Word Order in Resultatives

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1. Resultatives and their orders

This paper advances a general account of word order in resultatives. My conclusions derive from consideration of several languages, both VO and OV. Featured from the first group are English, Igbo, Edo, Ambae, Paamese, Mandarin, Shanghainese, Thai, and Vietnamese; included in the second are German, Ịjọ, Japanese, Malayalam, Kannada, Mizo, and Yi.

Resultatives are single clause constructions comprising two overt predicates, a means predicate M and a result predicate R, neither one introduced by a conjunction or adposition. In (1) M is *pound* and R is *flat*. The smallest constituent containing both M and R, I will call M/R.

(1)   Al pounded the cutlet flat.
       'Al made the cutlet flat by pounding.'

Semantically, resultatives describe an event of change, achieved by means of an M event and ending in a condition defined by R; but this particular relation among events has no morphological expression. My glosses follow the scheme used in (1) unless quoted from a source.

Word order varies in two ways. First, the overt direct object O may surface between M and R, giving a *discontinuous* order as in (1), or it may not, giving a *continuous* order as in (2) and (3).[1] Basic discontinuous order is found only in VO languages.[2]

(2)   Ọkụkọ kpu   wa   -ra   akw'a.
       fowl   brood split -FACT egg
       'The chicken made the eggs split by brooding.' [Igbo (Benue-Congo)]

(3)   da   =mo   tai   visa   na   avi.
       1ns.incS =REAL chop   split(tr) ACC   firewood
       'We split the firewood by chopping it.' [Ambae (Oceanic, Vanuatu)] (Hyslop 2001: 320)

Second, R may precede M as in (4), or follow it as in (5) and (6). The former, RM order is found only in OV languages.

(4)   weil   er   meine Hosen unheimlich sauber gewaschen hat
       because he   my   pants uncannily   clean   washed   has
       'because he made my pants uncannily clean by washing' [German]

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(5)   keel -in   pâl   a-   sû   chia.
       Goat -ERG fence 3s- butt at   bad
       'The goat butted the fence and broke it.' [Mizo (Kuki-Chin, TB)] (Chhangte 1993: 143)

(6)   Erí bẹ́lẹ̀ sùrụ pámọ   mị̀.
       he pot wash clean(tr) -PAST
       'He washed the pot clean.' [Ijọ (Atlantic-Congo)] (Williamson 1965: 57)

The question is, what determines these differences? In Section 2 I defend a generalization: word order varies with the syntactic size of R, head or phrase. Section 3 says what sort of syntax predicts this correlation, deciding that the size of R must vary underlyingly, and the initial position of O must be outside M/R. I observe a semantic implication of this conclusion in Section 4, before concluding.

2.   Observed correlates of order

This section reviews some facts that support (7), a generalization that I have found robust. The correlation it observes is stronger, moreover, than one that is noted more often, which relates order to whether or not R has a verb as its head.

(7) a.   Basic order is MOR in a VO language, and ORM in an OV language, if and only if R is phrasal.
    b.   Basic order is MRO in a VO language, and OMR in an OV language, if and only if R is nonphrasal.

I call R *phrasal* if it can include adverbial modifiers, and *nonphrasal* only if it can't. So if modification is impossible, this is evidence for nonphrasality, though it is not strictly conclusive. An order is *basic* when it does not depend on special phonological or pragmatic conditions.

Let's consider VO languages first. In these, resultatives whose basic order is continuous do not allow adverbs in R. To my knowledge, (8) is representative.

(8)   tā zá   (*hěn)   píng -le   nà kuài ròu.
       3s pound (*very) flat   -PFV   that chunk meat
       'He pounded that chunk of meat (very) flat.' [Mandarin (Sinitic)]

Discontinuous order, if possible with unmodifiable R, is always nonbasic. This pattern is found in Shanghainese, for example, but only when O is a monosyllabic pronoun (Xu and Tang 1988: 480, Huang 1996: 735), as in (9).

(9)   ŋu^{23} sɔ^{53} ɦi^{23} (*tɕɔ kwɛ)   su^{53}.
       1s   cook   it   (*very)   crisp
       'I cook it (very) crisp.' [Shanghainese (Sinitic)] (Libin Shen, p.c.)

I submit that, complementarily, basic order is discontinuous just when R is phrasal. So English (10) represents the general case.

(10)   Al pounded it (extremely) flat.

This seems at first to be false. In Edo, Yoruba, and other West African languages with MOR resultatives, many types of adverbs are excluded from R (Stewart 2001, Lawal 1993), (11). At least in Edo, however, some remain possible (12). R is indeed a phrase, therefore, even if it licenses only certain adverbs. The same may be true in Yoruba, though I have yet to confirm this.

(11) Òzó   sùá   ógọ́   (*giẹ́!giẹ́) dé.
       O.   push bottle (*quckly) fall
       'Ozo made the bottle fall (quickly) by pushing.' [Edo (Benue-Congo)]
       (Stewart 2001, translation modified by AW)

(12) Òzo kòkò Àdésúwà mòsè   (vbe Iyoba).
       O.   raise A.   be beautiful (like queen mother)
       'Ozo raised Adesuwa to be beautiful like the Queen Mother.' [Edo] (O.T. Stewart, p.c.)

More certainly, when R does accommodate adverbs, continuous order is nonbasic, if it is possible at all. In both English and Vietnamese, it requires that O be heavy or stressed.

(13) He pounded extremely flat (*it) / every single cutlet we gave him.

(14) Tôi giặt rất   sạch   (*cái quần) / cái quần tráng này.
       1s   wash very be clean (*CLS pants) / CLS pants white these
       'I washed very clean (*the pants) / *these* white pants.' [Vietnamese]

It must be observed, however, that one language may have two constructions, both with resultative form and meaning, but differing in the syntactic capacity of R. Crowley discusses cases like this in Oceanic languages, Paamese particularly (2002: 55, 83). One construction puts inflection on the verb in R, while the other does not. Consonant with (7), the first has MOR order and the second, MRO. Similarly, Vietnamese allows both continuous (15) and discontinuous (16) basic orders, but with a difference in R. When R openly includes a modifier, only MOR is basic. Surface MRO still remains available, but only as a nonbasic order, as shown by (14).

(15) Tôi giặt sạch   cái quần.
       1s   wash be clean CLS pants
       'I made the pants clean by washing.' [Vietnamese]

(16) Tôi giặt   cái   quần (rất) sạch.
       1s   wash CLS   pants (very) be clean
       'I made the pants (very) clean by washing.' [Vietnamese]

Besides the correlation of order with the size of R, there is also one with category. Basic order is continuous only if the predicate in R is a verb, i.e. a root that can serve as the main predicate of a matrix clause without auxiliary support. Igbo (2) and Ambae (3), for example, have verbs in R.

But category is less informative than size. Basic order may be discontinuous, even with a verb in R, as is the case in (11) or (17). So size promises a stronger basis for explaining order. I see the partial correlation with category as an additional explanandum.

(17) lum² loŋ¹ pat⁸ xa⁶ mai⁴ xaːt⁹ lɛu⁴.
       wind big blow tree branch snap FINPRT
       'A strong wind made the branches snap by blowing.' [Dai (Tai)]
       (Yu 1980: 90, translation from Mandarin gloss AW)

Before turning to OV languages, I note an important negative fact. Basic order never depends on whether O has a 'selected' thematic relation to M. Take Igbo (18). Here O can be understood as naming either the thing poked or the thing poked with (Williams 2007a). Only the former thematic relation is 'selected,' in being available to O in a simple clause with the same verb (19). But this has no effect on word order in the resultative. Likewise Ambae (20) has the same continuous order as (3), and necessarily so, even though O has a selected relation to M only in (3), judging by Hyslop's translations. Doubt must therefore attend any theory that assigns resultatives two very different syntactic structures, depending on O's relation to M.

(18)　　Ọ　sọ　ja　　　-ra　osisi.
　　　　　3sS poke splay(intr) -FACT wood
　　　　　'S/he made the stick splay by poking [it] / [with it].' [Igbo]

(19)　　Ọ　sọ　-rọ　osisi.
　　　　　3sS poke -FACT wood
　　　　　'S/he poked the stick.' (not 'with the stick') [Igbo]

(20)　　wai　mo　tuli　waga　　　　tanga　-na
　　　　　water REAL throw break open　　testicles -3sPOSS
　　　　　'The water threw him splitting open his testicles.' [Ambae] (Hyslop 2001: 283)

Examples like (4), (21) and (22) support the generalization that, among resultatives in OV languages, basic order is ORM just when R is phrasal.

(21)　　avaḷ　ari　(nann -aayi)　poḍiy　　　　-e　kutt　-um.
　　　　　she　rice　(good -ADVZ)　become powder -INFIN pound -FUT
　　　　　'She will pound the rice quite powdery.' [Malayalam (Dravidian)]
　　　　　(example and translation from K.A. Jayaseelan, p.c.)

(22)　　John -wa　niku -o　(totemo)　yawaraka -ku　ni -ta.
　　　　　J.　-TOP　meat -ACC　(very)　soft　　　-INFIN boil -PAST
　　　　　'John boiled the meat (very) soft.' [Japanese] (based on Washio 1997: 9)

Complementarily, basic order is OMR just when R is nonphrasal. Alongside ORM resultatives like (22), Japanese also has a resultative where R follows M (Matsumoto 1996, Washio 1997). But here R cannot be modified, (23). So far as I know, the same is true whenever R follows M.

(23)　　John -ga　Mary -o　uti　(*korituyoku)　korosi -ta.
　　　　　J.　-NOM　M.　-ACC shoot (efficiently)　kill　-PAST
　　　　　'John (efficiently) killed Mary by shooting.' [Japanese]

There are seeming exceptions in the Yiish (Lolo-Burmese) languages. Nosu Yi (Chen and Wu 1998, Chen et al. 1985) has what appears to be a resultative construction, with R following M. But it allows sentences like (24) and (25). The first might be analyzed as having a modified predicate in R, and the second, as having MOR order, which is otherwise unattested in OV languages.

(24)　　tshi^{33} sɿ^{34}　　　bo^{34}ṣo^{33} dʑi^{33}　bo^{34}ṣo^{33} o^{34}
　　　　　wash NONFINAL clean　REDUP　clean　FINPRT
　　　　　'wash [it] very clean' [Yi] (Chen and Wu 1998: 47, translation from Mandarin gloss AW)

(25)　　tshi^{33} ndu^{21} sɿ^{21}　　si^{33}　du^{33}　　o^{34}.
　　　　　3s　beat NONFINAL blood come out FINPRT
　　　　　'He beat [him] till blood came out.' [Yi] (Li and Ma 1982: 83, tr. from Mandarin gloss AW)

I believe, however, that Yi will leave our generalization fundamentally intact. (7) presupposes a pattern of linearization that is typical for an OV language. But Yi is highly atypical (Dryer 2003, R.J. LaPolla p.c.) in a way that might matter. It places many kinds of adverbial phrase *after* the verb. Sentences meaning 'he ran fast' and 'he left too late,' for example, have the adverbs after the verb (Chen and Wu 1998: 55). Perhaps it will be enough, therefore, just to restate our generalizations relative to a finer taxonomy of word order types, one that distinguishes Yi from more typical OV languages. More broadly, it may simply be wrong to class the Yi construction as a resultative. Rather, the putative R predicate might be a full clause in an adverbial position, not specifically associated with resultative meaning. Deciding this will take more data.

At the moment I have no clear information on *non*-basic orders in any OV languages, whether OMR order when R is phrasal or ORM order when it's not.

Lastly, there is once again a partial correlation between order and the category of R. When the basic order is OMR, R is a verb. Thus *chia* 'be bad' from Mizo (5) is a verb, for instance, (26).

(26)   pâl   â-   chia.
       fence 3s- be bad
       'The fence is broken.' [Mizo] (Chhangte 1993: 143)

But verbal R does not ensure OMR, and so is less informative. In Malayalam, for example, R is evidently a *verb* phrase, just one whose head takes what Asher and Kumari (1997: 322) call the ''infinitive'' suffix *-e*; see (21). With ORM resultatives in Japanese, R may be a verb phrase whose head (drawn from the so-called adjectival subclass of verbs) takes what Iwasaki (2002) calls the *-ku* ''infinitive.'' The ''infinitive'' of *yawaraka* 'be soft' occurs both in (22) and (27), for example.[3]

(27)   niku -wa   yawaraka -ku   -na   -katta.
       meat -TOP soft   -INFIN -NEG   -PAST
       'The meat was not soft.' [Japanese]

3.   Account of the correlation

I now give a syntax that captures the pattern described in (7), and indicate problems with alternatives to it. I assume an underlying VP within the outlines of (28). Three aspects of this are important. O c-commands M/R. The M verb never has an argument noun phrase as a sister.[4] And the size of R varies: it is either a phrase of some size (28a), or an X_o simply (28b) (cp. Matisoff 1969, Thompson 1973, Lord 1975, Li 1990). Importantly, when M/R contains a phrase (28a), it is therefore a phrase itself; but when it comprises only X_o's, (28b), it is therefore an X_o as well, a complex verb.

(28)   a. $[_{VP} O [_{V'[M/R]} V_M [_{Y'} CAUSE ZP_R]]]$

      b. $[_{VP} O [_{V[M/R]} V_M [_{Y} CAUSE Z_R]]]$

For concreteness I also assume a silent X_o, here named CAUSE, that introduces the semantic relation between R and M. I leave open what category this morpheme has, along with any questions about what is the head of this VP.

Next I posit that, universally, VP has a *v* sister that attracts the least embedded X_o in its complement, as per the usual rules of head movement. When R is phrasal, this will be the M verb itself, (29a). But when R is nonphrasal, M is embedded within a closer X_o, namely $V_{M/R}$. What raises to *v*, therefore, is the complex verb as a whole, (29b).

(29)   a. $[_{v'} [_v V_k v] [_{VP} O [_{V'[M/R]} [_{V[M]} t_k] [_{X'} CAUSE ZP_R]]]]$

      b. $[_{v'} [_v [_V V_M [_X CAUSE Z_R]]_k v] [_{VP} O [_{V[M/R]} t_k]]]$

Lastly I assume that *v* precedes VP in typical VO languages and follows it in typical OV languages. Consequently any verb that raises to *v* respectively precedes or follows the remaining contents of VP. When R is a phrase, (29a), what raises is the M verb alone, leaving O and R in VP. As desired, the result is MOR in VO languages, and ORM in OV languages. When R is an X_o, (29b), what

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[3]   Carstens 2002 aims to explain word order in ''serial verb constructions.'' She presumes that in OV languages, resultative SVCs always have MR order. This is true only if cases where the R verb bears nonmatrix inflection don't count as SVCs. But it's not true more generally that all resultatives with a verb in R have MR order.

[4]   These first two assumptions are also made in Dowty 1979, Larson 1991, Hale and Keyser 1993, Collins 1997, Carstens 2002, and elsewhere.

raises is the complex verb $V_{M/R}$, leaving only O in VP. So depending on the language, $V_{M/R}$ either precedes O or follows it.

As for the order of M and R within $V_{M/R}$, this is not predicted by rules governing heads and their complements. For here the sister of M is not a phrase, and hence is not its complement—not in the sense taken from X-Bar theory. And regardless of its size, R is not an argument of M semantically. A fortiori, the semantic relation between M and R is introduced by their structural context, not by M. And certainly R does not describe a necessary part of the event-type described by M, as one can say of the direct object in a simple verb phrase with *pound*, for example, that it describes a necessary part of any pounding, namely the thing pounded.

So order within $V_{M/R}$ must follow from independent assumptions. And whatever these are exactly, they ought to imply (30). Together with (29b), this yields MRO and OMR as basic orders.

(30)   A complex verb $[_V$ X [CAUSE Z]] is pronounced XZ.

Compare this with the order of subjects and objects. It too is typically the same in OV or VO languages: S before O either way. And this analogy may have a basis. Like S and O, M and R can be regarded as external and internal arguments in relation to a (possibly complex) predicate in their context.

Two attractions of this account should be noted. First, it provides exactly the same account for variation in the order of M and R (among OV languages) as for variation in the position of O (among VO languages). Second, it derives the correlations between size and order from an entirely general constraint on locality in head movement: X_o can't move to Y_o if contained in a Z_o of the same type. There is no need to say, therefore, that whenever R is not modifiable, each combination of M and R is an atomic primitive for syntax, listed in the lexicon (cf. Thompson 1973, Lord 1975, Li 1990, Matsumoto 1996). This is welcome, since resultatives with nonphrasal R do not uniformly show more irregularity in form or meaning than do those with phrasal R, where M/R is surely not syntactically atomic.[5,6]

The main alternative to what I have proposed is a *result object syntax*. This says that R is always a phrase, comprising a predicate and an argument for it. One version is the ''Small Clause'' syntax in (31), adopted in (e.g.) Kayne 1985, Hoekstra 1988, Sybesma 1999, and Kratzer 2005.

(31) $[_{VP}$ V_M [O Z(P)$_R$]]

Given (31), basic orders of MOR and ORM reflect the underlying order directly (though cf. Carstens 2002). But MRO and OMR orders require 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 dimmed, moreover, if a single language, like Paamese or Japanese, can indeed have resultatives of two syntactic types, one that forces raising and one that forbids it.

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[5]   Even if one were to associate the resultative construction lexically with the means verb, as in Simpson 1983, the process of combining M with the constituent containing R is ipso facto *syntactic*, if R is a phrase.

[6]   In a theory without head movement, one could partially mimic my account by using Bach's (1981) WRAP operation to combine O with M/R—but crucially, never when M/R is nonphrasal. Yet this has two weaknesses, exactly where the head movement theory is strong. First, it fails to extend directly to OV languages, where what varies is not the position of O, but the order of M and R. Second, the only principled way to outlaw WRAP when R is nonphrasal is to assume that M/R is then in every case a syntactic primitive, whose internal structure is lexical. But again, the traditional signs of lexical derivation do not uniformly distinguish nonphrasal from phrasal resultatives. The resultative is certainly no less productive or regular in Igbo, for instance, than in English.

A second version, (32), treats the object within R as an empty category, coindexed with the overt O outside M/R (Larson 1991, Hale and Keyser 1993, Collins 1997, Carstens 2002).

(32)　　[O_k [V_M [ec_k Z(P)$_R$]]]

But this faces similar problems. MRO 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 simply cannot include modifiers at all. Both requirements are unattractive.

Lastly, a different set of alternatives lets the M verb have a noun phrase argument as a sister (Carrier and Randall 1992, Déchaine 1993, Nishiyama 1998).

(33)　　[V_M O …]

Any version of (33) has problems deriving the observed patterns simply. But I will not review these here, as this *means object syntax* finds immediate trouble in a plain fact of English. M can't include adverbs. Thus (34) cannot mean that Al made the cutlet flat slowly, by pounding it quickly. (It dodges contradiction only if taken to mean that the slow pounding-flat had a sudden start, where *quickly* is inceptive.) This is not surprising if M can house nothing but the verb. But again, if it were to contain an argument for the verb as well, I would expect that it could also accommodate an adverb.

(34)　　Al quickly pounded the cutlet flat slowly.

I have yet to collect analogous data for any languages other than Igbo and Mandarin. But I am encouraged to pursue the strong hypothesis implied by (28): nothing we call a resultative has a means object syntax. Discussion of *why* this would be true, however, awaits a longer paper.

4.　Evidence for semantic structure

I have concluded that word order is in part explained by a syntax where O c-commands M/R from its initial position. This in turn supports the one semantics which requires this syntax uniformly, even in cases where O has no selected thematic relation to M, namely an *outside patient semantics*.

This semantics begins with the observation, (35), that M/R is not a predicate of the same event as either M or R (Williams 2005, 2007; cp. Pietroski 2005, Thomson 1977, contra Davidson 1969, Parsons 1990, Kratzer 2005). The best evidence for this is simple. From the sentence *Al slowly pounded the cutlet flat*, it follows neither that the pounding was slow nor that the flatness was. What was slow was an event of change, distinct from but related to the events of M and R.

(35)　　$[\![M/R]\!] = …\lambda e_1 \exists e_2 \exists e_3.\Phi(e_1, e_2, e_3) \wedge [\![M]\!](e_2) \wedge [\![R]\!](e_3)…$

The semantics then assigns O a Patient relation to the event of M/R, as in (36), independently of any further relations O might have to the events of M or R (Williams 2005, 2007b; cp. Goldberg and Jackendoff 2004).[7] Given this, usual notions of compositionality suffice to require that there be an argument position c-commanding M/R that is assigned this relation.

(36)　　$[\![$ [it [pound flat]] $]\!] = …\lambda e_1 . [\![$pound flat$]\!](e_1) \wedge$ Patient$(e_1,[\![$it$]\!])…$

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[7]　By assumption, the Patient of an event of change, including the sort of event described by a resultative, is the individual that changes, entering the result condition defined by R; compare what Parsons says about the "Theme" of a "BECOME" event (Parsons 1990: 119). Interestingly, this postulate makes it semantically unnecessary to provide an explicit argument for the predicate in R; see Williams 2007b.

Under the more common analyses of resultative meaning, exemplified in (37) and (38),[8] the referent of O has thematic relations only to the events of M and R, or in some cases just to that of R alone. Given this, there is no compositional need for an object whose initial position is outside M/R. And when O has a thematic relation only to R, there is no need for O to be outside M/R at all.

(37)   ⟦ Al pound it flat ⟧ = Cause:Become(⟦Al pound it⟧, ⟦it flat⟧)
       (Dowty 1972, Parsons 1990, Levin and Rappaport 1995, Kratzer 2005, among others)

(38)   ⟦ Al pound it flat ⟧ = Agent::Cause:Become(⟦Al⟧, ⟦Al pound it⟧, ⟦it flat⟧)
       (McCawley 1971, Green 1972, among others)

Since the word order patterns support an external patient semantics, they also support the nonlexicalist position that such a semantics presumes: not all thematic relations are introduced by overt lexical items (Carlson 1984, Dowty 1989, Schein 1993, Goldberg 1995, Kratzer 1996).

5.   Concluding remarks

There is much evidence that, in both VO and OV languages, word order in resultatives varies in lockstep with the size of R: MOR and ORM when R is phrasal, MRO and OMR when it's not. I have sketched a syntax that accounts for this correlation simply, and is consonant with what I believe to be the best analysis of resultative meaning. It remains to evaluate the various assumptions of this syntax, and to determine, through more extensive empirical work than I have so far managed, whether the generalization it explains is indeed valid universally.

Perhaps the suggestions I have made will also contribute to questions that this paper leaves unaddressed. Why do MRO and OMR orders entail that R is a verb? What decides whether a language allows a given type of resultative (Snyder 2001), either one with phrasal R or one with nonphrasal R? And what, ultimately, are the defining properties of constructions we classify initially as 'resultatives'?

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[8]   Here ":" and "::" indicate function composition over one and two arguments, respectively.

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