

Aspect and the Distribution of Prepositional Resultative Phrases In English¹

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Introduction

(1) PP Resultatives with *to* and *into*²:

- (a) Ted had refined them[=our billing procedures] *to* near perfection. [CORPUS]
- (b) ... Ed's rage dragged him out of the room and *into* sleep. [CORPUS]
- (c) ... the two-wheeled horse-drawn tonga is clip-clopping gently *into* extinction ... [CORPUS]

Q: Are there any distributional differences between *to* and *into* PP result XPs?

(2) Minimal pairs where both *to* and *into* are possible:

- (a) I marched myself *to/into* the Harvard Bookstore. [CORPUS : *to*]
- (b) ... the blue vein in the corner of his right eye so puffed and writhing that she longed *to* ... kiss it *to/into* calmness ... [CORPUS : *to*]
- (c) ... Emmy ... patted her father once more *into/to* a contented silence. [CORPUS : *into*]

(3) Minimal pairs where only one is possible:

- (i) (a) Tatyana Tarasova ... coached skaters *to/*into* 31 gold medals ... [CORPUS]
- (b) Tatyana Tarasova coached skaters *into/*to* the record books.
- (ii) (a) I was startled *into/??to* indiscretion. [CORPUS]
- (b) The third [shot] settled it[=the snake] *into/*to* death. [CORPUS]

Based on similar data, Boas (2000) has claimed that distributional behavior of result XPs is based on conventionalization and due to idiosyncratic properties of the base verb.

I claim there are generalizations to be made based on two criteria:

- Selectional restrictions — restrictions imposed by P on its NP object.
- Aktionsart — aspectual class of base verb (cf. Wechsler (2001, 2002), focusing on adjectival XPs).

¹I am indebted to Beth Levin for providing me access to her collection of over 2500 tokens from newspapers, novels, and magazines, including over 1700 prepositional resultatives. The data in this paper marked [CORPUS] are taken from this database. Some data were also found in the British National Corpus (BNC), COBUILD, and the internet. Original sources are not cited for brevity. Many thanks are due to Hana Filip, Ivan García, Beth Levin, Roger Levy, Ivan Sag, Rachel Sussman, Judith Tonhauser, and Tom Wasow for their help and insightful comments.

²I treat motion constructions as a subtype of resultatives, following Boas (2000), but not Goldberg (1995). This will be important to the analysis presented here.

Selectional Restrictions

- Things you can only be *at* must occur with *to*.
 - (4) (a) *at*/**in* 31 gold medals
(b) Tatyana Tarasova ... coached skaters *to*/**into* 31 gold medals ... (=3a)
 - (5) (a) *at*/**in* a [complete] stop
(b) The taxi squealed *to*/**into* a [complete] stop.
- Things that you can only be *in* must occur with *into*.
 - (6) (a) *in*/**at* the record books (on intended reading)
(b) Tatyana Tarasova coached skaters *into*/**to* the record books. (=3b)
 - (7) (a) *in*/**at* a [bus] stop (on intended reading).
(b) The taxi squealed *into*/**to* a [bus] stop.

Aktionsart

Definitions - Types of relevant predicates (Comrie, 1976, Dowty, 1979, Smith, 1991)³

- Telic — Denotes events that are bounded and entail a result state (e.g. *eat a sandwich, notice a painting*)
- Durative — Denotes events that have subparts (e.g. *walk, write*).
- Punctual — Denotes events that are atomic (e.g. *kick (once), notice*)⁴.
- Iterative — Durative events that have only homogeneous, bounded subparts on some partition (e.g. *kick repeatedly, read a letter (over and over again)*).
- Accomplishment — Telic, durative (e.g. *eat a sandwich, build a house*).
- Activity — Atelic, durative (e.g. *walk, read*)
- Achievement — Telic, punctual. (e.g. *notice a painting, arrive in London*).
- Semelfactive — Atelic, punctual (could be iterative). (e.g. *kick, peck, slap*)

³For purposes of this discussion I'll ignore stative events and only refer to non-statives in these definitions.

⁴There is some contention as to how instantaneous punctual events are, since at some granularity all events take time. I'll ignore the issue and assume that punctual events have no subparts, but this does not preclude them from taking some amount of time to finish, albeit of an extremely short duration. See Dowty (1979) for discussion.

Distribution

To and *into* XPs have the distribution in (8) relative to the aktionsart of the base verb.

(8) Base Verb Aktionsart	V+ <i>to</i> XP Attested	V+ <i>into</i> XP Attested
Accomplishment	yes	yes
Activity	yes	yes
Semelfactive	yes	yes
Achievement	no	yes

Why aren't *to* XPs found with achievements (telic, punctual verbs)?

Since *to* XPs occur with both accomplishments and activities, telicity may not be the relevant criteria (see also Goldberg (1995)). Instead I'll look at durativity, focusing on the differences among base verbs which have punctual readings.

Punctual Base Verbs - Achievements vs. Semelfactives

Achievements sound bizarre or ungrammatical with *to* but not with *into*:

- (9) (i) (a) Georgiana was surprised into cordiality. [CORPUS]
(b) ??Georgiana was surprised to cordiality.
- (ii) (a) I ducked into the cave.
(b) *I ducked to the cave.
- (iii) (a) In an instant, I had stubbed my poor toe into permanent stiffness.
(b) ??In an instant, I had stubbed my poor toe to permanent stiffness.
- (iv) (a) The balloon suddenly burst into useless shreds.
(b) *The balloon suddenly burst to useless shreds.

Both *to* and *into* XPs can occur with semelfactives. **But semelfactives with *to* XPs always have iterative (durative) readings** (shown via the *in an hour* and *it took X an hour...* tests (Dowty, 1979)⁵).

- (10) (i) (a) She kissed it to calmness in a few minutes.
(b) It took her a few minutes to kiss it to calmness. (cf. (2d))
- (ii) (a) Marc Pisciotta pitched his team to the 1983 title in five weeks.
(b) It took Marc Pisciotta five weeks to pitch his team to the 1983 title.

To XPs are incompatible with punctual readings, unlike *into* XPs:

- (11) (a) With one quick peck, she kissed it into calmness.
(b) ??With one quick peck, she kissed it to calmness.

⁵These tests are ambiguous between an *after* reading and a *over the span of* reading. The relevant one for testing durativity is the latter one, and I'll ignore the former reading.

- (12) (a) With one mighty pitch, Marc Pisciotta pitched his team into the 1983 title.
 (b) *With one mighty pitch, Marc Pisciotta pitched his team to the 1983 title.

However, some semelfactives are not iterable at all (and thus only punctual), and these are compatible with *into* but not *to*:

- (13) (a) Rosie Ruiz, like a nervous kid on the high board, stepped off the curb and into... infamy. [<http://www.runnersworld.com/boston/boston96/kenmore.html>]
 (b) *Rosie Ruiz, like a nervous kid on the high board, stepped off the curb and to... infamy.

So *to* is only compatible with semelfactives that can have iterative (durative) readings. This division of semelfactives helps explain the data in (9). Like non-iterable semelfactives, **achievements are always punctual**, since they usually entail result states that aren't immediately repeatable (if at all) and thus can't be iterated. Therefore the restriction on *to* XPs seems to be that it can't combine with verbs of any sort that only have punctual readings.

Generalizations

- *To* XPs only combine with base verbs compatible with durative readings.
Into XPs may combine with base verbs compatible with durative or punctual readings.

(14) Base Verb Aktionsart	Durativity	Attested V+ <i>to</i> XP	Attested V+ <i>into</i> XP
Accomplishment	Dur	yes	yes
Activity	Dur	yes	yes
Semelfactive (Iterable)	Dur/Punct	yes	yes
Semelfactive (Non-Iterable)	Punct	no	yes
Achievement	Punct	no	yes

I found no clear examples of *to* with lexically punctual verbs in the corpora, outside of idiomatic phrases (e.g. *to distraction*, *to death*, or *to pieces*).⁶

- *To* resultatives are always durative.
Into resultatives may be punctual or durative.

Analysis

Motion Constructions provide a basis for an explanation

- Intuitively, *to* marks the goal of some movement from one location through intermediate locations to another location (cf. *I swam (from somewhere else) to the cave*).

⁶This pattern is corroborated in Boas (2000): of 492 occurrences of *to death* in the BNC, all of them occur with potentially durative predicates (ignoring idiomatic and non-resultative uses). This is as opposed to *dead*, which may only occur with punctual verbs (Wechsler, 2001). Of 434 occurrences of *dead* in the BNC, 424 were with verbs that can have punctual readings and 10 were with verbs that have only punctual readings (Boas, 2000, p.260).

- *Into* marks the goal of some transition across a threshold from outside a location to inside a location (cf. *I swam into the cave (from outside the cave)*).

Following Krifka (1998):

- I'll assume a domain of events E that forms a lattice structure. Durative (*DUR*) events have subparts. Punctual (*PUNCT*) events don't.⁷
- I'll assume all motion verbs (e.g. *walk, hike*) have semantic path arguments (i.e. $\llbracket V \rrbracket^{M,g} = \lambda e \exists p. \Phi_V(e, p)$) corresponding to a physical path.
- Motion verbs entail a movement relation (MR) θ between an event e and a path p (i.e. $\theta(e, p)$) where the structure of the event is mapped homomorphically to the structure of the path and temporal progress of e is measured as “movement” along p and all parts of p have corresponding parts of e .⁸

Resultatives as Abstract Motion

Resultatives, and change-of-state predicates in general, are often metaphorically analyzed in terms of “movement” along paths (Gruber, 1965, Jackendoff, 1976, 1996, Krifka, 1998). Specifically this can be done by positing path arguments and MRs for all verbs of (potential) change-of-state (e.g. *dry, shine, kick, squirm*)⁹, where the path abstractly corresponds to the scale upon which the change of state occurs. In these terms it is possible to explain the durativity and selectional restrictions of *to* and *into* as in (15).

- (15) (a) *Into* — p ends *in* x , i.e. $GOAL(e, p, IN(x))$
 (b) *To* — p ends *at* x , i.e. $GOAL(e, p, AT(x))$, and $NON-ATOMIC(p)$.¹⁰

- The *at* vs. *in* distinction is captured in the “spatial” relations AT and IN (cf. (4)-(7)).
- Durativity of *to* resultatives is due to non-atomicity of the path p and the MR θ :

$$(16) \forall e \forall p [\theta(e, p) \wedge NON-ATOMIC(p)] \Rightarrow DUR(e)$$

If p is non-atomic and e stands in an MR with p , then e must be non-atomic as well, and thus durative, predicting the behavior of *to*.

Semelfactives that have iterative (*ITER*) readings are compatible with *to* (since iterative events are durative, i.e. $\forall e ITER(e) \Rightarrow DUR(e)$).

⁷Roughly, $\forall e DUR(e) \Leftrightarrow \exists e'[e' < e]$ and $\forall e PUNCT(e) \Leftrightarrow \neg \exists e'[e' < e]$, where $<$ is the “proper subpart-of” binary relation. See also appendix.

⁸More formally, θ is a strict movement relation (SMR) if θ is an isomorphism preserving adjacency, where temporally adjacent parts of e are mapped to spatially adjacent parts of p . θ is a general movement relation (MR) if some subevent e' of e is in an SMR relation to p and θ is homomorphic with respect to adjacency. MRs have the Mapping-to-Subobject (MSO) property, i.e. all subparts of p have corresponding subparts of e (Krifka, 1998, p.223ff).

⁹Non-stative verbs that don't lexically entail change of state (e.g. *squirm, rub, kick, etc.*) may form parts of predicates that do (e.g. *rub to a shine*) and therefore may be thought of as having abstract path arguments corresponding to potential changes of state (Tenny, 1992).

¹⁰Roughly, $\forall e NON-ATOMIC(p) \Leftrightarrow \exists p'[p' < p]$, but see appendix.

- (17) (a) She kissed it to calmness. (cf. (2b))
 (b) $\forall e, p, x, y, \text{y}kiss(e, p, x, y) \Rightarrow PUNCT(e) \vee ITER(e)$ (by def.)
 (c) $\exists e \exists p [kiss(e, p, she, it) \wedge GOAL(e, p, AT(calmness)) \wedge NON-ATOMIC(p)] \Rightarrow ITER(e)$ (by (b) and (16))

Achievements are necessarily punctual and incompatible with *to*.

- (18) (a) *I ducked to the cave. (= (9vi.b))
 (b) $\forall e, p, x, \text{x}duck(e, p, x) \Rightarrow PUNCT(e)$ (by def.)
 (c) $\exists e \exists p [duck(e, p, I) \wedge GOAL(e, p, AT(cave)) \wedge NON-ATOMIC(p)] \Rightarrow \perp$ (by (b) and (16))

Likewise for lexically punctual semelfactives:

- (19) (a) *Rosie stepped to infamy. (cf. (13b))
 (b) $\forall e, p, x, \text{x}step(e, p, x) \Rightarrow PUNCT(e)$ (by def.)
 (c) $\exists e \exists p [step(e, p, I) \wedge GOAL(e, p, AT(infamy)) \wedge NON-ATOMIC(p)] \Rightarrow \perp$ (by (b) and (16))

Into doesn't have this restriction and is compatible with any base predicate.

- (20) (a) I ducked into the cave. (= (9vi.a))
 (b) $\forall e, p, x, \text{x}duck(e, p, x) \Rightarrow PUNCT(e)$ (by def.)
 (c) $\exists e \exists p [duck(e, p, I) \wedge GOAL(e, p, IN(cave))] \Rightarrow PUNCT(e)$ (by (b))

Conclusion

- *To* resultatives always have durative readings and are incompatible with base predicates which only have punctual readings. *Into* resultatives do not entail particular readings with respect to durativity.
- *To* and *into* place selectional restrictions on their objects.
- The existence of these generalizations show that the distribution of resultatives is not completely idiosyncratic, counter to some recent work (cf. Boas (2000)).

Appendix

Aktionsart

Telicity of Construction

Telicity is another criterion of aktionsart upon which resultatives are analyzed. Resultative constructions, including *to* and *into* resultatives, are always telic. This is regardless of the aktionsart of the base verb (Goldberg, 1995).

- (21) (a) ... and Tara it would remain until the great chimneys crumbled to ruin ...
(Accomplishment base) [CORPUS]
(b) The early morning sun ... dragged Cora to wakefulness. (Activity base)
[CORPUS]
(c) I was startled into indiscretion. (Achievement base) [CORPUS]
(d) A fan purred into life. (Activity base) [CORPUS]

Into Resultatives

The behavior of *into* XPs in terms of aktionsart is less constrained than that of *to* XPs. First, as shown in (11), semelfactive base verbs with *into* XPs can have punctual readings. However, they are often compatible with durative readings as well:

- (22) (i) (a) She kissed it into calmness in a few minutes.
(b) It took her a few minutes to kiss it into calmness.
(ii) (a) Marc Pisciotta pitched his team into the 1983 title in five weeks.
(b) It took Marc Pisciotta five weeks to pitch his team into the 1983 title.

Second, while *to* XPs are compatible with durative base verbs and the resultant predicates are always durative, *into* resultative XPs do not always yield durative readings:

- (23) I walked into the Harvard Bookstore.
(i) (a) *I walked into the Harvard Bookstore in ten seconds.
(b) ??It took me ten seconds to walk into the Harvard Bookstore.
(ii) (a) It took me ten seconds to walk to the Harvard Bookstore.
(b) I walked to the Harvard Bookstore in ten seconds.

Without the XP the verb in (23i) is an activity but with the XP it's a short accomplishment or an achievement. With a *to* XP in (23ii) the resultative is an accomplishment. *Into* XPs can sometimes yield durative resultatives with durative base verbs:

- (24) In twenty minutes he was showered and dressed in a clean, stiff pair of blue jeans and a long-sleeved plaid shirt worn into comfort. [CORPUS]
(a) Kim wore the plaid shirt into comfort in a week.
(b) It took Kim a week to wear the plaid shirt into comfort.

In general, the durativity of *into* resultatives depends on context and pragmatics.

Formal Properties of The Ontological Domains

In the analysis of paths in Krifka (1998), paths necessarily have two parts, denoted by *SOURCE* and *GOAL* predicates, where sources and goals, i.e. the beginnings and ends of the paths, are necessarily distinct. The definitions of *DUR*, *PUNCT*, and *NON-ATOMIC* given above are intuitive characterizations of the basic concepts of atomicity and non-atomicity and do not take this into account. A set of definitions that do take this into consideration would require defining punctual events and atomic paths as those that have only two parts (a beginning and end) and durative events and non-atomic paths as those having also a middle section.

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