

Motion Events: Syntactic- Semantic Mapping

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Abstract

In this paper I examine the syntactic and semantic properties of events and, more specifically, events that involve motion verbs. I propose a semantic-syntactic analysis which combines insights from Dowty's (1979) and Rothstein's (2004) semantic approaches and Ramchand's (2008) syntactic approach. I claim that the semantic components of an event structure can be reflected in certain functional heads in a VP extended structure. More precisely, I argue that the BECOME event involved in Accomplishment and Achievement events as proposed in Dowty's (1979) and Rothstein's (2004) semantic approaches is parallel to ResP in Ramchand (2008). Moreover, I distinguish between what counts as a BECOME element and culmination and their syntactic representations.

Keywords: Motion events, syntactic-semantic mapping, BECOME, ResP, culmination.

1. Introduction

Developing a semantic-syntactic analysis that maps an event structure into a phrase structure has been the focus of many researchers in the last two decades (see e.g. Ritter & Rosen 1998; Borer 1998; Rappaport Hovav & Levin 2001; Gehrke 2008; Travis 2010). In this paper I propose a semantic-syntactic analysis which combines insights from Dowty's (1979) and Rothstein's (2004) semantic approaches and Ramchand's (2008) syntactic approach. I claim that the semantic components of an event structure can be reflected in certain functional heads in a VP extended structure. More precisely, I argue that the BECOME event involved in Accomplishment and Achievement events is parallel to ResP. This requires a close attention to what categories can lexicalise the Res node in a V projection. The proposal made provides a unified treatment of different types of motion events such as *Tahir entered the castle, Tahir went to the castle* and *Tahir ran into/out of the castle*.

Verbs form the core of the structure of motion events. Therefore, any account of events in general has to refer to verbs, as is done in work by e.g. Vendler (1957, 1967), Dowty (1979), Bach (1981, 1986), Verkuyl (1993), Pustejovsky (1991), Kenny (2003) and Ramchand (2008). Most of these studies classify and analyse verbs syntactically and semantically. In terms of motion verbs, the two main classes identified cross-linguistically are verbs which denote an activity and verbs which denote a direction or change of location (cf. Vendler 1957; Ikegami 1969; Levin 1993; Ramchand 2008). Following Ramchand's (2008) first-phase syntax of verbs, the two types of motion verbs focused on in this paper, according to their association with the Res(ult) feature, are [Proc(ess)] Vs and [Proc, Res] Vs.

The structure of the paper is as follows. In section 2, I review some relevant studies on event structure from a semantic point of view. This includes the classification of verbal predicates and/or verbs as well. In section 3, following proposals in Ramchand (2008), I present a V projection that encodes motion. A semantic-syntactic analysis of motion events is proposed and argued for in section 4. In section 5, I will closely examine the Res feature and its lexicalisation in analyses by Ramchand (2008) and Romeu (2012). Section 6 involves more discussion of the Res element, in particular its distinction from Talmy's (1985, 1991) Path and Saeed' (2015) Rel_{PATH} element. In section 7 I provide a syntactic representation for the culmination event proposed in Rothstein (2004) through examining combinations of [Proc] Vs and specific PPs. Finally, section 8 closes the paper with a conclusion.

2. Event Structure and Verbs

In this section, for the purpose of setting the scene, I will briefly outline the conventional view of events and then review its types according to several scholars.

Various approaches and hypotheses have been put forth in the literature to account for the semantics and syntax of event structure (e.g. Dowty 1979; Jackendoff 1973, 1983, 1990; Pustejovsky 1991; Verkuyl 1993; Folli & Ramchand 2005; Zubizarreta & Oh 2007; Ramchand 2008). The term *event* is usually used to describe the verbal component of a sentence, especially to refer to those VPs which involve a process or a “process and a telic point” (Arsenijević 2006: 2) or those VPs which comprise Vendler’s (1957, 1967) Accomplishments and Achievements (e.g. Pustejovsky 1991; Neeleman & van de Koot 2002).

The term *event* is also used as a contrast to those VPs that involve no process or dynamicity, which are usually referred to as *states* (Jackendoff 1983; Fong 2003; Ramchand 2008). It should be noted, however, that the term *event* is also used as a synonym to Bach’s (1986) term *eventuality* to cover the two main types: *events* and *states* (cf. e.g. Vendler 1957, 1967; Dowty 1979; Jackendoff 1983; Pustejovsky 1991; Arsenijević 2006; Travis 2010). For example, Arsenijević (2006: 3) claims that even simple stative sentences such as *Mary slept*, *Lions have manes*, etc. describes some kind of eventuality. In this paper, I focus on motion events that involvemotion (dynamic) verbs, such as *run*, *walk*, *jump*, *fall*, *push*, *put*, *kick*, *swim*, *go*, *enter*, etc.

2.1 Vendler (1957, 1967)

Vendler (1957, 1967) identifies four types of events. These are: States, Activities, Accomplishments and Achievements.¹ These types are mainly identified on the basis of the lexical aspectual properties of verbs.² Featuring telicity, allowing progressiveness and an occurrence with certain time adverbials are the crucial aspects considered in Vendler’s classification. Table 1 displays Vendler’s four types and their inherent properties in terms of dynamicity, telicity, progressiveness and the type of temporal phrases each allows. A few representative example predicates from English are also provided; most of them are cited or adapted from Dowty (1979: 54).

Event Type	Lexical aspectual properties	Examples
States	non-dynamic, atelic, non-progressive, <i>for</i> -phrases	<i>be happy, know the reality, have, love</i>
Activities	dynamic, atelic, progressive, <i>for</i> -phrases	<i>drink water, jump, walk, work, write</i>
Accomplishments	dynamic, telic, progressive, <i>in</i> -phrases	<i>run a mile, draw a circle, drink a glass of water, make a chair</i>
Achievements	(non-)dynamic, telic, non-progressive, <i>in</i> -phrases	<i>recognise the murderer, reach a solution, arrive, collapse, find, lose, die</i>

Table 1: Vendler’s (1957) typology of events

As can be seen the main difference between State events and the rest lies in dynamicity. State events do not involve dynamic verbs, while Activities and Accomplishments are usually associated with dynamic verbs, and Achievements can be of both types, although they mostly involve some type of dynamicity. As Jackendoff (1991: 39) and others have pointed out, Vendler’s classes relate to “entire sentences rather than verbs”. This can be seen from the fact that there are verbs which seem to show dual membership of the classes. For example, the verbs *run*, *walk* and *eat* can denote Activities, (1a), or Accomplishments, (1b). There are also VPs which can be classified as either an Accomplishment or an Achievement as in (1c). The examples below are adapted from Dowty (1986: 39, 42).

- (1) a. She is running/walking/eating. [Activities]
 b. She ran a mile/walked to the castle/ate an orange. [Accomplishments]
 c. She built a sandcastle. [Accomplishment/Achievement]

¹ Throughout the paper, I capitalise the terms that refer to types of events, for example, Vendler’s State, Activity, Accomplishment and Achievement, and Pustejovsky’s (1991) State, Process and Transition.

² In the literature on the inner aspectual nature of verbs, the term *Aktionsart* is commonly used. For details on the notion of *Aktionsart*, see (e.g. Dowty 1979; Parsons 1990; Verkuyl 1989, 1993; Pustejovsky 1991; Higginbotham 2000; Kenny 2003).

Vendler's typology of events has been expanded in several later studies.³ For example, some studies focused on decomposing these event types semantically (e.g. Dowty 1979; Jackendoff 1990; Rothstein 2004), some works attempted to classify large numbers of verbs (e.g. Ikegami 1969; Levin 1993; Ramchand 2008), and yet others have focused on the syntactic structure of events (e.g. Ritter & Rosen 1998; Ramchand 2008; Travis 2010). Within these three main areas, several types of arguments and approaches have been put forward and are still being debated, focusing, for example, on how much mapping there is between the semantics and syntax of event structures and what contribution elements from the verbal domain and the non-verbal domain make to the formation of an event structure (see e.g. Harley 1995; Folli 2002; Arsenijević 2006; Gehrke 2008; Ramchand 2008; Travis 2010). In this paper, I will follow those approaches which provide more promising analyses and lead to satisfactory results in the analysis of event structure. As mentioned in the introduction, my focus will be mainly on motion verbs, examining closely two classes of them: those denoting activity and those suggesting a change of location. The two types are distributed among the non-state event classes in Vendler's typology.

2.2 Dowty (1979)

Dowty (1979) associates Vendler's (1957, 1967) four event classes (States, Activities, Accomplishments and Achievements) with a set of atomic predicates, such as DO, CAUSE and BECOME.⁴ State events are associated with stative predicates, Activities are associated with stative and DO predicates, Accomplishments involve, in addition to DO, the predicates CAUSE and BECOME, and Achievements are associated with BECOME. The formulas for the four event types according to these predicates are given in (2), cited from Dowty (1979: 123-125). The notations used in (2) work as follows: α_i and β_i are arbitrary individual terms and π_n and ρ_n stand for arbitrary n -place (stative) predicates.

- (2) a. Statives: $\pi_n(\alpha_1, \dots, \alpha_n)$. (e.g. John knows the answer)
 b. Activities: DO($\alpha_1, [\pi_n(\alpha_1, \dots, \alpha_n)]$). (e.g. John is walking)
 c. Achievements: BECOME [$\pi_n(\alpha_1, \dots, \alpha_n)$]. (e.g. John discovered the solution)
 d. Accomplishments: [[DO($\alpha_1, [\pi_n(\alpha_1, \dots, \alpha_n)]$)]CAUSE[BECOME[$\rho_m(\beta_1, \dots, \beta_m)$]]]. (e.g. John broke the window)

Among them, Accomplishment events show most complexity since they involve three atomic predicates: DO, CAUSE and BECOME. For example, compare:

- (3) a. Sara melted the ice. [Accomplishment]
 b. Sara reached the top. [Achievement]

Following Dowty (1979), the logical structure of (3a-b) is as in (4a-b), respectively:

- (4) a. [[Sara melted ice] CAUSE [BECOME [the ice is melted]]]
 b. [[Sara reached the top] [BECOME [Sara is at the top]]]

In (4a), there is an activity of melting ice, which as a result of Sara *causing* the ice to melt, *became* liquid. So there is a DO, a CAUSE and a BECOME element. In (4b), there is an activity of reaching a location, which can be of any form, walking/running/cycling/etc.; at the end of it, Sara *becomes* at that location. Here, there is a BECOME element only, but not a CAUSE element, because Sara did not cause anything for her to 'become at the top'. A very clear example is the difference between *kill* (Accomplishment) and *die* (Achievement). By killing someone, a person causes him/her to die and as a result he/she becomes dead, whereas in dying, the final state is death. No one can cause someone dead to die again, therefore the CAUSE element is not available or necessary.⁵ Finally, Dowty (1979) distinguishes between the BECOME event involved in Accomplishment events and the BECOME event in Achievement events. In the former, BECOME suggests an extended event, while in the latter, the BECOME suggests an instantaneous state of change.

³ Other classifications of events have also been put forward (see, e.g. Mourelatos 1978; Bach 1981, 1986; Moens 1987; Verkuyl 1993; Kenny 2003).

⁴ For other semantic decompositions of Vendler's classes see Jackendoff (1983, 1990), Parsons (1990) and Pustejovsky (1991). The primitives CAUSE and BECOME were first introduced by McCawley (1968) in his lexical decomposition of the verb *kill*. In a similar manner to Dowty (1979), Jackendoff (1983, 1990) identifies a number of functions within the verbal domain in his theory of conceptual semantics. These are BE, GO, STAY and CAUSE. The availability of these functions is determined by the type of the verb, the VP and the secondary non-verbal predicate. For example, BE is available with States, GO with Activities, and CAUSE with Accomplishments.

⁵ This interpretation of *kill* was first put forward in McCawley (1968).

In later work, Dowty’s (1979) atomic predicates have been extended semantically and syntactically, for example by applying them to lexical representation and argument structures. The models I will review next are Pustejovsky (1991) and Rothstein (2004) which are lexically and semantically-oriented and Ramchand (2008) who provides a syntactic decompositional analysis.

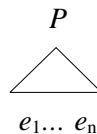
2.3Pustejovsky (1991)

Pustejovsky (1991) collapses Vendler’s four classes into three: State, Process (Vendler’s Activity) and Transition (Vendler’s Accomplishment and Achievement). Pustejovsky (1991) argues that the verbs in natural language belong to one of these three event types. Their structural representations and examples are given in (5a-c), cited from Pustejovsky (1991: 40):

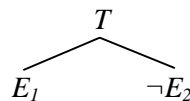
(5) a. State (*S*): a single event, which is evaluated relative to no other event, e.g. *be sick, love* and *know*.



b. Process (*P*): a sequence of events identifying the same semantic expression, e.g. *run, push* and *drag*. ($e_1...e_n$ represents an event *e* that includes a sequence of events).

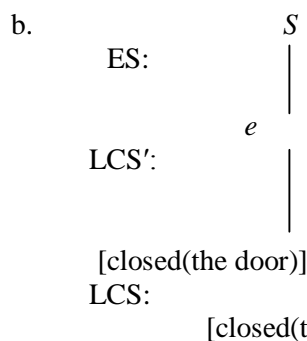


c. Transition (*T*): an event identifying a semantic expression which is evaluated relative to its opposition (where *E* is a variable for any event type), e.g. *give, open, build* and *destroy*.



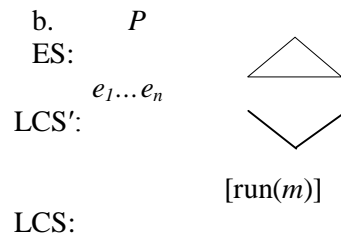
In his verbal decomposition, Pustejovsky (1991) assumes a level of Lexical Conceptual Structure (LCS) which maps into another level, called LCS’ (cf. Jackendoff 1983; Levin & Rappaport 1988). “An LCS is a lexical semantic representation which takes the form of a predicate decomposition” (Pustejovsky 1991: 40). As for LCS’, it involves a set of predicates such as *act(x, y)*, *at(x, y)* and *on(x, y)* which represent the specific components or participants involved in the event structure (ES). At the LCS’ level the event can be divided into two subevents with one subevent causing the other. Below I cite examples from Pustejovsky (1991: 41) with their lexical semantic structures. First, an example of a State:

(6) a. The door is closed.



The sentence in (6a) refers to one single state that the door is in the state of being closed. There are no other events or sub events involved in the verbal predicate. Thus, its event structure will be the one in (6b). Consider next an example of a Process event:

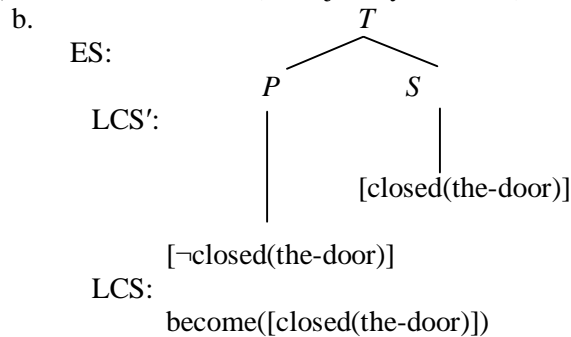
(7) a. Mary ran.



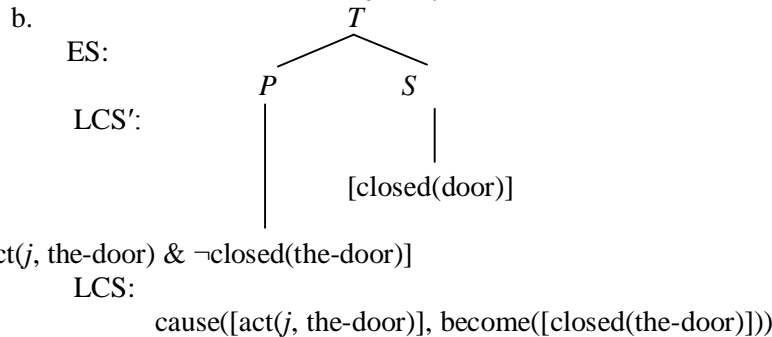
[run(m)] (Pustejovsky 1991: 42)

As shown, the event denotes a process of running or more specifically a sequence of the running activity, and hence, the structure in (7b). Finally, Pustejovsky (1991) argues against a distinction between Accomplishment and Achievement (cf. Vendler 1967; Dowty 1979; Rothstein 2004). He states that the only difference that distinguishes these two event types is the availability of an agent in the event. More precisely, if an event does not involve an agent, then it is an Achievement, such as *the door closed*. In contrast, if there is an agent, then it is an Accomplishment such as *John closed the door*.⁶The LCS representations of these two examples are given in (8) and (9), respectively:

(8) a. The door closed. (Pustejovsky 1991: 41)



(9) a. John closed the door. (Pustejovsky 1991: 41)



For Pustejovsky (1991), the availability of an agent (represented by the predicate *act*) entails the existence of a cause operator (cf. Dowty's (1979) CAUSE) which signals the initial subevent of an event structure. More importantly, in Pustejovsky's (1991) model, a Transition (T) event is composed of a Process (P) event and a State (S) event. The T can involve a cause and a become operator (a causative process/an Accomplishment), e.g. *John closed the door* or a become operator only (an inchoative process/an Achievement), e.g. *the door closed*. Pustejovsky's (1991) fusion of Accomplishment and Achievement under the Transition event will be adopted in the semantic-syntactic analysis proposed later.

⁶Verkuyl (1993) also collapses Accomplishments and Achievements under one class and refers to them as events. Verkuyl believes that both of these classes have a culmination point, but the process of reaching this point differs in each case. For Accomplishments the process may take a longer time, while for Achievements it is instantaneous.

2.4 Rothstein (2004)

Drawing heavily on Vendler's (1957, 1967) typology of events and Dowty's (1979) set of atomic predicates, Rothstein (2004) puts forward a particular approach to account for the semantics of event structure. I focus on her analysis of Accomplishment events only, which will be adopted in the semantic-syntactic analysis I propose. Rothstein (2004) proposes that an Accomplishment is the summing up of an activity and a culmination, which must be linked via an incremental process (a BECOME process). Rothstein (2004: 106) takes this incremental process to be parallel to Dowty's (1979) BECOME event, basically because both Dowty's Accomplishment BECOME and the incremental process are extended in nature. Below are the main semantic notions proposed in Rothstein (2004) to account for the semantics of Accomplishments.

Rothstein's Accomplishment consists of "an activity event and an extended BECOME process, which is incremental" in nature (Rothstein 2004: 106). That is, BECOME events are incremental events that consist of indivisible parts which are linearly ordered by the incremental chain, as defined in (10). Besides, each of these parts has a distinguishable upper bound referred to as a culmination, (11). More importantly, when a BECOME event combines with an activity, the former imposes a developmental structure on the activity (Rothstein 2004: 108). This is done through an incremental relation, defined in (12), which relates indivisible parts of the BECOME event to parts of the activity event.⁷

(10) Incremental chain:⁸

Let e be a BECOME event.

An incremental chain $C(e)$ is a set of parts of e such that:

1. the smallest event in $C(e)$ is the initial bound of e
2. for every e_1, e_2 in $C(e)$ $e_1 \sqsubseteq e_2$ or $e_2 \sqsubseteq e_1$
3. $e \in C(e)$

(Rothstein 2004: 107)

(11) The culmination is the final minimal event in an incremental process. It is the event which is the final part of the BECOME event; the upper bound of the BECOME event. The argument of the culmination event is the argument of the BECOME event (i.e. the affected object or theme). (Rothstein 2004: 106)

(12) Incremental relations:

Let e_1 be an activity, e_2 be a BECOME event, and $C(e_2)$ be an incremental chain defined on e_2 .

$\text{INCR}(e_1, e_2, C(e_2))$ (e_1 is incrementally related to e_2 with respect to the chain $C(e_2)$) iff:

there is a contextually available one-one function μ from $C(e_2)$ onto $\text{PART}(e_1)$ (the set of parts of e_1) such that:

for every $e \in C(e_2)$: $\tau(e) = \tau(\mu(e))$.

(Rothstein 2004: 108)

According to Rothstein, the BECOME event is a "change of state ... which happens to the theme participant in the activity event ... while the activity event is going on" (2004: 108-109). This BECOME event consists of a set of indivisible parts which form an incremental chain and progresses gradually through a specific amount of time. Moreover, the culmination of an Accomplishment represents the telic point reached at in the end and, more specifically, it is "determined by what happens to its theme" (Rothstein 2004: 77). For example, *Mary built a house* is an Accomplishment event that consists of the unstructured activity of building and a culmination. These two components are linked via a BECOME event which involves an incremental structure. The BECOME event of this event is BECOME-BUILT and it culminates when a house (the theme) "becomes built". Similarly, the BECOME event of *Mary ate a sandwich* will be BECOME-EATEN that culminates at the point when the sandwich "becomes fully eaten". It is crucial that the theme is shared by the BECOME event and the culmination since the latter forms part of the former. This theme is referred to as the "incremental argument or incremental theme" (Rothstein 2004: 107).

⁷See Rothstein (2004: 108-109) for a graphic representation of an incremental event (or BECOME event) and Accomplishment event structure.

⁸ In the interpretation of the symbols: \sqsubseteq indicates a squared subset of or equals, \in means 'element of', and τ is a temporal trace function.

Finally, to derive an Accomplishment Rothstein (2004) suggests that a type-shifting operation is involved which shifts e.g. an Achievement or Activity event into an Accomplishment.⁹ For example, an Accomplishment can be derived structurally from an Activity when a resultative predicate (e.g. a PP or AP) is added. The resultative predicate introduces the culmination of the event and it triggers an operation of aspectual shift that

introduces an incremental relation INCR which associates the activity e_1 with an incremental BECOME event e_2 through a function μ which maps each element in a linearly ordered set of parts of e_2 onto that part of e_1 which has the same run time. (Rothstein 2004: 131)

In other words, it is through the resultative predicate, which through providing culmination information and triggering a shifting process, that a BECOME event and μ function are constructed. For example in *Mary hammered the metal flat* the VP *hammered the metal* is an unstructured activity event and the AP headed by *flat* represents the resultative predicate which, when added to the VP, means an Accomplishment event is expressed. Finally, it is worth mentioning that Achievements also include an activity and a BECOME event in Rothstein (2004). The difference between the BECOME in Accomplishments and that in Achievements is in line with Dowty's (1979) and Verkuyl's (1993) analyses. It is extended in Accomplishments but instantaneous in Achievements. In sum, for Rothstein (2004) BECOME is a crucial ingredient of lexically and syntactically derived Accomplishments. An Accomplishment is composed of an activity event and a BECOME event combined by an incremental relation. Moreover, the upper bound of the BECOME event is the culmination of the incremental chain with which the activity event is associated.

3. Motion events: Ramchand (2008)

Ramchand (2008) uses a Minimalist syntactic system, which she refers to as first-phase syntax, to decompose events or more precisely VPs. Her VP extended structure is based on the lexical entries of the verbs and their ability to lexicalise a set of syntactic projections which correspond to subevental predications. She identifies three subevents: "a causing subevent, a process-denoting subevent and a subevent corresponding to result state" (Ramchand 2008: 39). These subevents are respectively mapped into three syntactic projections: the Init(iation) phrase, the Proc(ess) phrase and the Res(ult) phrase.

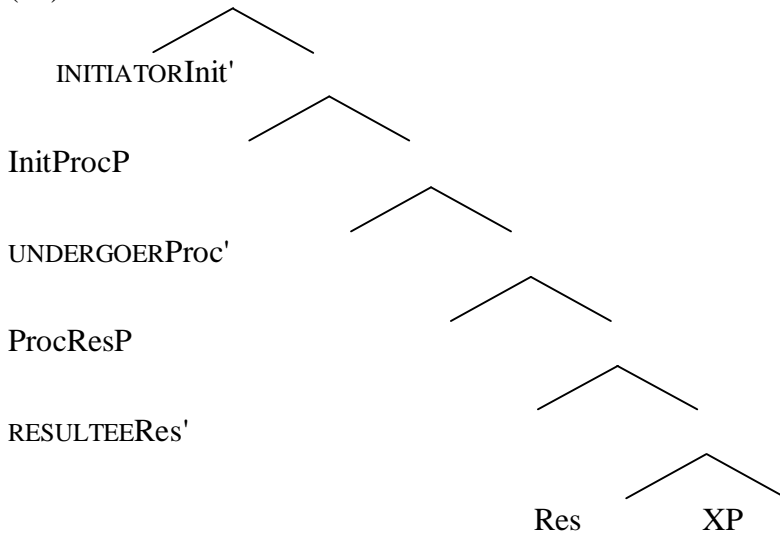
In this, the specifier position of each of these projections is occupied by a specific argument, which Ramchand refers to as a thematic participant (ibid 108). In the Spec of the InitP, there is the subject argument INITIATOR, which is the entity that initiates or causes a process subevent. The Spec of the ProcP is occupied by an UNDERGOER argument, which is the entity that undergoes a process. Finally, the Spec of the ResP is filled by a RESULTEE, the entity which holds the result state (ibid 40, 52).¹⁰ The structure in (13) presents these projections and arguments and the functional sequence they display.¹¹

⁹ Other proposals on how an activity and a secondary predicate can be combined to derive a syntactic Accomplishment can be found in work by von Stechow (1995), Doetjes (1997), Kratzer (2005) and Beck (2005).

¹⁰ Other thematic participants in Ramchand's (2008) account are PATH and RESULT-RHEME, but these occupy complement positions, not Specs.

¹¹ An earlier version of the structure in (13) included vP-VP-RP, respectively (see Butt & Ramchand 2001; Ramchand 2004; Folli & Ramchand 2005). But, they are based on the same proposals and arguments put forth in Ramchand (2008). As for the position of these projections with respect to Asp and Tense, Ramchand (2013) argues that they are lower than AspP and TP in the hierarchy and introduces them under an EventP (for details the reader is referred to Ramchand (2013)).

(13) InitP



(Adapted from Ramchand 2008: 39)

Examples for each of the three arguments are given in (14), cited from Ramchand (2008: 52). For explanatory purposes, I underline the targeted arguments.

- (14) a. Karena drove the car. [INITIATOR]
 b. The ball rolled. [UNDERGOER]
 c. Katherine ran her shoes ragged. [RESULTEE]

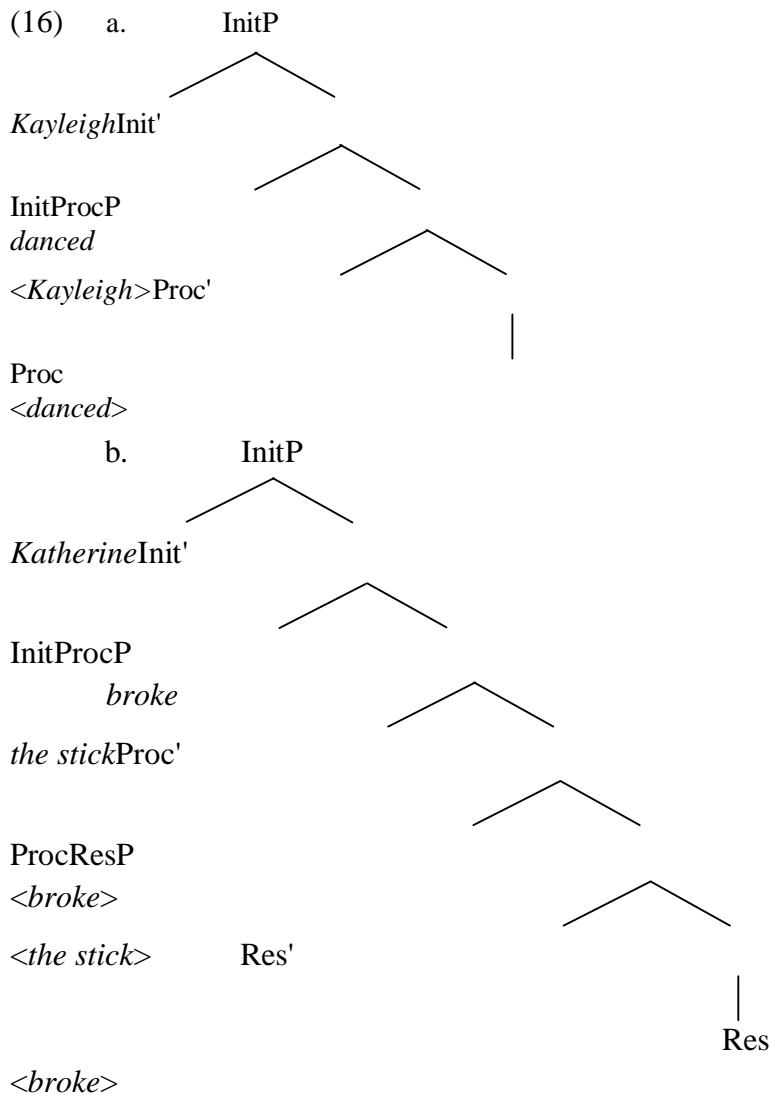
Ramchand (2008) employs the Minimalist syntactic operation 'Merge' to account for the fact that an item can have multiple roles and thus appear in more than one position concurrently. This is done through the copy theory of movement or 'Remerge'. Consider the examples in (15a-b), cited from Ramchand (2008: 53).

- (15) a. Kayleigh danced. [UNDERGOER - INITIATOR]
 b. Katherine broke the stick. [RESULTEE - UNDERGOER]

In (15a), since *Kayleigh* is the entity which initiates an act of dancing and also the entity which undergoes this act or process, it will be performing the roles of both UNDERGOER and INITIATOR. Syntactically, it will be introduced under Spec-ProcP, leaving a copy there when it moves to Spec-InitP. In the same manner, in (15b), *the stick* plays two roles, this time a RESULTEE and an UNDERGOER. The stick indeed undergoes the process of breaking and also displays the result state of being broken. In the projection structure, *the stick* has a copy under Spec-ResP and an overt form under Spec-ProcP.

This Merge and Remerge system operates also on the lexical representation of the heads Init, Proc and Res. For example, since the verb *dance* instantiates both Init and Proc, it will first merge as Proc and then project to Init. The same applies to the verb *break*, which instantiates all the three subevents in (15b).¹² The structures of (15a-b) are as in (16a-b), respectively:

¹² When there is no Agent (INITIATOR of an event), the verb *break* only instantiates Proc and Res, as in *the window broke*.



As for the semantic interpretation assumed for her first-phase syntax, Ramchand (2008: 40-45) adopts a post-davidsonian semantics, which establishes a systematic correspondence between syntax and semantics (cf. Higginbotham 1985; Parsons 1990; Hale & Keyser 1993). In this semantic account, the functional heads involved in the V projection are interpreted in a systematic way. Ramchand (2008) takes particular nodes in the hierarchy to denote particular semantic relations, for example, the causational/initiation relation and telic augmentation. However, the basic primitive of the event combinatorial system is the 'leads to' relation represented as '→' following Hale and Keyser's (1993) notation system. This is given in (17):

(17) *Event Composition Rule*

$e = e_1 \rightarrow e_2$: e consists of two subevents, e1, e2 such that e1 causally implicates e2 (Ramchand 2008: 44)

More in particular, the semantic decomposition of the Accomplishment predicate *defuse the bomb* has the following structure:

(18) 'defuse-the-bomb' (e) where $e = e_1 \rightarrow (e_2 \rightarrow e_3)$: [initiate-defuse(e1) & process-defuse(e2) & result-of-defusing(e3)] (Ramchand 2008: 43)

Using first-phase syntax and the decomposition model of verbs described above, Ramchand (2008) identifies six lexical verb types. Her classification is based on the features or components associated with a verbal lexical item, in such a way that the verb type is determined by the types of subevental projection it can spell out. Ramchand's (2008) typology of verbs is summarised in table 2 along with illustrative examples from English, cited from Ramchand (2008: 108).

Verb class	Examples
Initiation-process verbs	<i>drive, push, eat, read, run</i>
Initiation-process-result verbs	<i>throw, enter, arrive, give</i>
Process verbs	<i>melt, freeze, roll</i>
Process-result verbs	<i>break, tear</i>
Initiation-process-N verbs	<i>dance, sleep</i>
Initiation-process-A verbs	<i>dry, clear</i>

Table 2: Ramchand's (2008) typology of verbs

Since the focus of this paper is on analysing the occurrence of motion verbs with spatial PPs, I do not attempt to fully review or discuss Ramchand's (2008) analysis of all these verbs. Rather the focus will be on motion verbs only. However, before wrapping up this section, a few general observations are due on the whole model and on the verbs in table 4.2. First, all these verbs are dynamic in nature, because all of them involve a Proc component. Second, the thematic participants available in each verb type differ according to the type of subevents available, for example, in *she arrived* the subject *she* can play the role of initiator, undergoer and resultee, because the verb can spell out the three subevents [Init, Proc, Res]. In contrast, in *the water froze* there is an undergoer participant only, i.e. *the water*, because *froze* involves a process sub event only.

Third, stative verbs in Ramchand's (2008) account consist only of the Init element in their first-phase syntax. The external argument is interpreted as the holder of the state, not as initiator. This is because the InitP in the case of stative verbs does not take a ProcP as its complement, thus it is not to be interpreted as a causal event (see Ramchand 2008: 55-56). Hence, Proc is the main element that distinguishes state verbs (minus Proc) from motion verbs (plus Proc) in Ramchand's typology of verbs. Finally, most of the motion verbs in table 2 can occur with elements such as *in/on/at* and *to/from/through*, although only under certain conditions and triggering certain readings.

4. Discussion and proposal: Res = BECOME

In this section, I compare the proposals made by the authors reviewed above. In particular, I draw parallels between Ramchand's (2008) model of events and the other semantic accounts. In brief, I take from Dowty (1979) the atomic predicates DO, BECOME and CAUSE, from Pustejovsky (1991) the idea of combining Accomplishments and Achievements under Transition, from Rothstein (2004) the distinction between BECOME and culmination, and from Ramchand (2008) the decomposition model of InitP>ProcP>ResP. The combination of these proposals will help in establishing some theoretical grounds to base my later analyses and proposals on.

Despite the different terminology used in semantic and syntactic analyses, the underlying assumptions of event analysis are similar in many respects. In general, there is agreement that dynamic events or dynamic verbs are more complex than states or stative verbs, both semantically and syntactically. For example, semantically, following Dowty (1979), the dynamic event *she broke the vase* involves a DO, BECOME and CAUSE element, and syntactically, following Ramchand (2008), it is decomposable into InitP>ProcP>ResP. In contrast, a State such as *she is a star* has a simple semantic and syntactic structure. Semantically, it includes none of these semantic predicates and syntactically it can be represented as an InitP (see Ramchand 2008: 55-56). The complexity of dynamic, or more specifically motion, verbs increases further when they occur with spatial PPs.

As was evident in the previous sections, the semantic and syntactic structures assumed for the events mostly represent entire verbal predicates. Moreover, verbs are the main constituents focused on in the semantic and syntactic accounts reviewed above. A division of labour between analysing verbs as lexical items and VPs is reflected in the literature as lexicalist vs constructionist approaches. In this paper I will follow a moderate constructionist approach as presented in Ramchand (2008).

As stated by Ramchand (2008: 109, 196), Vendler's classes correspond to her classes as follows: "activities" correspond to either [init, proc] or [proc] verbs; 'accomplishments' are [init, proc] verbs with incremental theme or path complements; 'achievements' are [init, proc, res], or [proc, res]". According to the way Ramchand puts it, Vendler's Activities and Accomplishments class differ in that the latter has an incremental theme or path complement. The contrast is captured in (19a-b):

- (19) a. Tahir ran. [Activity]
 b. Tahir ran a mile. [Accomplishment]

Moreover, the Achievement class is the only one which is supposed to include a Res subevent. Restricting the Res subevent to the Achievement class does not seem accurate if we take into account the semantic proposals made in Dowty (1979), Pustejovsky (1991) and Rothstein (2004). In these studies, Accomplishments involve a BECOME event/component on a par with Achievements. Accordingly, there is a result state in Accomplishment events as well.

Furthermore, on the one hand, we have seen that in Dowty (1979) that Achievement events lack the DO atomic predicate. On the other hand, Ramchand (2008) takes Achievements to involve a Procsubevent. If we assume that Proc is the syntactic representation of DO, this may cause a clash between the semantics and syntax assumed for Achievements. This clash, however, can be avoided if we take Achievements to involve dynamic verbs and thus involve a DO/Proc element. Moreover, following Pustejovsky (1991), proposals for collapsing Accomplishments and Achievements into one class leads to a satisfactory result in this respect. That is, Pustejovsky's Transition (which subsumes both Accomplishment and Achievement) involves a Process and a State. Thus, both DO and Proc are involved in Achievements.

Each of Ramchand's (2008) subevents can be said to correspond to an atomic predicate proposed in Dowty (1979). The Initsubevent corresponds to the CAUSE predicate, Proc is similar to the DO element, and Res is parallel to the BECOME predicate. This correspondence can be represented in the logical structure of *Sara melted the ice*, as in (20a), and its syntactic structure, as in (20b).

- (20) a. [DO [Sara melted ice] CAUSE [BECOME [the ice is melted]]]
 b. [_{InitP}Sara [_{Init}melted [_{ProcP}the ice [_{Proc}<melted> [_{ResP}<the ice> [_{Res}<melted>]]]]]]]]

This correspondence seems to support the existence of a rather direct semantic-syntactic mapping. The most important correspondence for our analysis is that between Res and BECOME. Accordingly, verbs in Vendler's (1957, 1967) Accomplishment and Achievement classes (=Pustejovsky's Transition) can be assumed to have a Res projection in their first-phase syntax. Having this correspondence in mind, assuming a parallel between Ramchand's Res and Rothstein's BECOME is quite reasonable, especially since Rothstein's semantic account is based on Dowty (1979). Therefore, we may take BECOME to be this semantic component which suggests the Res feature in the syntactic structure. This correspondence is supported by the fact that what Rothstein (2004) refers to as the incremental argument or incremental theme is parallel to the argument introduced in Spec-ResP, namely the RESULTEE in Ramchand (2008). The incremental argument and the RESULTEE are the entities which are affected by (or hold) the result event.

To sum up the discussion so far, I have shown that there is a one-to-one mapping between the semantics and syntax proposed for events in the literature. The correspondence that I will focus on is that Res is the syntactic representation of the BECOME event and that it is present in the Transition events.

Having this parallelism in hand, along with Rothstein's (2004) distinction between BECOME and culminations, I claim that Res is distinct from the culmination of an event. Following Rothstein (2004), I take culmination to be the final event in a BECOME event which is often referred to as the telic point. The questions that arise here are whether Res can be realised by non-verbal elements, such as PPs, and how Rothstein's culmination can be represented. Discussion of the first question will be presented in section 5, where I look closely at the features and possible lexical representations of the Res projection. The second question will be discussed in section 7.

5. Lexicalisation of Res

As mentioned earlier, Ramchand (2008) proposes that the fine-grained structure of motion VPs can be decomposed into three functional projections: InitP>ProcP>ResP. Each serves a specific function and represents a specific subevent. The component that I will be closely looking at in this section is the Res subevent.

Res is a decisive factor in distinguishing different types of motion verbs and its presence contributes to the type of reading expressed by the lexical predicates that include DPs, APs or PPs. Therefore, recognising its semantic and syntactic properties is crucial to determine its role in an event structure and its lexicalisation in a phrase structure, especially with the existence of a spatial PP. The main questions I will address in this section are: what are the semantic properties and/or function of Res? What lexical items can lexicalise Res?

And what types of complements does it allow? I will first review Ramchand's (2008) and Romeu's (2012) account of Res lexicalisation. I then discuss and assess their proposals, showing a mismatch between the semantics and syntax of event structures in their accounts. Finally, I propose that Res, being parallel to a BECOME event, should be recognised as part of the verb only. Elements such as PPs or APs are culminations of BECOME (=ResP) (see section 7).

5.1 Res

A result state is that subevent that is attained after (or because of) a process (cf. Dowty 1979; Pustejovsky 1991; Rothstein 2004; Folli & Ramchand 2005; Ramchand 2008). Syntactically, a result state is represented as ResP in Ramchand (2008) and it has a Spec, head and complement. The Spec hosts the holder of the result state and is referred to as RESULTEE. ResP "gives the 'telos' or 'result state' of an event [and it] only exists when there is a result state explicitly expressed by the lexical predicate" (Ramchand 2008: 40).¹³ This view of Res is in line with the common view of resultativity in the literature (see, e.g. Pustejovsky 1991; Hoekstra 1992; Rappaport Hovav & Levin 1996, 2001; Rothstein 2004). Also, authors working on the syntactic composition of events have suggested a similar result projection to represent the telos or resultativity of an event structure (see, e.g. Ritter & Rosen 1998; Borer 1998; Rappaport Hovav & Levin 2001).

As for the lexical representation of Res, the general view is that it can be lexicalised as part of the verb licensed and constructed by other categories such as DPs, PPs and APs (see, e.g. Folli & Ramchand 2005; Fábregas 2007; Ramchand 2008; Romeu 2012). For illustration, I will outline the proposals in Ramchand (2008) and Romeu (2012) of the kinds of categories that can represent or lexicalise Res.

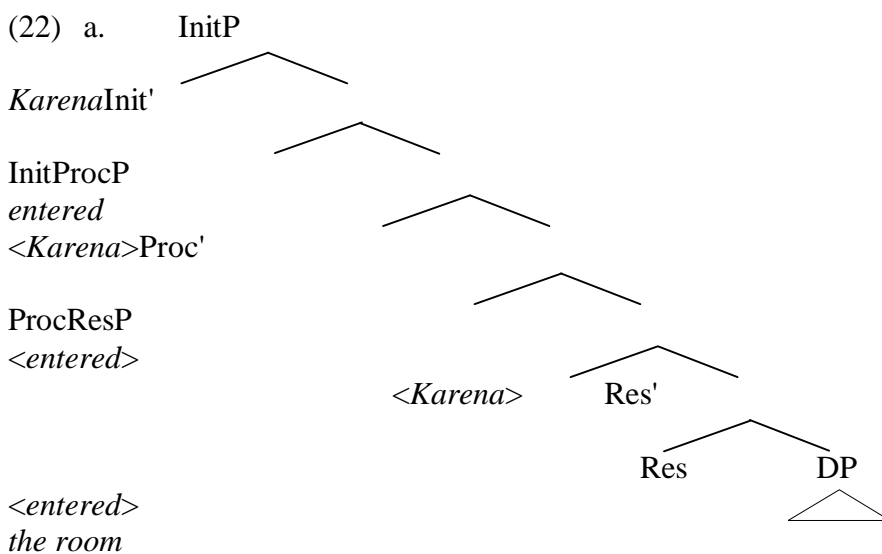
5.1.1 Ramchand (2008)

Ramchand (2008: 39) states that her three projections (including Init and Proc) are "essentially verbal". For example, the verbs *enter*, *break* and *find* license Res as part of their lexical entries. However, other ways to specify Res or telos in Ramchand (2008) are through APs, PPs and particles. I will consider the different forms in turn.

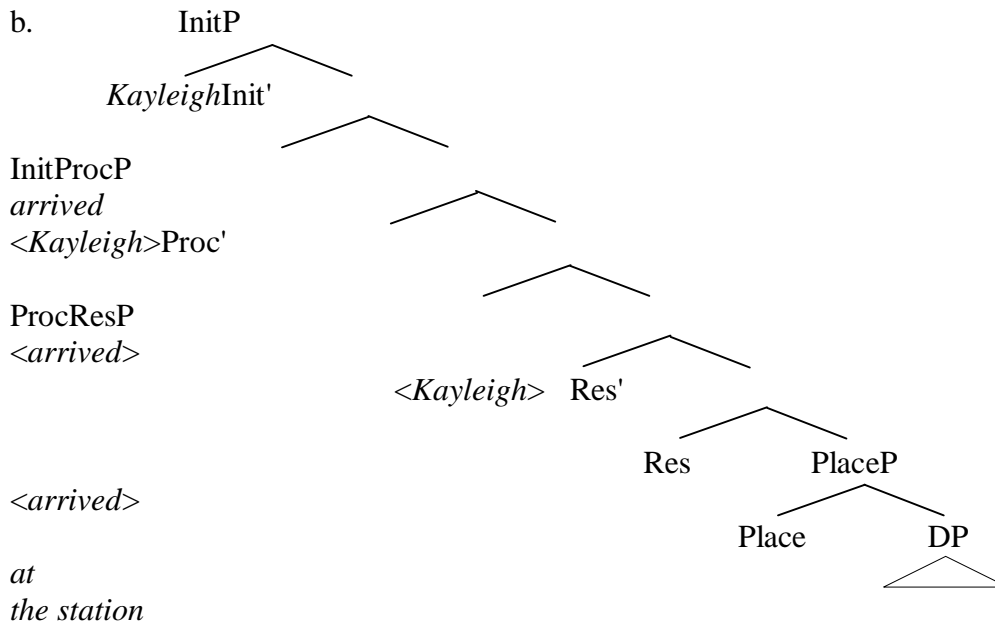
To start with, in the verbal type, Res will be lexicalised as part of the verb. Consider examples (21a-b), cited from Ramchand (2008: 52):

- (21) a. Karena entered the room.
b. Kayleigh arrived at the station.

According to Ramchand, both *enter* and *arrive* instantiate the Res feature in the first-phase syntax and their complements are in the form of Grounds which further describe the result state through naming its final location. Following Ramchand (2008), the structures of the examples in (21a-b) are as in (22a-b), respectively:



¹³ 'Telos' is a Greek word meaning goal or end.



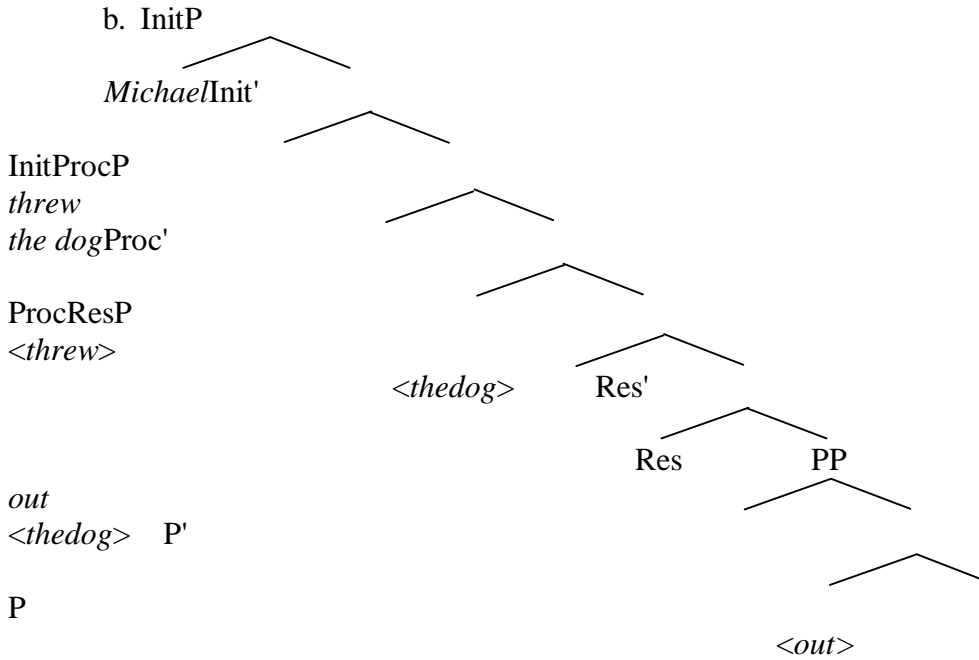
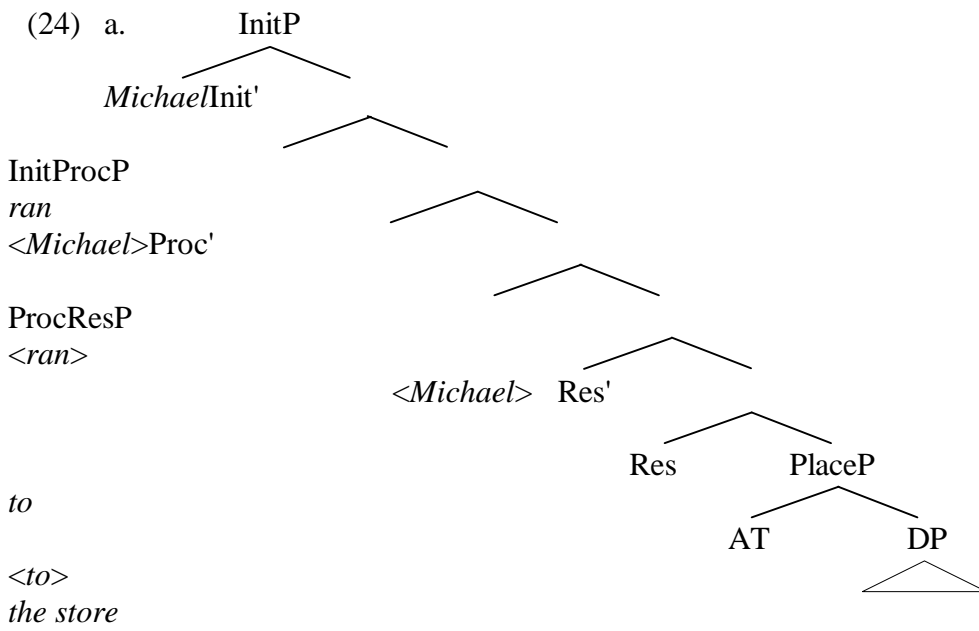
For Ramchand (2008), both the DP *the room* in (22a) and the PP *at the station* in (22b) are taken as the Ground of the result projection, although in the latter, the Ground, is introduced in a PP. In fact, she claims that the PPs that can appear in the complements of ResP are PlacePs (Saeed's (2015)Rel_{PLACE}Ps), but not PathPs (see Ramchand 2008: 51, 75).

In Ramchand (2008), Res can also be represented by a PP or a particle. Examples (23a-b) are from Ramchand (2008: 52):

- (23) a. Michael ran to the store.
- b. Michael threw the dog out.

Ramchand (2008) assumes that both *to* and particles such as *out* lexicalise the Res head. Ramchand's (2008) treatment of *to* is rather different to what is common in the literature (cf. e.g. Jackendoff 1983; Svenonius 2010; Pantcheva 2011). Ramchand claims that *to* can be associated with two features: a Res feature and a Place feature (Ramchand 2008: 119).¹⁴ Accordingly, Ramchand (2008) assumes the existence of a ResP in constructions made up of [Proc] verbs such as *run* and PPs provided that the PP is headed by *to* (not unbounded or even other bounded path-denoting Ps). As for the particle *out*, Ramchand assumes that particles are also associated with a Res feature. Furthermore, she follows the common treatment of particles as intransitive prepositions with no complement Grounds (see, e.g. Emonds 1976, 1985; Svenonius 2010). Thus, in Ramchand (2008), particles are inserted under P before they obligatorily move to Res. Following Ramchand (2008), the hierarchical structures of the two examples in (23) are as in (24a-b), respectively:

¹⁴ In Nam (1995) and Zwarts (2005), *to* is represented as involving an AT meaning.

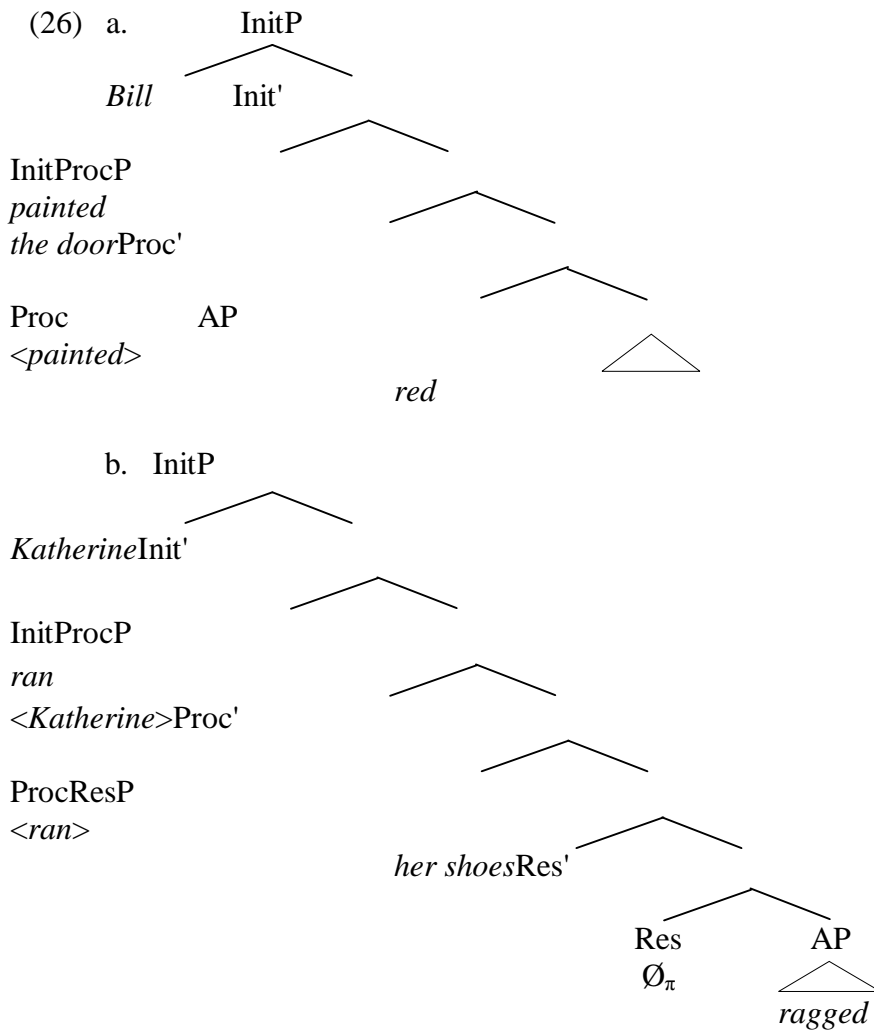


According to Ramchand, APs can also add a telos to an event. Consider the examples below, cited from Ramchand (2008: 121):

- (25) a. Bill painted the door red.
- b. Katherine ran her shoes ragged.

Both examples denote an adjectival resultative event, although a different structure underlies each of them based on the predicate properties. In (25a), the AP has a selected object and a gradable adjective. Following the proposals in Wechsler (2001), Ramchand (2008: 122) relates gradable and closed scale adjectives to a scalar path. That is, the AP describes the property of the object at the end of a painting activity (a scalar path). In this case, Ramchand does not postulate a ResP in the structure but takes the AP to license the resultativity of the event. The structure is as in (26a). As for (25b), the argument occupying the object position is unselected by the verb. In such cases, following Wechsler (2001), the AP does not represent the ResP. The reason why APs with unselected objects do not license resultativity is that the AP is a complement of a “distinct result-state subevent”

(Ramchand2008: 123). Following Ramchand (2008), the structure for the case in (25b) is as in (26b):



The null Res accounts for the resultativity suggested in example (25b). Following proposals in Hale and Keyser (2000) and Baker (2003), Ramchand (2008) assumes that APs do not license a Spec position because they do not have external arguments.¹⁵ As can be seen, the UNDERGOER in (26a) is the item that undergoes the change, while in (26b) the UNDERGOER is the subject of the event who experiences the process of running. Therefore, in (26b), the unselected object is introduced into the structure under the RESULTEE position, another piece of support for the null Res postulated by Ramchand (2008: 124-125).

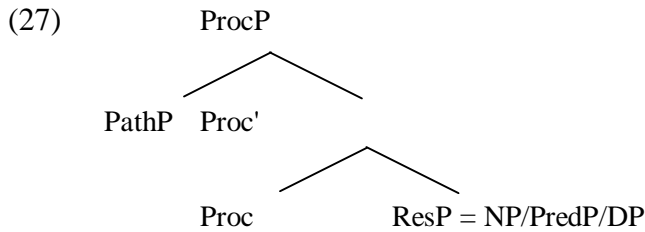
In sum, in Ramchand (2008), Res can be lexicalised as part of the verb (e.g. *enter*), by PathPs (in particular, *to*-phrases), by particles (such as *out*) and by APs with selected objects (as in (26a)). Ramchand also proposes a null Res in the case of APs with unselected objects (as in (26b)). Next I review Romeu's (2012) account of motion events, which is more or less in line with Ramchand's (2008) account although with some modifications.

5.1.2 Romeu (2012)

In his analysis of Spanish spatial Ps and motion events, which follows Ramchand's (2008) model in certain respects, Romeu (2012) proposes that the complement of Proc is always an element that is interpreted as the result of the process. He argues that the result element can correspond to an action (NP), a state (PredP) or an entity (DP). The main difference between Ramchand (2008) and Romeu (2012) is in the position of PathPs. While Ramchand locates them as complements to Proc, Romeu (2012, 2014) considers them as modifiers (for details see

¹⁵ Authors such as Williams (1980), Johnson (1991), Neeleman (1994) and Beck (2005) assume that APs have external arguments.

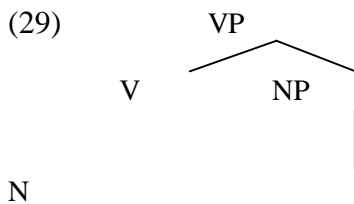
Romeu 2014). Having PathPs as modifiers, Romeu (2012) claims, helps explain their different properties and the different positions they occupy in the structure. Romeu’s (2012) distribution of these elements can be roughly represented as in (27):



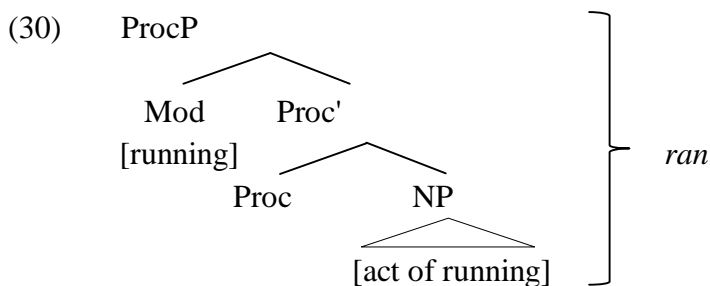
Examples of the three possible realisations of ResP are given in (28), cited from Romeu (2012: 11-12):

- (28) a. John ran towards the store.
 b. John ran in the room.
 c. John wrote a book.

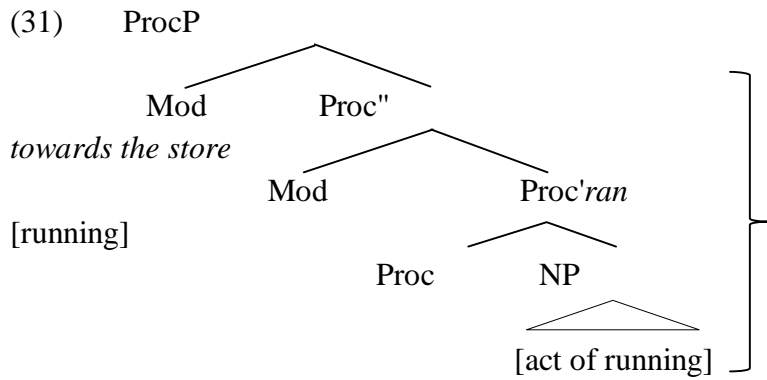
In (28a), the result element is an NP which corresponds to the action of the verb. In (28b), the result is the PredP (*John in the room*). In (28c), the result is the DP *a book*. For the interpretation of denominal verbs, such as unergative *run*, *dance* and *walk*, Romeu (2012) bases his analysis on Hale and Keyser’s (1993, 2002) approach. For Hale and Keyser, the lexical structure of such verbs involves an empty verbal head and a nominal complement. This is portrayed in (29), cited from Hale and Keyser (1993: 54):



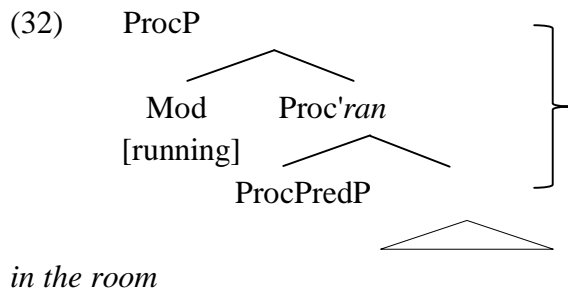
For Hale and Keyser (1993, 2002), the nominal element incorporates into the verbal head. For Romeu, the verb lexicalises the whole chunk by means of phrasal spell-out, as shown in (30). Accordingly, in the interpretation of, for example, *John ran*, John “undergoes a process that triggers an act of running”, which is parallel to doing a run by running (Romeu 2012: 10). Its structure can be represented as in (30), cited from (Romeu 2012: 10):



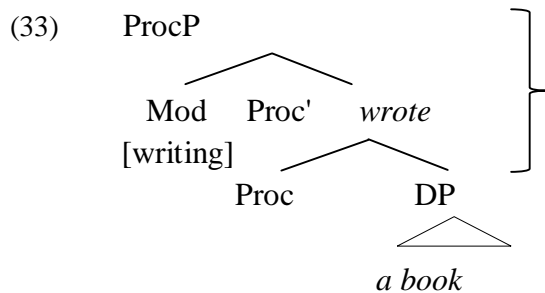
In this way, the complement of Proc is a result element represented as an NP, which is taken as the ResP. As for the PP in (28a), in Romeu’s (2012) model, the PP *towards the store* is a modifier (Mod) that determines how the process of running is developed. Therefore, it is not a complement but a modifier located in Spec-ProcP. It is worth noting that Romeu (2012, 2013, 2014) does not propose a Path projection in his model of directional Ps. The syntactic representation of (28a) is as in (31), adapted from Romeu (2012: 11):



In (28b), for Romeu (2012), the PP *in the room* can have a directional reading.¹⁶ Thus, there is a result element triggered by the process of running due to which John ends up being in the room (Romeu 2012: 12). Here, the ResP corresponds to a PredP represented in the form of a PP. Its structure is given in (32), adapted from Romeu (2012: 12):



Finally, in the interpretation of (28c), the DP complement *a book* is an object created at the end of a process. Hence, the ResP here is represented in the form of a DP. Its corresponding structure is as in (33), adapted from Romeu (2012: 13):



In brief, in Romeu (2012), the complement of Proc is always a result element, which can be an action (NP), a state (PredP) or an entity (DP).

5.2 Discussion

In this section, I discuss the main proposals and claims made by Ramchand (2008) and Romeu (2012) with regard to the lexicalisation of Res, focusing on the mapping between the semantic function of Res and its lexical representations. I argue that there are reasons for not sharing Ramchand’s (2008) and Romeu’s (2012) view that ResP can be lexicalised by non-verbal elements.

Ramchand (2008) and Romeu (2012) both assume that the complement of ProcP introduces a result state, e.g. an ending point or a property. Most importantly, when the ResP is lexicalised by non-verbal elements, such as *to-*

¹⁶ A directional meaning for *in the room* with *run* appears to be possible for some English native speakers, where the PP defines a final location (see Ramchand 2008: 112, footnote 1).

PPs/APs with selected objects (Ramchand 2008), NPs/PredPs/DPs (Romeu 2012), they are attached to the ProcP as complements in the hierarchy. That is, the ResP is taken as an XP lexicalised by different categories. Interestingly, both accounts are similar in spirit to Pustejovsky's (1991) proposals, especially his level of event structure (ES) (see section 2.3). Recall that Transition events involve a process and a state; the process (P) seems to correspond to Proc and the state (S) to Res. Obviously, the state corresponds to different XPs in Ramchand's (2008) and Romeu's (2012) accounts.

However, adopting Dowty's (1979) atomic predicates, it is not clear which projection encodes the BECOME subevent under Ramchand's (2008) and Romeu's (2012) accounts of ProcP + non-verbal ResPs. Although Ramchand (2008) provides a semantic interpretation for her event decomposition model, such as the 'leads to' relation where one event (e1) leads to another event (e2) (recall structure (17)), her account lacks an adequate mapping between the semantic components of an event and its syntactic structure. This lack of mapping leads to an inaccurate interpretation of events of the type verb + PP/AP/DP and inaccurate lexicalisation possibilities of the Res subevent. For instance, Ramchand (2008) claims that *to* is associated with a Res and Place feature. To claim that *to* lexicalises Res has some plausibility, especially since *to*-phrases do indeed suggest a goal of motion with all kinds of motion verbs, e.g. *ran to the store, went to the store, jumped onto the surface*, etc. However, I propose a different structure for *to*-phrases in such cases.

I claim that *to* is not associated with Res and Place features, *per se*, but a Relator in a path domain as is proposed in Saeed (2015). Below, I present some arguments in support of this claim.

First, if *to* is taken as a Res element, then how should we account for its occurrence with verbs such as *enter, fall, go*, etc., which are associated with a Res feature. Sentences that show such combinations are numerous in the British National Corpus. See the examples below:

- (34) a. [T]he lord marquis had entered into the Tower of London. (BNC, W_ac_humanities_arts)
 b. The book fell to the floor with a loud bang. (BNC, W_fict_prose)
 c. I went to court a month later and was fined 175. (BNC, W_biography)

Under Ramchand's assumption, there are two lexical items in such sentences that can lexicalise the Res head. Ramchand resolves such cases by means of an underassociation process, as stated in (35):¹⁷

(35) Underassociation

If a lexical item contains an underassociated category feature, (i) that feature must be independently identified within the phase and linked to the underassociated feature, by Agree; (ii) the two category features so linked must unify their lexical-encyclopedic content.

(Ramchand 2008: 98)

That is, according to Ramchand, in cases like *enter into*, since the verb identifies Res, the P *to* underassociates (by the Superset principle) and lexicalises the PathP only. Even if we take this as a solution to the double Res lexical identifiers, *to* will be the one that underassociates in (35), not the verb. Consequently, *to* has its normal function which, according to Saeed's (2015) proposal, would be a Relator, relating the Figure to the Ground in a path domain.

In section 4, I showed that, semantically Res is parallel to Dowty's (1979) and Rothstein's (2004) BECOME event. Also in the literature, some authors argue that path PPs involve a BECOME element (see, e.g. Dowty 1979; Rapp & von Stechow 1999; Higginbotham 2000). However, this leads to the wrong conclusion; that *to* is a lexical expression of Res since it involves BECOME. I assume, following Gehrke (2008), that *to* does not involve a BECOME event.¹⁸ Consider the examples in (36), cited from Zubizarreta and Oh (2007: 193):

- (36) a. John sent the package to Paris.
 b. John put the book on the table.

¹⁷ The under association principle is Ramchand's term for the Superset principle suggested by Michal Starke (see Starke 2005).

¹⁸ Gehrke (2008: 79-83) argues at length that path PPs do not involve a BECOME element. She provides four specific pieces of evidence for this. I refer the reader to her thesis for details.

Quoting Zubizarreta and Oh (2007: 193), the first sentence does not entail that the package is in Paris; indeed, it can be followed by the phrase *but the package never got to Paris*. On the other hand, *John put the book on the table* does entail that the book is on the table.

A further example is *Tahir entered the room*, where the Figure *Tahir* does end up inside the room. In contrast, in *Tahir ran to the room*, *Tahir* does not necessarily end up in the room. These examples show that *to* does not express a result state and thus, cannot lexicalise the Res element or even the Place element (Saeed's (2015)Rel_{PLACE}). Its semantic function is to relate a Figure to a Ground, which forms the end point of a path. Its semantics involves the transition of the Figure between two phases in a path domain (see Pantcheva 2008 and Saeed 2015).

To sum up the discussion on *to* as Res, I have shown that it is not associated with a Res feature because it does not involve a BECOME event and it can occur with Res verbs productively (e.g. in English, Spanish and Arabic). Instead, I propose a unified treatment of *to* in all its occurrences, following Proc or Res verbs. *To* is a Relator in a path domain. It relates a Figure to a Ground which forms the end point of a path in a motion event. In this way, contrary to Ramchand's underassociation suggested solution to account for the occurrence of *to* with Res verbs, I take *to* to be the same item in all cases. It should be noted that although I do not adopt the underassociation process to explain cases like Res Vs + *to*, I do not argue against it, *per se*. Under my analysis since I do not take *to* to be tagged with a Res feature, the underassociation process is simply irrelevant. Similarly, I extend this reasoning to particles and APs. Since these elements do not involve a BECOME event, they cannot lexicalise the Res head. APs define a (ending) property of the result state and particles define an end point. As for DPs as lexical elements of ResPs, for example, *he wrote a book*, as suggested in Romeu (2012), again such categories do not define a BECOME event. Contrary to Ramchand and Romeu, such PPs, APs and DPs are the complements of a ResP. More specifically, they are the culmination of the result (BECOME) event expressed as part of the verb.

In brief, the way Ramchand (2008) and Romeu (2012) determine the lexicalisation of the Res element, linking it to the ProcP, does not account for the exact semantic components which are lexicalised in the structure, in particular, they BECOME event. For instance, if the ResP is lexicalised by a *to*-phrase or an AP, the structure will not adequately reflect the semantics suggested. In other words, the main problem with Ramchand's (2008) and Romeu's (2012) ResP lexicalisation is that they seem to take it to represent two semantic elements: a BECOME event and its culmination. As will be shown in section 7, a division of labour should be maintained between these two notions (see also Moens 1987; Rothstein 2004; Travis 2010).

6. More on Res

Having established the properties of Res and the way it has to be understood, in this section, I examine possible parallels between Res and two other notions. These are: telicity (section 6.1) and Path in Talmy's (1985, 1991) account of verb-framed languages and Saeed's (2015)Rel_{PATH} (section 6.2).

6.1 Res vs telicity

Ramchand (2008: 40) states that "[Res] does not correlate with semantic/aspectual boundedness in a general sense". So, if an event is telic, it does not imply the existence of a Res element. I share this view because there are examples where an event is telic yet no result state is expressed.¹⁹ Consider the following examples:

- (37) a. John ran a mile in an hour. (Rothstein 2004: 93)
 b. Michael ate the mango (in an hour). (Ramchand 2008: 36)

These are telic/bounded events, but no Res projection is suggested in the structure. In (37a), the verb *run* is non-Res, but its interaction with the complement *a mile* entails a telic event. In Ramchand (2008), the complement is interpreted as a PATH. In (37b), *eat* is a consumption verb and its complement, *the mango*, is also interpreted as a path scale. This entails that telicity cannot be relied on to determine if a verb is associated with a Res feature or not. To put it differently, the presence of ResP entails telicity but telicity does not necessarily entail the existence of a result state.

¹⁹Ramchand (2008) also argues against a one-to-one correspondence between telicity and the presence of internal arguments (cf. e.g. Krifka 1992; van Hout 2000; Kratzer 2004; Borer 2005). For details, the reader is referred to the works cited.

6.2 Res vs Path/Rel_{PATH}

Although it is difficult to tell the difference between Res and Path/Rel_{PATH}, in this section I give arguments to show that they are distinct. Prior to that, I draw a parallel between Path in Talmy’s (1985, 1991) account and Saeed’s (2015)Rel_{PATH}. To account for cross-linguistic variation in expressing motion events, Talmy (1985, 1991) classifies languages into two classes: satellite- and verb-framed languages. His classification is based on the method languages use to encode the notions of motion, path and manner by grammatical categories. More precisely, Talmy (1985) identifies the following set of semantic elements that are involved in a motion event: Motion, Path, Figure, Ground, Manner and Cause. Talmy’s (2000: 25) description of a motion event involving these components is stated below:

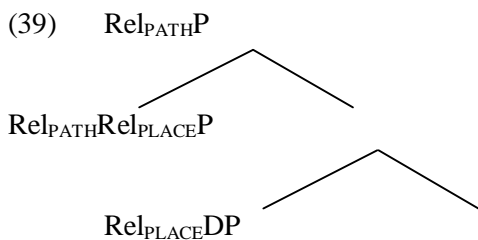
The basic Motion event consists of one object (the Figure) moving or located with respect to another object (the reference object or Ground). ... The Path ... is the path followed or site occupied by the Figure object with respect to the Ground object. The component of Motion ... refers to the presence per se of motion or locatedness in the event.

While Talmy’s (1985) typology was based on the way languages encode Manner, the focus of his typology in (1991) has shifted to the way languages encode Path. The named semantic elements are lexicalised by different linguistic elements across languages, such as verbs, adpositions, case, nouns and adverbs. This is illustrated in the following examples, cited from Talmy (1991: 488):

(38)	a. The bottle	floated	into	the cave	[English]
	Figure	Motion+Manner	Path	Ground	
	b. La botella	entró	flotando	a la cueva	[Spanish]
	Figure	Motion+Path	Manner	Ground	

Based on such observations, Talmy (1991) classifies English as a satellite-framed language since the Path notion is lexicalised by a satellite element (here the preposition *into*), while the verb encodes both Motion and Manner.²⁰ On the other hand, he classifies Spanish as a verb-framed language because it is the verb which lexicalises both Motion and Path, while Manner is expressed separately as an adjunct.

In Saeed (2015) I argue that Path Ps are Relators in a path domain and are distinct from the notion of path (a set of points). For instance, Ps such as *to/from/through* relate a Figure to a specific point of a path. This point can be a starting point in case of *from*, an end point in case of *to* or points in between in case of *through*. These points are represented by the DP Ground. Syntactically, I represent *to/from/through* as Rel_{PATH} which in return dominates the Rel_{PLACE} in a complex spatial relationship. The P projection that illustrates these is given in (39) (see Saeed (2015) for more details).



Accordingly, what Talmy takes as a Path is a Rel_{PATH} in Saeed’s account. More in particular, in (38a) *into* is a Rel_{PATH} (not Path) and in (38b) the Path element assumed in *entró* is, in fact, a Rel_{PATH}. Next, I turn to the parallel between Res and Talmy’s Path (Saeed’s Rel_{PATH}) in verbs within the verb-framed languages.

In her analysis of the English equivalent *enter*, Ramchand (2008) associates the verb with a Res projection (recall the structure in (22a)). The question that arises here is whether the Path element recognised in *entró* and Res in *enter* are the same.

²⁰ Although Talmy (1985, 1991) restricts the satellite elements in English to verb particles, for example, *she ran OUT*, authors following Talmy have extended satellites in English to include ad positions as well, since particles are subsumed under the ad positions family (see Beavers *et al.*, 2010).

It is hard to give a definitive answer. Both Ramchand's Res and Talmy's Path are inherent in the verb and not represented by a specific morpheme (say a prefix or suffix). However, below I provide arguments that show they are distinct elements.

Recall that in accounts like Ramchand (2008), ResP can be lexicalised by *to*-phrases, which I rejected later due to the co-occurrence of Res and Rel_{PATH} as in *entered into* and also the lack of an association of *to* with a BECOME event. The same is true for Spanish *entró*, which can be found with elements like *hacia* 'towards' or *hasta* 'up to'. The examples below are from Juan Romeu (p.c.) (the glosses are mine):²¹

- (40) a. entraron hacia la cocina
 enter.PST.3PL towards the kitchen
 '#They entered towards the kitchen.'
- b. entraron hasta la cocina
 enter.PST.3PL up to the kitchen
 '#They entered up to the kitchen.'

Based on such examples, we can say verbs such as *entró* and *enter* are associated with Res, not Path (Saeed's Rel_{PATH}). They can be followed by Rel_{PATH} elements. Similar verbs in Spanish are *lanzar* 'to throw' and *tirar* 'to throw/drop', which are classified as Res Vs in Fábregas (2007).

These verbs can appear with directional PPs introduced by *a* (examples (41a-b) are from Fábregas (2007: 170)) (the glosses are mine):

- (41) a. Juan lanzó una pelota al tejado
 Juan throw.PST a ball to.the roof
 'Juan threw a ball to the roof.'
- b. Juan tiró una piedra a la ventana
 Juan throw.PST a stone to the window
 'Juan threw a stone to the window.'

This examination of (40) and (41) leads to the following conclusions. First, Res is distinct from Path/Rel_{PATH}. Second, although a path notion is entailed in e.g. *entered the house*, no Path element is available, contrary to what Talmy assumes. Third, verbs like *enter*, *reach* and *leave* are not associated with a Rel_{PATH}, but it is a Res element which expresses the BECOME event.

7. BECOME Vs Culmination

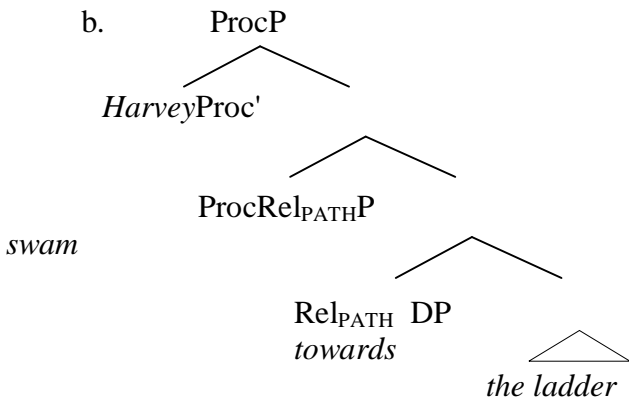
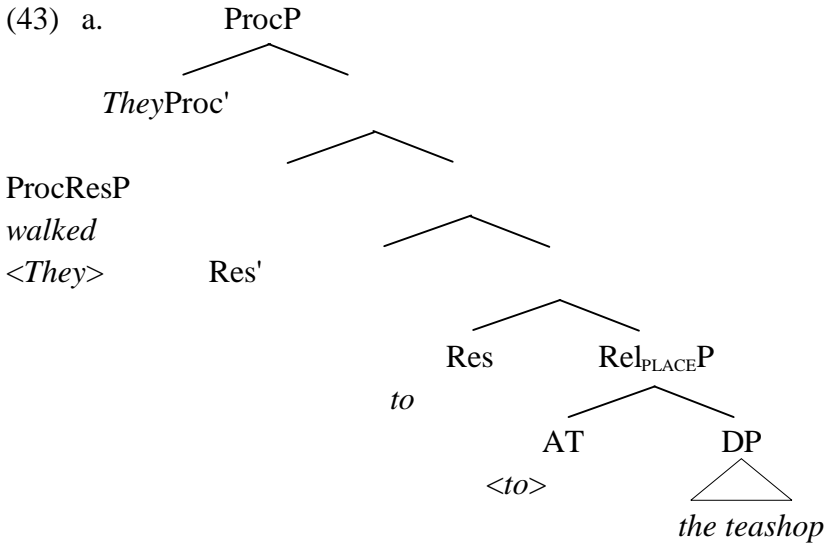
In this section, I distinguish between the BECOME element and culmination proposed in Rothstein (2014) syntactically. For this purpose I examine the occurrence of Ramchand's (2015) class of [Proc] Vs and PPs headed by e.g. *to/into/onto/up to/towards*. The general reading of PPs headed by these Ps is that of goal direction. Consider the following examples:

- (42) a. They walked to the teashop in silence. (BNC, W_misc)
 b. Smiling to herself, she walked into the kitchen. (BNC, W_fict_prose)
 c. I ran onto the pavement, dragging my cart after me. (BNC, W_biography)
 d. She walked up to the villa. (BNC, W_fict_prose)
 e. Harvey swam towards the ladder. (BNC, W_fict_prose)

The difference between (42a-d), on one hand, and (42e), on the other is that the *to*-phrase, *into/onto*-phrases and *up to*-phrase represent a bounded end point of the Figure's motion or path and thus are telic, whereas the *towards*-phrase is atelic since the PP does not suggest a transition or boundary of the Figure's motion in a path. To put it differently, although all of *to/into/onto/up to/towards* relate the Figure to an end point in a path, the Figure does end up at the end of the path in the case of *to/into/onto/up to*, but not in the case of *towards*. Thus, in (42e), the Figure, *Harvey*, can keep swimming in the direction of the ladder without reaching it.

²¹ The English equivalents in (40) are odd, hence the '#'.

The combinations of [Proc] Vs and such PPs yield specific types of events, which, in turn, suggest specific syntactic structures. For example, the difference between *to/into*-phrases and *towards*-phrases leads to two different types of reading according to Ramchand (2008). She suggests that *to/into*-phrases express goal of motion while *towards*-phrases express directed path. As mentioned in section 3, Ramchand (2008) claims that *to* can be associated with two features: a Res feature and a Place feature. Accordingly, Ramchand (2008) assumes the presence of a ResP even in the case of pure [Proc] verbs; the Res head will be lexicalised by *to* in that case, while *towards* lexicalises the Path element (Saeed's Rel_{PATH}) element. These are illustrated in (43a-b) for the examples in (42a) and (42e), respectively:



In section 6.2, I established the difference between ResP and Rel_{PATH}P. I showed that *to* does not lexicalise Res because it does not express a BECOME event. Instead, I propose a unified analysis of Rel_{PATH}P's headed by Path Relators. They are introduced under the Rel_{PATH} head. Most importantly, I argue that the type of events expressed in the examples in (42a-e) are as follows:

- (44) a. [Proc] Vs + *to*-phrase = Process
- b. [Proc] Vs + *into/onto*-phrase = Transition
- c. [Proc] Vs + *up to*-phrase = Process
- d. [Proc] Vs + *towards*-phrase = Process

As can be seen, the combination in (44b) is the only one which suggests a Transition event, more precisely a resultative Transition event, while the other combinations suggest a Process event. The reasoning goes as follows. Since *into/onto*-phrases suggest that the Figure ends up within the spatial domain of the Ground in a spatial relationship, a Transition event is expressed and, hence, a BECOME event is constructed.

Mapping this interpretation onto the syntactic-semantic analysis I proposed in section 4, we can assume that the BECOME event is implied and can be represented as a null ResP. Moreover, we can take the PPs headed by *into* and *onto* as the culmination of the BECOME event. In contrast, the occurrence of *to-/up to-/towards*-phrases with [Proc] Vs, such as *run*, *walk* and *fly* does not give rise to a resultative Transition event. Although *to-/up to-/towards*-phrases relate the Figure to the end point of a path, they do not suggest a culmination. In section 2.4, I discussed Rothstein's (2004) notion of culmination and its role in an event structure. The definition is repeated in (45):

- (45) The culmination is the final minimal event in an incremental process. It is the event which is the final part of the BECOME event; the upper bound of the BECOME event. The argument of the culmination event is the argument of the BECOME event (i.e. the affected object or theme).

(Rothstein 2004: 106)

Based on this definition, it might be thought that the PPs headed by *to*, *up to* and *towards* should give rise to a resultative Transition event when they occur with a [Proc] V. However, this is not the case, although in the case of *to/up to*-phrases a telic point is defined. First, although the tests have shown that these PPs are complements, not all of them can function as the upper bound of the BECOME event because they do not suggest a result active Transition event with [Proc] Vs. To put it informally, walking into a place is not the same as walking to or up to or towards a place. With *into* and *onto* combined with a [Proc] V, a resultative Transition event can be expressed that culminates when the Figure (=the incremental theme) becomes within the spatial domain of the Ground, but with *to*, *up to* or *towards* there is no such possibility. It is worth noting that when I assume that *into* and *onto* give rise to a BECOME event, this is not because they represent the BECOME event itself but because their occurrence with a [Proc] V gives rise to a result active Transition event. More precisely, these PPs provide information about the culmination of the event and trigger the construction of a BECOME event.

Empirical evidence in support of the classification in (44) can be gained by inserting the measure phrase *for a while* to test the result state of the example sentences in (42). Through this test, we can determine the type of event expressed in such constructions.

- (46) a. They walked to the teashop for a while.
 b. She walked into the kitchen for a while.
 c. I ran onto the pavement for a while.
 d. She walked up to the villa for a while.
 e. Harvey swam towards the ladder for a while.

In (46a), *for a while* measures the walking activity of the Figure; it does not entail that the Figure has been in the teashop. The same is true for (46d and e). Contrary to them, in (46b and c), *for a while* entails that the Figure has been in the kitchen or on the pavement for some time. So the walking and running have ended up with the Figure being in the kitchen or on the pavement, which suggests that both have a resultative Transition event. The Transition event is mainly due to the preposition being used, for example, *into* and *onto*. In particular, it is due to the presence of the Place Relators *in* and *on*, which relate the Figure to the inner side and surface of the Ground, respectively.

An advantage of this analysis is that it provides a unified account for cases where *to*-phrases that have unspecified quantity objects do not give rise to a resultative Transition event. An illustrative example is given in (47), cited from Travis (2010: 110):

- (47) Mary ran to stores (*in 3 hours/√for 3 hours). [Activity/*Accomplishment]

The main difference between the Process events expressed by [Proc] Vs combined with *to-/up to*-phrases, on the one hand, and *towards*-phrases, on the other hand, lies in the telicity of the Process. Applying the temporal adverbial test can show this.

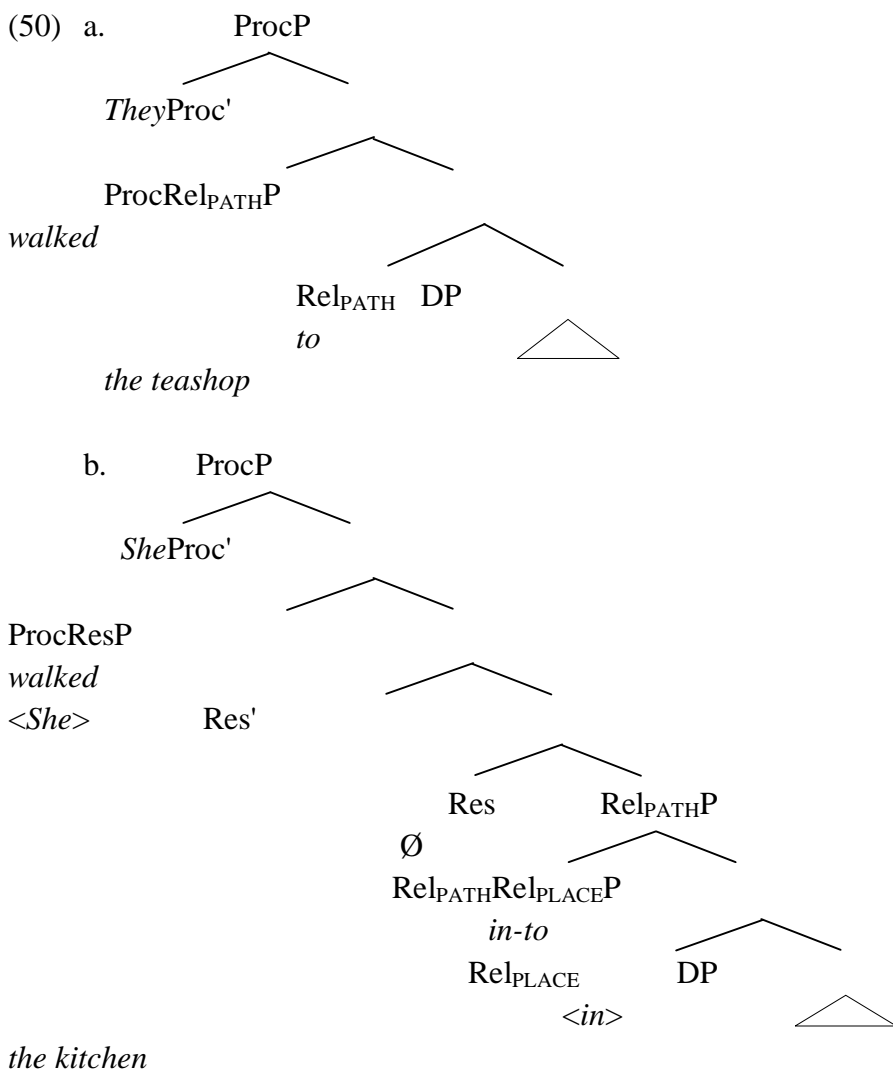
- (48) a. They walked to the teashop in two hours/*for two hours. [Telic Process]
 b. She walked up to the villa in two hours/*for two hours. [Telic Process]
 c. Harvey swam towards the ladder *in two hours/for two hours. [Atelic Process]

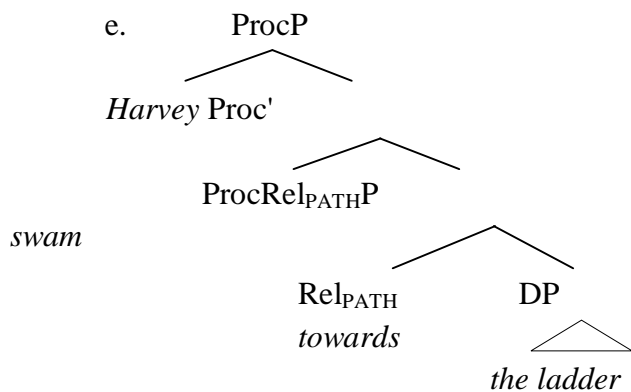
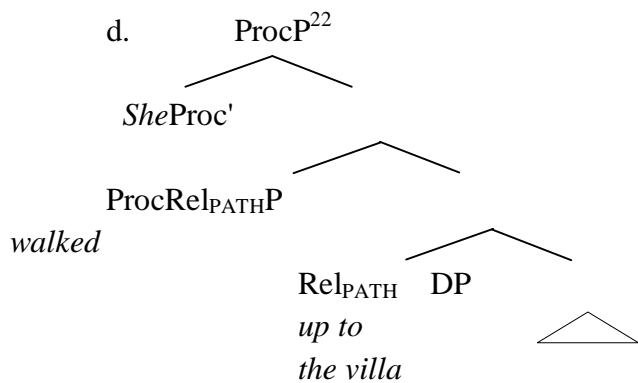
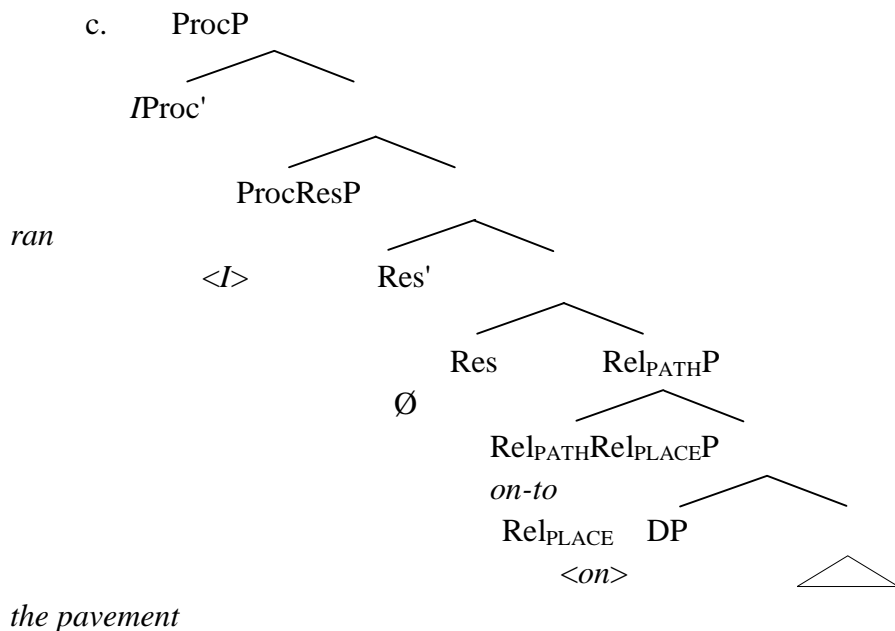
The grammaticality of an *in*-temporal phrase in (48a-b) shows that the Process expressed is bounded, while the possibility of a *for*-temporal phrase in (48c) shows that the Process is unbounded. Telicity, however, is not represented syntactically. It is, rather, a semantic concept (for a discussion on telicity see Krifka 1998; Folli 2002; Folli & Harley 2006; Arsenijević 2006, among others).

Finally, each of the event structures in (42) yields a different syntactic structure. For convenience, I repeat the examples in (49):

- (49) a. They walked to the teashop in silence. (BNC, W_misc)
- b. Smiling to herself, she walked into the kitchen. (BNC, W_fict_prose)
- c. I ran onto the pavement, dragging my cart after me. (BNC, W_biography)
- d. She walked up to the villa. (BNC, W_fict_prose)
- e. Harvey swam towards the ladder. (BNC, W_fict_prose)

In (49b and c), I suggest there is a null ResP, which is licensed by the BECOME event, while for (49a, d and e) I do not suggest one. The syntactic structures of the [VP + PP] constructions in (49a-e) are as in (50a-e), respectively:





To sum up, the discussion has shown that PPs headed by Ps such as *into* and *onto* in English can function as culminations to a BECOME event. For such cases, I proposed that there is a null ResP in the structure licensed by the BECOME event. Other goal PPs, such as *to*, *up to*, and *towards*, do not have a culmination effect.

²² For notational simplicity, I represent the two elements of *up to* Rel_{PATH}. Readers interested in P projection involving such element are referred to Svenonius (2010) and Saeed (2015).

One conclusion in this connection is that, in English, the occurrence of [Proc] Vs and Rel_{PATH}P_s can give rise to a resultative Transition event provided that the Rel_{PATH}P_s specifies a final point (a culmination) where the Figure in a motion event ends up being within the spatial domain of the Ground. In English, the Rel_{PATH}*into* and *onto* are representative examples. PPs headed by such elements can change the semantic and syntactic structure of the motion event expressed. Semantically, a Transition event will be expressed and a BECOME event will be constructed, and, syntactically, there is a null Res element to represent the BECOME event. Moreover, the position of the Rel_{PATH}P with reference to the verb does not affect the type of event expressed. For example, in English, all such PPs are V complements, but only *into/onto*-phrases give rise to a resultative Transition event, based on their lexical-semantic properties. Thus, semantics plays a fundamental role in the syntax of motion events, especially those that involve spatial PPs.

8. Conclusion

In this paper I proposed a semantic-syntactic analysis that maps an event structure onto a phrase structure. This has been accomplished through bringing together the semantic model of events in Dowty (1979) and Rothstein (2004) and the first-phase syntax of verbs in Ramchand (2008). I claimed that the semantic components of an event structure are reflected in certain functional heads in a VP structure. In particular, I argued that Res is licensed by the BECOME event which is realised within the verbal domain and involved in Accomplishment and Achievement events (=Transition event). In sum, Res has the following properties:

- Semantically, it is parallel to Dowty's (1979) and Rothstein's (2004) BECOME element which suggests a BECOME event in Pustejovsky's (1991) Transition (=Vendler's (1967) Accomplishments and Achievements).
- Syntactically, it can be represented as part of the verb only.
- It cannot be lexicalised by DPs, APs or PPs because these lexical predicates do not suggest a BECOME event.
- Its complement can be an end point, a property or a created object.

Finally, the occurrence of [Proc] Vs with different goal-denoting PPs was discussed. Based on the semantic properties of the preposition, different events are suggested. For example, [Proc] Vs and *into/onto*-phrases give rise to a result active Transition event, while [Proc] Vs and *to-/up to*-phrases express a telic Process and [Proc] Vs with *towards*-phrases suggest an atelic Process. I have shown that culminations play a role in determining the type of event expressed and, most importantly, I have shown that not every spatial PP suggests a culmination even if it denotes an end point. This shows the difference between what counts as an end point and what is taken as a final point of a BECOME event. Only when the Figure in a motion-spatial relationship ends up in the spatial domain of a Ground, a resultative Transition event is expressed with [Proc] Vs. To account for the syntactic structure of such an event, I proposed a null Res element licensed by the BECOME event constructed by the PP which defines the culmination of the matrix event.

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