded the cutlet flat.
- (2) Ozzy sang his throat hoarse.
- (3) tā tī duàn -le nàtiáo mùbǎn.
3s kick snap -PFV that plank
'S/he made that plank snap from kicking.'

This paper defends an alternative, less often justified explicitly, which I call an *outside role analysis* of resultative meaning. The resultative describes an event that is distinct from those of its two component predicates; its arguments, the subject and object, identify the agent and patient of this event, independently of any other thematic relations they might enter. Only a semantics like this allows a satisfactory explanation of two central facts. First, the direct object restriction: it is the underlying object of the clause whose referent comes to have the property defined by its secondary predicate, as in (1–3). Second, it may be that the object has no thematic relation to the

¹ Interlinear glosses use these abbreviations: 1s/2s/3s 'first/second/third person singular pronoun,' CLS 'noun classifier,' FIN.PRT 'sentence final particle,' NEG.POT 'negative potential infix,' NMOD 'adnominal modifier,' PFV 'perfective,' PROG 'progressive.' I use hyphens only to indicate that a morpheme is intrinsically an affix or a clitic. My scheme of translation is described in section 2.

verb describing the means of change, as in (2). As an additional, third benefit, the outside role analysis facilitates a simple account of cross-linguistic patterns in word order variation.

My argument for the first of these three claims, which is the heart of this paper, will rely importantly on facts from Mandarin. Mandarin illuminates crucial points that English leaves dim; most importantly, that a thematic relation to the result predicate depends in no way on a thematic relation to the means verb, contrary to what is said in several important papers (Rappaport Hovav and Levin 2001, Rothstein 2004, Goldberg and Jackendoff 2004).

I begin in section 2 by introducing the terms of discussion. I then describe the outside role analysis in section 3, alongside the standard *result patient analysis*. Section 4 documents patterns in the thematic interpretation of the subject and object, comparing English with Mandarin. These data are a background for section 5, which argues that only the outside role analysis can explain the direct object restriction. Sections 6 and 7 give two further arguments, from sentences like (2) and from word order. I comment briefly on the semantic derivation in section 8, before concluding.

2 Talking about resultatives

A resultative is a single clause comprising two overt predicates, a *means predicate* M, and a *result predicate* R, neither one introduced by a conjunction or adposition. In (1) M is *pound* and R is *flat*. In (3) M is *tī* ‘kick’ and R is *duàn* ‘snap.’ I will refer to the smallest constituent containing both M and R abbreviatorily as M/R.

Semantically, a resultative entails that some individual changes, entering the result condition defined by R. The overt phrase that identifies this individual *controls* R. In (1) *the cutlet* controls *flat*, since (1) says that the cutlet wound up flat. A resultative also entails that its change was achieved by means of the event of M, or that this event caused that of R (Dowty 1979, among many others). But no overt morpheme signals this relation.

In addition, the subject and object may identify participants in the event of M. In (1) *Al* names

the agent of pounding and *the cutlet* names its patient. As it happens, these same interpretations are associated with the same grammatical relations when *pound* occupies a simple, nonresultative clause like (4). In such cases I will say that the resultative has a *selected* subject or a *selected* object. The object is *unselected* in (2), since it does not have the interpretation of the object in (5).

(4) Al pounded the cutlet.

(5) # Ozzy sang his throat.

I presume a broad understanding of my thematic predicates. Roughly, an agent initiates an event and a patient undergoes it. More specific information (whether the agent is volitional, for example, or whether the patient undergoes a change of state) derives from other sources, such as what sort of thing the agent or patient is, and what sort of event it is related to; for similar views see Van Valin and Wilkins 1996 and Baker 1997. Here I will not distinguish between patients and themes. I will also assume that the holder of a state is its patient, at least in general.

There is a distinction between *transitive* and *intransitive* resultatives. In English the distinction is readily made in terms of surface syntax. Transitive resultatives have a subject and an object, like (1) and (2), while intransitives have only a (surface) subject, as in (6).

(6) The cutlet froze solid.

But the criterion of the distinction, as I intend it, is in control of R. Control is by the surface object in transitives and the surface subject in intransitives. For purposes of semantic comparison across languages, this provides a more useful classification than does the number of argument noun phrases in the clause.

My glosses, which always give an intended interpretation, follow a fixed format. Transitives are glossed as ‘S made O R from M’ing,’ and intransitives as either ‘S got R from M’ing’ or ‘S R’ed from M’ing.’ The use of *from* rather than *by* will rarely be idiomatic in glosses of transitives. But it will avert two unwarranted suggestions. First, that transitives differ from intransitives in the

semantic relation they impose on the means event (when the only clear difference between them is in the interpretation of the subject). Second, that the subject in a transitive must name the agent of the means event (which is not true in in Mandarin, as we'll see).

Finally a note about what is included in M and R. M comprises not just the lexical predicate (e.g. the verb *pound*), but the largest constituent containing that predicate which does not also contain R, or any structure that introduces any part of the meaning associated with the construction. Likewise for R, *mutatis mutandis*.

This usage rules out the proposal made in Simpson 1983, and many times since (recently, Müller 2006), that the verb appears in M with a special lexical entry, one that itself introduces the causative meaning of the construction. The verb *pound* in (1), for example, is supposed to have the meaning 'cause x to become R by pounding.' This can't be right, I think, for at least two reasons. First, the resultative lexical entry of a verb should allow nominalization, absent arbitrary stipulations to the contrary. But in fact the nominalization of an activity verb cannot have implicit resultative meaning. For instance, if *the pounding* could mean 'the event of causing x to become R by pounding,' and given that nominalizations of this sort do not require their notional arguments to be overtly expressed, (7) should have a coherent interpretation. But it doesn't, unlike any of the sentences schematized in (8). Resultative meaning evidently comes from the structural context of the means verb, coincident with the addition of R.

(7) # The slow pounding (of the cutlet) was achieved by striking it very rapidly with a mallet.

(8) The slow transformation / flattening / pounding flat (of the cutlet) was achieved by striking it very rapidly with a mallet.

Second, I know of no language where verbs in M (or more broadly, verbs serving the role of the means verb in a construction meeting the semantic criteria of the resultative) show any morphological sign of the proposed derivation.² For those who add resultative meaning in the lexicon, however, even utter suppletion should be possible.

²In some Oceanic languages, including Paamese (Crowley 1987: 64), some verbs do not have the same morphology

3 Two analyses of resultative meaning

3.1 The outside role analysis

An outside role analysis analysis of resultative meaning combines two claims. First, M/R is not a predicate of the same event as either M or R. It describes a distinct event e_c that stands in some relation K to the means and result events, e_m and e_r , (9), but need not itself satisfy the event description provided by M. Just to have a name for it, I call this the *event of causation*.

$$(9) \quad \llbracket \text{M/R} \rrbracket = \dots \lambda e_c \exists e_m \exists e_r. K(e_c, e_m, e_r) \wedge \llbracket \text{M} \rrbracket(\dots)(e_m) \wedge \llbracket \text{R} \rrbracket(\dots)(e_r) \dots$$

Second, subject and object are assigned agent and patient relations to the event of causation, independently of any further relations they may bear to those of M or R, (10); I will sometimes call these the *outside agent* and *outside patient* relations. The upshot, given normal rules of of argument realization (see §5), is logical forms as in (11).

$$(10) \quad \llbracket [\text{S} [\text{O} [\text{M/R}]]] \rrbracket = \exists e_c. \llbracket \text{M/R} \rrbracket(\dots)(e_c) \wedge \text{Pat}(e_c, \llbracket \text{O} \rrbracket) \wedge \text{Ag}(e_c, \llbracket \text{S} \rrbracket)$$

$$(11) \quad \text{a. } \llbracket \text{Al pound the cutlet flat} \rrbracket = \exists e_c \exists e_m \exists e_r. K(e_c, e_m, e_r) \wedge \llbracket \text{pound} \rrbracket(\dots)(e_m) \\ \wedge \llbracket \text{flat} \rrbracket(\dots)(e_r) \wedge \text{Pat}(e_c, c) \wedge \text{Ag}(e_c, a) \dots$$

$$\text{b. } \llbracket \text{Ozzy sing his throat hoarse} \rrbracket = \exists e_c \exists e_m \exists e_r. K(e_c, e_m, e_r) \wedge \llbracket \text{sing} \rrbracket(\dots)(e_m) \\ \wedge \llbracket \text{hoarse} \rrbracket(\dots)(e_r) \wedge \text{Pat}(e_c, t) \wedge \text{Ag}(e_c, o) \dots$$

$$\text{c. } \llbracket \text{The cutlet freeze solid} \rrbracket = \exists e_c \exists e_m \exists e_r. K(e_c, e_m, e_r) \wedge \llbracket \text{freeze} \rrbracket(\dots)(e_m) \\ \wedge \llbracket \text{solid} \rrbracket(\dots)(e_r) \wedge \text{Pat}(e_c, c) \dots$$

Evidence for the second claim will come later. But the first claim, (9), can be established immediately, with evidence from adverbs. A resultative verb phrase can be modified by a manner when in M as they do in simple clauses. And what these cases show is *not* that the verb has resultative meaning incorporated lexically; almost the opposite. Verbs which take an object-marking suffix when they head a simple clause appear without that suffix when in M. The suffix instead attaches to the entire complex predicate, M/R.

adverb, as in (12). What both sentences here say, roughly, is that the time from the start of the relevant pounding to the achievement of flatness was long. Thus the adverb describes an event that is (or at least includes) a change.

- (12) a. Al slowly pounded the cutlet flat.
 b. Al pounded the cutlet flat slowly.

This event is not identical to those of either M or R. For if there was a slow change wrought by pounding, there needn't have been a slow pounding, (13); and if this slow change ended with the cutlet being flat, that doesn't mean that this state of being flat was slow. A semantics in the mold of (9) is therefore necessary.

- (13) Al slowly pounded the cutlet flat, by pounding it rapidly for hours.

Kratzer (2003, 2005) instead treats M/R as a predicate of the means event, (14). For her *pound flat* is a predicate true of poundings with a certain relation Φ to a state of flatness. But then (12a) or (12b) should entail that Al slowly pounded the cutlet, and neither one does, (13). Still more clearly, (15) does not entail the absurd proposition that Ozzy *sang* by not resting between songs.

- (14) $\llbracket \text{M/R} \rrbracket = \dots \lambda e_m \exists e_r. \Phi(e_m, e_r) \wedge \llbracket \text{M} \rrbracket(\dots)(e_m) \wedge \llbracket \text{R} \rrbracket(\dots)(e_r) \dots$

- (15) Ozzy sang his throat hoarse by not resting between songs.

Indeed it seems impossible to predicate an adverb of the M event at all. Certainly (16) cannot mean that Al made the cutlet flat slowly by pounding it quickly. It escapes contradiction only if taken to mean that the slow event of pounding flat had a quick start, where *quickly* is inceptive. And under this reading, both adverbs describe the event of causation.³

- (16) Al quickly pounded the cutlet flat slowly.

³Similar data support the same observation for Mandarin resultatives. Li 1980 notes that the adverb 'howlingly' is unacceptable in (i), showing that M/R, unlike M itself, is not a predicate of blowing events. Nor is M/R in the intransitive (ii) a predicate of states of being ill, since it, unlike *lèi* 'tired,' cannot be modified by *hěn* 'very.'

An event of causation—an event e_c such that $\exists e_m \exists e_r. K(e_c, e_m, e_r)$ —is one in which some individual y changes, entering a state e_r of a type defined by R , (17). At the very least, this means that e_c ends when e_r starts, and e_r is the earliest event of its type within the time span of e_c with the patient y (cp. Lombard 1985, Pietroski 2000, 2005). Necessarily, an event of Al pounding the cutlet flat ends with the earliest event of the cutlet being flat.

$$(17) \quad K(e_c, e_m, e_r) \Rightarrow \text{Change}(e_c, e_r)$$

In addition e_c is achieved ‘by means of’ an event e_m , (18). The analysis of this relation is famously difficult; see e.g. Thomson 1977, Dowty 1979, Bennett 1994, and Pietroski 2000. Often it sounds right to say that the means of a change is a *direct cause* of its result state. Al punched Bob unconscious, so Al’s punching Bob was a direct cause of Bob’s unconsciousness. But not always. If Al froze the cutlet solid, it’s odd to say that his freezing the cutlet caused its being solid, or even its becoming solid, insofar as the freezing did not entirely precede either of the latter events. More obviously, it’s hard to say when a cause counts as direct.

$$(18) \quad K(e_c, e_m, e_r) \Rightarrow \text{Means}(e_c, e_m)$$

But a theory of the Means concept is not part of the outside role analysis,⁴ which claims only that (what I call) events of causation have a patient, and sometimes an agent as well.

-
- (i) 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).’ (ex. L. Li 1980:100, trans. AW)
- (ii) tā (*hěn) lèi bìng -le.
 3s (*very) tired be.ill -PFV.
 ‘S/he got tired from being (very) ill.’

⁴Pietroski (2005: 185) observes, however, that an outside role analysis of causative predicates does help capture the intuition that these express ‘direct’ causation. If the referents of the subject and object are coparticipants in a single event of change, this already implies in a more intimate relation than if we said only that the means event causes the result event.

The patient is the individual which changes in the event, entering the result state it ends with. If the cutlet is the patient of an event of causation that ends with a state of flatness, then it's the cutlet that winds up flat. So any definition of the basic predicates *Pat* and *K* should have (19) as a theorem. Assuming the partial definition of *K* provided by (17) and (18) this will be presumably be a consequence of the more basic postulate in (20).

(19) If $K(e_c, e_m, e_r)$, then the patient of e_c is the patient of e_r .

(20) If $\text{Change}(e_c, e_r)$, then the patient of e_c is the patient of e_r .

Parsons makes essentially the same claim for his “Themes” of “BECOME” events, which, like my *K* events, are events in which something changes, (21). Indeed the two claims would be identical if Parson’s “BECOME” is just the same as “Change” in (20), an equation that is not entirely implausible.⁵

(21) “The Theme of [BECOME’s] event is the same as the Theme of its Target state:
 $\text{BECOME}(e, s) \rightarrow [\text{Theme}(e, x) \equiv \text{Theme}(s, x)]$.” (Parsons 1990: 119)

Now given (19), the phrase that identifies the patient of the event of causation also controls R, as a matter of semantic definition. And consequently this phrase will control R regardless of whether it is also assigned a thematic relation to R itself. An explicit relation to the R event could only be redundant. If we say that the cutlet undergoes an event of change that ends in flatness, it is not necessary to also say that the flatness is flatness of the cutlet.

Whether a resultative construction even states a thematic relation to R explicitly in its logical form is therefore something that must be decided on *nonsemantic* grounds—e.g. by whether we

⁵A reviewer notes that there are derived lexical causatives where the direct object does not identify the patient of the ‘caused’ event; for example, causatives of transitives in Javanese or Bantu (Dixon 2000: 52–3). Given (19), this suggests that these causatives, probably unlike lexical causatives in English (see Pietroski 2005: 182–9), cannot have an outside patient semantics. Perhaps they have a logical form more like (23) or (24) below. Testing this prediction will require careful study.

have syntactic reasons to say that R contains an argument noun phrase, or distributional reasons to say that its head denotes a function over a patient. In order to leave such questions open, I will not presumptively state any relations to the R event in my logical forms, from now on.

An event of causation may also have an agent, a thing responsible for its happening. One might suggest that this entails being the agent of the means event. Certainly some theories of action have sought to reduce agency over events that extend beyond their agent (like Ruby's killing Oswald) to immediate agency over basic acts (like Ruby's moving his trigger finger, or trying to do so) plus the causal effects of these events. Even if this were right, however, it would not fix relations to the event described by M in a resultative, since this is seldom a basic act, if ever. A glacier can scrub a valley smooth better than I can, and without performing any basic acts. Our intuitions, moreover, clearly do not require that the agent of a change be the agent of every important causal factor in its achievement. Yes, Al flattened the cutlet by means of a pounding of which he was the agent. But a bone might dull his knife, not by cutting it, but by being cut with it. And if Al dies from a viral illness, the virus is responsible for his dying from illness, without being a participant in the state of illness at all. The null hypothesis should be that resultatives describe a type of change that accords with these intuitions, one with a *sui generis* agent, an agent of the change itself. And as we'll see, Mandarin supplies data that confirm this.

In sum, the outside role analysis gives theoretical definition to a familiar idea: the meaning of a resultative involves a causer and causee, these being the agent and patient of an event of change. Informal paraphrases expressing this idea are common. But it is much less often reflected in the actual semantic value assigned to the construction. Here I mean to redress this equivocation and, more importantly, to argue explicitly for the outside role analysis and against its alternatives.

Two exponents of the outside role analysis deserve special mention here. Yafei Li 1995 proposes that, in some (but not all) of the transitive resultatives of Mandarin, subject and object are assigned "Causer" and "Affectee" relations, besides any relations they may have to M. But Li does not extend this to English, and assumes that no outside thematic relation is ever assigned in intran-

sitives. The outside role analysis finds wider expression in Goldberg and Jackendoff 2004, which develops analogous aspects of Jackendoff 1990 and Goldberg 1995. There we read (pg. 548) that resultatives describe an event, dubbed the “constructional subevent,” which “consists in [the referent of the phrase that controls R] coming to have the property expressed by [R].” The constructional subevent moreover “has three arguments: a causer (or agent) mapped into the subject position, a patient mapped into object position, and a predicate,” besides also having a “MEANS” relation to the means event. This would suggest a logical form something like (22), which is equivalent to my (10), if K is defined as the conjunction of MEANS and COME.TO.HAVE.

$$(22) \quad \exists e_1 \exists e_2 \exists e_3. \text{COME.TO.HAVE}(e_1, e_3) \wedge \text{Ag}(e_1, \llbracket \text{Sbj} \rrbracket) \wedge \text{Pat}(e_1, \llbracket \text{Obj} \rrbracket) \\ \wedge \llbracket \text{R} \rrbracket(e_3) \wedge \text{MEANS}(e_2, e_3) \wedge \llbracket \text{M} \rrbracket(e_2)$$

The arguments I present for the outside role analysis therefore count as support for this aspect of Goldberg and Jackendoff’s position, if indeed this is correctly interpreted by (22),⁶ and for the corresponding aspect of Li’s, if this is extended to cover every resultative uniformly. Our disagreements, in sections 4.3 and 5.3, are orthogonal to these lines of concord.

⁶Unfortunately the logical form Goldberg and Jackendoff actually give (2004: 538), “[u]sing an informal, more or less common-practice semantic notion,” is not (22) but (i).

- (i) Sbj CAUSE (Obj BECOME R)
MEANS: M

For this to mean what their prose description does, it must be that “X CAUSE Φ ” means ‘X is the agent of Φ ,’ and “Y BECOME Z” means ‘Y is the patient of an event of coming to have the property expressed by R.’ That (6) should mean this would not otherwise be obvious, however. Normally “BECOME” names a propositional operator, with “Y BECOME Z” being a readable version of “BECOME(Z(Y)).” And read this way (6) would represent a result patient analysis, identical to (24) in §3.2. It is furthermore unclear what is meant by calling the event of change a “subevent.” Under the outside role analysis, this event is not a part of any others.

3.2 The result patient analysis

I will contrast the outside role analysis with the *result patient analysis*, which has long been standard, particularly in the more formal literature. This assigns the referent of the direct object a thematic relation only to the events of the lexical predicates, M and R. More specifically, the object referent always has a thematic relation to the result event, and sometimes to the means event as well; but the semantics never states a relation to a distinct event of change associated with the construction per se.

Dowty 1972 proposed the analysis illustrated in (23), and this has been adopted in one form or another by many after him (e.g. Parsons 1990, Levin and Rappaport 1995).

$$(23) \quad \llbracket Al \text{ pound the cutlet flat} \rrbracket = \\ \text{Cause}(\llbracket Al \text{ pound the cutlet} \rrbracket, \text{Become}(\llbracket the \text{ cutlet be flat} \rrbracket))$$

This relates *the cutlet* only to the lexical predicates *pound* and *flat*, establishing thematic relations only to the events of pounding and being flat. Change is expressed by *Become* and *Cause*, and these relations don't have the cutlet as a term. So what (23) says changes is the proposition that the cutlet is flat, from false to true; we can infer that the cutlet changed too, but only because it is involved in the changed proposition. In event terms, the event of change has no individual as a thematic participant, though it may conclude with a state that does.

McCawley 1971 and Green 1972 proposed an analysis that I paraphrase in (24). This analysis differs from Dowty's in its treatment of the subject, which is here related not only to M and R, but also to a complex predicate that includes both.

$$(24) \quad \llbracket Al \text{ pound the cutlet flat} \rrbracket = \\ \text{Agent}(\llbracket Al \rrbracket, \text{Cause}(\llbracket Al \text{ pound the cutlet} \rrbracket), \text{Become}(\llbracket the \text{ cutlet be flat} \rrbracket))$$

Translated into my terms, (24) can be seen as saying that the subject names the agent of an event of causation. But it agrees entirely with (23) in its treatment of the object. Both are instances of

the result patient analysis.

This analysis can be seen a natural consequence of the traditional semantic metalanguage: the first order predicate calculus, with a non-Davidsonian domain of individuals, and a Fregean analysis of predicates as unsaturated functions. If R contains a predicate of individuals, and the language is first-order, then R cannot be part of a proposition unless it is predicated of something. And if it has to be predicated of something, it will have to be predicated of the phrase that controls R , or at least one that shares its reference. In the context of Cause and Become, this is sufficient to represent control of R . So simplicity would seem to counsel against overkill. Why also say that the object referent x bears a further relation to the proposition that $R(x)$ became true? There's no obvious semantic need for it.

But with an enriched metalanguage, one including events and thematic relations for example, other analyses are easily stated, as we have seen. We are not even obliged to treat the predicate in R as a function over individuals; maybe *flat* is simply a predicate of events, for instance, as assumed in Parsons 1990. There is consequently a real choice between the result patient and the outside role analysis, and we have to ask which is best. Both capture the basic facts of interpretation. So in large part, this can only be decided by which one relates to the grammatical facts in the most explanatory way. And the advantage here, I will argue, goes decisively to the outside role analysis.⁷

4 Interpreting the subject and object

This section details patterns in the interpretation of the subject and object, comparing English with Mandarin. Relative to M , English exhibits a constraint that is absent in Mandarin: the subject and

⁷There are restrictions on what sorts of event descriptions are possible in M and R , and in what combinations (Green 1972, Boas 2003, Wechsler 2005). I will not discuss these, however, since they can be stated relative to either the result patient or the outside relations analysis. Moreover, the restrictions observed in the literature are not uniform across languages. Possibilities excluded from English are attested elsewhere. For instance, while English seems to exclude from R scalar predicates with no maximum degree, like 'bad,' 'wet' or 'dirty,' Mandarin and Igbo do not.

object be interpreted just as they are in a simple clause with the same verb. Relative to R, however, the two languages show the same pattern: control of R is always by the underlying object, though it takes some subtlety to see this in Mandarin. These observations form the foundation for the argument for the outside role analysis in section 5.

4.1 Relations to the means event

It is characteristic of English that its verbs show what I'll call *uniform projection*. They enter the same patterns of thematic relations in a resultative as they do in a simple clause.

For instance a verb in M will require a patient or theme to the same extent, and under the same conditions, that it requires one in a simple clause (Dowty 1979: 222, Carrier and Randall 1992: 187, Levin and Rappaport Hovav 1995: 39, but cf. Boas 2003: 113 and Williams 2005: 102–114). Take *sing*. In simple clauses it does not require identification of what is sung, (25), and the same is true in resultatives, (26).

(25) Ozzy sang.

(26) Ozzy sang his throat hoarse.

The verb *hammer*, on the other hand, typically occurs only in simple clauses with an object that names the patient of hammering. But sometimes, particularly when the hammering is repetitive, the patient may go unexpressed, (27). Again, the same is true in resultatives. (28) does not tell us what was hammered, but some speakers find it acceptable if the hammering is repetitive.

(27) Al hammered ?(nails).

(28) ? Al hammered his wrist sore.
'Al made his wrist sore from hammering [something].'

Finally, verbs like *cut* and *carry* do not tolerate drop of their patients in simple clauses (29), and the same intolerance is shown in resultatives (30); compare Carrier and Randall (1992: 187).

- (29) a. Al cut *(the frozen meat).
 b. Navin carried *(his favorite chair).
- (30) a. * Al cut the knife dull.
 b. * Navin carried his neck sore.

So an unselected object is possible only when the verb in M is potentially unergative; otherwise the object will identify the patient of the means event.

Likewise a verb that must have the agent of its event identified in simple clause, such as *sing* or *cut*, will show the same predilection in a resultative, transitive (31) or intransitive (32).

- (31) * The tour sang Ozzy's throat hoarse.
 'The tour made Ozzy's throat hoarse from [his] singing.'
- (32) * The box cut open.
 'The box opened from cutting [i.e. from its being cut].'

In addition, a verb in M will find its thematic relata bearing the same grammatical relations in a resultative that they would have in a simple clause. In simple clauses, *sing* and *pound* must find their agent in the subject and their patient in the object, for example. And interpretations like (33) and (34) are correspondingly unavailable, despite describing plausible situations.

- (33) * The Sabbath tunes sang Ozzy hoarse.
 'The Sabbath tunes made Ozzy hoarse from [his] singing [them].'
- (34) * The frozen meat pounded Rocky's fists bloody.
 'The frozen meat made Rocky's fists bloody from [their] pounding [it].'

Similarly, an unaccusative verb that finds its patient in the underlying object of a simple clause cannot find it in the underlying subject of a resultative (35).⁸

⁸Something more general is true. In English, no transitive resultative can have an unaccusative verb in M, even if it finds its patient in the underlying object (thus leaving the underlying subject unselected). Aside from the negative point in note 11 below, I have nothing interesting to say about what explains this.

- (35) * The rain fell the ground soggy.

This pattern has an important consequence. When M houses a transitive or unergative verb, the resultative subject cannot be unselected, and will identify the agent of M's event. So if the subject of a transitive resultative also identifies an agent for the event of causation, as the outside role analysis claims, then this agent will always be identical to that of the means event. And because of this coincidence, evidence for the assumption of an outside agent in English can only be indirect.

When the verbs of a language characteristically show uniform projection, I will say that the language has the *uniform projection property*, or UPP. Thus English has the UPP (see Williams 2005: 102–14). But Mandarin does not. Systematically, verbs in M need not enter the same pattern of relations that is required in simple clauses.⁹

A verb that must cooccur with a patient in simple clauses, for instance, need not do so when in M (L. Li 1980, Lü 1986, Ma 1987, Tan 1991, among others). Take the verb *qiē* 'cut.' In simple clauses, (36–38), it requires an object naming the patient of cutting. Sentences like (37) or (38) can only be understood as including a silent object pronoun, referring to some individual salient in the discourse. They cannot mean simply that there was an event of Lao Wei cutting something, or that there is such an event ongoing.

- (36) Lǎo Wèi qiē -le zhúsǔn.
L.W. cut -PFV bamboo shoot
'Lao Wei cut bamboo shoots.'

- (37) * Lǎo Wèi qiē -le.
L.W. cut -PFV
'There was an event of cutting with Lao Wei its agent.'
Can mean: 'Lao Wei cut *it*.'

- (38) * Lǎo Wèi zài qiē.
L.W. PROG cut

⁹Igbo behaves very much like Mandarin in this regard (Williams 2005, 2008a); the data are also somewhat easier to interpret in Igbo, since Igbo lacks the silent pronouns that are available in Mandarin. Consequently the arguments based on Mandarin in section 5.3 could just as well be based on Igbo.

‘There is an ongoing event of cutting with Lao Wei its agent.’
 Can mean: ‘Lao Wei is cutting *it*.’

When *qiē* ‘cut’ is in M, however, no such requirement holds. (39), for example, can mean just that the subject made the knife dull from cutting something.

- (39) tā hái qiē dùn -le nǐde cài dāo.
 3s also cut dull -LE your food knife
 ‘S/he also made your cleaver dull from cutting.’
 (Adapted from Ma 1987: 428)

Here no noun phrase names what is cut. There is no silent object pronoun referring to the patient. Syntactically the sentence has no space for a second object, (40).

- (40) * tā hái qiē dùn -le (zhúsǔn) nǐde cài dāo (zhúsǔn).
 3s also cut dull -LE (bamboo) your food knife (bamboo)
 ‘S/he also made your cleaver dull from cutting bamboo.’

Pragmatically, moreover, (39) is not constrained to occur only in a context that would license silent pronominal reference to the patient of cutting. The context of (41a), for instance, does not license pronominal reference to anything but the cleaver, yet (41b) is felicitous nonetheless.

- (41) a. cài dāo zěnmē huíshì a?
 cleaver how happened FIN.PRT
 ‘What happened with the cleaver?’
- b. Lǎo Wèi qiē dùn -le *pro*.
 L.W. cut dull -PFV it
 ‘Lao Wei made it dull from cutting.’

Should the speaker of (39) want to identify what was cut, this can be done (among other ways) by adjoining an adverbial verb phrase, as in (42). Yet regardless of whether this addition is required by the conversation, it is not required by the syntax.

- (42) Lǎo Wèi qiē zhúsǔn, qiē dùn -le cài dāo.
 L.W. cut bamboo shoots, cut dull -PFV food knife
 ‘Cutting bamboo shoots, Lao Wei made the cleaver dull from cutting.’

Finally we cannot say that the direct object in (39), *càidāo* ‘cleaver,’ is itself an argument of the means verb. Here it happens to name the instrument of the means event; but in simple clauses *qiē* ‘cut’ cannot take an instrument as its direct object, (43).

- (43) * *tā qiē -le nǐde càidāo.*
 3s cut -LE your food knife
 ‘S/he cut [stuff] with your cleaver.’

This pattern is systematic. With few exceptions, any verb in M can occur without the patient argument required in simple clauses. (44–48) give further examples; note that (48) is an intransitive resultative, with a intransitive stative verb in M, whose patient is nowhere realized in the clause. As usual, the glosses give an intended interpretation, which is not always the only interpretation possible; the abbreviations ‘ex.’ and ‘tr.’ stand for ‘example’ and ‘translation,’ respectively.

- (44) *wǒ cā zāng -le liǎngkuài mǒbù.*
 1s wipe dirty -PFV two towels
 ‘I made two towels dirty from wiping.’ (Wang 1995: 148, tr. AW)
- (45) *tā pāi téng -le shǒu.*
 3s smack hurt -PFV hand
 ‘S/he made her/his hand hurt from smacking [something else].’
 (Adapted from L. Li 1980: 98, tr. AW)
- (46) *tī qiú, tī qiú, yīge yuè tī huài -le sān shuāng xié.*
 kick ball, kick ball, one month kick bad -PFV three pair shoe
 ‘S/he kicked balls, and kicked balls, [so] in one month s/he made three pairs of shoes go bad from kicking.’ (Lü 1986: 5, tr. AW)
- (47) *tā mǎi kōng -le qiánbāo.*
 3s buy empty -PFV wallet
 ‘He bought (so much that) his wallet (got) empty.’ (ex. & tr. Tan 1991: 100)
- (48) *tā -de shēntǐ lèi kuǎ -le.*
 3s -NMOD health tired collapse -PFV
 ‘His health gave in from overwork.’ (ex. & tr. Wu et al. 1986: 261)

The verb in M may also find no phrase indentifying the agent of its event, even when this

omission is impossible in otherwise equivalent simple clauses. This is routine in intransitive resultatives, such as (49).¹⁰

(49) nǎjiān fángjiān -de hēibǎn cā gānjing -le?
 which room -NMOD blackboard wipe clean -PFV
 ‘Which room’s blackboard got clean from wiping?’

(50) * nǎjiān fángjiān -de hēibǎn cā -le?
 which room -NMOD blackboard wipe -PFV
 ‘Which room’s blackboard underwent wiping?’

The data is more subtle in transitives, but consider (51), which is often cited in the literature. Here M is *kū* ‘cry.’ In simple clauses this verb must occur with a subject that identifies the agent of crying, (52), certainly if it is to describe a dynamic event of crying, as it does in (51). But in (51) no argument noun phrase refers to the cryer. We know who cried only by inference, from the fact it was Lisi’s eyes which were reddened by the crying.

(51) zhèjiàn shì kū hóng le Lìsì-de yǎnjīng.
 this matter cry red PFV L-’s eyes
 ‘This matter made Lisi’s eyes red from crying.’ (Huang 1988: 296, tr. AW)

(52) * yǎnlei kū -le.
 tears cry -PFV
 ‘There was a crying of tears.’
 Can mean: ‘*pro* cried tears,’ and perhaps ‘The tears are cried.’

The absence of simple-clause requirements is also evident in the correspondence between thematic and grammatical relations. A verb constrained to find its patient in the object of a simple clause, and its agent in the subject, may seem to find the reverse arrangement when in M. This has been observed in L. Li 1980, Lü 1986, Ma 1987, Tan 1991, and elsewhere; the most widely known discussions are in Y. Li 1990 and 1995. Consider (53). Here the subject is understood as naming

¹⁰I let the subject of the intransitives in (49) and (50) be a *wh*-phrase, in order to eliminate an otherwise possible transitive parse, one which presumes a *pro* subject and a fronted object. Normally a *wh*-phrase in object position cannot be fronted (Tan 1991; Williams 2005, pp. 108–14).

the patient of the means event, and the object, its agent: big sister washed the clothes. Yet in simple clauses *xǐ* ‘wash’ must find its patient in the object and its agent in the subject.

- (53) yīfú xǐ lèi -le jiějiě.
clothes wash tired -PFV elder sister
‘The clothes made big sister tired from [her] washing [them].’
(Ren 2001: 326, tr. AW)

(54) makes the same point, but with a twist. Here M is *xià* ‘fall,’ a verb which is evidently unaccusative, (55). But in (54) it is not the object but the subject that tells us what falls.¹¹

- (54) mì yú xià hēi -le tiāndì.
dense rain fall black -PFV earth
‘The dense rain made the earth dark from falling.’
(L. Li 1980, quoting from Zhou Libo’s *Baofeng Zhouyu*)

- (55) xià -le yú.
fall -PFV rain
‘Rain fell.’ (i.e., ‘It rained.’)

Thus interpretation relative to M is not fixed by the behavior of its verb in simple clauses. Unlike in English, it is possible to have an unselected subject, and unselected objects do not require an unergative verb in M. These two facts are essential. In the next section they will help us see that Mandarin, like English, exhibits the DOR. More importantly, in section 5 they will undermine a last potential redoubt of the result patient semantics.¹²

¹¹Resultatives like (54) are not possible in English, (35). This might be thought to follow from basic constraints on semantic structure; see the discussion of Van Valin’s views in Levin and Rappaport Hovav 1995: 71–72). That they are possible in Mandarin shows that this is wrong. (35) violates no universal principle of semantics. It is simply inconsistent with whatever aspect of English grammar explains the UPP, on which see section 4.3.

¹²In Williams (to appear), I use the same Mandarin facts to argue against the claim in Kratzer 2003 that the thematic relation Theme, unlike Agent, is not a “natural predicate,” because it is not “cumulative.”

4.2 Relations to R

Interpreted as a resultative, (56) cannot mean that Ozzy got hoarse. (57) can only mean that the meat got bloody, and (58), that the chains came free.

(56) * Ozzy sang the Sabbath tunes hoarse.

‘Ozzy got (or made himself) hoarse from singing the Sabbath tunes.’

(57) Rocky’s fists pounded the frozen meat bloody.

(58) Bruce kicked the chains free.

The absent interpretations are in fact plausible: Rocky’s fists got bloody from pounding the meat, and Bruce got free from kicking the chains. But the grammar does not allow them. The phrase that controls R must be the direct object of the clause, not the subject.

According to (59), this is true of any resultative, at the level of underlying grammatical relations (Williams 1980, Simpson 1983, Levin and Rappaport Hovav 1995).

(59) Direct Object Restriction (DOR)

In a resultative, the phrase that controls R is the underlying direct object of the clause.

For some, any complex predicate is called *resultative* if its secondary predicate can be said to describe a result, at least informally. I reserve the term for those which exhibit the DOR; accordingly, only these are at stake in this paper. The cut is not arbitrary. For the DOR seems to carve the space of complex predicates along natural joints. In English and elsewhere, sentences that obey the DOR can generally be distinguished on independent grounds from those that would breach it, even those which permit some similar paraphrases.

First take a look at English. The DOR excludes (60), where one might say that the underlying subject controls *down the hall*: it is not a resultative (compare Goldberg 1995 and Rothstein 2004, contra Wechsler 1997 and Rappaport Hovav and Levin 2001). And just so, (60) differs from any English resultative, such as (61), in allowing an adverb that does *not* modify the secondary

predicate itself to occur immediately before it.¹³ (62) and (63) display an additional difference (Embick 2004: 382).¹⁴

- (60) John danced (jigs) merrily down the hall.
- (61) # Al pounded the cutlet spastically flat.
- (62) John danced jigs last night, straight down the hallway.
- (63) a. * Al pounded the cutlet last night, flatter than a sheet of phyllo.
b. ?* Al beat Rocky last night, to an awful bloody pulp.

The DOR also excludes sentences like (64) from the class of resultatives. And here the classification is supported by a clear contrast in meaning, observed in Rappaport Hovav and Levin 2001, between (64) and (65), an agreed resultative.

- (64) Bruce kicked free.
- (65) Bruce kicked himself free.

(64) describes a motion breaking free that proceeds in lockstep with Bruce kicking. (65) doesn't seem to describe a *motion* of breaking free at all (see note 15). And clearly, it allows that Bruce

¹³Importantly, I do not assume that any complex predicate which forbids adverbs in this position is resultative. Even so, a reviewer questions the soundness of the adverb diagnostic in (61), under the assumption that (i) below is a resultative. But that assumption is challenged by the contrast between (ii) and (63b). Plausibly, the PP in (i) is not part of a resultative, but simply a further predicate of the shaping event, specifying its intrinsic trajectory.

- (i) John shaped the dough carefully into a ball.
- (ii) John shaped the dough last night, into a long and skinny cylinder.

¹⁴A still clearer distinction is made in several Oceanic languages. In Ambae, for example, monoclausal complex predicates of directed motion analogous to English (60), like *dige vano* 'walk go,' have repeated marking of modality and agreement for each of their component heads (Hyslop 2001:297). But complex predicates with uncontroversially resultative meaning, like *tai visa* 'chop split,' take only a single marking of modality and agreement (ibid: 283).

was not kicking when he moved away from his restraints. It's enough that his kicking is what freed him. Given this major difference in meaning, there is no reason to regard the two sentences as instances of the same construction.¹⁵ Specifically, if it's right to assume (as per the outside role analysis) that (65) describes an event of change with its own agent and patient, one that is not a kicking, then there is no reason to assume the same for (64).

Of course it remains possible to have a genuine resultative where the surface subject controls R. The surface subject must only be the object of the clause underlyingly. This is plausible for cases like (66), as argued by Simpson 1983 and Levin and Rappaport Hovav 1995.

(66) The outlet froze solid.

Here the subject names the patient of the means event. Furthermore the means verb is unaccusative: when it occurs in a simple clause, it finds its patient in the underlying object. Since

¹⁵In assigning (64) and (65) very different event structures ("simple" and "noncausative" versus "complex" and "causative," respectively) Rappaport Hovav and Levin 2001 express the same conclusion. Nevertheless, they regard these distinct constructions as two species of the same super-construction, for which they reserve the name "resultative." I see no advantage to this taxonomy, however, since no grammatical principle that Rappaport Hovav and Levin discuss refers to the "resultative" super-construction per se and neutralizes the distinction between the its two putative subtypes.

For want of space, I cannot pursue the analysis of (60) or (64) in this paper. But it should be stressed that both describe directed motions (or paths), unlike superficially similar resultatives. Notice below that (64), but not the resultative (65), will accept PPs further specifying the trajectory of motion; the sentences in (i) were found on the internet.

- (i) a. She kicked free into the water.
- b. A leg kicked free through the side.
- (ii) a. * She kicked herself free into the water.
- b. * A leg kicked itself free through the side.

English has the UPP, an unaccusative verb in M will find its patient in the underlying object of the resultative clause as well. Hence the subject in (66) is an object underlyingly, and the sentence complies with (59).¹⁶

Turning now to Mandarin, however, we notice that the same argument will not apply. Mandarin lacks the UPP. And absent this property, presumed thematic relations to the means event do not predict underlying grammatical relations in the resultative clause. That the surface subject in (67) or (68) refers to the understood patient of the means event, for instance, does not show that it is the object of the clause underlyingly, even if simple clauses with *dòng* ‘chill’ are indeed unaccusative, and even though simple clauses with *qiē* ‘cut’ plainly have its patient in the object.¹⁷

(67) wǒ dòng bìng -le.
1s chill ill -LE
‘I got ill from being cold.’

(68) shéide diànnǎo dǎ suì -le?
whose computer strike smashed -PFV
‘Whose computer got smashed from striking?’

For the same reason, though, the DOR is not falsified by (69) either. This point deserves emphasis, because it has been missed (e.g. by Y. Li 1995 and Rappaport Hovav and Levin 2001).

(69) tā hē zuì -le.
3s drink drunk -LE
‘S/he got drunk from drinking.’

The subject on the surface refers to the presumed agent of drinking. But this says nothing about whether this is the subject underlyingly. It may well be the object in this resultative clause, even

¹⁶ In English there are no intransitive resultatives whose surface subject, hence underlying object, is unselected (contrast Mandarin (48) and (i) in note 18). This is an aspect of the UPP. In English an unselected object requires an unergative verb in M. In simple clauses, such verbs do not occur without an underlying subject identifying the agent of their event. As per the UPP, therefore, they do not occur in intransitive resultatives at all.

¹⁷ See note 10 on the use of an interrogative clause here.

though in simple clauses *hē* ‘drink’ does find its agent in the subject. We know this because in the transitive (70), for example, the presumed agent of drinking is clearly designated by the direct object, right on the surface.

- (70) nà píng jiǔ hē zuì -le wǒ.
 that bottle wine drink drunk -PFV 1s
 ‘That bottle of wine made me drunk from drinking.’

So an analysis of (69) which generates *tā* ‘3s’ as the underlying object of the clause, and therefore complies with the DOR, cannot be excluded.¹⁸

In short, no argument about the DOR in Mandarin, whether for or against, can rely on the UPP, or in any way on the subject referent’s understood relation to the means event.

This understood, we nevertheless find evidence for the DOR in the complementary relation between control of R and the presence of an agent of change. This is observed by Wang (1958) and Huang (1988), and stressed by Li (1990, 1995). When control of R is by the surface object, the subject is interpreted as agent of the event of the verb phrase; that is, as the so-called causer of the change it describes. Indeed this may be its only thematic relation, as in (51) above or (71) below, a situation that is impossible in English.

¹⁸Sentence (69) is an intransitive resultative where M describes an event, drinking, that has an agent. In addition, the subject is taken to name that agent. Contrary to an impression left by Y. Li 1995, however, this second fact is not implied by the first. Unlike English, Mandarin regularly allows intransitives where M describes an event with an agent, like one of striking (68), but where no argument noun phrase refers to that agent. It also allows intransitive resultatives with unselected subjects, like (48) or (i) below, often alongside parallel transitives with unselected objects (cf. note 16). Igbo is the same in both respects (Hale et al. 1995, Williams 2005).

- (i) cùidào qiē dùn -le.
 food knife cut dull -PFV
 ‘The cleaver got dull from cutting.’ (Ma 1987: 424, tr. AW)

- (71) 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*)

But when the surface subject controls R, no noun phrase is understood as a causer, even when the subject itself refers to the presumed agent of the means event. (69) says only that ‘s/he’ got drunk, not that ‘s/he’ is responsible for bringing this change about.

I support these claims just below. First note their relation to the DOR. We say that a subject is an object underlyingly when its surface privilege depends on the absence of an agent for the event of its verb phrase, as in (72). Add an agent, and the same interpretation must instead be realized by a surface object.

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

On the same grounds, we should describe the surface subject as an underlying object in any intransitive resultative, like (67) or (69). It occupies the subject position 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, and crucially not the event of M. Thus it becomes clear that Mandarin resultatives too exhibit the DOR; this is just to say that there is no causer when the subject controls R.

Now, agentivity can be diagnosed with questions like (73). These presuppose that *X* was the agent of some event, and is also animate (Teng 1975). An answer is direct, therefore, to the extent that it reports an event of which *X* is the agent. The most direct answer is a sentence whose event—that is, the event of which its matrix verb phrase is a predicate—is itself one with *X* as its agent, as in (74). An answer is less direct if it only entails that there is such an event, as in (75). And it is at best indirect if the relevant event can only be inferred pragmatically, as with (76).

- (73) *X* zuò -le shénme?
 do -PFV what

‘What did *X* do?’

- (74) a. tā hē -le sān bēi jiǔ.
3s drink -PFV three cup wine
‘S/he drank three glasses of wine.’
- b. tā zǒu -le èrshí gōnglǐ.
3s walk -PFV twenty kilometers
‘He walked twenty kilometers.’
- (75) a. tā zuì -le, yīnwèi tā hē -le sān bēi jiǔ.
3s drunk -PFV, because 3s drink -PFV three cup wine
‘S/he is/got drunk, because s/he drank three glasses of wine.’
- b. tā lèi -le, yīnwèi tā zǒu -le èrshí gōnglǐ.
3s tired -PFV, because 3s walk -PFV twenty kilometers
‘He walked twenty kilometers.’
- (76) a. tā zuì -le.
3s drunk -PFV
‘S/he is drunk.’
- b. tā lèi -le.
3s tired -PFV
‘S/he is tired.’

Transitive resultatives, such as (77), make very direct answers to questions like (73). And importantly, what matters is that the subject is the agent of the event of the full verb phrase, the event of causation. It is not necessary that it also be the agent of its means event. Thus (78) is a direct answer to (73), even though its means event, an event of being hungry, has no agent.

- (77) tā zá píng -le nà kuài ròu.
3s pound flat -PFV that chunk meat
‘S/he made that piece of meat flat from pounding.’

- (78) tā è sǐ -le jǐ qiān ge xúesheng.
 3s be.hungry die -PFV several thousand CLS student
 ‘S/he made several thousand students die from being hungry.’

Intransitive resultatives, on the other hand, do not make direct answers. Intransitive (79) is like transitive (78) in having a means event without an agent. But (79) is a very odd response to (73).

- (79) tā bìng sǐ -le.
 3s be ill die -PFV
 ‘S/he died from being ill.’

More strikingly, the intransitives in (80) contrast with the sentences in (74)—they are judged to be much less direct answers to (73)—even though the subject refers to the presumed agent of the means event. Speakers find them comparable to (75) at best.

- (80) a. tā hē zuì -le.
 3s drink drunk -PFV
 ‘S/he got drunk from drinking.’
- b. tā zǒu lèi -le.
 3s walk tired -LE
 ‘S/he got tired from walking.’

This contrast would make no sense if the event of the verb phrase in (80a,b) were one with an agent, named by the subject. For the same is true of (74a,b). Yes, the resultatives would differ in adding that the drinking made the drinker drunk, or that the walking made the walker weary. But these additions could not make them less direct answers to (73). After all, *Rocky punched himself* tells of an effect on Rocky that *Rocky punched somebody* does not, but it is no less direct in telling us what Rocky did. The contrast does make sense, however, if the event of the verb phrase in the intransitive resultatives is *not* one with an agent named by the subject—for example if it is a change and the subject names its patient. Of course, since this event is explicitly related to other

events, of drinking or walking, whose presumed agent is named by the subject, these resultatives still imply some answer to (73). But these answers, like those in (75) or (76), are not direct.

Thus the event of an intransitive resultative is always nonagentive, while that of a transitive is agentive. And this observation, to repeat, is tantamount to the DOR.

Before moving on I should note that in Mandarin there are intransitive resultatives with a second noun phrase following the complex predicate, like (81).

- (81) tā hē zuì -le jiǔ.
 3s drink drunk -PFV wine
 ‘S/he got drunk from drinking wine.’

But these pose no challenge to the DOR. Like all other intransitive resultatives they are nonagentive: the subject is not understood as a causer (Li 1990, 1995), any more than in (80).¹⁹ These are double-object unaccusatives (cp. Huang 1992, Chappell 1999).

4.3 Accounting for these data

In the coming sections I use the facts above to argue for the outside role analysis. But of course these facts pose their own question (Y. Li 1990, 1995): how is the UPP, or its lack, instantiated in the grammar? This is not the topic of this paper. But it may help to quickly rehearse the answer I have given elsewhere (Williams 2005, 2008a). This answer is presupposed in §8, where I outline a possible semantic derivations for resultatives in English and in Mandarin.

¹⁹Two-argument intransitives do pose a separate challenge, however. Yafei Li (1990, 1995) has emphasized that, in two-argument intransitives, interpretation with respect to the means event is inflexible: we understand the surface subject as naming its agent and the second argument as naming its patient. At the same time, and this Li does not emphasize, interpretation is *not* constrained in this way in one-argument intransitives; in these, the subject can be understood as referring to various participants in the means event (agent, patient, instrument) or to none at all, just like the object in a transitive (Ma 1987: 424). I suggest a pragmatic explanation of this contrast between one- and two-argument intransitives in Williams 2005 (pp. 189–96).

Uniform projection follows if we encode the distribution of the verb in simple clauses by granting it *lexical* arguments (cp. Levin and Rappaport Hovav 1995, ch. 2). Lexical properties follow the verb wherever it goes. So if *cut* denotes as in (82), for example, we expect it will cooccur with two noun phrases constrained to name the agent and patient of cutting, whether it's in a simple or a resultative context.

$$(82) \quad \llbracket \text{cut} \rrbracket = \lambda y \lambda x \lambda e. \text{cut}(e) \wedge \text{Pat}(e, y) \wedge \text{Ag}(e, x)$$

Of course the verb might occur in the context of passive or antipassive operations, which will stifle the realization of its arguments. But there is no independent evidence for such operations in the resultative.

It's also possible to derive uniform projection without giving the verb arguments lexically. Thematic relations could instead be introduced structurally, but only under one condition. The immediate context of the verb in M must be the same as it is in a simple clause: the verb must find agent and patient noun phrases within M itself. Yet it is most often assumed that M contains no noun phrase positions, but only the verb alone (Dowty 1979, Kayne 1985, Hoekstra 1988, Baker 1989, Larson 1991, Hale and Keyser 1993, Kratzer 2005; though cf. Carrier and Randall 1992, Déchaine 1993).²⁰ And a thematic relation introduced outside of M will (ipso facto) not be a relation to the means event. So unless the verb enters M bearing its arguments lexically, there will be no compositional way to constrain the interpretation of the subject and object relative to the means event. For English, where interpretation is fixed in accord with the UPP, this is an unacceptable consequence.

For Mandarin, on the other hand, this seems exactly right. It's very clear that M in Mandarin contains only the verb (Thompson 1973, Y. Li 1990, Huang 1992). The lack of uniform projection is therefore explained if we assume that, characteristically, the verbs of Mandarin have *no* argu-

²⁰This explains, among other things, the fact that the means event cannot be adverbially modified, as noted above. Adverbs apply to verb phrases, not verbs alone.

ments lexically, and denote event sortals simply, as in (83). Any thematic relations come not from the verb, but from the context in which it occurs.²¹

$$(83) \quad \llbracket \text{qiē 'cut'} \rrbracket = \lambda e. \textit{cut}(e)$$

Then M, with just the verb in it, will contribute to the meaning of M/R no thematic relations to the means event. At most, the ellipsis in (84) will be filled by agent and patient relations to the event of causation.

$$(84) \quad \llbracket \text{qiē dùn 'cut dull'} \rrbracket = \lambda e_c \exists e_m \exists e_r. K(e_c, e_m, e_r) \wedge \textit{cut}(e_m) \wedge \textit{dull}(e_r) \dots$$

Thus the semantics itself leaves interpretation with respect to the M event entirely free. Any understood relations to this event must be the result of extragrammatic, and possibly pragmatic assumptions. The claim, in short, is that the observed freedom in Mandarin resultatives is a case, not of ambiguity, but of semantic generality. See Williams 2008a for a fuller exposition.²²

5 Outside roles and the DOR

Mandarin sentences like (51) and (71) give direct evidence for one part of the outside role analysis. They show that ‘agent of causation’ is not merely an informal label for the agent of the means event; and in at least some transitives, the subject identifies an agent for the event of causation.

This is an important observation, obscured by the distributional coincidence of the two relations, agent of causation and agent of the means event, in English. But it takes more to show that every transitive resultative involves an outside agent, both in Mandarin and in English; and still

²¹Lin 2001 arrives at a similar conclusion, via the observation that Mandarin verbs occur in a wide and heterogeneous range of contexts. A reviewer indicates that this idea is pursued in Huang, Li, and Li (forthcoming).

²²Modern Mandarin, unlike some other languages (Nishiyama 1998, Collins 2002), does not allow transitive verbs in R. As one reviewer notes, this cannot be a restriction on the number of the verb’s arguments, if in Mandarin even transitives typically have none. Probably, therefore, the restriction must be implemented purely in terms of the verb’s distributional category features.

more to show that every resultative involves an outside patient. In this section I give what I think is the strongest argument for this conclusion: without the outside role analysis, it is impossible to explain the DOR. I begin in §5.1 by presenting the explanation provided by the outside role analysis. I then contrast the failings of the standard syntactic account of the DOR in §5.2, and finish in §5.3 by showing how Mandarin defeats a more semantic account of the DOR that has been suggested in several recent discussions.

5.1 Explaining the DOR

The resultative predicate M/R describes what I have called an event of causation. Such events always have a patient and sometimes have an agent. By definition, the patient of an event of causation is also the patient of its result event, (19). So if we insist that the former relation be assigned to the underlying direct object of the resultative clause, we capture the DOR. And if this alliance of patient and object is an instance of a more general pattern, we do so in an explanatory way. Of course it is an instance of a very general pattern, which (85) gives in slogan form.

(85) Patients are underlying objects, and agents are underlying subjects.

Given the outside role analysis, the DOR is nothing but the expression of this pattern in verb phrases which happen to contain a resultative complex predicate.

To see this clearly, it will help to state (85) more carefully. Take a clause C in the active voice with P the maximal predicate in its verb phrase. P is either a predicate of events itself (86a), or a function from various thematic relata to a predicate of events (86b). I use ‘ e_P ’ for the event of P.

- (86) a. $\llbracket P \rrbracket = \lambda e_P.P(e_P)$
 b. $\llbracket P \rrbracket = \lambda x \dots \lambda e_P.P(e_P) \wedge \theta(e_P, x) \dots$

Then if the grammar constrains any nonadjunct phrase to identify the agent of e_P , (87), that phrase will be the subject of C. And in that case, if the grammar constrains any nonadjunct phrase to

identify the patient of e_P , (88), it will be the object of C.

$$(87) \quad \llbracket C \rrbracket = \exists e_P \dots P(e_P) \wedge \text{Ag}(e_P, x) \dots$$

$$(88) \quad \llbracket C \rrbracket = \exists e_P \dots P(e_P) \wedge \text{Ag}(e_P, x) \wedge \text{Pat}(e_P, y) \dots$$

But the surface realization of the patient may be different if no nonadjunct phrase is constrained to name the agent of e_P , (89). Then the phrase constrained to identify the patient of e_P may be the subject of C, at least on the surface. And if we accept the unaccusative hypothesis, then this subject reaches its position only by raising, and underlyingly, the patient is always the object.

$$(89) \quad \llbracket C \rrbracket = \exists e_P. P(e_P) \wedge \text{Pat}(e_P, y)$$

This, then, is what I mean by (85).

Now compare (91) and (92) with the simple clause in (90). The maximal predicate in (90) comprises just the verb *pound*, and describes an event of pounding. The sentence identifies both the agent and the patient of this event, the agent with the subject and the patient with the object.

(90) Al pounded the cutlet.

(91) Al pounded the cutlet flat.

(92) Ozzy sang his throat hoarse.

The maximal predicates in (91) and (92) are complex, *pound flat* and *sing hoarse*. But things are otherwise the same. Each predicate describes an event of causation. Both the agent and the patient of this event are identified, and again in the expected way: the subject names the agent, and the object, the patient. Only here the object controls R as a consequence.

Patterns of unacceptability are likewise parallel. Under either the (a) or (b) interpretations of (93)—where ellipses range over contents contributed by M or R—the sentence is impossible for exactly the same reasons as (94). Both assign the patient role to the underlying subject of the clause, in violation of (85).

- (93) * Rocky's fists pounded the frozen meat bloody.
- a. 'Rocky's fists got bloody from pounding ...'
 $\exists e_c \exists e_m \exists e_r. K(e_c, e_m, e_r) \wedge \text{Pat}(e_c, rf) \wedge \dots$
- b. 'The frozen meat made Rocky's fists bloody from pounding ...'
 $\exists e_c \exists e_m \exists e_r. K(e_c, e_m, e_r) \wedge \text{Pat}(e_c, rf) \wedge \text{Ag}(e_c, fm) \wedge \dots$
- (94) * The outlet pounded Al.
 'Al pounded the outlet.'

A third interpretation of (93), below, is excluded in the same way as (95). Abstracting from well-known nuances: when a predicate can occur in a context where two distinct thematic relations to its event are assigned to two different syntactic positions, it cannot also occur in a context where both are assigned to a single position, except perhaps with some mark of reflexivization.²³ This is one aspect of Chomsky's (1981) Theta Criterion on which there is consensus.

- (93) c. 'Rocky's fists made themselves bloody from pounding ...'
 $\exists e_c \exists e_m \exists e_r. \text{Cause}(e_c, e_m, e_r) \wedge \text{Pat}(e_c, rf) \wedge \text{Ag}(e_c, rf) \wedge \dots$
- (95) * Al pounded.
 'Al pounded himself.'

These symmetries are attractive. They reflect the breadth of the principle here used to derive DOR. And if the outside role analysis counts as explanatory, it is mainly for this reason.

Without the outside role analysis, the same symmetries are unavailable. Unless we recognize a distinct event for M/R, along with its own agent and patient, the subject and object will not both have thematic relations to the event of the verb phrase. In this way resultatives will differ profoundly from clauses with simple predicates. And the difference will be still greater when the

²³Intransitives like *Al shaved*, with seemingly reflexive meaning but no marking of it, are a familiar challenge. Yet these violate the rule only if they have exactly the same meaning as the homophonous transitive with a reflexive object (like *Al shaved himself*), and this can be questioned (e.g. Kemmer 1990:60ff). Likewise, the rule would find an exception in *Bruce kicked free* only if the predicate were synonymous in *Bruce kicked himself free*, which it isn't, as noted above.

object is unselected. Then there will be no event at all to which both arguments are assigned thematic relations; the subject will have only a relation to M, and the object, only a relation to R.

This point is often muddled. In English, an underlying subject always names the agent of the means event; and by assumption, an underlying object always names the patient of the result event. So between the subject and the object there is some sort of agent/patient contrast. But it is not the contrast of being the agent and patient of the same event.

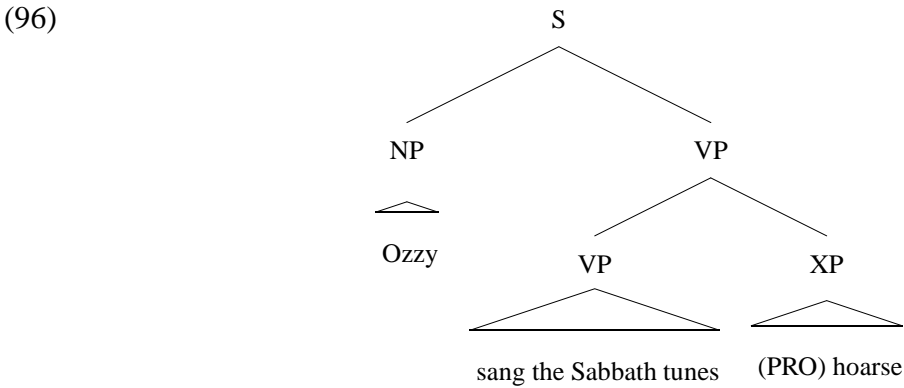
Recognizing this, one can design a theory in which it amounts to the same thing, if only through the lens of the principles that predict grammatical relations. (I read Van Valin 2004 as presenting a theory like this, for example.) But we know in advance that any such effort is pointless, in light of the facts from Mandarin. Here the subject in a transitive resultative need not name the agent of the means event, even when the means event is of a type that has an agent necessarily. It is free to refer to the patient of the means event, or an individual with no thematic relation to that event at all. So there is no truly semantic opposition between the agent of means and the patient of result, aligning with the syntactic opposition between subject and object. And therefore it cannot be such an opposition that explains the DOR.

5.2 Problems with the standard syntactic account

Most often the DOR has been implemented in terms of the object's syntactic relation to R, while still presuming a result patient semantics. This is not hard to do. We just need a syntax where the direct object is the only noun phrase local to R, on some metric of locality relevant to establishing the presumed thematic relation to R, or perhaps to the binding of a silent anaphor still closer to R. This might be the relation of being the lowest overt c-commanding DP within VP, for example.

Observational adequacy thus comes easily. But discontent grows in the face of an important question. Why not have a construction with the criterial semantic properties of a resultative, but with a different syntax, one that allows for subject control? For instance, why not have a structure

like (96) and assign it the meaning ‘Ozzy sang the Sabbath tunes and this made him hoarse’? Absent an answer to this we have explained very little.



The question is sharpened when we compare subject depictives. The string corresponding to (96), while it cannot be read as a resultative, can be read as a depictive, as in (97). And under this interpretation the string plausibly *does* have a parse quite like (96). So if a structure like (96) can be assigned a depictive meaning, why can't a similar structure be assigned a resultative meaning?

- (97) Ozzy sang the Sabbath tunes hoarse.
 ‘Ozzy sang the Sabbath tunes *while* hoarse.’

By itself, a result patient analysis will yield no answers to these questions. For plainly there is no problem at all mapping (96) into a result patient logical form.

Worse, a result patient analysis (at least one which does not recognize an outside agent) will assign resultatives and depictives isomorphic logical forms. Dowty 1979 would give the intended resultative interpretation of our example the analysis in (98). And presumably the depictive meaning has a logical form like (99), where “While” means something like ‘while’ (see §6).

- (98) Cause([[Ozzy sing the Sabbath tunes]], Become[[Ozzy be hoarse]])
 (99) While([[Ozzy sing the Sabbath tunes]], [[Ozzy be hoarse]])

The two analyses differ only in the relation they state, ‘while’ versus ‘cause to become,’ between the same two expressions. And it’s not clear why this difference should matter, in precisely the way

it must, to the syntactic realization of terms *within* those two expressions, $\llbracket \text{Ozzy} \rrbracket$ in particular. To say the least, a theory capable of predicting that $\llbracket \text{Ozzy} \rrbracket$ can be ‘realized’ by a subject given (99), but not (98), would not be ideally restrictive. Ideally the syntactic realization of an expression in a logical form should depend only the content of relations of which it is an immediate constituent.

The outside role analysis, in contrast, distinguishes resultatives sharply from depictives in gross logical form. A resultative expresses not only a relation between the events of M and R, but also outside agent and patient relations. The unavailable interpretation of (96) would therefore have the general structure of (100), and it is no surprise that this cannot be realized by a syntax similar to what realizes (99).

(100) $\mathcal{A}(\llbracket \text{Ozzy} \rrbracket, \mathcal{P}(\llbracket \text{Ozzy} \rrbracket, \mathcal{K}(\llbracket \text{Ozzy sing the Sabbath tunes} \rrbracket, \llbracket \text{Ozzy be hoarse} \rrbracket))))$

Specifically, this analysis predicts on general grounds that control of R goes to the underlying object of the clause, as we have seen. So for a parse like (96) to be compatible with this analysis, it would have to be that either *Ozzy* or PRO is the direct object of the clause. But this cannot be, since *Ozzy* is the subject by assumption, and as a matter of general fact the direct object position excludes any empty category A-bound by the subject, PRO or otherwise.

5.3 Problems with recent semantic responses

Recognizing that the DOR cannot be explained by a syntactic relation to R, several recent works, including Rappaport Hovav and Levin 2001, Rothstein 2004, and Goldberg and Jackendoff 2004, have proposed to derive the DOR, at least in part, from thematic relations to the M event. The postulate in (101) generalizes over variants of a common idea.

(101) In the change described by a resultative, the patient of the result state is also the patient of the means event.

Given (101) the object will control R whenever it is constrained to name the patient of the means event. So for at least these cases, the DOR has a semantic basis—one that makes sense of the contrast with depictives, where (101) does not apply.

The authors who propose variations on (101), I should stress, are not committed to the result patient analysis. Goldberg and Jackendoff are proponents of the outside role analysis, and Rothstein endorses a part of it, in postulating something like an outside patient role. But (101), if true, will neutralize the stated advantage of the outside role analysis over the result patient analysis in explaining the DOR, since the explanation from (101) is indifferent to the content of either theory. Debunking (101) is therefore necessary, if that advantage is to be maintained.

Now anything like (101) would be interesting if true, since it would tell us more than our intuitions do. Intuitively it is easy to divorce a patient relation to (the result of) a change from any particular relation to its means event. The cutlet is flat because Al pounded it, but the knife is dull because Bill cut bamboo with it, and Cate is tired because she washed the clothes. These thoughts are equally easy to think, and the latter two do not incline us to think that Bill cut the knife or that Cate washed herself. So if (101) is correct, the resultative construction expresses a concept of change that is very different from the one provided by common sense, revealing an unexpected subtlety in our stock of basic concepts.

We'll see in this section that (101) appears to find some support in English. But the appearance depends on the UPP. Mandarin lacks the UPP. And with this counfound removed, it becomes clear that nothing like (101) can be true. Thus our intuitions are vindicated—resultatives force us to say nothing new about change or causation—and the outside role analysis remains the only satisfactory account of the DOR.

Rappaport Hovav and Levin 2001, henceforth RHL, introduces the “force recipient condition” in (102), where a “force recipient” is roughly what I would call a patient, and an “argument of the verb” is a participant in the event it describes. They suggest that this condition follows from a native theory of “force dynamics” that finds expression in the semantics of natural languages.

(102) “[T]he result XP must be predicated of the argument of the verb which is the force recipient, if there is one” (Rappaport Hovav and Levin 2001: 33).

Crucially they also suppose that a force recipient is identified by the direct object of the clause that the verb occupies, equally in simple and resultative clauses. Given this, (102) implies that R is predicated of the direct object, so long as the M event “involves the transmission of force” (pg. 786) and thus that there is an “argument of the verb which is the force recipient.”

The test of this is of course in resultatives with unselected objects, like (103) or (104). For Rappaport Hovav and Levin these may comply with (102) in one of two ways.

(103) Rocky ran his shoe soles thin.

(104) Ozzy drank the pub dry.

It may be that the M event does not involve the transmission of force. In that case the force recipient condition, (102), is silent. But as it happens, control of R must nevertheless go to the object, since it would otherwise lack any thematic relation to either predicate. This is plausible for (103), since if Rocky ran laps, one might not want say that his running exerted force on the laps.²⁴

But (104) must have a different treatment, since Ozzy’s drinking surely affects his beer. Here, according to RHL, the object names an individual “inferentially related” to the “deep force recipient” of the means event, which is indeed what Ozzy drank. And specifically in the semantic context of a resultative, they imply, such an individual *counts* as “the force recipient” of the means event for all relevant grammatical purposes. It is a target of predication permitted by (102) and, more importantly for capturing the DOR, it is necessarily realized by the direct object of the clause.

²⁴Pursuant to their “Argument per Subevent Condition,” RHL claim that a resultative must be transitive, and cannot be intransitive, unless there is a special relation between the event types of M and R: progress towards the latter must be an intrinsic consequence of undergoing the former. But this claim is false. Illness is not an intrinsic consequence of being cold, nor dullness of cutting, but Mandarin has *intransitive* resultatives that express these pairings of events, as we’ve seen. This point is made more forcefully still in Igbo, since its intransitives are easier to recognize as such (Hale et al. 1995, Williams 2005: 197–200)

RHL seem to have in mind that the resultative permits this special interpretation because it is a construction dedicated to describing a causal effect of the means event. But then why does it matter what verb is in M? Allegedly the effects of Ozzy’s drinking allow us to count the pub as its force recipient. But if Al cuts bamboo and this makes his knife dull, the knife still won’t count as the force recipient of the cutting; if it could, (105) would be grammatical.

(105) * Al cut his knife dull.

An answer is available in English, where verbs project uniformly. Because of this, an unselected object needs a means verb that is potentially unergative, one that can occur in a simple clause without a direct object. Plausibly enough, this distributional property reflects a semantic distinction that matters here: maybe a verb is potentially unergative just if its event lacks a force recipient, or has one that is no more than weakly affected. And maybe the principles of grammar, the force recipient condition in particular, will forsake the “deep force recipient” of an event for an inferentially related proxy just when the former is weakly affected. Otherwise it would play its role with more authority.

But Mandarin makes clear that no semantic distinction between dedicated transitives and potential unergatives in English can serve as a basis for the DOR. Mandarin exhibits the DOR. Yet it allows unselected objects even when the means verb translates to a dedicated transitive in English.²⁵ Mandarin (39) says that an event of cutting made the knife dull. So (102) requires that the knife be the “force recipient” of the cutting. It will count as such, RHL imply, because a certain “inferential relation” facilitated by the semantic context of the resultative. But then the same inference should be available to speakers of English—we should be able to count the knife as the force recipient of the cutting, in this semantic context—and (105) should be fine. Since it isn’t, (102) must be wrong. One cannot derive control of R from a thematic relation to M, ever.

²⁵As noted above, the same is systematically true in Igbo; see Williams 2008a.

Rothstein (2004) makes essentially the same claim as (102), but with a different justification. She studies resultatives in aspectual terms, as a species of accomplishment.²⁶ Accomplishments are predicates that describe a change which may have duration. The change reaches its end when a certain individual enters a state conventionally defined by the predicate. The predicate *melt*, for instance, describes a change that ends when the referent of its object turns liquid. Rothstein characterizes the change described by an accomplishment as an “incremental process,” and refers to its undergoer as “the argument of the incremental process.” It is commonly observed that the realization of this “argument” is not arbitrary. It is always realized either by a subject or by an object, and never by an oblique—perhaps always by an object underlyingly (see e.g. Tenny 1994). Extending this latter conclusion, Rothstein makes the stronger claim in (106).

(106) “The semantic constraint is that the argument of the incremental process must be the theme or affected argument of the lexical verb” (Rothstein 2004: 115).

In the case of resultatives, the “incremental process” ends with the state defined by R. And crucially, Rothstein takes the “lexical verb” of (106) to be the verb in M (cp. Wechsler 2005). This makes (106) an instance of (101), or a strengthened version of RHL’s force recipient condition, (102). It constrains the patient of the result event to be “the theme or affected argument” of the means event, and without exception.²⁷

Again the test is unselected objects, like in (107). Rothstein claims that (106) is true even here. Her analysis of (107)’s meaning includes the proposition in (108), which says that the baby is the theme of the singing.

(107) John sang the baby asleep. (Rothstein 2004: 128, (12))

²⁶Rothstein’s semantics clearly distinguishes the event of M/R from that of M alone. It also involves something like a patient role for that event. But it is not a full-fledged outside role semantics, since the event of M/R does not have both patient *and* an agent.

²⁷To me it is not clear whether Rothstein wants to distinguish “affected arguments” from “themes” substantially, or whether “affected argument” is just a convenient descriptive term for a “theme” of a certain type of event.

- (108) “[T]he accomplishment e_1 is the sum of a singing activity event e_3 , with John as agent and *the baby as theme*, and a BECOME event e_4 .” (Rothstein 2004: 128, (13a), my emphasis)

The baby will count as such in the context of the resultative, argues Rothstein, because it makes explicit how the singing affects the baby: it puts the baby to sleep. When a verb phrase with *sing* says nothing about the singing’s effects, on the other hand, only one thing counts as its theme, namely what gets sung. So (109) cannot be used to say what (107) is supposed to imply, namely that the baby was the theme of John’s singing.

- (109) # John sang the baby.

But again, why does the resultative have this virtue only when the verb in M is potentially unergative? Rothstein can say that the criteria of themehood are more lax for unergatives than for transitives, and rule out (105) on these grounds. But again this defense collapses when faced with Mandarin. If Mandarin (39) presents the knife as the “theme or affected argument” of the cutting, the same should be possible for English (105), making the sentence acceptable. Thus Rothstein’s proposal fails, along with RHL’s.

This failure, it’s worth noting, is fortunate for the general theory of events and thematic relations. For when John sings the baby to sleep, the singing that makes the baby sleep is presumably a singing of some song, say Brahms’s *Wiegenlied*. Consequently Rothstein must say that a single singing can have several disparate themes, and furthermore that a noun phrase assigned a theme relation to a singing need not identify all of them. (The object in (107) identifies only one, for example.) Correspondingly (110) must be interpreted as saying, not that there was a singing with the *Wiegenlied* as its theme, but only that there was a singing with this song *among* its themes. And if the same goes for all thematic relations, (110) says only that John is one among possibly several singers. But that must be wrong, since then (110) would not entail that John sang the *Wiegenlied* (Schein 1993).

(110) John sang Brahms's *Wiegenlied*.

To avoid problems like this, it is standardly assumed that, when a noun phrase is assigned a thematic relation Θ , it identifies every Θ participant in the relevant event. This is the heart of what Carlson (1984) called “the constraint on thematic uniqueness” (see Dowty 1989, Schein 1993, and Landman 2000 for variations). And given this assumption, Rothstein cannot say that the baby is the theme of the singing that put the baby to sleep, for surely this was a singing of the *Wiegenlied*. Similar comments apply to the proposal in RHL.

Lastly, Goldberg and Jackendoff (2004) propose something in the spirit of (101)—in that it attempts to deduce control of R from relations to M—though with important differences. To explain the ungrammaticality of an example like (111) below, they invoke a principle of “semantic coherence.” This forbids the grammar from assigning certain combinations of thematic relations to a single phrase; so unlike (101) it is a constraint, not on meanings, but on the semantic derivation. Relative specifically to a resultative, posit Goldberg and Jackendoff, semantic coherence says that the grammar cannot require the same phrase to identify both the agent of the M event and the patient of the change to the R condition. So the reason (111) is bad is not that Ozzy, who gets hoarse, fails to be the patient of singing, as per (101). It is rather that the underlying subject position is assigned the agent role relative to the singing; since the same position is also assigned the patient role relative to the event of change, this analysis violates semantic coherence.

(111) *Ozzy sang the Sabbath tunes hoarse.
 ‘Ozzy got (or made himself) hoarse from singing the Sabbath tunes.’

This account faces no threat from unselected objects. But it has two other weaknesses. First, it does not itself exclude a structure where the subject controls R by binding a empty category more local to it, as in (96) above, since then no single noun phrase bears two incoherent relations. Second, the particular choice of “incoherent” relations in the resultative has no semantic motivation. As the authors themselves observe, there is no inconsistency in saying that the same individual is

both the patient of a change and the agent of its means event, witness (112).

(112) Ozzy sang himself hoarse.

So the claim that these two roles in particular cannot be assigned to the same phrase is tailor-made to the case at hand. Its authors could just as well have declared some other pair of roles incoherent, without compromising anything but their account of (111). Consequently their application of semantic coherence in this case is unexplanatory.

In sum, the three papers I have criticized in this subsection propose to derive control of R from the object's thematic relation to M, and perhaps from the semantic category of its verb. But Mandarin says loudly what English only whispers: properties of the means event, including the identity of its participants, are irrelevant to control of R. This leaves the outside role analysis as the only way to explain the DOR—and it will do so without help from anything like (101).

6 Evidence from the syntax of unselected objects

The outside role analysis implies that the initial position of the direct object is the same, whether or not it has a selected relation to M. Either way, it originates in the position assigned a patient relation to the event of causation.

The natural place for this position is outside M/R, as in (113), yielding an *outside object syntax*. It seems natural, that is, to assume that predicates of the means and result events enter the derivation 'prior' to any phrase that identifies a participant in the superordinate event of causation, of which those events are parts.

(113)

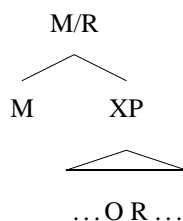
$$\begin{array}{c} \text{VP} \\ \wedge \\ \text{O} \quad \text{M/R} \end{array}$$

This syntax would furthermore be *necessary* if resultative meaning were introduced by a semantic rule that interprets the combination of two predicates, as is often supposed (e.g. Hale and Keyser

1993, Rothstein 2001). For then the event of causation, whose patient is identified by O, would not be semantically available until after M and R had combined.

The result patient analysis is different. It does not imply, given the same background premises, that the object always begins outside M/R. Additional premises might mandate this configuration just in case the object is selected.²⁸ But when the object is unselected, there can't be any trouble with a *result object syntax* like (114). Indeed this is the syntax one would then expect on grounds of simplicity (Kayne 1985, Hoekstra 1988, Kratzer 2005).

(114)



I therefore regard evidence that favors (113) over (114), even for resultatives with unselected objects, as supportive of the outside role analysis, if not conclusive. I present such evidence from cross-linguistic patterns in word order in section 7. In this section I presuppose the outside object syntax in illustrating why the mere possibility of an unselected object, as in (115), itself supports the outside role analysis.

(115) Ozzy sang his throat hoarse.
 'Ozzy made his throat hoarse from singing.'

Rothstein 2004 observes that an unselected object, while possible in the English resultative, it is not possible in its object depictive construction. Example (116) is grammatical, and here the object is selected; relative to the verb *slice*, it has the same interpretation as it would if the

²⁸If the resultative clause states a thematic relation between the referent of the object and the events of both M and R, then the object will, under the usual theories of semantic composition, need to c-command both at some point in the derivation, whether both relations are assigned to the object directly, or one is instead assigned to an unpronounced position that the object binds. This may be at the outset of the derivation. But it is also possible to satisfy the c-command requirement only after movement of the object above its base position; see Lidz and Williams 2002.

secondary predicate were omitted. But (117) is not grammatical with the depictive interpretation given, which assigns the object no thematic relation to the verb.²⁹

(116) Al sliced the meat frozen.
'Al sliced the meat while it was frozen.'

(117) *Ozzy sang his throat hoarse.
'Ozzy sang while his throat was hoarse.'

This contrast is understood most easily given an outside role analysis of resultative meaning. For then the resultative and the depictive differ fundamentally in argument structure, leaving little reason to expect that they will behave alike. Resultatives describe a change, and we have a clear notion of undergoing a change. According to the outside role analysis, this role, undergoer of change, is assigned to the initial position of the direct object, which is consequently licensed independently of any relation to either M or R. Contrast the depictive, which says that two events are concurrent. Surely its meaning involves thematic relations only to the events of its two lexical predicates: when Al slices the meat frozen, the meat gets sliced and the meat is frozen, but it is not also the patient of a third event that is one neither of slicing nor of being frozen.³⁰ A fortiori there is no such event in the interpretation of a depictive, since if Al slices the meat frozen quickly, it follows necessarily that his slicing was itself quick. Consequently, since *his throat* is not interpreted relative to *sing* in (117), its initial position could only be licensed by a thematic relation to the secondary predicate *hoarse*.³¹

Why exactly should this make (115) good and (117) bad? Here is one suggestion. As just

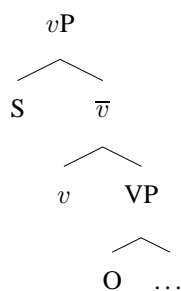
²⁹There is a grammatical parse of (117) in which I am not interested. It treats *his throat hoarse* as an absolute sentential adjunct, and is distinguished by a clear intonational break after *sang*: *Ozzy sang, his throat hoarse*. The hypothetical depictive parse that is my focus here would not induce comma intonation—or so I assume, given that there is no intonational break within the verb phrase of the grammatical (116), neither after *sliced* nor before *frozen*.

³⁰In any case, if there even is such a thing as an event of two events being concurrent, I don't think we have a clear concept of undergoing one, as we have a clear concept of undergoing a change.

³¹A similar argument can be applied to (64), *Bruce kicked free*, which does not have (and does not permit) an unselected reflexive object. As we saw, (64) describes a motion of breaking free while kicking. It does not have the

observed, the upshot of the resultative semantics is an outside object syntax like (113), whether M/R is *pound flat* or *sing hoarse*. Following now common assumptions (Chomsky 1995), I assume that objective Case is associated with a *v* sister to VP, whose specifier is the initial position of the subject, (118). This head licenses Case for a noun phrase that originates in the specifier of its complement. And given (113), the ellipsis in (118) accommodates any resultative predicate just as well as as a simple verb. Consequently the object in a resultative is licensed in precisely the same way as the object in a simple clause, even when it is unselected. And notice, this depends in no way on the syntactic status of R; it makes no difference to the licensing of O whether we decide that R is itself a complement or an adjunct.

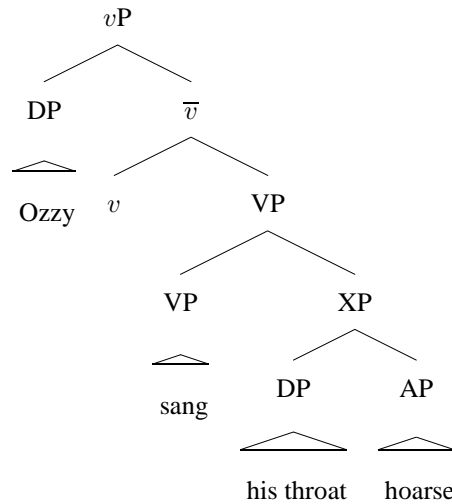
(118)



That this syntax suits the resultative, however, says nothing about whether it will suit the depictive. With a depictive *sing hoarse* in the ellipsis, O could be licensed only by a thematic relation to *hoarse*. And our analysis of (115) leaves us free to assume that no secondary predicate, whether resultative or depictive, can assign an interpretation to a nonlocal argument, in the distant specifier of the main VP. Perhaps a secondary predicate is capable, however, of assigning an interpretation to an argument that's immediately local. In that case (117) could have a structure like (119).

resultative event structure of (65). And absent any reason to believe its event involves an outside agent and patient, distinct from the participants in the kicking, there is no reason it should allow an unselected object.

(119)



But then we can decide that the depictive secondary predicate is an adjunct. And we can do so without needing to say the opposite about R in the resultative, since in the resultative, to repeat, the licensing of the object has nothing to do with the secondary predicate.³² Thus (119) is bad because *his throat* has no way of associating with v for the purposes of Case; it is generally agreed that a Case dependency (or a Raising dependency) cannot cross into an adjunct.

The contrast between depictives and resultatives is harder to explain given a result patient analysis, since then in both constructions an unselected object will have a thematic relation only to the secondary predicate. It must also be true in both constructions that the secondary predicate is c-commanded by the v head that checks objective Case.³³ (For suppose instead that the secondary predicate were to attach above v , and presume that a noun phrase must c-command a predicate it controls. If the depictive predicate attached at \bar{v} , we would expect control by the subject, since,

³²What I say here should not be taken as a definite universal claim about any depictive predicate in any language, or any secondary predicate more generally. It is conceivable that the syntax of secondary predicates differs depending on such variable factors as the syntactic category of the head. But here this doesn't matter.

³³As observed above, the maximal verb phrase in a depictive is a predicate of the same event as its main verb is, since when Al slices the meat frozen quickly, he slices it quickly. Thus in a depictive, if the v sister to VP introduces an agent relation, as suggested in Kratzer 1996, this will be a relation to the event of the main verb; the agent of an event of slicing the meat while its frozen is the agent of an event of slicing the meat. In the resultative, on the other hand, v will introduce a relation to the event of causation.

in the specifier of v , it would be the nearest c-commanding DP. And if the predicate attached still higher, above vP , it's not clear how the object, generated in the complement of the verb, could come to c-command it.) So then why does the secondary predicate license an argument position that is within range of the Case-licensing v head only in the resultative, and not in the depictive? With effort, answers can be offered. But none will have the attraction of the explanation allowed by the outside role analysis, of reflecting a basic contrast in argument structure and meaning. Any postulated difference in syntax will therefore seem ad hoc in comparison.³⁴

Rothstein herself, who observed the contrast between resultatives and depictives, gives it an explanation very different from mine, involving assumptions that I reject. Yet in outline and with some modifications, it can be seen as making the same point, namely that the contrast is evidence for the outside role analysis. Rothstein stipulates argument sharing directly, in her rules of semantic composition. For her all rules that interpret the addition of a secondary predicate, whether depictive or resultative, combine two expressions in type $\langle e, \dots \rangle$ and covalue their first arguments. So the depictive (117) cannot be derived, because if *hoarse* combines with the verb *sing*, both will have to share *his throat* as an argument. But the resultative (115) is good because here, according to Rothstein, *hoarse* combines, not with the verb *sing*, but with an otherwise covert predicate containing it, one which I would interpret as in (120).

(120) $\lambda y \dots \lambda e_c \exists e_m \exists e_r . K(e_c, e_m, e_r) \wedge sing(e_c) \wedge Pat(e_c, y) \dots$

Crucially this predicate, which describes a change, has an argument for its patient, y in (120). This makes it a proper input for one of Rothstein's rules, which then covalues this patient argument with that of *hoarse*. As a result, *his throat* will identify both what changes and (redundantly) what

³⁴Suppose we said, for example, that the secondary predicate is an adjunct in the depictive but a complement in the resultative. This would deliver a contrast, since only a phrase generated within a complement can enter Case relations. But if this choice of adjunct and complement status has some motivation in the difference between caused change and temporal concurrence, it is not at all clear. The relative virtue of the outside role analysis is exactly that it does not compel us to make unmotivated distinctions of this sort.

is hoarse. But since the patient of a change wrought by singing need not be what is sung (*pace* Rothstein), the object has no selected relation to the means verb: it is unselected. What ultimately explains the contrast between resultatives and depictives for Rothstein, therefore, is the fact that only the semantics of the former involves an outside patient.

7 Evidence from word order

In VO languages, the basic word order for a resultative is either *continuous* or *discontinuous*. Continuous order has O following both M and R, as in Mandarin. Discontinuous order has it separating the two, as in English. Surveying a number of languages (including Shanghainese, Vietnamese, Thai, Paamese, Ambae, Edo, and Igbo, besides English and Mandarin) I concluded in Williams 2008b that the choice depends on the size of R. Basic order is discontinuous just when R is *phrasal*, and continuous just when it's not, where R is phrasal when it can accommodate an adverbial modifier. The pair of English and Mandarin is therefore exemplary, (121).³⁵

(121) a. Al pounded the cutlet (extremely) flat.

b. tā (*feīcháng) zá (*feīcháng) píng -le (*feīcháng) nà kuài ròu.
 3s (*extremely) pound (*extremely) flat -PFV (*extremely) that CLS meat
 'He pounded the meat (extremely) flat.'

In addition, basic order never depends on whether the object is selected. It is discontinuous in English and continuous in Mandarin, for example, even when the object is unselected. Ideally, therefore, no satisfactory account of the pattern will rely on the object's thematic relation to M.

Why should order correlate with the size of R in just this way? There is a simple answer if every resultative, whether its object is selected or not, has an outside object syntax underlyingly.

³⁵Williams 2008b also discusses word order in OV languages (including German, Japanese, Malayalam, Ijò, and Yi), where the contrast between phrasal and nonphrasal R has, on the surface, a different effect. When R is phrasal, as in German, it follows M, and when R is nonphrasal, as in Ijò, it precedes. Both types are attested in Japanese.

But the correlation is otherwise hard to explain, if we allow that resultatives sometimes have an underlying result object syntax like (114). And this is evidence, I suggested at the start of section 6, for the outside role analysis.

The simple answer relies on one reasonable way to understand the exclusion of modifiers. As a rule, a phrase can accommodate a modifier. So when R cannot be modified, or M, I assume that it is not a phrase. Rather, it contains just the lexical predicate alone, an X_o . I showed in §2 that M cannot be modified in English. There is analogous data for Mandarin and Igbo, and I have some confidence that this is a general property of resultatives. I submit that in all the languages within my survey M never contains anything but the verb—something which is often assumed in any case (see e.g. Larson 1991, Hale and Keyser 1993, Collins 1997, and Carstens 2002).³⁶ This provides a basis for explaining the observed pattern in word order.

Given an outside object syntax, M and R are not separated by O in the underlying structure. Whether R is a head or a phrase, the underlying order is continuous, and discontinuous order must be derived. Suppose this is achieved by mandatory verb raising: VP has a v sister that attracts the least embedded X_o in its complement. When R is phrasal, this is the means verb V^M , (122).

$$(122) \quad [\bar{v} [v V_k^M v] [_{VP} O [t_k [\dots R \dots]]]]$$

But when R is nonphrasal, raising of the means verb to v will be illicit, because nonlocal. It is contained within a larger V_o that is closer to v : namely the entire complex predicate M/R. Since M/R contains only X_o s, it is itself an X_o , a complex verb. So assuming that movement to v remains mandatory, what does move will be this larger verb, $V^{M/R}$, as in (123). The result in a head-initial language is basic continuous order.

³⁶This conjecture may help explain Snyder's (2001) observation that a language has a productive resultative construction only if has productive compounding of roots. If M comprises only the verb, then resultatives share with compounds the property that the verb combines directly with something *other* than a thematically related argument. It is perhaps this general possibility (rather than, as Snyder has it, the more specific property of being able to form a compound) which is absent in languages that lack resultatives.

$$(123) \quad [\bar{v} [v [V_k^{M/R} M R] v] [VP O t_k]]$$

Thus the correlation between order and the size of R follows from fully general constraints on locality in head movement, given our initial syntax.

Contrast the predictions of the result object syntax. Given (114), discontinuous order reflects the underlying order directly, whether R is a head or a phrase (though cf. Carstens 2002). But continuous order requires derivation, presumably right-adjunction of the R head to the verb in M. And this is unattractive for at least two reasons. First, if R includes a predicate and an argument, I would presume it can include at least some kinds of adverbs as well. But then one must require that adverbs not be stranded by raising of R's head; and this is contrary to normal assumptions about head movement (see e.g. Baker 1988). Second, it's unclear what properties could force or forbid the raising of R, in just the appropriate cases. No theory has emerged that covers every relevant language (Williams 2005: 221–3, contra Déchaine 1993, Stewart 2001). Prospects are further dimmed if a single language can have resultatives of two syntactic types, one that, given the result object syntax, would force raising of R and one that would forbid it. I have suggested (Williams 2008b) that Vietnamese and Paamese (Crowley 2002) are such languages.³⁷

Many analyses of the resultative have melded the result object syntax with an outside object syntax (Larson 1991, Hale and Keyser 1993, Collins 1997, Carstens 2002). The noun phrase within R is an empty category, coindexed with the overt object outside M/R, (124)

$$(124) \quad [VP O_k [\bar{v} V^M [Z_{PR} ec_k Z]]]$$

But this faces similar problems. Continuous order will require one of two derivations. Either the head of R first adjoins to the M verb, and then the result raises above O; or the M/R phrase itself raises as whole, to a specifier above O (Carstens 2002). The first derivation again requires

³⁷Among OV languages, Japanese has been said to be of this type as well; see Matsumoto 1995, Washio 1997, Nishiyama 1999.

that modifiers not be stranded. The second requires that R, despite comprising a predicate and its argument, simply cannot include modifiers at all. Both requirements are unattractive.

The word order patterns therefore counsel against any theory which would require, in every resultative construction in every language, that R include a local argument for its predicate. So it is an advantage of the outside role analysis that it never requires this. Uniquely, it does not even require that R be provided with an argument anywhere in the clause; a thematic relation to the event of causation is sufficient.

8 The semantic derivation

Having defended a semantic analysis of the resultative, I will make some very general comments about its derivation relative to the syntax.

The outside role analysis posits three covert predicates that are not associated with the lexical heads of either M or R: the two outside thematic relations, plus *K* (which may itself prove to be analyzable). Each predicate might be introduced at different nodes in the derivation, or some combinations might be introduced together. And in principle any predicate might be introduced in either of two ways: lexically, in the meaning of a terminal node, or structurally, by a semantic rule that interprets the combination of two constituents. Here I will choose freely from among these options, for the purposes of illustration.

A possible analysis for a Mandarin resultative with the predicate *qiē dùn* ‘cut dull’ is outlined in (125). Here *K* is introduced by a silent terminal node *K* in the sister of R, whose category I do not decide. The outside patient is introduced by a rule, call it PR for ‘Patient Rule,’ which interprets VP, (125d). The outside agent is instead introduced by a silent head of category *v*, (125e), whose merger with VP is interpreted with Kratzer’s rule of ‘Event Identification’: $EI(f, g) \equiv \lambda x \lambda e. fe \wedge gxe$. All other nodes are interpreted by Function Application, FA.

$$(125) \quad a. \quad \llbracket [X \ K] \rrbracket = \lambda R \lambda M \lambda e_c \exists e_m \exists e_r. K(e_c, e_m, e_r) \wedge R(e_r) \wedge M(e_m)$$

- b. $\llbracket R \rrbracket = \llbracket [V \text{ dun}] \rrbracket = \lambda e. \text{dull}(e)$
- c. $\llbracket M \rrbracket = \llbracket [[V \text{ qiē}]] \rrbracket = \lambda e. \text{cut}(e)$
- d. $\llbracket [_{VP} DP \alpha] \rrbracket = PR(\llbracket \alpha \rrbracket, \llbracket DP \rrbracket) \equiv \lambda e. \llbracket \alpha \rrbracket \wedge Pat(e, \llbracket DP \rrbracket)$
- e. $\llbracket [_{vP} AG] \rrbracket = \lambda x \lambda e. Ag(e, x)$
- f. $\llbracket [[_{vP} DP_1 [_{\bar{v}} AG [_{VP} DP_2 [V M [K R]]]]] \rrbracket =$
 $FA(EI(PR(FA(FA(a, b), c), \llbracket DP_2 \rrbracket), e), \llbracket DP_1 \rrbracket)) =$
 $\lambda e_c \exists e_m \exists e_r. K(e_c, e_m, e_r) \wedge \text{dull}(e_r) \wedge \text{cut}(e_m) \wedge Pat(e_c, \llbracket DP_2 \rrbracket) \wedge Ag(e_c, \llbracket DP_1 \rrbracket)$

Notice that if we substitute just the verb *qiē* ‘cut’ for α in (125d), we instead derive a *vP* meaning ‘ $\llbracket DP_1 \rrbracket$ cut $\llbracket DP_2 \rrbracket$.’ So under this analysis of Mandarin, the same structures that introduce thematic relations in the resultative will also introduce them in simple clauses (Williams 2005, 2008a).

Besides PR, the derivation in (125) involves only the two rules, EI and FA. No others are needed, because neither M nor R has arguments. Both denote an event predicate simply. And because M has no arguments, the clause states no thematic relations to the means event. This is appropriate for Mandarin, where interpretation with respect to M is in principle free, as shown in section 4.

It would not be appropriate for English, however, where interpretation is fixed in accord with the UPP. Like any transitive with *cut* in M, (126) requires the subject to name the agent of cutting and the object to name its patient; contrast (127). This is neither a logical consequence of resultative meaning, nor a merely pragmatic inference, since things are different in Mandarin. It is a contingent fact that must be captured in the output of the compositional semantics.

(126) Ed cut the box open.

(127) * The bamboo cut my knife dull.
 ‘The bamboo made my knife dull from cutting [the bamboo with it].’

But given the outside role analysis, the subject and object are *also* assigned thematic relations to the event of causation. And this dual interpretation mandates one of two possible complications.

One is to have noun phrase positions within M , one for each requisite thematic relation to the means event, in addition to those outside M/R for the outside agent and patient. These would be silent, and bound by the subject and object. But there are two serious problems with this. First, if there is a noun phrase within M assigned an agent relation to the means event, we want it to be bound by the subject in particular. Given an outside object syntax, however, the more local binder is the object. Second, as noted in section 2, M cannot include an adverb, even a manner adverb. And this is surprising if it is large enough to contain both a verb and its agent argument.

Alternatively, if M is to be kept free of DPs, we must let M itself denote a function over the participants in the means event, as in (128); see §4.3.

$$(128) \quad \llbracket [\text{V cut}] \rrbracket = \lambda y \lambda x \lambda e. \text{cut}(e) \wedge \text{Pat}(e, y) \wedge \text{Ag}(e, x)$$

In that case these arguments will need to be passed upwards and covalued with those of the construction. And this will require more complex rules of semantic composition, including one or more of those in (129) (cp. Higginbotham 1985, Steedman 2000). This would allow an analysis like (130), for instance, which takes M to denote a function over the agent and patient of a pounding. (Here I also have a single terminal K_+ introducing both K and the outside patient relation; but I suppose that APs have no arguments, cp. Parsons 1990.)

- (129) a. $\text{Conj}_1(f, g) \equiv \lambda x. fx \wedge gx$
 b. $\text{Conj}_{1+2}(f, g) \equiv \lambda y \lambda x. fyx \wedge gyx$
 c. $\text{Comp}_1(f, g) \equiv \lambda x. f(gx)$
 d. $\text{Comp}_{1+2}(f, g) \equiv \lambda y \lambda x. f(gyx)$
 e. $\text{Subst}_1(f, g) \equiv \lambda x. fx(gx)$
 f. $\text{Subst}_{1+2}(f, g) \equiv \lambda y \lambda x. fyx(gyx)$
 g. $[\text{Subst}_1 + \text{Comp}_2](f, g) \equiv \lambda y \lambda x. fy(gyx)$

$$(130) \quad \text{a. } \llbracket [\text{X } K_+] \rrbracket = \lambda R \lambda M \lambda y \lambda e \exists e_m \exists e_r. K(e_c, e_m, e_r) \wedge R(e_r) \wedge M(e_r) \wedge \text{Pat}(e_c, y)$$

- b. $\llbracket R \rrbracket = \llbracket [_{AP} \text{ open}] \rrbracket = \lambda e. \text{open}(e)$
- c. $\llbracket M \rrbracket = \llbracket [_{V} \text{ cut}] \rrbracket = \lambda y \lambda x \lambda e. \text{cut}(e) \wedge \text{Pat}(e, y) \wedge \text{Ag}(e, x)$
- d. $\llbracket [_{v} \text{ AG}] \rrbracket = \lambda x \lambda e. \text{Ag}(e, x)$
- e. $\llbracket [_{vP} \text{ DP}_1 [_{\bar{v}} \text{ AG} [_{VP} \text{ DP}_2 [_{V} \text{ M} [\text{K}_+ \text{ R}]]]] \rrbracket =$
 $\text{FA}(\text{Conj}_1(\text{FA}([\text{Subst}_1 + \text{Comp}_2](\text{FA}(a, b), c), \llbracket \text{DP}_2 \rrbracket), d), \llbracket \text{DP}_1 \rrbracket) =$
 $\lambda e_c \exists e_m \exists e_r. K(e_c, e_m, e_r) \wedge \text{open}(e_r) \wedge \text{cut}(e_m) \wedge \text{Pat}(e_m, \llbracket \text{DP}_2 \rrbracket)$
 $\wedge \text{Ag}(e_m, \llbracket \text{DP}_1 \rrbracket) \wedge \text{Pat}(e_c, \llbracket \text{DP}_2 \rrbracket) \wedge \text{Ag}(e_c, \llbracket \text{DP}_1 \rrbracket)$

An increase in the number and complexity of rules is not in itself desirable (cp. Kratzer 2005, Pietroski 2005).³⁸ But in this case simplicity comes only at the expense of descriptive coverage. The contrast with Mandarin argues that the facts of interpretation in English must be accounted for in the semantics. And if the syntax is kept simple, this can be done only by making the semantic derivation more complex.

9 Conclusion

A semantic analysis ought to have a simple, and perhaps explanatory relation to the syntax. For this reason, grammatical patterns can adjudicate between competing analyses. In the case of resultatives, the grammatical patterns decide for what I have called an outside role analysis, a semantics that is certainly no less natural conceptually than its competitor.

Resultatives describe an event of change. A change involves a patient that undergoes it, and

³⁸Of course the complex rules could be eliminated by rigging the denotations of silent terminals to achieve the same effects. Changing the denotation of K_+ in (130) will allow $\llbracket [\text{K}_+ \text{ R}] \rrbracket$ to combine with $\llbracket M \rrbracket$ by the simple rule of FA; just let K_+ denote: $\lambda R \lambda M \lambda y \lambda x \lambda e \exists e_m \exists e_r. K(e_c, e_m, e_r) \wedge R(e_r) \wedge M(y)(x)(e_r) \wedge \text{Pat}(e_c, y)$. But at best this is not a net simplification. And in the case at hand, it suggests something we have learned to be false, namely that this identification of arguments, patient of change with patient of M, follows somehow from the very concept of a K relation, which is the predicative content of K_+ .

perhaps also an initiating agent. These thematic relations, I have argued, are imposed respectively on the underlying object and (if there is one) the underlying subject, (131).

$$(131) \quad \exists e. \llbracket M/R \rrbracket(e) \wedge \text{Pat}(e, \llbracket \text{Object} \rrbracket) (\wedge \text{Ag}(e, \llbracket \text{Subject} \rrbracket))$$

The semantic analysis of a transitive resultative is therefore, in outline, just like that of a transitive clause whose predicate is simple; similarly, intransitive resultatives are just like simple unaccusatives. This permits an explanation of the DOR in terms of general rules of argument realization, besides facilitating a simple account of unselected objects, and cross-linguistic patterns in word order. With special reliance on the facts of the English depictive and the Mandarin resultative, I have shown that comparable explanations are not available given the traditional result patient semantics. The Mandarin facts also falsify any meaning postulate that would identify the agent or patient of a change, of the sort described by a resultative, with the agent or patient of its means event.

In closing I note explicitly that my conclusions go against the lexicalist inclination to project all thematic relations from overt predicates, overt verbs in particular. The outside agent and patient relations are introduced covertly, in the interpretation either of a (silent) syntactic relation or of a (silent) lexical terminal. I have also argued (Williams 2008a), on the basis of the facts above in §4, that thematic relations are quite generally separated from the verb in Mandarin, both agents and patients. Resultatives thus supply interesting support for the nonlexicalist views of argument structure espoused in, among other places, Fillmore 1968, Carlson 1984, Schein 1993, Goldberg 1995, Kratzer 1996, Marantz 1997, Borer 2003, and Pietroski 2005.

References

Baker, Mark. 1988. *Incorporation: A theory of grammatical function changing*. Chicago: University of Chicago Press.

- Baker, Mark. 1997. Thematic roles and syntactic structure. In *Elements of grammar*, ed. L. Haegeman, 73–137. Dordrecht: Kluwer.
- Bennett, Jonathan. 1994. The “namely” analysis of the “by”-locution. *Linguistics and Philosophy* 17:29–51.
- Boas, Hans. 2003. *A constructional approach to resultatives*. Stanford: CSLI.
- 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. Stanford, CA: CSLI.
- Carlson, Greg. 1984. Thematic roles and their role in semantic interpretation. *Linguistics* 22:259–279.
- Carrier, Jill, and Janet H. Randall. 1992. The argument structure and syntactic structure of resultatives. *Linguistic Inquiry* 23:173–233.
- Carstens, Vicki. 2002. Antisymmetry and word order in serial constructions. *Language* 78:3–50.
- Chappell, Hillary. 1999. The double unaccusative construction in Sinitic languages. In *External possession*, ed. D. Payne and I. Barshi, 195–228. Philadelphia: John Benjamins.
- Chomsky, Noam. 1981. *Lectures on government and binding*. Dordrecht: Foris.
- Chomsky, Noam. 1995. *The minimalist program*. Cambridge, MA: The MIT Press.
- Collins, Chris. 1997. Argument sharing in serial verb constructions. *Linguistic Inquiry* 33:461–497.
- Crowley, Terry. 2002. *Serial verbs in Oceanic*. Oxford: Oxford University Press.
- Déchaine, Rose-Marie. 1993. Predicates across categories. Doctoral Dissertation, University of Massachusetts at Amherst.
- Dowty, David. 1972. On the syntax and semantics of the atomic predicate CAUSE. In *Papers from*

- the Eighth Regional Meeting of the Chicago Linguistic Society*, ed. P.M. Peranteu, J.N. Levi, and G.C. Phares, 62–74. Chicago: Chicago Linguistic Society.
- Dowty, David. 1979. *Word meaning and montague grammar*. Dordrecht: Reidel.
- Dowty, David. 1989. On the semantic content of the notion of ‘thematic role’. In *Properties, types and meanings*, ed. G. Chierchia, B.H. Partee, and R. Turner, volume 2: Semantic issues, 69–130. Dordrecht: Kluwer.
- Dowty, David. 1991. Thematic proto-roles and argument selection. *Language* 67:547–619.
- Embick, David. 2004. On the structure of resultative participles in English. *Linguistic Inquiry* 35:355–392.
- Fillmore, Charles. 1968. The case for case. In *Universals in linguistic theory*, ed. E. Bach and R.T. Harms, 1–90. New York: Holt, Rinehart and Winston.
- Goldberg, Adele. 1995. *Constructions*. Chicago: University of Chicago Press.
- Goldberg, Adele, and Ray Jackendoff. 2004. The English resultative as a family of constructions. *Language* 80:532–568.
- Green, Georgia. 1972. Some observations on the syntax and semantics of instrumental verbs. In *Papers from the Eighth Regional Meeting of the Chicago Linguistic Society*, ed. P.M. Peranteu, J.N. Levi, and G.C. Phares, 83–97. Chicago: Chicago Linguistic Society.
- Gu, Yang. 1992. The syntax of resultative and causative compounds in Chinese. Doctoral Dissertation, Cornell University.
- Hale, Kenneth, and Samuel J. Keyser. 1993. On argument structure and the lexical expression of syntactic relations. In *The view from Building 20*, ed. K. Hale and S.J. Keyser, 53–109. Cambridge, MA: The MIT Press.
- Higginbotham, James. 1985. On semantics. *Linguistic Inquiry* 16:547–593.
- Hoekstra, Teun. 1988. Small clause results. *Lingua* 74:101–39.

- Huang, Li, and Li. forthcoming. *The syntax of Chinese*. Cambridge: Cambridge University Press.
- Huang, C.-T. James. 1988. *Wo pao de kuai* and Chinese phrase structure. *Language* 64:274–311.
- 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.
- Jackendoff, Ray. 1990. *Semantic structures*. Cambridge, MA: The MIT Press.
- Kayne, Richard. 1985. Principles of particle constructions. In *Grammatical representation*, ed. J. Gueron, H.G. Obenauer, and J.-Y. Pollock, 101–40. Dordrecht: Foris.
- Kemmer, Suzanne. 1993. *The middle voice*. Philadelphia: John Benjamins.
- 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, Angelika. 2003. The event argument, chapter 3. Manuscript available from www.semanticsarchive.net.
- Kratzer, Angelika. 2005. Building resultatives. In *Events in syntax, semantics, and discourse*, ed. C. Maienborn and Wöllstein-Leisten, 177–212. Tübingen: Niemayer.
- Landman, Fred. 2000. *Events and plurality*. Dordrecht: Kluwer.
- Larson, Richard K. 1991. Some issues in verb serialization. In *Serial verbs*, ed. C. Lefebvre, 185–210. Philadelphia: John Benjamins.
- Levin, Beth, and Malka Rappaport-Hovav. 1995. *Unaccusativity*. Cambridge, MA: The MIT Press.
- Li, Linding. 1980. Sentence types containing the verb-complement construction [Dongbu-ge jushi]. *Zhongguo Yuwen* 1980:93–103.
- Li, Yafei. 1990. On V-V compounds in Chinese. *Natural Language and Linguistic Theory* 8:177–207.
- Li, Yafei. 1995. The thematic hierarchy and causativity. *Natural Language and Linguistic Theory* 13:255–282.

- Lidz, Jeffrey, and Alexander Williams. 2002. Reflexivity and resultatives. In *WCCFL 21 Proceedings*, 250–263. Somerville, MA: Cascadilla Press.
- Lin, Tzong-hong. 2001. Light verb syntax and the theory of phrase structure. Doctoral Dissertation, UC Irvine.
- Lombard, Lawrence Brian. 1985. How not to flip the prowler: Transitive verbs of action and the identity of actions. In *Actions and events: Perspectives on the philosophy of Donald Davidson*, ed. E. LePore and B.P. McLaughlin, 268–281. New York: Basil Blackwell.
- Lü, Shuxiang. 1986. The flexibility of Chinese sentence grammar [Han-yu jufa -de linghuo-xing]. *Zhongguo Yuwen* 1986:1–9.
- 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, Alec. 1997. No escape from syntax: Don't try morphological analysis in the privacy of your own lexicon. *Penn Working Papers in Linguistics* 4:201–226.
- Matsumoto, Yo. 1995. *Complex predicates in Japanese*. Stanford, CA: CSLI.
- McCawley, James D. 1971. Pre-lexical syntax. In *Report on the 22nd Annual Round Table Meeting on Linguistics and Language Studies*, ed. R.J. O'Brien. Georgetown: Georgetown University Press.
- Nishiyama, Kunio. 1998. V-V compounds as serialization. *Journal of East Asian Linguistics* 7:175–217.
- Pietroski, Paul. 2000. *Causing actions*. Oxford: Oxford University Press.
- Pietroski, Paul. 2005. *Events and semantic architecture*. Oxford: Oxford University Press.
- Rappaport-Hovav, Malka, and Beth Levin. 2001. An event structure account of English resultatives. *Language* 77:766–796.
- Ren, Ying. 2001. An analysis of verb-result complement constructions where the subject and

- object can switch places [Zhubin kehuanwei dongjieshi shuyu jiegou fenxi]. *Zhongguo Yuwen* 2001 (4):320–328.
- Rothstein, Susan. 2001. *Predicates and their subjects*. Dordrecht: Kluwer.
- Rothstein, Susan. 2004. *Structuring events*. Malden, MA: Blackwell Publishing.
- Schein, Barry. 1993. *Plurals and events*. Cambridge, MA: The MIT Press.
- Simpson, Jane. 1983. Resultatives. In *Papers in lexical-functional grammar*, ed. L. Levin, M. Rapoport, and A. Zaenen. Indiana University Linguistics Club.
- Snyder, William. 2001. On the nature of syntactic variation: Evidence from complex predicates and complex word formation. *Language* 77:324–342.
- Steedman, Mark. 2000. *The syntactic process*. Cambridge, MA: The MIT Press.
- Sybesma, Rint. 1999. *The Mandarin VP*. Dordrecht: Kluwer.
- Tan, Fu. 1991. Notion of subject in Chinese. Doctoral Dissertation, Stanford University.
- Teng, Shou-hsin. 1975. *A semantic study of transitivity relations in Chinese*. Berkeley: University of California Press.
- Tenny, Carol. 1994. *Aspectual roles and the syntax-semantics interface*. Dordrecht: Kluwer.
- Thompson, Sandra. 1973. Resultative verb compounds in Mandarin Chinese: A case for lexical rules. *Language* 42:361–379.
- Thomson, Judith. 1977. *Acts and other events*. Ithaca, NY: Cornell University Press.
- Van Valin, Robert D. 2004. Semantic Macroroles in Role and Reference Grammar. In *Semantische rollen*, ed. R. Kailuweit and M. Hummel, 62–82. Tübingen: Gunter Narr Verlag.
- Van Valin, Robert D., and David P. Wilkins. 1996. The case for ‘effector’: Case roles, agents and agency revisited. In *Grammatical constructions: Their form and meaning*, ed. M. Shibatani and S. Thompson. Oxford: Clarendon.

- 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 yufa yanjiu]*, 144–167. Beijing: Beijing Daxue Chubanshe.
- Wang, Li. 1958. *Hanyu shikao*. Beijing: Science Press.
- Washio, Ryuichi. 1997. Resultatives, compositionality and language variation. *Journal of East Asian Linguistics* 6:1–49.
- Wechsler, Stephen. 1997. Resultative predicates and control. In *Texas Linguistic Forum* 38, 307–321.
- 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, Alexander. 2005. Complex causatives and verbal valence. Doctoral Dissertation, University of Pennsylvania.
- 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. Berlin: Mouton de Gruyter.
- Williams, Alexander. 2008b. Word order in resultatives. In *WCCFL 26 Proceedings*, ed. H. Haynie and C. Chang. Somerville, MA: Cascadilla Press.
- Williams, Alexander. To appear. Themes, cumulativity, and resultatives: Comments on Kratzer 2003. *Linguistic Inquiry*.
- Williams, Edwin. 1980. Predication. *Linguistic Inquiry* 11:203–238.
- Wu, Jingrong, Ping Mei, and Xiaoping Ren. 1986. *Concise Chinese-English dictionary*. Beijing: Oxford University Press and The Commercial Press.