Particles and results: where to draw the line?

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1. The problem

Unaccusativity diagnostic: resultatives. Possible with most change-of-state verbs:

(1) a. The lake froze solid.
     b. Imhotep grew tall.
     c. ?The wood burned black.
     d. The bike broke into pieces.
     e. The cloth tore into shreds.

Cf. unergatives, transitives:

(2) a. Lucy worked herself crazy.
     b. Lucy coughed herself hoarse.

(3) a. Lucy froze the lollipops solid.
     b. Ethelgar hammered the metal flat.

Are simple resultatives possible with change-of-location verbs? Maybe …

(4) a. The balloon went/rose high.
     b. ??Lucy went/rose high.

(cf. *{The balloon / Lucy} went/rose high into the sky.*)

(5) a. The sun sank/dropped low.
     b. ?Lucy sank/dropped low.

(6) a. {Lucy / The balloon} went/came up/down/in/out … .
     b. Lucy fell down.

Question: Are *high*, *low*, *up*, *down* etc. RESULT STATES (RSs) like *solid*, *flat* etc. above, or something else?

If these do qualify as RSs, then the class of intransitives that allows this construction is a little larger (most change verbs, not just change of state).

Other possibilities:

- some or all of these elements are adverbial (cf. (7));
- some or all of these elements are particles (cf.) – the traditional analysis of *up*, *down* etc.

(7) a. Lucy went/rose upwards.
     b. Lucy went/fell/sank downwards.

(8) a. The building blew up.
     b. Thomas broke down.
     c. Lucy passed out.
     d. Lucy's hangover wore off.

Question: where do we draw the line between RSs and particles?

Method:

- identify the general properties of (i) resultatives, (ii) verb-particle constructions (§4, 5);
- identify those properties which *differ* between the two (§5);
- use these differing properties to determine the status of the questionable elements (§5).

In §6 I attempt some more formal analyses.

2. Basic facts about resultatives

Resultatives: verb plus a phrase denoting a "result state" (RS) of an argument, arising as a result of the event denoted by the verb.

Possible with most intransitive change of state verbs (*melt*, *burn*, *freeze*, *tear*, *break* etc.) as well as "motional processes" (*walk*, *run*, *swim*):

(9) a. Lucy and Chris walked apart.
     b. Harry was caught in the seaweed, but he managed to swim free.

Ruled out, however, with *(dis)appear* verbs and morphologically complex forms like *redden*, *solidify* (though possibly these are resultatives underlying: RS incorporates into light verb). *die* also lacks a resultative form (and a causative, a correlation which may be significant).

Also possible with many (change of state?) intransitives (e.g. *hammer*, transitive alternants of the above).

RS can be either an adjective or a PP:

(10) a. The lake froze *solid*.
      b. The lake froze *into ice*.

(11) a. Ethelgar hammered the metal *flat*.
      b. Ethelgar hammered the metal *into sheets*.

Inherently telic change intransitives (*break*, *tear* …) only allow RS to be a PP or *apart* (whatever that is):

(12) a. *The bike broke for hours.
      b. The bike broke into pieces.
      c. The bike broke apart.

Change of location verbs like *go*, *come*, *arrive*, *fall* clearly can be followed by a PP:

(13) a. Lucy went into the shop.
      b. Harry fell into the Devil's Snare.

I am treating these PPs as not expressing RSs (this may be the wrong decision, and ought to be subjected to further research). Some reasons:

- *in the shop* etc. may not describe a state of the argument in the way canonical RSs do; *Lucy went into the shop* at best awkwardly entails *Lucy became in the shop* (but cf. discussion to come in §5).
- Directional PPs are available with verbs in other semantic classes where adjectival RSs (and directional particles) are not:

(14) a. Lucy coughed into the room.
       b. The trucks rumbled into the village.
       c. Manchester United survived into the cup final.

3. Basic facts about particle verbs

Particle verbs (phrasal verbs; PVs): consist of a verb plus a "particle". Widespread in English; also found in other languages.

With transitives, particle may in general either precede or follow the direct object:

(15) a. James blew up the building.
       b. James blew the building up.

Possible to discern two broad groupings:

(16) Idiomatic: *get on*, *get along*, *log in*, *nod off*, *black out*; *blow up*, *break down*; *draw up*, *print out*; *cosy up* …
(17) Transparent: *go up*, *go down*, *rise up*, *sink down*, *come across*, *run away*; *push out*, *pull in*, *move over* …

The particles in (17) are all *directional* (though this isn't necessarily true of all transparent PVs). Note same particles may be found (indeed extremely often are) in both idiomatic and transparent contexts.

Distinction between idiomatic and transparent PVs is not always straightforward. It is particle verbs of the second sort that are at issue here – do they count as resultatives or not?

Selection of particles identified by Cappelle (2005): *about*, *across*, *ahead*, *along*, *apart*, *around*, *aside*, *away*, *back*, *by*, *down*, *home*, *in*, *off*, *on*, *out*, *over*, *round*, *through*, *together*, *up*

- Also *short* in *cut short*, *go* in *let go* etc.

4. Similarities (mostly) between resultatives and particle verbs

Position relative to PPs

Particles must precede adjunct PPs (unless PP is preposed) (Cappelle 2005):

(18) a. The building blew (*in the attack) up (in the attack).
       b. In the attack the building blew up.

Same is true of RSs:

(19) a. (In the smithy) Ethelgar hammered (*in the smithy) the metal (*in the smithy) flat (in the smithy).
       b. The water froze (*out in the garden) solid (out in the garden).

c. The bike broke (*in the accident) into pieces (in the accident).

(20) Icarus soared (*above the sea) high/up (above the sea).   (Jackendoff 2002)

Position relative to adverbs

The ordering restrictions on particles and adverbs discussed by Neeleman (2002) also seem to hold broadly of RSs and adverbs:

(21) (Adv) V (*Adv) NP (Adv) Prt (Adv)
      *James (quickly) blew (*quickly) the building (quickly) up (quickly).*

(22) (Adv) V (*Adv) Prt (*Adv) NP (Adv)
      *James (quickly) blew (*quickly) up (*quickly) the building (quickly).*

(23) (Adv) V (*Adv) NP (Adv) RS (Adv)
      *Ethelgar (quickly) hammered (*quickly) the metal (quickly) flat (quickly).*

(24) (Adv) V (*Adv) RS (*Adv) NP (Adv)
      *Ethelgar (quickly) hammered (*quickly) flat (*quickly) the metal (quickly).*

(The acceptability of the sentences in (24) may be reduced relative to (23) by virtue of the fact that the NP-RS order is preferred in general; see the next section.)

Position in nominals

Particles show strong preference for preceding object in *-ing* nominals (Cappelle 2005):

(25) a. the blowing up of the building
      b. *the blowing of the building up

Same is true of adjectival RSs:

(26) a. the burning black of the toast, *?the burning of the toast black
      b. the freezing solid of the lake, *?the freezing of the lake solid
      c. Ethelgar's hammering flat of the metal, *?Ethelgar's hammering of the metal flat

But PP RSs allow both orders:

(27) a. {the / Lucy's} breaking into pieces of the bike
      b. {the / Lucy's} breaking of the bike into pieces

(This is not helpful as regards the cases under question here.)

Combination with particles

Particles can combine with other particles to some extent (Bolinger 1971, Nicol 2008):

(28) a. Come along up!
      b. Lucy went back down.
      c. Chris moved on over.

These combinations generally involve directional particles.

RSs can also combine with particles:

(29) a. Ethelgar hammered the metal down flat.
      b. Lucy broke the bike up into pieces.

Note the obligatory RS-Prt order in these cases:

(30) a. *Ethelgar hammered the metal flat down.
      b. *Lucy broke the bike into pieces up.

This may connect to ordering restrictions on multiple particles noted by Bolinger (1971), Nicol (2008) and others (e.g. *up* and *down* must precede *over* and *in*).

high and *low* follow similar particles, however:

(31) a. The balloon rose up high.
      b. The sun sank down low.

Note also slightly different possibilities with *away* (a consequence of semantic differences?):

(32) a. Ethelgar was hammering (?away) the metal (*away) flat (*away).
      b. Lucy was breaking (?away) the bike (away) into pieces (*away).

Gapping

V+Prt combinations can be gapped together (Cappelle 2005); so can V+RS:

(33) a. Lucy ran up a big bill and Chris a small one.
      b. Ethelgar hammered flat the iron and Hereward the bronze.

The verb cannot be gapped alone in these cases:

(34) a. *Lucy ran up a big bill and Chris up a small one.   (after Cappelle 2005)
      b. *Ethelgar hammered flat the iron and Hereward flat the bronze.

Pied-piping

Neither particles or RSs can be pied-pied with an object NP under *wh*-movement:

(35) a. *Up which bill did Lucy run?   (after Cappelle 2005)
      b. Which metal flat did Ethelgar hammer?

5. Differences between resultatives and particle verbs

Compositionality

Meaning of resultatives is straightforwardly compositional. This is not the case with many PVs (e.g. *blow up*). But the class of "particle verbs" under question (e.g. *go up*) can be analysed in compositional terms, as of course can constructions like *go high*.

➢ *up, high* etc. act more like RSs than Prts in this instance.

"become" paraphrase

Resultatives can be paraphrased using *become*:

(36) a. The lake froze solid ≈ The lake became solid as a result of freezing
b. Ethelgar hammered the metal flat ≈ The metal became flat as a result of Ethelgar hammering it

This is clearly not the case with the idiomatic PVs:

(37) a. The building blew up ≠ The building became up as a result of blowing
b. Lucy and Chris got along ≠ Lucy and Chris became along as a result of getting

Status of directional particles is less clear:

(38) a. Lucy went up ?≈ Lucy became up as a result of going   (end-state: *Lucy was up*)
b. Chris fell down ?≈ Chris became down as a result of falling   (end-state: *Chris was down*)

Cf. (after Cappelle 2005):

(39) The trucks drove by ≠ The trucks became by as a result of driving.
                                                        (end-state: **The trucks were by*)

What about *high*, *low*?

(40) a. The balloon rose high ≈ The balloon became high as a result of rising
                                                        (end-state: *The balloon was high*)
b. The sun sank low ≈ The sun became low as a result of sinking
                                                        (end-state: *The sun was low*)

Cf. Declerck (1990), McIntyre (2002, 2004).

> *up*, *down* etc. do not clearly pattern either with RSs or other Prts, but *high*, *low* behave as RSs.

Relation to semantic/syntactic class of base

Related to its compositional semantics, the resultative construction maintains the basic argument/event structure class of the base verb, e.g. unaccusatives remain unaccusative, transitives remain transitive:

(41) a. The lollipops froze.
b. the frozen lollipops   (allows adnominal past participle)
c. Lucy froze the lollipops.   (allows causative alternation)
d. *The lollipops froze a freezing. (disallows cognate object)

(42) a. The lollipops froze solid.
b. the frozen solid lollipops
c. Lucy froze the lollipops solid.
d. *The lollipops froze a freezing solid.

(43) a. Ethelgar hammered *(the metal).   (disallows object omission)
b. Ethelgar hammered *(the metal) flat.

This is not always true of particle verbs. Just looking at intransitive PVs:

(44) Transition → transition (unaccusative → unaccusative): *break → break down, fill → fill out, dry → dry up* (and most PVs derived from transition verbs; exceptions include *break in* which appears unergative)

(45) a. Process → process (unergative → unergative): *work → work out* (and most PVs derived from process verbs?)
b. Process → transition (unergative → unaccusative): *blow → blow up*

(Importantly *verbs in this class do not allow resultatives*, a central difference.)

(46) Transitive → intransitive: *pass → pass away, get → get out, make → make up, think → think back …*

(47) a. Noun → intransitive: *mess → mess up, back → back away …*
b. Adjective → intransitive: *black → black out*

The directional PVs seem to pattern with the resultatives (but also many other PVs) in that they maintain the syntactic properties of transitions/changes of location/unaccusatives. However, the relevant diagnostics are not so clear-cut as would be ideal. These verbs fail the diagnostics for unergativity:

(48) a. *Lucy went up a going up.
b. *Lucy was going up away. / *Lucy was going away up.   (in relevant sense)
c. *Lucy went up her way into the clouds.
d. *Lucy outwent up Chris.
e. *goer up

However, even PVs which semantically look like processes tend to fail these tests (though nb. they do not pass the unaccusative tests either):

(49) a. *Lucy worked out a working out.
b. *Lucy was working out away. / *Lucy was working away out.
c. *Lucy worked out her way into the competition.   (in relevant sense)
d. *?Lucy out-worked out Chris.
e. *worker out

(Agentive *-er* is somewhat possible with some of these verbs: it is attested for example in *washer-up*, *washer-upper*, *finder-outer*, *finder-out*, *runner-away*, *nodder-offer*.)

Many directional PVs also fail the standard unaccusativity test of allowing the causative alternation (to a degree this is unsurprising as it is out with most change of location verbs anyway):

(50) a. *Lucy went Chris.   (intended sense: "Lucy made Chris go.")
b. *Lucy went Chris up.   (intended sense: "Lucy made Chris go up.")

(51) a. ??Lucy rose the ball.
b. ??Lucy rose the ball up.

(52) a. The storm sank the ship.
b. *?The storm sank the ship down.

This contrasts with many PVs which do allow the causative alternation, e.g. *break out*, *shut up*, *check in* …

(53) a. Lucy shut up.
  b. That shut Lucy up.

(54) a. Lucy checked in.
  b. The manager checked Lucy in.

Not all idiomatic intransitive PVs allow causatives, however:

(55) a. Process verbs (unergatives): *make up*, *get along*, *work out* …
  b. Verbs referring to death or unconsciousness: *pass away*, *die down*, *drop off*, *pass out*, *nod off*, *black out*
  (cf. *die*, a notable exception to the general rule that simple intransitive change-of-state verbs allow causatives)
  c. Various others: *dry up*, *grow up*, *break down*, *fill out*

The (a) cases above are expected, but not the (c) cases.

Motionality does not by itself preclude the causative alternation with PVs. Alternating PVs include: *stand up*, *get up*, *break free/apart*, *tear free/apart*.

(56) a. Lucy stood up.
  b. Chris stood Lucy up.

Directional PVs may allow adnominal past participles (though not prenominally):

(57) a. The soul gone up to heaven is blessed.
  b. The ship sunk low on the seabed remained forgotten.

> ➢ *up*, *high* etc. pattern with all RSs and some Prts.

Position relative to NP

Transitive PVs generally allow both V-NP-Prt and V-Prt-NP orders:

(58) a. James blew up the building.
  b. James blew the building up.

Though cf. exceptions like:

(59) *They pushed inside the piano.   (after Cappelle 2005)

With resultatives, V-NP-RS is the normal order:

(60) a. Ethelgar hammered the metal flat.
  b. Lucy tore the cloth into pieces.

Adjectival RSs may also be able to occur with V-RS-NP order, though this feels somewhat degraded:

(61) a. (?)Ethelgar hammered flat the metal.
  b. ??Lucy froze solid the lollipops.
  c. *?Imhotep burned black the toast.

PP RSs do not allow this order:

(62) *Her father tore into pieces the book.

"Transparent" PVs with *up*, *down* etc. allow either order (although perhaps V-Prt-NP is more natural?):

(63) a. Lucy moved the picture up.
      b. Lucy moved up the picture.

(64) a. Lucy pushed her feet down.
      b. Lucy pushed down her feet.

high, *low* must come after the NP:

(65) a. Lucy threw the ball high.
      b. *Lucy threw high the ball.

Like particles (Cappelle 2005), RSs must precede, not follow, an unstressed pronoun:

(66) a. James blew it up.
      b. *James blew up it.   (in relevant sense)

(67) a. Ethelgar hammered it flat.
      b. *Ethelgar hammered flat it.

> *up*, *down* etc. pattern with Prts, although maybe slightly more like RSs than others. *high*, *low* pattern with RSs.

Position relative to multiple arguments

Particles and RSs show essentially the same ordering restrictions in prepositional dative/benefactive contexts (see Neeleman 2002 for some discussion of particles in these contexts):

(68) V (Prt/?RS) NP (Prt/RS) PP (*Prt/*RS)

(69) a. The professor sent (out) the handouts (out) to the students (*out).
      b. Chris cooked (up) a surprise (up) for Lucy (*up).
      c. Ethelgar hammered (?flat) the metal (flat) for Elfleda (*flat).

However when indirect object argument is expressed just as an NP the two show different orders:

(70) Datives: V (*Prt) NP (Prt) NP (*Prt)
      Benefactives: V (Prt/*RS) NP **(Prt/*RS)** NP **(RS/*Prt)**

(71) a. The professor sent (*out) the students (out) the handouts (*out).   (Neeleman 2002)
      b. Chris cooked (up) Lucy (up) a surprise (*?up).
      c. Ethelgar hammered (*flat) Elfleda (*flat) the metal (flat).

This test is hard to apply to the directional particles case due to the difficulty of constructing useable examples.

Position relative to complex NP

Particles must precede rather than follow a complex NP (Ross 1967):

(72) a. I looked up the building which housed the man who killed my father.
b. *I looked the building which housed the man who killed my father up.

RS can perhaps marginally follow a complex NP, though:

(73) Ethelgar hammered (flat) the radioactive metal (*flat) which poisoned the man who killed his father (??flat).

Similarly this order may be marginally possible with directional particles, and very marginally with *high* and *low*:

(74) a. ??I moved the piece which represented the man who killed my father up.
b. *?Moeen threw the ball which knocked out the Australian who tried to catch it high.

➢ *up, high* etc. may pattern with RSs not Prts, but the relevant judgements are weak.

Preposing

Idiomatic PVs do not allow the preposing of the particle (Cappelle 2002, Huddleston & Pullum 2002):

(75) a. *Up blew the building.
b. *Out she worked.
c. *Down it all calmed.

Preposing of RS marginally possible with intransitives?

(76) a. ?Solid froze the lake.
b. ?Into pieces the bike broke.

Worse with transitives:

(77) a. ??Flat Ethelgar hammered the metal.

Possible, however, with "transparent" PVs (Cappelle 2002, Huddleston & Pullum 2002):

(78) a. Down went the ship.
b. Up she rises.
c. Away we went.

Generally out with transitives, with some exceptions with pronominal arguments (Cappelle 2002):

(79) a. *Up Lucy pulled her socks.
b. *Down Lucy moved the picture.
c. In he brought her.
d. Off they took him.

Also possible with some potentially idiomatic cases (though Cappelle 2002 and others argue these are in fact compositional):

(80) a. Out went the light.

b. Up went the sales.
c. On he chattered.

Very marginal with *high*, *low*:

(81) a. *?High rose the balloon.
b. *?Low sank the sun.

➢ RSs may pattern slightly more like *up*, *down* than other Prts do; *high*, *low* are distinct from *up*, *down*

Modification

Particles (like prepositions) can be modified by *all*, *right*, *the hell* etc. (Emonds 1972, Jackendoff 1973, Fraser 1986):

(82) a. They cleaned it all away.
b. The soles of his shoes had worn right out.
c. Shut the hell up!

Adjectival RSs also allow *all* modification:

(83) a. Ethelgar hammered the metal all flat.
b. The lake froze all solid.

Note, however, this is also possible in non-resultative contexts:

(84) a. The metal was all flat.
b. The lake looked all solid.

right is not permitted, except perhaps in a colloquial register?

(85) %?The lake froze right solid.

These are somewhat possible with PP RSs, as might be expected:

(86) a. Lucy hammered the metal right/all into bits.
b. The window broke right/all into shards of glass.

the hell doesn't seem possible with RSs:

(87) a. *Ethelgar hammered the metal the hell flat.
b. *The lake froze the hell solid.

Directional particles act somewhat like other particles, though matters are not fully clear-cut

(88) a. The balloon went right up. / The ship went right down.
b. ?The balloon went all up.
c. *The balloon went the hell up.

high, *low* do not generally accept these modifiers:

(89) a. *The balloon rose right high. / *The ship sank right low.
b. *?The balloon rose all high.

c. *The balloon rose the hell high.

> ➢ *up, down* pattern more like Prts than RSs; *high, low* pattern more like RSs.

Clefting

Particles cannot be clefted (Emonds 1972, Jackendoff 1973):

(90) a. *It was up the building blew.
b. *It was down the sea calmed.

RSs, however, can be:

(91) a. It was black that the toast burned.
b. It was into pieces that the bike broke.
c. It was flat Ethelgar hammered the metal.

This may also be marginally possible with directional particles and *high, low*:

(92) a. ?It was up that Lucy climbed/went/walked.
b. ?It was high that the balloon rose.

> ➢ *up, high* may pattern slightly more like RSs than Prts.

Bare replies to questions

Similar results to clefting:

(93) A: How did the building blow?
B: *Up.   (after Emonds 1972, Jackendoff 1973)

(94) A: How did Ethelgar hammer the metal?
B: Flat.

(95) A: Where did Lucy go?
B: Up.

(96) A: Where did the balloon rise?
B: ??High.

> ➢ *up, high* may pattern slightly more like RSs than Prts.

Summary

To summarise the patterns identified in this section:

- **Compositionality:** *up*, *high* etc. act more like RSs than Prts.
- ***become* paraphrase:** *up*, *down* etc. do not clearly pattern either with RSs or other Prts, but *high*, *low* behave as RSs.
- **Relation to class of base:** *up*, *high* etc. pattern with all RSs and some Prts.

- **Position relative to NP:** *up*, *down* etc. pattern with Prts, although maybe slightly more like RSs than others. *high*, *low* pattern with RSs.
- **Position relative to multiple arguments:** test hard to apply.
- **Position relative to complex NP:** *up*, *high* etc. may pattern with RSs not Prts, but the relevant judgements are weak.
- **Preposing:** RSs may pattern slightly more like *up*, *down* than other Prts do; *high*, *low* are distinct from *up*, *down*.
- **Modification by *right* etc.:** *up*, *down* pattern more like Prts than RSs; *high*, *low* pattern more like RSs.
- **Clefting, bare replies:** *up*, *high* may pattern slightly more like RSs than Prts.

In tabular form:

	up, down	*high, low*
Compositionality	More like RSs	More like RSs
become **paraphrase**	Unclear	As RSs
Relation to class of base	As all RSs and some Prts	As all RSs and some Prts
Position relative to NP	More like Prts	More like RSs
Position relative to complex NP	More like RSs??	More like RSs??
Preposing	More like RSs??	More like RSs? (distinct from *up*, *down*)
Modification by *right* etc.	More like Prts	More like RSs
Clefting, bare replies:	More like RSs?	More like RSs?

high, *low* clearly pattern more like result states overall, and it may be sensible to conclude that they are indeed a sort of result state (though more research is required to compare these to more clearly adverbial elements like *upwards* and *downwards*).

The directional particles like *up* and *down* show rather more mixed behaviour. In some respects they appear to act like result states, in other respects like particles.

6. Syntactic structures

The structure of PVs and resultatives

All this somewhat supports the viewpoint taken by Wurmbrand (2000) and others subsequent that transparent PVs have a "small clause"-type structure – if we assume following Hoekstra (1988) and others that resultatives also involve small clauses – and that idiomatic PVs are something else (e.g. "complex heads").

(97) a. [VP V *go* [SC *Lucy up*]]
    b. [VP V *freeze* [SC *lollipops solid*]]

(98) [VP [V° *blow up*] [NP *the house*]]

Similarities between transparent PVs and straightforward resultatives thus arise because of this shared small clause structure (I will not go into this here).

Similarities between resultatives and PVs (§4) more generally presumably reduce to some more general similarities between (97) and (98).

Differences between directional particles and Adj/PP result states

What about the differences between directional particles (Prt$_{dir}$) and canonical RSs?

- the two behave broadly the same in most respects, but differ in that (i) Prt$_{dir}$ more easily precedes an object NP (though perhaps not as easily as other particles), (ii) Prt$_{dir}$ can be modified by *right*.

The relevant data for (i), again:

(99) a. Ethelgar hammered the metal flat.
 b. (?)Ethelgar hammered flat the metal.

(100) a. Lucy moved the picture up.
 b. Lucy moved up the picture.

Contrast is slight but Prt-NP is perhaps slightly better than AdjP-NP.

Possible account: particles have less formal-featural and/or semantic and/or phonological content than adjectives (and PPs), allowing them to more freely occur in a range of positions.

- Evidence that words like *up*, *down* etc. have relatively small sets of formal features further furnished by the fact that they can operate in a number of different ways: as compositional particles, as idiomatic particles, as prepositions, as affixes, (as adjectives, as verbs …).

Relevant data for (ii):

(101) a. Lucy went right up.
 b. *The lake froze right solid.

This contrast may again relate to the featural status of Prt$_{dir}$: they belong to the same class of elements as idiomatic particles and prepositions (indeed may not even be lexically distinct from them in many cases) – i.e. the class which allows *right* modification. Adjectives are not in this class (in Standard English).

Differences between ditransitives

What about the following distinction (repeated from (71) above)?

(102) a. Chris cooked (up) Lucy (up) a surprise (*?up).
 b. Ethelgar hammered (*flat) Elfleda (*flat) the metal (flat).

Small clause vs. complex head structures with higher applicative head introducing benefactee:

(103) [$_{ApplP}$ *Elfleda* [$_{Appl'}$ Appl [$_{VP}$ [$_V$ *hammer*] [$_{SC}$ *the metal flat*]]]]

(104) [$_{ApplP}$ *Lucy* [$_{Appl'}$ Appl [$_{VP}$ [$_{v°}$ *cook up*] [$_{NP}$ *a surprise*]]]]

V moves to Appl and then v in each instance, giving the surface orders. *up* (as part of the complex head) can either remain in situ or move up with the VP. Movement of *a surprise* – ordinarily possible with PVs – to wherever would otherwise go is blocked because of the intervention of *Lucy*.

(See also Basilico 2008.)

Outstanding question: what about datives, though? Recall V-Prt-NP-NP order is not possible here:

(105) The professor sent (*out) the students (out) the handouts (*out).

Rethinking complex heads in terms of selectional features

"Complex head" analysis is unappealing for various reasons (e.g. why can V and Prt be separated?). Alternative suggestion: V *selects* for Prt, e.g. *blow up* is derived from a lexical entry along the following lines:

(106) [BLOW, /bloʊ/, <*blew*, *blown*>, "explode", V, SEL: <u>NP</u>, (NP), *up*]

This is distinct then from the lexical entry for ordinary *blow*:

(107) [BLOW, /bloʊ/, <*blew*, *blown*>, "exhale strongly; bluster", V, SEL: <u>NP</u>, (PP)]

In the *blow up* case, NP and *up* can be merged in either order, yielding the different surface orders:

(108) a. *blow up the house*: [[[*blow*] [*up*]] [*the house*]]
     b. *blow the house up*: [[[*blow*] [*the house*]] [*up*]]

Directional particles, by contrast, are not selected by the lexical verb. (Neither are RSs, probably.)

How does this interact with what assumed above?

Prt+RS combinations

Given (97), how do we derive sentences such as the following?

(109) Ethelgar hammered the metal down flat.

down looks like it's probably a Prt$_{dir}$, but can we fit both it and *flat* into the small clause structure?

Nb. if we can, we need some way of explaining why the following is ungrammatical:

(110) *Ethelgar hammered the metal flat down.

- Prt must precede Adj.

down modifies *flat* in this instance?

A need for a more elaborate structure? – directional elements c-command stative/resultative ones (also observable in orders of particles themselves; cf. Ramchand 2008, Nicol 2008, Baker 2017).

(111) [TransitionP *down* [ResultP *flat*]]

Lots of details to be worked out here – what is the position of the NP? of the verb? What position do Prt and RS occupy in the structure (specifier? head? complement?)? How does this interact with the other analyses above?

This sort of analysis has potential for explaining differences between transparent and idiomatic PVs in terms of the structural positions of particles. One set of possibilities:

- Directional particles and RSs are complements, entering into a predicate relation with a functional head and an argument:

(112) [*Lucy* [Transition [… *up*]] = Lucy BECOME up

(113) [*lollipops* [Transition [… *solid*]] = lollipops BECOME solid

- Prt$_{dir}$ may optionally incorporate into the verb, but Adj/PP cannot (features mean not able to be a defective goal for V).

- Idiomatic particles may be merged either in the functional head position itself, in which case V incorporates into them as it moves up the tree, or into a specifier position:

(114) *James blew up the house:* [… [*the house* [Result=*up* [*blow*]]]]

(115) *James blew the house up:* [… [*the house* [*up* [Result [*blow*]]]]]

Much still to be thought about here!

7. "Conclusions"

- Directional particles like *up* and *down* are somewhat like result states, in that they can be analysed as part of small clause structures – however, they differ from standard RSs in ways which may be explicable in terms of their featural makeup.

- *High*, *low* behave consistently like result states, suggesting the class of verbs which allow resultatives should also verbs like *rise*, *sink*, *come*, *go* (the latter sort better with non-agentive subjects). However, the possibility that these may be better analysed as adverbs remains to be properly explored.

- Details of formal analysis still need working through.

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