Objects in Resultatives
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1 Introduction

Resultatives, like English (1) and (2) or Mandarin (3), have been a source of influential ideas about semantic analysis and its relation to basic syntax. Yet it seems to me that a standard 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 tǐ duàn-le nàtiáo mǔbān.
   3s kick snap -PFV that plank
   ‘S/he made that plank snap from kicking.’

This paper defends an alternative, 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 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.

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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.
2 Talking about resultatives

A resultative is a single clause comprising two overt predications, 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 ti ‘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 imposed on 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 arguments.

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 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, 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. For Simpson, however, even utter suppletion should be possible.

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 ec that stands in some relation K to the means and result events, em and er, (9), but need not itself satisfy the event description provided by M. To have a name for it, I call this the event of causation.

(9) ⊦ M/R = . . . λec∃em∃er.K(ec, em, er) ∧ [M](. . .)(em) ∧ [R](. . .)(er) . . .

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).

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2In some Oceanic languages, including Paamese (Crowley 1987: 64), some verbs do not have the same morphology when in M as they do in simple clauses. And what these cases show is not that the verb has causative 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.
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 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) \[[M/R] = . . . \lambda e_m \exists e_r. \Phi(e_m, e_r) \wedge [[M]](\ldots)(e_m) \wedge [[R]](\ldots)(e_r) . . .\]
(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.

(16) Al quickly pounded the cutlet flat slowly.

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.
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\((17)\) \[ K(e_c, e_m, e_r) \Rightarrow \text{Change}(e_c, e_r) \]

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.

\[(18)\] \[ K(e_c, e_m, e_r) \Rightarrow \text{Means}(e_c, e_m) \]

But a theory of the Means concept is not part of the outside role analysis,\(^3\) which claims only that events of causation have a patient, and sometimes an agent as well.

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 \(\text{Pat}\) 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 \((20)\).

\[(19)\] \[ \text{If } K(e_c, e_m, e_r), \text{ then the patient of } e_c \text{ is the patient of } e_r. \]

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

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.

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

\(^3\)Pietroski (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.
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. And as we’ll see, Mandarin supplies data that confirm this.

In sum, one can see the outside role analysis as giving 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.

### 3.2 The result patient analysis

I will contrast the outside role analysis with the **result patient analysis**, which has long been standard. 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 (22), and this has been adopted in one form or another by many after him (e.g. Parsons 1990, Levin and Rappaport 1995, Kratzer 2005).

(22) \[
\text{[Al pound the cutlet flat]} = \\
\text{Cause([Al pound the cutlet]}, \text{Become([the cutlet be flat])})
\]

This semantics relates the cutlet only to the lexical predicates pound and flat, establishing thematic relations only to the events of pounding and being flat. There is no explicit relation between the cutlet and any event of change. We know that the cutlet underwent a change (hence was a ‘causee’) only by deduction, based on knowing what Cause and Become mean. If something caused it to become true that the cutlet is flat, then the cutlet must have changed from not being flat to being flat.

McCawley 1971 and Green 1972 proposed an analysis that I paraphrase in (23). 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.

(23) \[
\text{[Al pound the cutlet flat]} = \\
\text{Agent([Al], Cause([Al pound the cutlet]}, \text{Become([the cutlet be flat])})
\]
Translated into my terms, (23) can be seen as saying that the subject names the agent of an event of causation. But it agrees entirely with (22) 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 counsels 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 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.

I should note that the outside relations analysis, though it is not standard, has found some expression in Goldberg and Jackendoff 2004, which develops 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 (24), which is equivalent to my (10), if $K$ is defined as the conjunction of MEANS and COME.TO.HAVE.

\[(24)\quad \exists e_1 \exists e_2 \exists e_3. \text{COME.TO.HAVE}(e_1, e_3) \land \text{Ag}(e_1, [\text{Sbj}]) \land \text{Pat}(e_1, [\text{Obj}]) \land [\text{R}](e_3) \land \text{MEANS}(e_2) \land [\text{M}](e_2)\]

The arguments I present for the outside role analysis therefore count as support for the position of Goldberg and Jackendoff 2004, if this is correctly interpreted by (24).

\[\text{(i)} \quad \text{Sbj CAUSE (Obj BECOME R)}\]
\[\text{MEANS: M}\]

For this to mean what their prose description does, it must be that “X CAUSE $\Phi$” means ‘X is the agent of $\Phi$,’ and “Y BECOME Z” means ‘Y is the patient of an event of coming to have the property expressed by R.’ That (4) 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 (4) would represent a result patient analysis, identical to (23). 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.
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 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 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). 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].’

This 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.\(^5\) 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 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.\(^6\)

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, (35–37), it requires an object naming the patient of cutting. Sentences like (36) or (37) 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.

(35) Lǎo Wèi qiē-le zhúshǔn.
    L.W. cut -PFV bamboo shoot
    ‘Lao Wei cut bamboo shoots.’

(36) * Lǎo Wèi qiē -le.
    L.W. cut -PFV

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\(^5\)In English, only intransitives allow an unaccusative verb in M. I have no interesting account of why.

\(^6\)Igbo behaves very much like Mandarin in this regard; see Williams 2005, 2007a. The relevant data are also somewhat easier to interpret in Igbo, since Igbo lacks the silent pronouns that are available in Mandarin.
‘There was an event of cutting with Lao Wei its agent.’
Can mean: ‘Lao Wei cut it.’

(37) * Lǎo Wèi zài qiē.
    L.W. PROG cut
‘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. (38), for example, can mean just that the subject made the knife dull from cutting something.

(38) tā hái qiē dǔn -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, (39).

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

Pragmatically, moreover, (38) is not constrained to occur only in a context that would license silent pronominal reference to the patient of cutting. The context of (40a), for instance, does not license pronominal reference to anything but the cleaver, yet (40b) is felicitous nonetheless.

(40) a. cài dāo zénme huíshì a?
    cleaver how happened FIN.PRT
‘What happened with the cleaver?’

b. Lǎo Wèi qiē dǔn -le pro.
    L.W. cut dull -PFV it
‘Lao Wei made it dull from cutting.’

Should the speaker of (38) want to identify what was cut, this can be done (among other ways) by adjoining an adverbial verb phrase, as in (41). Yet regardless of whether this addition is required by the conversation, it is not required by the syntax.

(41) Lǎo Wèi qiē zhúshǔn, qiē dǔn -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 (38), cài dāo ‘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, (42).
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(42) * tā qiē -le nǐde cǎidāo.
    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. (43–46) give further examples. 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.)

(43) wǒ cā zāng -le liāngkuài móbù.
    1s wipe dirty -PFV two towels
    ‘I made two towels dirty from wiping.’ (Wang 1995: 148, tr. AW)

(44) tā pāi tèng -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)

(45) 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)

(46) tā mǎi kōng -le qianbāo.
    3s buy empty -PFV wallet
    ‘He bought (so much that) his wallet (got) empty.’
    (ex. & tr. Tan 1991: 100)

The verb in M may also find no phrase indentifying the agent of its event, even when this omission is impossible in simple clauses. This is routine in intransitive resultatives, such as (47).7

(47) nǎjiān fāngjiān -de heībān cā gānjing -le?
    which room -NMOD blackboard wipe clean -PFV
    ‘Which room’s blackboard got clean from wiping?’

(48) * nǎjiān fāngjiān -de heībān cā -le?
    which room -NMOD blackboard wipe -PFV
    ‘Which room’s blackboard underwent wiping?’

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7I let the subject of the intransitives in (47) and (48) 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 data is more subtle in transitives, but consider (49), 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, (50), certainly if it is to describe a dynamic event of crying, as it does in (49). But in (49) 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.

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

(50) * yánlei 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 (51). Here the subject is understood as naming 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.

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

(52) makes the same point, but with a twist. Here M is $xià$ ‘fall,’ a verb which is evidently unaccusative, (53). But in (52) it is not the object but the subject that tells us what falls.

(52) mì yú xià hēi -le tiān dì.
    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)

(53) 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. This will be important in §5.3, and to understanding in the next subsection that Mandarin, like English, exhibits the DOR.\(^8\)

### 4.2 Relations to R

Interpreted as a resulative, (54) cannot mean that Ozzy got hoarse, and (55) can only mean that the meat got bloody. So the phrase that controls R must be the direct object of the clause, even when the alternative interpretation is in fact plausible.

\[
\begin{align*}
(54) & \quad * \text{Ozzy sang the Sabbath tunes hoarse.} \\
& \quad \text{‘Ozzy got (or made himself) hoarse from singing the Sabbath tunes.’} \\
(55) & \quad \text{Rocky’s fists pounded the frozen meat bloody.} \\
& \quad \text{‘Rocky’s fists made the cutlet bloody from pounding it.’}
\end{align*}
\]

According to the direct object object restriction, (56), this is true in any resultative, at least at the level of underlying grammatical relations (Williams 1980, Simpson 1983, Levin and Rappaport Hovav 1995).

\[
\begin{align*}
(56) & \quad \text{Direct Object Restriction (DOR)} \\
& \quad \text{The phrase that controls R is the underlying direct object of the clause.}
\end{align*}
\]

I take the DOR to be correct, both in English and Mandarin, and indeed universally. Any construction that appears to violate the DOR is ipso facto not a resultative, and will in general be distinguishable on independent grounds. Thus (57), where one might say that the underlying subject controls down the hall, is not a resultative (compare Goldberg 1995 and Rothstein 2004, contra Wechsler 1997 and Rappaport Hovav and Levin 2001). And just so, (57) differs from any English resultative in allowing an adverb that does not modify the secondary predicate itself to occur immediately before it; contrast (58).

\[
\begin{align*}
(57) & \quad \text{John danced (jigs) merrily down the hall.} \\
(58) & \quad \# \text{Al pounded the cutlet spastically flat.}
\end{align*}
\]

Given the DOR, the surface subject in any intransitive resultative, like (59), must be an object underlingly. For English there is a standard argument that this is right, deriving from Simpson 1983 and developed in Levin and Rappaport Hovav 1995.

\[
\begin{align*}
(59) & \quad \text{The cutlet froze solid.}
\end{align*}
\]

In English, whenever the subject controls R, it also names the patient of the means event.\(^9\) Furthermore the means verb is unaccusative: when it occurs in a simple clause, it finds its patient in

---

\(^8\)In Williams 2007b, I use the same Mandarin facts to argue against the claim in Kratzer 2003 that the thematic relation “Theme” (or Patient),” unlike “Agent,” is not a “natural predicate,” because it is not “cumulative.”

\(^9\)In English there are no intransitive resultatives whose surface subject, hence underlying object, is unselected. 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.
the underlying object. English has the UPP, so an unaccusative verb in M will find its patient in the underlying object of the resultative clause as well. Hence whenever the subject controls R on the surface, it is the object underlingly.

The same argument will not apply to Mandarin, however, since Mandarin lacks the UPP. Absent the UPP, presumed thematic relations to the means event do not predict underlying grammatical relations in the resultative clause. That the surface subject in (60) refers to the understood patient of the illness, for instance, does not show that it is the object underlingly, even if simple clauses with dòng ‘chill’ are indeed unaccusative.

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

For the same reason the DOR is not falsified by (61), contrary to what is sometimes said (Y. Li 1995, Rappaport Hovav and Levin 2001). The subject refers to the presumed agent of drinking. But this says nothing about its underlying syntactic position, even granting that in simple clauses hē ‘drink’ finds its agent in the subject. We know this because in the transitive (62), for example, the presumed agent of drinking is clearly designated by the direct object, right on the surface.

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

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

Thus establishing the DOR for Mandarin requires a argument that does not rely on the UPP, or in any way on the subject’s understood relation to M.

Such an argument is available in the complementary relation between control of R and agentivity, observed in Wang 1958, C.-T.J. Huang 1988 and Y. Li 1990. 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 (49) above or (63) below, a situation that is impossible in English.

(63)  chī jī dùn miàn tiáo yě chī bù 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, citing Jiang Zilong, Weichi Hui Chang)

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. (61) says only that ‘s/he’ got drunk, not that ‘s/he’ is responsible for bringing this change about.
I support these claims empirically 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 (64). Add an agent, and the same interpretation must instead realized by a surface object.

(64) 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 (60) and (61). It occupies the subject position on the surface only because no argument is assigned an agent role to the event of the verb phrase. Given this broader perspective, it becomes clear that Mandarin resulatives too exhibit the DOR.

Agentivity can be diagnosed by questions like (65). An answer is felicitous only if it describes an event of which $X$ is the agent (Teng 1975). Thus the answers to (65) in (66) are acceptable, but those in (67) are not.

(65) $X$ zuò -le shénme?
    do -PFV what
    ‘What did $X$ do?’

(66) a. (tā) zá -le nà kuài ròu.
    (3s) pound -PFV that chunk meat
    ‘S/he pounded that piece of meat.’
    b. (tā) hē -le sān bēi jiǔ.
    (3s) drink -PFV three cup wine
    ‘S/he drank three glasses of wine.’

(67) a. # (tā) zuì -le.
    (3s) drunk -PFV
    ‘S/he is/got drunk.’
    b. # (tā) sǐ -le.
    (3s) die -PFV
    ‘S/he died.’

This test shows that the subject of a resultative, when it controls R, is not the agent of the event described by the complete verb phrase. Question (65) cannot be answered by any of the resultatives in (68), even when the subject names the presumed agent of the means event.

(68) a. # (tā) hē zuì -le (jiǔ).
    (3s) drink drunk -PFV (wine)
    ‘S/he got drunk from drinking.’
    b. # tā bìng sǐ -le.
    L.W. be ill die -PFV
    ‘Lao Wei died from being ill.’
Transitives like (69), in contrast, can make good answers to questions like (65). And what matters is being the agent of the VP event, the event of causation, not being the agent of its means event. Insofar as it is possible to ask (70a), personifying the bottle somewhat, (70b) is a good answer.

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

(70) a. ?nà pǐng jiǔ zuò-le shénme?
    that bottle wine do -PFV what
    ‘What did that bottle of wine do?’

b. pro hē zuǐ -le wǒ.
    it drink drunk -PFV (wine)
    ‘It made me drunk from drinking.’

Additional evidence comes from the distribution of the progressive auxiliary (zhèng) zài. This progressive is compatible with a predicate only if the subject identifies the agent of its event, (71).

(71) a. tā (zhèng) zài hē jiǔ.
    3s PROG drink wine
    ‘S/he is drinking wine.’

b. # tā (zhèng) zài sǐ.
    3s PROG die
    ‘S/he is dying.’

The progressive is never compatible with an intransitive resultative, (72), even when the subject identifies the agent of the means event. But it is often compatible with transitives, as in (73).10

(72) a. # tā (zhèng) zài hē zuǐ jiǔ (le).
    3s PROG drink drunk wine (LE)
    ‘S/he is making her/himself drunk from drinking.’

b. # tā (zhèng) zài bìng sǐ (-le).
    3s PROG be ill die (LE)
    ‘S/he is making her/himself die from being ill.’

(73) tā (zhèng) zài zá pǐng nà kuài ròu.
    3s PROG pound flat that chunk meat
    ‘S/he is making that chunk of meat flat from pounding.’

---

10Further conditions prevent the progressive from occurring with every object-control resultative. As a rule, predicates that accept (zhèng) zài describe events which are extended over time (either by duration or by repetition) and which have an animate agent. But interestingly, it does not seem strictly necessary that the subject name the agent of
So it is clear that intransitive resultatives in Mandarin are always nonagentive, while transitives are 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 (74).

(74) tā hē zuǐ-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: neither argument is understood as a causer (see Li 1990, 1995). The tests that show (70b) to be nonagentive, for example, show the same for (74). 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. Here it may help to quickly rehearse what I have said elsewhere about how to instantiate the UPP, or its lack, in the grammar (Williams 2005, 2007a). This account is presupposed in §8, where I outline possible semantic derivations for the resultative.

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 (75), 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.

(75) \[ \text{cut} = \lambda y \lambda x \lambda e. \text{cut}(e) \land \text{Pat}(e, y) \land \text{Ag}(e, x) \]

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.

---

11Two-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 (Ma 1987: 424). 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. I suggest a partly pragmatic explanation of this contrast between one- and two-argument intransitives in Williams 2005 (pp. 189–96).
It’s also possible to derive uniform projection without giving the verb arguments. Thematic relations could instead be introduced structurally—but only if the immediate context of the verb in M is the same as it is in a simple clause. That is, the verb must find agent and patient noun phrases within M itself. Yet most often it is 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, D´ echaine 1993). 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 arguments lexically, and denote event sortals simply, as in (76). Any thematic relations come not from the verb, but from the context in which it occurs.

(76) $[\text{qiē ‘cut’}] = \lambda e. \text{cut}(e)$

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 (77) will be filled by agent and patient relations to the event of causation.

(77) $[\text{qiē dūn ‘cut dull’}] = \lambda e_c \exists e_m \exists e_r. K(e_c, e_m, e_r) \land \text{cut}(e_m) \land \text{dull}(e_r) \ldots$

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 extrasemantic 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 2007a for a fuller exposition.

5 Outside roles and the DOR

Mandarin sentences like (49) and (63) 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 in English. But it takes more to show that every transitive resultative involves an outside agent, both in Mandarin and in English; and still 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 several more semantic accounts that have recently been proposed.

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12. This 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.
5.1 Explaining the DOR

The resultative predicate M/R describes 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. 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 (78) gives in slogan form.

(78) 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 (78) 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 (79a), or a function from various thematic relata to a predicate of events (79b). I use ‘$e_P$’ for the event of P.

(79) a. $[[P]] = \lambda e_P. P(e_P)$
    b. $[[P]] = \lambda x \ldots \lambda e_P. P(e_P) \land \theta(e_P, x) \ldots$

Then if the grammar constrains any nonadjunct noun phrase to identify the agent of $e_P$, (80), that phrase will be the subject of C. And in that case, if the grammar constrains any nonadjunct phrase to identify the patient of $e_P$, (81), it will be the object of C.

(80) $[[C]] = \exists e_P \ldots P(e_P) \land Ag(e_P, x) \ldots$
(81) $[[C]] = \exists e_P \ldots P(e_P) \land Ag(e_P, x) \land Pat(e_P, y) \ldots$

But the surface realization of the patient may be different if no nonadjunct phrase is constrained to name the agent of $e_P$, (82). 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.

(82) $[[C]] = \exists e_P. P(e_P) \land Pat(e_P, y)$

This, then, is what I mean by (78).

Now compare (84) and (85) with the simple clause in (83). The maximal predicate in (83) 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.

(83) Al pounded the cutlet.
(84) Al pounded the cutlet flat.
(85) Ozzy sang his throat hoarse.
The maximal predicates in (84) and (85) 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 (86)—where ellipses range over contents contributed by M or R—the sentence is impossible for exactly the same reasons as (87). Both assign the patient role to the underlying subject of the clause, in violation of (78).

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

a. ‘Rocky’s fists got bloody from pounding . . . ’
\[ \exists e_c \exists e_m \exists e_r. K(e_c, e_m, e_r) \land \text{Pat}(e_c, rf) \land \ldots \]

b. ‘The frozen meat made Rocky’s fists bloody from pounding . . . ’
\[ \exists e_c \exists e_m \exists e_r. K(e_c, e_m, e_r) \land \text{Pat}(e_c, rf) \land \text{Ag}(e_c, fm) \land \ldots \]

(87) * The cutlet pounded Al.

‘Al pounded the cutlet.’

A third interpretation of (86), below, is excluded in the same way as (88). 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. This is one aspect of Chomsky’s (1981) Theta Criterion on which there is consensus.

(86) c. ‘Rocky’s fists made themselves bloody from pounding. . . ’
\[ \exists e_c \exists e_m \exists e_r. \text{Cause}(e_c, e_m, e_r) \land \text{Pat}(e_c, rf) \land \text{Ag}(e_c, rf) \land \ldots \]

(88) * 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 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 (89) 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.

(89)

The question is sharpened when we compare subject depictions. The string corresponding to (89), while it cannot be read as a resultative, can be read as a depictive, as in (90). And under this interpretation the string plausibly does have a parse quite like (89). So if a structure like (89) be assigned a depictive meaning, why can’t a similar structure be assigned a resultative meaning?

(90) 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 (89) 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 depictions isomorphic logical forms. Dowty 1979 would give the intended
resultative interpretation of our example the analysis in (91). And presumably the depictive meaning has a logical form like (92), where “While” means something like ‘while’ (see §6).

(91) \textit{Cause(\{Ozzy sing the Sabbath tunes\}, Become\{Ozzy be hoarse\})}

(92) \textit{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, \{Ozzy\} in particular. To say the least, a theory capable of predicting that \{Ozzy\} can be ‘realized’ by a subject given (92), but not (91), 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 (89) would therefore have the general structure of (93), and it is no surprise that this cannot be realized by a syntax similar to what realizes (92).

(93) \textit{A(\{Ozzy\}, P(\{Ozzy\}, K(\{Ozzy sing the Sabbath tunes\}, \{Ozzy be hoarse\})))}

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 (89) 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.

\subsection*{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 (94) generalizes over variants of a common idea.

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

Given (94) 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—and one that makes sense of the contrast with depictives, where (94) does not apply.

Anything like (94) 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 (94) 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 (94) appears to find some support in English. But the appearance depends on the UPP. Mandarin lacks the UPP. And with this confound removed, it becomes clear that nothing like (94) 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 (95), 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.

\[(95) \quad \text{"[T]he result XP must be predicated of the argument of the verb which is the force recipient, if there is one" (Rappaport Hovav and Levin 2001: 33).} \]

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, (95) 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 (96) or (97). For Rappaport Hovav and Levin these may comply with (95) in one of two ways.

\[(96) \quad \text{Rocky ran his shoe soles thin.} \]
\[(97) \quad \text{Ozzy drank the pub dry.} \]

It may be that the M event does not involve the transmission of force. In that case the force recipient condition, (95), 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 (96), since if Rocky ran laps, one might not want say that his running exerted force on the laps.

But (97) 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 (95) and (more importantly for the DOR) it is necessarily realized by the direct object of the clause.

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 bar 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, (98).

\[(98) \quad * \text{Al cut his knife dull.} \]
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. Mandarin (38) says that an event of cutting made the knife dull. So (95) 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, and (98) should be fine. Since it isn’t, (95) must be wrong. One cannot derive control of R from a thematic relation to M, ever.

Rothstein (2004) makes essentially the same claim as (95), but with a different justification. She studies resultatives in aspectual terms, as a species of accomplishment. 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 underlingly (see e.g. Tenny 1994). Extending this latter conclusion under lexicalist influences, Rothstein makes the stronger claim in (99).

\[(99) \quad \text{“The semantic constraint is that the argument of the incremental process must be the theme or affected argument of the lexical verb” (Rothstein 2004: 115).}\]

In the case of resultatives, the “incremental process” ends with the state defined by R. And crucially, Rothstein takes the “lexical verb” of (99) to be the verb in M (cp. Wechsler 2005). This makes (99) an instance of (94), or a strengthened version of RHL’s force recipient condition, (95). It constrains the patient of the result event to be “the theme or affected argument” of the means event, and without exception.\(^{13}\)

Again the test is unselected objects, like in (100). Rothstein claims that (99) is true even here. Her analysis of (100)’s meaning includes the proposition in (101), which says that the baby is the theme of the singing.

\[(100) \quad \text{John sang the baby asleep. (Rothstein 2004: 128, (12))}\]

\(^{13}\)To 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.
“[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 (102) cannot be used to say what (100) is supposed to imply, namely that the baby was the theme of John’s singing.

(102) # 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 (98) on these grounds. But again this defense collapses when faced with Mandarin. If Mandarin (38) presents the knife as the “theme or affected argument” of the cutting, the same should be possible for English (98), 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 (100) identifies only one, for example.) Correspondingly (103) 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, (103) says only that John is one among possibly several singers. But that must be wrong, since then (103) would not entail that John sang the *Wiegenlied* (Schein 1993).

(103) John sang Brahms’s *Wiegenlied*.

To avoid problems like this, it is standardly assumed that, when a noun phrase is assigned a thematic relation $\Theta$, it identifies every $\Theta$ 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 (94)—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 (104) 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 (94) 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 (104) is bad is not that Ozzy, who gets hoarse,
fails to be the patient of singing, as per (94). 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.

(104) * 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 (89) 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 (105).

(105) 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 (104). 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. The only way to explain the DOR is in terms of a patient relation, not to the events of M or R, but of the complex predicate as such. We need an outside role semantics.

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 (106), 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.

(106)

\[ \text{VP} \]
\[ \text{O} \quad \text{M/R} \]

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.\textsuperscript{14} But when the object is unselected, there can’t be any trouble with a result object syntax like (107). Indeed this is the syntax one would then expect on grounds of simplicity (Kayne 1985, Hoekstra 1988, Kratzer 2005).

\begin{center}
\begin{tikzpicture}

\node (M) at (0,0) {M};
\node (R) at (1,0) {R};
\node (O) at (0.5,0) {O};
\node (XP) at (0.5,0.5) {XP};
\node (M/R) at (0.5,1) {M/R};

\draw (M) -- (O);
\draw (M) -- (XP);
\draw (R) -- (O);
\draw (R) -- (XP);
\end{tikzpicture}
\end{center}

(107)

I therefore regard evidence that favors (106) over (107), 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 (108), itself supports the outside role analysis.

(108) 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 (109) is grammatical, and here the object is selected; relative to the verb \textit{slice}, it has the same interpretation as it would if the secondary predicate were omitted. But (110) is not grammatical with the depictive interpretation given, which assigns the object no thematic relation to the verb.\textsuperscript{15}

(109) Al sliced the meat frozen.
    ‘Al sliced the meat while it was frozen.’

(110) * 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

\textsuperscript{14}If 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.

\textsuperscript{15}There is a grammatical parse of (110) in which I am not interested. It treats \textit{his throat hoarse} as an absolute sentential adjunct, and is distinguished by a clear intonational break after \textit{sang}: \textit{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 (109), neither after \textit{sliced} nor before \textit{frozen}.
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.\footnote{In 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.} 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 (110), its initial position could only be licensed by a thematic relation to the secondary predicate hoarse.

Why exactly should this make (108) good and (110) bad? Here is one suggestion. As just observed, the upshot of the resultative semantics is an outside object syntax like (106), 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, (111). This head licenses Case for a noun phrase that originates in the specifier of its complement. And given (106), the ellipsis in (111) 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.

\begin{center}
\begin{tikzpicture}[level distance=1.5cm, sibling distance=1.5cm, every node/.style={scale=0.6}]
    \node (S) {S} child {node (vp) {vP} child {node (v) {v} child {node (VP) {VP} child {node (O) {O }}}}};
\end{tikzpicture}
\end{center}

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 (108) 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 (110) could have a structure like (112).
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. Thus (112) 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. (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 τ, we would expect control by the subject, since, 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.

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

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17 What 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.

18 As observed above, the maximal VP 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.

19 Suppose 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.
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 \( \langle e, \ldots \rangle \) and covalue their first arguments. So the depictive (110) cannot be derived, because if *hoarse* combines with the verb *sing*, both will have to share his throat as an argument. But the resultative (108) 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 (113).

\[
\lambda y \ldots \lambda e_c \exists e_m \exists e_r. K(e_c, e_m, e_r) \land \text{sing}(e_c) \land \text{Pat}(e_c, y) \ldots
\]

Crucially this predicate, which describes a change, has an argument for its patient, \( y \) in (113). 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 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 2008 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, (114).\(^{20}\)

\[(114) \quad \begin{align*}
a. & \text{ Al pounded the cutlet (extremely) flat.} \\
b. & \text{ tā (*feǐcháng) zá (*feǐcháng) píng -le (*feǐcháng) nà kuài ròu.} \\
& 3s (*extremely) pound (*extremely) flat -PFV (*extremely) that CLS meat \\
& \text{‘He pounded the meat (extremely) flat.’}
\end{align*}\]

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.

\(^{20}\)Williams 2008 also discusses word order in OV languages, 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 Ijo, it precedes. Both types are attested in Japanese.
Objects in resultatives

But the correlation is otherwise hard to explain, if we allow that resultatives sometimes have a result object syntax like (107). 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). Consequently when R too is nonphrasal, the complex predicate M/R will contain only $X_o$s, and will therefore be an $X_o$ itself, a complex verb. 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. Thus basic 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 $V^M$, (115).

\[(115) \quad [\tau [v \ V^M_k \ v] [V^M_P \ O [t_k [\ldots R \ldots]]]]\]

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 complex verb that comprises both M and R. So assuming that movement to $v$ remains mandatory, what does move will be this larger verb, $V^{M/R}$, as in (116). The result in a head-initial language is continuous order.

\[(116) \quad [\tau [v [V^{M/R}_k M R] \ v] [V^M_P \ t_k ]]\]

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 (107), discontinuous order reflects the underlying order directly (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

\[21\text{This conjecture may help explain Synder’s (2001) observation that a language has a productive resultative construction only if has productive compounding of roots. If M comprises only the verb, then resultatives share with compounds the property that the verb combines directly with something other than a thematically-related argument. It is perhaps this general possibility (rather than, as Snyder has it, the more specific property of being able to form a compound) which is absent in languages that lack resultatives.}\]
raising of R and one that would forbid it. I have suggested (Williams 2008) that Vietnamese and Paamese (Crowley 2002) are such languages.22

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, (117)

\[
\text{(117) } [VP \ O_K \ [\bar{\top} \ V^M \ [Z_{PR} \ ec_k \ Z]]]
\]

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 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 qiè dàn ‘cut dull’ is outlined in (118). 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, (118d). The outside agent is instead introduced by a silent head of category v, (118e), whose merger with VP is interpreted with Kratzer’s rule of “Event Identification”: EI(f, g) ≡ λxλe.f e ∧ gxe. All other nodes are interpreted by Function Application, FA.

\[
\text{(118)} \quad \begin{align*}
\text{a. } & [\text{X K }] = \lambda R \lambda M \lambda e_c \exists e_m \exists e_r . K (e_c, e_m, e_r) \land R (e_r) \land M (e_m) \\
\text{b. } & [R] = [[V \ dun ]] = \lambda e. dull (e) \\
\text{c. } & [M] = [[[V \ qie ]] = \lambda e. cut (e)
\end{align*}
\]

\footnote{Among OV languages, Japanese has been said to be of this type as well; see Matsumoto 1995, Washio 1997, Nishiyama 1999.}
Notice that if we substitute just the verb qiè ‘cut’ for $\alpha$ in (118d), we instead derive a vP meaning ‘[[DP$_1$] cut [[DP$_2$]]].’ 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, 2007a).

Besides PR, the derivation in (118) involves only the two rules, EI and FA, 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. But 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, (119) requires the subject to name the agent of cutting and the object to name its patient; contrast (120). 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.

(119) Ed cut the box open.

(120) * 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. 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 (121) (cp. Higginbotham 1985, Steedman 2000).

This would allow an analysis like (122), 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.)

(121) a. $\text{Con}_{1}(f, g) \equiv \lambda x.f x \land g x$

b. $\text{Con}_{1+2}(f, g) \equiv \lambda y \lambda x.f y x \land g y x$
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. $\text{Subst}_1(f, g) \equiv \lambda x. f(x)g(x)$

f. $\text{Subst}_{1+2}(f, g) \equiv \lambda y \lambda x. f(gyx)$

g. $[\text{Subst}_1 + \text{Comp}_2](f, g) \equiv \lambda y \lambda x. f(y)g(y)x$

(122) a. $[[\lambda x. K_+]] = \lambda R \lambda M \lambda y \lambda e \exists e_m \exists e_r. K(e_c, e_m, e_r) \land R(e_r) \land M(e_r) \land \text{Pat}(e_c, y)$

b. $[[R]] = [[\lambda \text{ap. open }]] = \lambda e. \text{open}(e)$

c. $[[M]] = [[\text{v cut }]] = \lambda y \lambda x \lambda e. \text{cut}(e) \land \text{Pat}(e, y) \land \text{Ag}(e, x)$

d. $[[\text{v. AG }]] = \lambda x \lambda e. \text{Ag}(e, x)$

e. $[[\text{vp DP}_1 [v \text{ AG } [\text{vp DP}_2 [v M [ K_+ R ]]]]] = \lambda y \lambda e \exists e_m \exists e_r. K(e_c, e_m, e_r) \land \text{open}(e_r) \land \text{cut}(e_m) \land \text{Pat}(e_c, e_m, [\text{DP}_2]) \land \text{Ag}(e_m, [\text{DP}_1]) \land \text{Pat}(e_c, [\text{DP}_2]) \land \text{Ag}(e_c, [\text{DP}_1])$

An increase in the number and complexity of rules is not in itself desirable (cp. Kratzer 2005, Pietroski 2005). 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 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, (123).

(123) $\exists e. [[M/R]](e) \land \text{Pat}(e, [\text{Object}]) \land \text{Ag}(e, [\text{Subject}])$

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 DO\text{R} in terms of general rules of argument realization,

\[\text{Of course the complex rules could be eliminated by rigging the denotations of silent terminals to achieve the same effects. Changing the denotation of } K_+ \text{ in (122) will allow } [[K_+ \ R]] \text{ to combine with } [[M]] \text{ by the simple rule of } FA; \text{ just let } K_+ \text{ denote: } \lambda R \lambda M \lambda y \lambda e \exists e_m \exists e_r. K(e_c, e_m, e_r) \land R(e_r) \land M(y)(x)(e_r) \land \text{Pat}(e_r, y). \text{ But at best this is not a net simplification. And in the case at hand, it suggests something we have learned to be false, namely that this identification of arguments, patient of change with patient of } M, \text{ follows somehow from the very concept of a } K \text{ relation, which is the predicative content of } K_+\].
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 2007a), 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


Objects in resultatives


