1. Introduction

There is an intuitive difference between the two kinds of resultatives shown in (1–2) (Carrier and Randall 1992, Randall 2010).

(1) Transitive resultatives:
   a. The winemakers stomped the grapes flat.
   b. The chef sliced the cheese thin.
   c. The barber cut the customer’s hair short.
   d. The grocer ground the coffee beans into a fine powder.
   e. They painted their house a hideous shade of green.
   f. Sue hammered the metal flat.

(2) Intransitive resultatives (odd for some):
   a. The kids laughed themselves into a frenzy.
   b. The old man snored himself awake.
   c. He drank himself sick.
   d. The joggers ran their Nikes threadbare.
   e. He sneezed his handkerchief soggy.
   f. Ken drank the teapot empty.

This difference has to do with the transitivity of the verbs in sentences without resultative secondary predicates. When the resultative predicate is omitted, the transitive resultatives

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One difference between these two kinds of resultatives that we note but do not focus on is that transitive resultatives are (to our knowledge) universally judged as acceptable, while judgments about intransitive resultatives are more variable. This complication does not affect our analysis of grammars where all resultatives in (1–2) are acceptable.
in (1) have grammatical uses as transitive verbs with the kinds of objects they take in (1). In contrast, the intransitive resultatives cannot be used with the object DPs in (2) when the resultative predicate is omitted.

(3) Transitive verbs:
   a. The winemakers stomped the grapes.
   b. The chef sliced the cheese.
   c. The barber cut the customer’s hair.
   d. The grocer ground the coffee beans.
   e. They painted their house.
   f. Sue hammered the metal.

(4) Intransitive verbs:
   a. The kids laughed (*themselves).
   b. The old man snored (*himself).
   c. He drank (*himself).
   d. The joggers ran (*their Nikes).
   e. He sneezed (*his handkerchief).
   f. Ken drank (?the teapot).

Some analyses propose a unified structure for both kinds of resultatives. Such analyses treat all resultatives as structurally either intransitive (e.g., Kratzer 2005) or transitive (e.g., Embick 2004, Williams 2015). In contrast, other approaches (e.g., Randall 2010) propose transitive and intransitive resultatives have different underlying structures.

We argue for a non-uniform approach, where transitive and intransitive resultatives have different underlying structures. Our evidence comes from the English verbal prefix re-, which carries an internal argument requirement. As it turns out, re- is compatible with transitive resultatives but not intransitive resultatives. We take this to show that transitive resultatives involve a verb that directly takes an internal argument and that intransitive resultatives do not, which is incompatible with a uniform structural analysis for both. We then observe that putting re- together with post-VP again supports an analysis of transitive resultatives where the internal argument of the verb is shared with the resultative predicate. We propose an analysis that captures this argument sharing using multidominance (following similar proposals in Hiraiwa and Bodomo 2008, Johnson 2018 and Wilson 2021 for different structures).

2. Re- and its internal argument requirement

When re- is prefixed to an English verb in a sentence, the resulting sentence has the same asserted content as before, but with a presupposition that an event described by the verb it attaches to occurred at a prior time as well. Let us consider some examples.
Re- visiting resultatives

(5) The detective reexamined the scene.  
    ≈ “The detective examined the scene, and someone had examined the scene before.”  

(6) The traveler reread the magazine.  
    ≈ “The traveler read the magazine, and someone had read the magazine before.”

(7) George relit the lamp.  
    ≈ “George lit the lamp, and the lamp was lit before.”

(8) The satellite reentered the atmosphere.  
    ≈ “The satellite entered the atmosphere, and it had been in the atmosphere before.”

Much like the well-examined adverb again (Beck 2005, Beck and Gergel 2015, Beck and Johnson 2004, Beck and Snyder 2001, Patel-Grosz and Beck 2019, von Stechow 1995, 1996), re- is capable of producing both repetitive and restitutive presuppositions. Repetitive presuppositions are those in which the prior eventuality invoked by re-’s presupposition is an event, while restitutive presuppositions are those in which it is a state.

In addition, again like again (Bale 2007), re-’s presupposition may exclude the external argument. Consider (9), which provides a prior context supporting the sentence/paraphrase in (5).

(9) **Context:** A well-known public figure had been murdered. Due to the high profile of the case, the chief of police herself went to examine the scene before anyone else had. However, she was unable to find anything. She then assigned her finest detective to do another pass, so ...

The detective went and reexamined the scene.  

A presupposition that includes the external argument is not satisfied in (9): the detective had never previously examined this crime scene. Nevertheless, we find (9) felicitous in the context described, where the only prior event available to satisfy re-’s presupposition in the context is the one of the chief examining the scene.

The previous examples show that re- is very similar in meaning to again. However, unlike again, re- carries an internal argument requirement: re-V must take an internal argument, even if V alone typically does not (Keyser and Roeper 1992).

(10) a. Mary ran for five miles.  
b. *Mary reran for five miles.  
c. Mary ran the length of the race course.  
d. Mary reran the length of the race course.

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2An important concern we put aside here has to do with why there is a strong tendency in out-of-the-blue contexts to favor interpreting re-’s presupposition as including the external argument if this is not part of re-’s semantics. We do not propose an explanation for this, but believe it is likely to reside in pragmatics rather than semantics.
Olivia thought *(about) the solution.

Olivia rethought *(about) the solution.

In (10), we see an example of this with the verb run. Run is typically used intransitively, as in (10a). In such a use, re- cannot be used with run (10b). However, run can be used transitively with DP internal arguments that describe the path of the running eventuality (10c), and in these cases, re- can be used with run (10d).

In (11) we see what happens when re- is prefixed to a verb that lacks a transitive use otherwise. Think without re- introduces its internal argument via the preposition about (11a). In contrast, rethink does not use about to introduce its internal argument: it takes its DP internal argument without a preposition. In this regard, re- behaves like many other English verbal prefixes, which have similar requirements (Keyser and Roeper 1992).

For implementational purposes, we build this internal argument requirement into re-’s semantics. The result is very similar to many analyses of again. But while again combines with predicates of eventualities (type $\langle s, t \rangle$), re- combines with functions from entities to predicates of eventualities (type $\langle e, \langle s, t \rangle \rangle$).

Re-’s internal argument requirement is not satisfied by small clause subjects (14), clauses (15), adverbs (16), or datives (17) (Keyser and Roeper 1992). Only DP internal arguments suffice, as in the examples above. In each of these cases, an alternative way of expressing the meaning re- would express can be achieved using again; thus, semantic ineffability is not the culprit.

Marsha (re)watched the movie.
Marsha (*re)watched the movie play.
Marsha watched the movie play again.

Victoria (*re)thought that Abby was tired.
Victoria thought that Abby was tired again.


We note here but otherwise ignore the issue of implicit internal arguments. This could lead to complications in examples like John reconsidered, depending on how or whether the implicit internal argument of reconsider is represented syntactically.
Re-visiting resultatives

(16) a. Victoria (*re)behaved badly.
    b. Victoria behaved badly again.

(17) a. Victoria (*re)gave Abby a dollar.
    b. Victoria gave me a dollar again.

3. **Re-sultatives**

We now return to the structure of resultatives. In particular, we find that *re-* is grammatical with transitive resultatives, but ungrammatical with intransitive resultatives.

(18) *re-* added to transitive resultatives:
    a. The chef resliced the cheese thin.
    b. The grocer reground the coffee beans into a fine powder.
    c. They repainted their house a hideous shade of green.
    d. Sue rehammered the metal flat.

(19) *re-* added to intransitive resultatives:
    a. *The joggers reran themselves thin.
    b. *The kids relaughed themselves into a frenzy.
    c. *He resneezed his handkerchief soggy.
    d. *Ken redrank the teapot empty.

*Re-*’s internal argument requirement leads us to an explanation for the constrast. Transitive resultatives, we propose, are truly transitive: they contain a verb that takes a direct DP internal argument (as well as an external argument). In contrast, intransitive resultatives are not transitive: their verbs do not take a direct DP internal argument. If they did, we should expect *re-* added to intransitive resultatives to be grammatical, contrary to (19). We conclude that uniform analyses that do not recognize a structural distinction between transitive and intransitive resultatives are on the wrong track.

We now turn to the question of what the proper structural analyses of resultatives are, focusing primarily on transitive resultatives. One possible approach would posit that in (18), *re-* combines with a structure larger than the verb. For instance, *re-* might combine not with hammer in (18d), but instead a complex transitive predicate [hammer flat], producing re-[hammer flat] (and similarly for the other examples) (cf. Williams 2015, ch. 15). Such a structure would have to be unavailable in (19).

However, this approach is empirically untenable. In (20), we see that *re-*’s presupposition in transitive resultatives only necessarily includes the verb and the internal argument; the resultative may be excluded (20) (cf. Keyser and Roeper 1992). This is incompatible with *re-* scoping over the resultative, as in the analysis we just described.
a. Sue rehammered the nail flat after Ann hammered it crooked the first time.

b. Sue rehammered the metal flatter than Bill had hammered it before.

c. They repainted their house green after having painted it a grotesque shade of yellow.

d. The grocer reground the coffee beans into a fine powder, after first grinding them into smaller chunks.

e. I redirected him to the airport, since he was going the wrong way.

Instead, the structure seems to be 
\([re-V] \text{ DP}\), given our semantics in (13b). More precisely, we have shown that the internal argument is an argument of \(re-V\).

The same internal argument is an argument of the resultative as well. Because \(re\)- can only adjoin to verbs and not resultative predicates, we show this using \(again\). Consider (21).

(21) **Context:** The machine stamped out a flat piece of metal. Christine, being mischievous, went and bent it until it was all lumpy. Stepping in to fix things, ... Sue hammered the metal flat again. (restitutive)

In (21), no presupposition including Sue or a hammering eventuality is supported, since there is no prior eventuality in the context involving either of these. The eventuality that makes the presupposition of (21) felicitous is a prior state of the metal being flat, which excludes the verb and the external argument, but includes the internal argument and the resultative predicate. This shows us that the internal argument is an argument of the resultative, given the semantics for \(again\) in (13a). Let us conclude therefore that \([\text{DP Res}]\) is a constituent in a transitive resultative.

We are now potentially led to an interesting paradox: (20) led us to say that \([re-V \text{ DP}]\) is a constituent that excludes the resultative, while (21) led us to say that \([\text{DP Res}]\) is a constituent that excludes the verb. A standard syntax does not allow us to have both of these constituents in the same structure. Are resultatives structurally ambiguous, being generated in one way with \(re\)- as in (21) and in a different way with restitutive \(again\) as in (21)? No.

We can straightforwardly show that both sets of facts that lead to the conflicting predictions can be shown in a single example, as in (22), making such a proposal inadequate.

(22) **Context:** The machine made a flat sheet of metal. Christine hammered it until it was all lumpy. To fix this, ... Sue rehammered the metal flat again.

Here, the context satisfies two presuppositions: (1) a repetitive presupposition paraphrasable as “someone hammered the metal before,” and (2) a restitutive presupposition paraphrasable as “the metal was flat before.” No presupposition referring to a prior eventuality of the metal becoming flat via hammering (e.g., referring to a constituent \(hammer \text{ the metal flat}\)) is satisfied in (22). It is possible to modify \([\text{hammer the metal sheet}]\) apart from \([\text{flat}]\), while simultaneously modifying \([\text{the metal sheet flat}]\) apart from \([\text{hammer}]\). Structural ambiguity of the sort just described cannot predict this.
Re-visiting resultatives

To account for these modification possibilities coexisting in a single structure, we must extend a standard syntax. What causes a problem for a standard syntax is that the internal argument DP seems to belong to two distinct phrases that are not in a containment relationship. We can address this by augmenting our syntax to permit precisely this, using representations that allow multidominance (Citko 2005, Epstein et al. 1998, Gärtner 1999, Johnson 2012, Starke 2001). We represent the difference between transitive and intransitive resultatives as shown in (23). Note that nothing special need be added to standard rules of semantic composition to achieve the correct result; standard rules of semantic composition that relate the denotation of a mother node to its two daughters produce the correct result, as shown.

(23) a. hammer the metal flat (transitive resultatives)

\[
\begin{align*}
\text{\textsc{[vp]}} &= \lambda e.\text{hammer}(e,\text{the metal}) \land \exists e'[\text{flat}(e',\text{the metal}) \land \text{cause}(e, e')]
\end{align*}
\]

In addition, the structure proposed for transitive resultatives predicts the correct result for examples like (22), as shown in (24).

b. run their Nikes threadbare (intransitive resultatives)

\[
\begin{align*}
\text{\textsc{[vp]}} &= \lambda e.\text{run}(e) \land \exists e' [\text{threadbare}(e',\text{their Nikes}) \land \text{cause}(e, e')]
\end{align*}
\]
Finally, this analysis predicts that the acceptability of *re-* with resultatives with optionally transitive verbs should depend on the interpretation of the object. If the object can be interpreted as the internal argument, *re-* should be acceptable; if it cannot be (or can be only with coercion), the acceptability of adding *re-* should decrease. We find this to be the case.

(25) a. Yolanda (*re)sanded the board smooth.
    b. Yolanda (*re)sanded the air full of sawdust.

(26) a. Ken (?*re)drank the bottle empty. (metonymic reading easy)
    b. Ken (?*re)drank the teapot empty. (metonymic reading marginal)
    c. Ken (*re)drank himself into a stupor. (no metonymic reading)

In (25a), *the board* can be interpreted as the object of *sand*, and *re-* with a resultative is grammatical; while in (25b), *the air* cannot be interpreted as the object of *sand*, and it is ungrammatical. Similarly, if an object can be coerced into a metonymic reading (e.g., *the bottle* = the contents of the bottle), where the coerced referent can be interpreted as the object of the verb, as in (26a), the result is grammatical. With objects where the metonymic reading becomes more difficult or impossible, as in (26b–c), grammaticality decreases with the ease of coercion. Given the link our analysis makes between objecthood and the grammaticality of *re-* with resultatives, this is exactly what we would predict.
4. Conclusion

Using the internal argument requirement of re-, we revealed a structural difference between transitive and intransitive resultatives in English: transitive resultatives have a DP internal argument, while intransitive resultatives do not. By combining re- with again, we showed that transitive resultatives involve argument sharing: the DP internal argument is shared by (re-)V and the resultative predicate in transitive resultatives.

To capture these facts, we proposed an analysis where the constituent structure transparently reflects this argument sharing. Moreover, the structures we proposed provide not only capture the facts discussed here, but also express efficiently and simply the intuitive distinction between transitive and intransitive resultatives that was our starting point. Transitive resultatives involve a transitive verb sharing its argument with a resultative predicate, while intransitive resultatives involve a resultative predicate combining with its own argument to specify a state resulting from the event the (intransitive) verb describes. Nevertheless, both kinds of resultatives structurally and semantically overlap in that both involve a caused state that is expressed as a small clause.

Traditionally multidominance has been invoked to model a variety of movement-related phenomena (Engdahl 1980, Epstein et al. 1998, Gärtner 1997, 1999, Johnson 2012, Nunes 2001, Starke 2001). But in some instances, multidominance has been used to successfully model phrase sharing behavior that does not resemble movement as it is typically conceived (Citko 2005, Hiraïwa and Bodomo 2008, Johnson 2018, Wilson 2021). We have built on this prior work by showing that such applications of multidominance bear fruit in the analysis of resultatives as well. The line of work we aim to contribute to shows there is potential value in liberating multidominance from “corners” of the grammar (e.g., hydas, right-node raising, etc.) and using it in the modeling of parts of “core” grammar, such as argument structure and small clauses.

References


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