

Waltzing Matilda around and around:

On the licensing of directed-motion resultatives

This paper investigates a case where the mapping between semantic and syntactic boundedness doesn't seem to be one-to-one. We focus on one famous example of an alternation that is supposed to depend on telicity, i.e. the causative manner-of-motion alternation in Germanic *John ran the dog *(to the park)*. The standard approach has taken telicity to be central to the possibility of causative formation. In this paper, we focus on directed-motion causatives to argue that in fact this connection has been overstated. Although telicity *can* appear in these constructions, it is not a *necessary* property of a motion causative in English. Rather, what licenses the alternation is the availability of a specific syntactic structure. In the second part of the paper, we investigate a number of related issues bearing on the division of labor between syntax and semantics, such as animacy restrictions and accompanied-motion readings.

1. INTRODUCTION

Since Talmy (1975) and Jackendoff (1976), the relationship between the semantics and the syntax of directed-motion constructions has been a central focus of studies of argument structure. These constructions are a locus of important cross-linguistic variation (Talmy's 1991 satellite-framed vs. verb-framed languages), and they seem to show a causal connection between syntax and semantics, although theorists disagree about which is cause and which is effect. The differences between the availability of directed-motion

constructions in languages like English and languages like Italian are clearly related to broader properties of the interface in these languages. They correlate with the availability of resultative constructions and verb-particle constructions as well as the inventory of lexical items in these languages: manner-of-motion verbs in English (*swagger*, *wriggle*) vs. verbs of inherently-directed motion in Italian (*entrare* ‘enter’, *uscire* ‘exit’) (Talmy 1985, Higginbotham 2000, Mateu (2000), Pustejovsky 1983, Napoli 1992, Levin & Rappaport-Hovav 1995, among many others).

Because of the clear syntactic and semantic relationship between directed-motion constructions and resultatives, most theorists have treated them as two manifestations of the same underlying phenomenon. For instance, in the semantic realm, both resultatives such as *Bill painted the cart red* and directed-motion constructions such as *Mary pushed the cart into the store* license inferences about the final state of the object *cart*. We can see the syntactic reflex of their similarity, on the other hand, realized in auxiliary choice, as in the Dutch examples in (1):

- (1) (a) Jan is/*heeft in der sloot gesprongen.
 [on the resultative interpretation].
 John is/*has in the ditch jumped.

‘John jumped in the ditch.’

(b) De deur is/*heeft open gezwaaid.

The door is/*has open swung.

‘The door swung open.’

We will consider two of the competing hypotheses in the literature concerning the construction of resultatives in languages like English.¹ One, typified by, e.g., Rappaport-Hovav & Levin (1999), Wechsler (2001), holds that the constraints on resultative formation are purely semantic, and that linking rules governing the mapping from syntax to semantics accounts for syntactic restrictions on the construction. The second approach argues that the formation of resultatives is a purely syntactic process. There are two primary versions of this approach. One proposes that there is a functional projection which licenses objects and interprets them as the undergoer of a change of state. In such an approach, the functional projection is necessary for telicity to arise (Tenny 1987, vanHout 1996, Borer 1998, Sanz 2000, Ramchand 2001). In the other type of syntactic account, these constructions are formed when a resultative predicate is added. The consequent structural change forces a semantic reinterpretation of the internal argument of the main verb as a subject of the lower predication, and a change-of-state interpretation follows naturally. Such

an approach is advocated by Chomsky (1981), Stowell (1983), Kayne (1985), Hoekstra (1984), among many others.

We will adduce evidence in favor of the second type of structural approach to the directed-motion constructions. Such constructions are typically telic, which has led to the assumption that telicity is always associated with these constructions. We present evidence showing that endpoint telicity is not in fact a requirement for their formation. We also show that endpoint telicity may arise from different structures, and may be affected by apparently semantic or pragmatic factors. Hence there is no two-way requirement: telicity need not be represented by a unique syntactic structure, and resultative structures need not be telic. We argue instead that the crucial ingredient which allows the formation of this construction is a particular kind of syntactic configuration, no matter whether the event denoted is telic or atelic. Crucially, the second type of syntactic approach can allow this dissociation between telicity and directed-motion constructions. Both the semantic approach, which is driven by telicity, and the first type of syntactic approach, which entails a necessary connection between structure and a telic interpretation, fail to account for the range of data we discuss.

Although we advocate a purely syntactic account of the formation of these constructions, in considering a set of related issues such as animacy and

the accompanied-motion reading, we come to the conclusion that semantic effects are at work in restricting which types of verbs and arguments may co-occur in these constructions. We adopt Wechsler's (2001) account of a homomorphism effect in adjectival resultatives and extend it to the issues mentioned above.

2. TELICITY AND RESULTATIVES

In studies of argument projection, it has been cogently argued that certain syntactic structures have a particular semantic correlate. The issue centers on the relationship between the telos of an event and the syntactic structure of the verb phrase which refers to that event. It is well-known that events can unfold in different ways along the timeline. They can be homogenous, continuing for an arbitrarily long amount time; they may be punctual, occupying a simple minimal point on the timeline; and crucially they may involve a process of change, which may or may not lead to an inevitable conclusion. It is this latter type of event which will concern us here.

In the linguistic literature, in the mapping to linguistic form, events are broken down into idealized sub-parts, usually called sub-events. For example,

change-of-state events are made up of a process of change, followed by an endpoint (telos) (Pustejovsky 1993, Kratzer 1996, Higginbotham 1997, among others). Other types of events do not contain a telic sub-event, and the presence or absence of such a sub-event has been argued to have direct consequences for the syntax.

For those who take a syntactic perspective on this relationship, it is assumed that event structure, in particular, endpoint sub-events, are directly represented by the projection of a particular functional superstructure (Travis 1994, van Hout 1996, Borer 1998, Ritter and Rosen 1998, among others). For those who take the semantic perspective, the relationship between endpoints and syntax is the result of the lexical specification of the verbal semantics being enforced in the syntax via linking rules which allow connections between particular semantic elements and particular syntactic structures. (Levin and Rappaort-Hovav 1995 for example).

One famous example of an alternation that is supposed to depend on telicity is the causative manner-of-motion alternation in English, (Hoekstra 1984, Jackendoff 1990). Verbs of motion may not take a direct object, as shown in (2):

- (2) (a) John waltzed (*Matilda).

- (b) John walked (*Matilda).
- (c) John ran (*the dog).
- (d) John jumped (*the horse).

It has been noticed (Hoekstra & Mulder 1990 and many since) that these structures containing objects may be rescued by adding a goal PP, whose presence creates grammatical structures denoting events which are both causative and telic:

- (3) (a) John waltzed Matilda into the bedroom in 5/*for 5 minutes.
- (b) John walked Matilda to his new flat in 20/*for 20 minutes.
- (c) John ran the dog over the bridge in 20/*for 20 seconds.
- (d) John jumped the horse across the ditch in a flash/*for 2 seconds.

The possibility of modifying these verb phrases with an *in-an-X* adverbial shows that the events are delimited (Vendler 1967). Consequently, as mentioned above, both the syntactic and semantic approaches to the interface have taken telicity to be central to the possibility of causative formation with these predicates. Consider, however, the examples in (4):

- (4) (a) John waltzed Matilda around and around the room for hours.
(b) John walked Mary along the river all afternoon.
(c) John ran the dog up and down the path for hours.
(d) John jumped the horse back and forth across the ditch for 30 minutes.

The interesting thing in these examples is that although the causative is grammatical, the PP which licenses it does not delimit the event. The adjunction of the for-an-hour adverbial elements shows that the events in these VPs are in fact atelic. We will concentrate on investigating the properties of this data set, drawing the conclusion that the relationship between telicity and these resultative constructions is more coincidental than causal². We show that the crucial licensing factor is a particular structural configuration involving a subject and a predicate. However, the predicate may or may not specify a final state for the object.

Causativized manner-of-motion verbs with goal PPs have been of long-standing interest, because they can shed light on the nature of selection, causativization and the thematic properties of arguments: agentivity, affectedness, and so on. Normally the internal argument of a causative structure (*Mary hammered the metal flat*) undergoes a change of state and as a

consequence has few or no agentive properties, but in these types of construction there is an interesting combination of agentivity and affectedness on the part of the direct object. They are consequently less flexible than run-of-the-mill causatives, and have important implications for theories of the syntax/semantics interface. We will discuss these related problems in section 7.

3. NON-STRUCTURAL SOURCES OF TELICITY, NON-ENDPOINT TYPES OF TELICITY

In this section, we first exhibit a case discussed in the literature where a change in the telicity of an event type is not correlated with a change in syntactic structure, further supporting our position above that telicity is not an essentially syntactic property. We also consider different varieties of telicity discussed by Borer (2002), where the usual tests for telic structures do not indicate the cessation of the event; rather, they refer to a type of ‘threshold.’ We conclude, with Borer, that the notion of “endpoint” so frequently referred to must be discarded in favor of a considerably more fluid conception of linguistically relevant sub-event.

3.1 Context induced telicity

It has been shown elsewhere that telicity can also be created by effects due to the contextual cues. For example, as discussed in Hay, Kennedy and Levin (1999), there is a class of verbs that they call 'degree achievements', exemplified by *lengthen*, *widen*, *cool*, *dry* etc. which are problematic for aspectual classifications because they alternate between telic and atelic behavior (*the soup cooled in five minutes/for five minutes*). Hay et al. (1999) argue that what is crucial for the aspectual classification of these verbs as telic or atelic is whether the degree of change, (the *difference value*) associated with the meaning of the adjectival base can be interpreted as bounded or unbounded. In the former case, when the *difference value* can be interpreted as bounded we have a telic predicate, while in the latter, when the *difference value* is unbounded, we have the creation of an atelic verb. In essence, the argument is that 'the variable aspectual behavior of many degree achievements can be explained in terms of the relation between event structure and the scalar structure of gradable properties'(Hay et al. 1999, pag. 3). In many cases, the difference value is provided by linguistic material, for example by a measure phrase (*the lake cooled 4 degrees*), or by adverbial modifiers (*They clothes*

dried completely (telic) vs. *the independent counsel broadened the investigation slightly* (atelic))³.

The interesting thing for us here is that the bounded versus unbounded nature of the property involved in the deadjectival verb can sometimes be determined by contextual cues. For example, consider the difference between (5) (a) -(b) below.

- (5) (a) John lengthened a rope (*in 2 minutes/for 2 minutes).
 (b) The tailor lengthened a pair of trousers (in 2 minutes/for 2 minutes).

The difference in event type here is not the result of any syntactic change in the structures involved. Rather, the telicity in (5b) results from world knowledge; there is no conventional length for ropes, but there is a very salient conventional length for trousers (as long as the leg of the owner). When that length is achieved, the event is over. In Hay, et al.'s term, here what is relevant is not the scalar structure of the adjectival base, but rather the conversational implicature relative to trousers length. The important aspect of their treatment for us, here, is the lack of any necessary implication between telicity and a particular syntactic structure.

3.2 *Threshold vs. endpoint telicity*

Most approaches to the event-structure/argument-structure correspondence have assumed that the simple notion of ‘telicity’ is transparent and unproblematic, because the fundamental aspectual nature of an Accomplishment involves the notion of a result achieved, after which the event ceases. Formalizing a connection between “result” and “endpoint”, then, has seemed a very natural step. Borer (2002), however, has shown that there are cases where the correlation doesn’t hold. Consider the following standard examples of supposedly telic events, delimited by Goal PPs:

- (6) (a) John walked around the corner.
- (b) The boat floated under the bridge.

The telic interpretation for a sentence such as *the boat floated under the bridge* can (and usually does) carry the implication that the boat got to the other side of the bridge, so that the sentence could be paraphrased as *the boat floated until it went under the bridge and then beyond*. If the notion of telicity that was

relevant here involved an “endpoint”, however, we would expect the sentence simply to have the interpretation *the boat floated until it got under the bridge* (with the presupposition that then it stopped there).⁴ In such sentences, we will call the PP's contribution the *threshold* of the event: here, as well as above, it is not the presence of an endpoint of the event which is relevant for the directed-motion interpretation.

Borer (2002) argues extensively that 'endpoint' is not an adequate characterization of the contribution of the result predicate in resultatives generally. Rather, endpoint telicity is only a special sub-case of the overall phenomenon. ‘Telicity does not predict co-finality, or, for that matter, co-initiality. It suffices that there be some sub-part of an event P which is not, itself, P’. She cites examples like the following:

- (7) (a) Kim ate more than enough meat (non-P defined by *enough*).
 (b) Robin read at least 3 books (non-P defined by *3 books*).
 (c) We filled the room with smoke⁵ (non-P defined by *full of smoke*).

Here, there are thresholds but not endpoints. We have emphasized that endpoint telicity is only a particular case of a general phenomenon of 'threshold' telicity,

where there is a transition from not-P to P, but that transition does not necessarily demarcate the endpoint of the event.

3.3 *The [+Telic] FP approach*

According to one particular syntax-driven approach to resultatives and the measuring-out phenomenon, the telicity of a phrase is constructed by a particular functional projection. This FP goes by various names: AgrO (vanHout 1996), AspPQ (Borer 1998), RvP (Ramchand 2001, Folli 2002), EventP (Sanz 2000), but the crucial thing is that all contain features which must be checked by an object in its specifier position, in particular, [+telic] features. This is intended to enforce the event/object-homomorphism requirement (Krifka, 1998), Tenny's "Measuring-Out" effect, typical of these structures where the object is often an Incremental Theme.

Borer's threshold endpoints, as well as Hay, et al.'s pragmatically induced telicity, are problematic for such approaches. A [+telic] feature introduced by the syntax should not be sensitive to the contextual effects imposed by the choice of object and overall situation, as in the *lengthen the trousers* case. Further, there is no clear way to encode non-endpoint telicity:

such approaches employ a compositional semantics which entails that the object is necessarily an entity which undergoes a change to a finished result state, thereby ‘measuring-out’. For this reason, the *more than enough meat* and *fill the room with smoke* examples are not easily treated by the semantics usually proposed for a telic functional projection. The insight is that ‘telicity emerges in the context of a counter, and it is absent in the absence of a counter’ (Borer, 2000, pag.10), where by ‘counter’ Borer refers to whatever is projected in and therefore assigns value to the quantity phrase. In other words, the availability of a precise quantity is what is crucial for the formation of a telic interpretation. This hypothesis leads Borer to suggest that the relevant functional node in her system, AspQ, does not attend to telicity *per se* but rather to quantity.⁶

It seems to us that none of these approaches, Borer’s included, can explain the object-introducing effects of PPs such as *around and around* in the atelic directed-motion resultatives we are considering here. The telic FP-type approach explains the introduction of an unselected object in examples like *Bill laughed himself to death* or *John waltzed Matilda across the floor* by saying that the telic FP is responsible for licensing an additional object argument, precisely to do the measuring-out for these [+telic] expressions. Our paradigm

in (4) above, however, shows that the object-introducing effect is created by the addition of a PP, whether that addition creates a telic or atelic event.

3.4 *Summary so far*

We have presented evidence that, for motion verbs, telicity and the resultative structure are not necessarily correlated. Causatives of motion verbs are possible with atelic PPs, which shows that causativization—i.e. the introduction of an extra object argument—does not correlate with telicity. This constitutes a strong argument against the family of analyses inspired by Tenny's 1987 intuition concerning the relationship between telicity and transitivity.

We now turn to some semantically-based accounts of resultatives, and show that while they give insight into certain types of resultative construction, they are again inadequate to account for our central paradigm.

4. SEMANTIC APPROACHES TO ENDPOINT TELICITY

Despite the inadequacy of accounts which propose a necessary and complete connection between object licensing and telicity for motion verbs, there is one type of construction where the correlation does seem to be as complete as advertised. This is the case of adjectival resultatives formed on transitive verbs: the “selected-object resultatives” discussed by Rappaport-Hovav and Levin (1999) and Wechsler 2001, among others.

Resultatives can be formed both on verbs which select for a direct object and on verbs which do not:

- (8) (a) John swept the floor.
 (b) John swept the floor clean.
 (c) John shouted (*himself).
 (d) John shouted himself hoarse.
 (e) John swept the broom apart.
 (f) *John swept the broom.

In (8a), we see that the verb *sweep* allows a direct object; (8b) is a resultative formed on this construction. In (8c), we see that *shout* is ungrammatical with a

direct object, but may allow a direct object with a resultative adjectival, as in (8d). *Sweep* is a verb which subcategorizes for a direct object, *shout* is not.⁷ Notice, however, that *sweep* in (8e) has an unsubcategoryed object (one cannot sweep a broom). What is at issue, therefore, is not transitivity, but the actual selectional properties required of subcategoryed objects by the verb.

In resultatives with subcategoryed objects, R&L and Wechsler have shown that the resultative adjective must be bounded, i.e. it must encode a definite telos:

- (9) (a) Mary wiped the table clean.
 (b) #?Mary wiped the table dirty.

Wechsler, in particular, argues that it is the boundedness of the adjectival predicate (what he calls closed-scale gradable adjectives), not the syntactic presence of an object, that is essential for resultative formation. In (9a) above, *clean* is a closed-scale adjective, because ‘clean’ in its typical use represents an absolute endpoint: when all the dirt is removed, the object can’t get any cleaner. In (9b), however, *dirty* is an open-scale adjective: something can get arbitrarily dirty; there is no typical necessary endpoint of dirtiness where something can’t get any dirtier.⁸

These cases do exhibit exactly the syntax/semantics difference between endpoint and threshold telicity that we argued above was not relevant for other examples. The fact that it isn't relevant in other examples, we argued, posed a problem for syntax-based treatments which appeal to a [+telic] functional projection.

Wechsler argues for a semantically-based account according to which a linking rule allows resultative formation with these verbs iff the correct type of closed-scale adjective is predicated of a selected object. When a resultative is formed on a subcategorized argument, an *event-object homomorphism*, in the sense of Krifka (1992), is imposed. Consequently a resultative may not be formed on a subcategorized argument with an open-scale adjective, since the appropriate homomorphism cannot be imposed with such an adjective. Wechsler's account has the attractive property of predicting the ungrammaticality of (9b) above. He takes the predictive power of this approach to be a strong argument in favor of lexical-semantic approaches to the syntax/semantic interface problem in general.

Since lexical selection, rather than syntactic position, is the crucial factor for Wechsler, it follows that similar restrictions should hold of resultative-type predications formed on surface subjects, as long as the subjects are subcategorized for. Such an account allows for a monostratal syntax, since

all the relevant factors are encoded in the lexical-semantic representation of the elements involved. He adduces examples like the following:

- (10) (a) *We danced tired.
 (b) *The coach trained us tired.
 (c) We danced ourselves tired.
 (d) John danced into the room.

The problem with understanding *danced tired* as a resultative,⁹ he asserts, is not that it lacks a direct object, but rather that *tired* is an open-scale adjective, and therefore unbounded. Even though (10b), *trained us tired*, has an object, it is still ill-formed as a resultative, which Wechsler accounts for in the same way as *wipe the table dirty* in (9b) above: *us* is subcategorized for and hence requires a closed-scale adjective, but *tired* is not. The fact that (10d), *John danced into the room*, is well-formed, then, is accounted for in the same way. *Into the room* is a closed-scale PP, according to Wechsler, and hence is grammatical when predicated of a selected argument like the subject of *dance*. Since Wechsler's closed-scale restriction applies only to resultatives of verbs formed on subcategorized arguments, (10c) is grammatical because *ourselves* is not a true

object of *dance* and hence is not subject to the event-theme homomorphism restriction.

In essence, Wechsler's account hinges on the notion of selection, rather than syntactic position. Resultatives formed on selected arguments, whether they are subjects or object, must be formed with closed-scale predicates. However, this cannot be the whole story. Wechsler's closed-scale/open-scale contrast applies equally well to prepositions as to adjectives. *Along*, *around* and *towards*, for instance, are prepositions which produce an atelic interpretation of a motion event, hence are open-scale, while *to*, *into*, and *across* produce a telic event, according to our tests below, and hence are closed-scale. (We will refer to the former as atelic prepositions and the latter as telic ones, for shorthand). Consider the examples in (11) and (12):

- (11) (a) John walked to the river #for 3 hours/ in 3 hours.
 (b) Mary pushed the cart into N.Y. #for 3 hours/ in 3 hours.
 (c) Sue danced across the room #for 3 hours/ in 3 hours.
- (12) (a) John walked along the river for 3 hours /#in 3 hours.
 (b) Mary pushed the cart towards N.Y. for 3 hours /#in 3 hours.
 (c) Sue danced around and around the room for 3 hours /#in 3
 hours.¹⁰

Wechsler could obviously account for the examples in (11), as the predicate is closed-scale and the NP is an argument of the verb. Crucially, he would predict that the examples in (12) should be ungrammatical because the NP of which the result is predicated is subcategorized for by the main verb, and yet the result PP is open-scale. Consequently, there is no event-argument homomorphism in such examples.¹¹ While Wechsler's conclusions may be correct for adjectival resultatives of subcategorized objects, the account does not make the right predictions for PP resultatives.

One might attempt to argue that the open-scale PPs in (12) above are not in the VP-internal resultative position, but rather are locative adjuncts. Below we show that in the cases in (12) above, the open-scale PP is a complement of the verb and not an adjunct (cf. the tests provided for Norwegian by Tungseth (2002)). Consider the contrasts in (13):

- (13) (a) Sue danced around the bathroom at the party.
 (b) #Sue danced at the party around the bathroom.
 (c) Sue danced at the party in the bathroom.
 (d) Sue danced in the bathroom at the party.

Switching the order of two locative PPs, both of which modify a dancing event, in (13c-d) does not affect grammaticality. However, reversing the order of a locative and an open-scale Goal PP in (13a-b) severely degrades the sentence, indicating that the GoalPP is in an argument rather than an adjunct position.

Similarly, temporal adverbials can normally be interchanged with locative adjuncts as well, as seen in (14a-c) below. However, with these atelic resultative PPs, the order is fixed, as seen in (14b-d):

- (14) (a) Sue danced at the party for hours/ for hours at the party.
- (b) Sue danced around the room for hours/#for hours around the room.
- (c) John pushed the cart at the state fair for hours/for hours at the state fair.
- (d) John pushed the cart towards New York for hours/#for hours towards N.Y.

Another relevant test for constituency is *do-so* VP elision. Elements which are adjoined to the VP may occur outside the domain of *do-so*, as illustrated in (15a) for a locative PP. On the other hand, argument PPs, as in the ditransitive case in (15b), may not be excluded from elision, because they are structurally

part of the VP being elided. The crucial example for us is (15c), where the atelic goal PP is clearly part of the elision domain:

- (15) (a) Mary kissed John in the park and Sue did so in the bedroom.
 (b) *Sue gave a book to John and Mary did so to Bill.
 (c) *John pushed a cart towards N.Y. and Bill did so towards
 Washington.

According to the test in (15c), the open-scale PP here must be within the VP, and hence cannot be an adjunct. These cases, therefore, are problematic for Wechsler.

We can confirm the Goal nature of the atelic PP in the equivalent construction in Italian by considering auxiliary selection facts. As discussed for Dutch above, whenever a verb of motion followed by a PP alternates between a locative and a directed-motion reading, the auxiliary selected in the perfective changes from the *avere* to *essere*, corresponding to an agentive vs. an unaccusative structure. In (16), changing the auxiliary correlates with a change in the interpretation of the PP, from locative adjunct in (16a) to closed-scale Goal endpoint in (16b). This is confirmed by the standard telicity tests (see Folli 2002 for further discussion):

- (16) (a) Gianni ha corso nel bosco per ore/#in un minuto.
 John has run in the woods for hours/in one minute.
- (b) Gianni é corso nel bosco in un minuto/#per ore.
 John is run into the woods in a minute/in one minute.

Crucially, changing the preposition from a closed-scale, endpoint-locating one like *in* 'into' to an open-scale, path-denoting preposition like *verso* 'towards' still results in *essere* being selected as the auxiliary, again confirming that these PPs are argumental:

- (17) (a) Gianni é corso verso il bosco.
 John is run towards the woods.
 'John ran towards the woods.'
- (b) Gianni é scivolato in direzione della pianta.
 J. is slid in the direction of the tree.
 'John slid in the direction of the tree.'

The same constellation of facts is true in Dutch:

- (18) (a) Jan is in het bos gerend.
 Jan is in the woods run.
 ‘Jan ran into the woods.’
- (b) Jan heeft in het bos gerend.
 Jan has in the woods run.
 ‘Jan ran in the woods.’
- (c) Jan is naar het bos gerend.
 Jan is towards the woods run.
 ‘Jan ran towards the woods.’

Finally, we note that there is a small class of English manner-of-motion verbs which select for a directional PP, and may not occur in an unergative, PP-less frame.¹² Consider the examples in (19) below:

- (19) (a) The car careened around the corner.
 (b) #The car careened.
 (c) The car hurtled around the corner.
 (d) #The car hurtled.

These verbs actually require a directional PP, confirming that these PPs can be arguments in the canonical sense. We therefore conclude that the structural position of the open-scale PP in the examples above is not that of an adjunct, but rather the usual VP-internal position of a PP that specifies a Goal result. It follows, then, that the open-scale/closed-scale distinction emphasized by Wechsler, while important for adjectival resultatives predicated of selected objects, is inadequate as an account for the availability of PP resultatives with subcategorized arguments.

5 SMALL CLAUSES

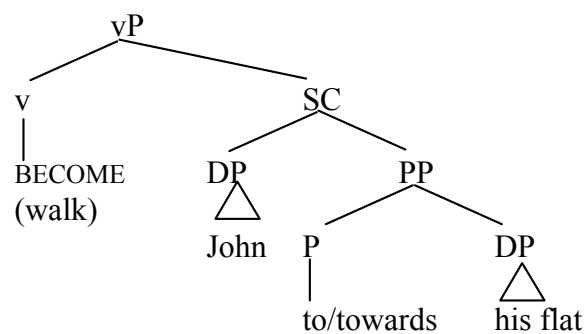
So far, we have seen that when we add a argument PP to a manner-of-motion construction, we see a change in syntactic behavior independently of whether the PP is telic or atelic. One syntactic change is the availability of auxiliary selection alternations in the Italian and Dutch intransitive examples introduced above. The second change, alluded to in the introduction, is the licensing of a causative interpretation when a PP is added to these verbs: the addition of the PP allows the introduction of an additional argument. As we have seen, open-

scale PPs allow the formation of causative structures on these verbs just as well as the closed-scale ones do:

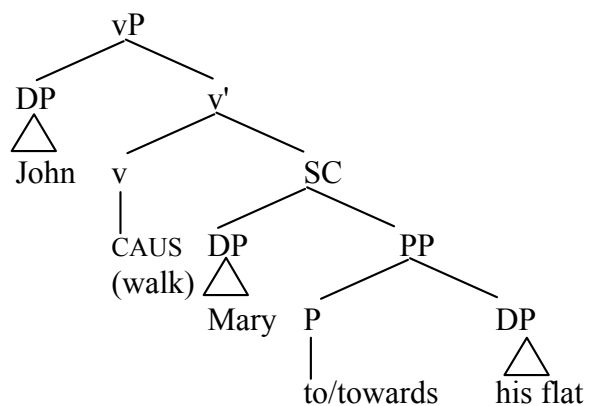
- (20) (a) John waltzed Matilda around and around the room for 3 hours
/in 3 hours.
- (b) John walked Mary towards her car for 3 hours /in 3 hours.
- (c) John ran his dog along the canal for 3 hours /in 3 hours.

We argue that the fact that the open-scale PP works as well as a closed-scale one for causativization shows that the structural change is what is important in these cases, not telicity. Hence, a purely syntactic account of the formation of these structures is necessary. We essentially adopt the proposals of Hoekstra (1984 et seq), according to which the PP forms a predicative small clause with the Theme. This small clause may be embedded under either an unaccusative or causative light verb, thus explaining both the auxiliary selection and causativization facts.

(21) (a) John walked to/towards his flat.



(b) John walked Mary to/towards his flat.



If the SC structure is all that is responsible for the change in argument structure, i.e. for the availability of an extra slot for the Theme argument, then we can understand why telicity need not arise here. Both *to* and *towards* give the same structural effect, independent of their semantics.

The notion of telosplays no role in licensing the alternation. The alternation is purely structural, and consequently it arises with both kinds of PPs. The semantic telicity of the whole construction is the compositional result of the semantics of the particular lexical items involved. Compare, for instance, the two examples below, both involving the same small clause complement:

- (22) (a) Mary drove John crazy.
 (b) Mary considers John crazy.

The first, of course, is resultative, while the second is simply stative; the difference is not structural, but results from the semantics of the matrix verbs: *consider* is stative, therefore it does not provide the necessary transitional element involved in a resultative event, while *drive* is eventive and can furnish the transitional portion of the resultative event. This kind of analysis, of course, explains the auxiliary alternation facts mentioned earlier in Dutch and, for those intransitive verbs which allow an argument PP, in Italian (ex. (17)-(18)). The unaccusative structure forces the selection of the *to be* auxiliary.

It is worth noting that dissociation between auxiliary selection and telicity holds not only for these motion+PP constructions, but for a whole class

of degree achievement verbs, as shown by the following examples (Folli 2002 among others, and contra Arad 1998).

- (23) (a) La temperatura é diminuita per ora.
 The temperature is diminished for hours.
 ‘The temperature decreased for hours.’
- (b) L’inflazione é aumentata per mesi.
 The inflation is increased for months.
 ‘Inflation has increased for months.’

It is clear, then, that in general, telicity is not directly involved in auxiliary choice (cf. ex. (17)-(18) above). On the other hand, it is well known that auxiliary selection is a sensitive test for an unaccusative syntactic structure (Rizzi 1982, Burzio 1986); our analysis of motion verbs with both kinds of PPs confirms this conclusion.

6 WHAT THE SMALL CLAUSE *DOES* ENTAIL

Folli & Harley (2002) argue that there is a semantic effect associated with the presence of a small clause, but that it doesn't have to do with telicity per se. They notice that a change in the type of subject is associated with a change in argument structure in examples like the following:

- (24) (a) John ate the apple.
 (b) John ate up the apple.
 (c) *The sea ate the beach.
 (d) The sea ate away the beach.
 (e) Gianni ha mangiato una mela.
 G. has eaten an apple.
 'Gianni has eaten an apple.'
 (f) Gianni si é mangiato una mela.
 G. REFL is eat.PST an apple.
 'Gianni ate an apple up.'
 (g) *Il mare ha mangiato la spiaggia.
 The sea has eat.PST the beach.

‘The sea ate the beach.’

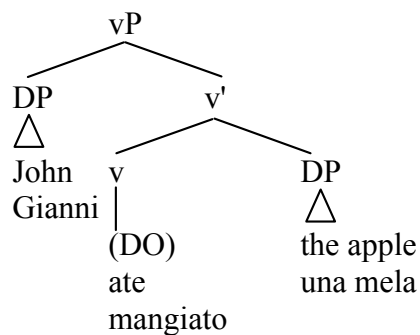
(h) Il mare si é mangiato la spiaggia.

The sea REFL is eat.PST the beach.

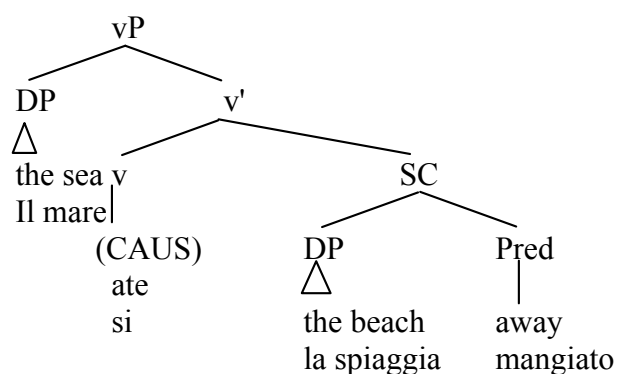
‘The sea ate the beach away.’

In (24a-d), we see that when the agent of a verb of consumption like *eat* is not intentional, like 'the sea', a small clause structure is required in English; similar facts obtain in Italian, as in (24g-h). They analyze this paradigm by assuming that different external-argument-selecting little *vs* also select for different kinds of complements: true intentional-agent-selecting *v* DO requires a nominal complement, while the *v* which selects for Causer external arguments, CAUSE, requires a small-clause complement. Consequently, when a DP which can only be a Causer, not an Agent, appears in the external argument position of *v*P, it forces an interpretation on the sentence according to which *v* = CAUSE and consequently forces the complement to *v* to be a small clause, rather than a nominal. The structures proposed for the two constructions in English and Italian are illustrated in (25) below:

(25) (a) John ate the apple



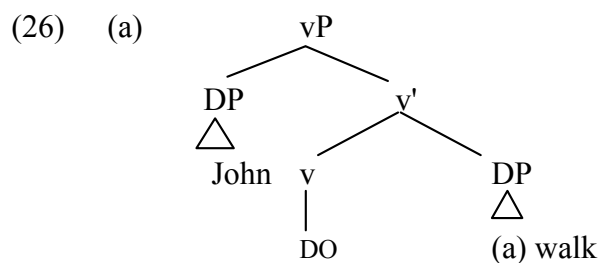
(b) The sea ate the beach away

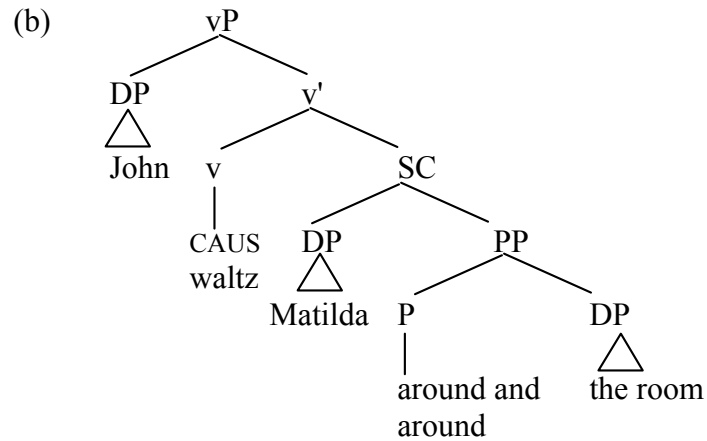


The treatment of *si* as a realization of the head of a functional projection rather than as a pronominal clitic in these and other constructions is motivated in Italian in Folli (2001), in Spanish by Zagana (1996) and Zubizaretta (1987), and for Kannada, see Lidz (1998). We assume that the Italian word order (participle-object, not object-participle as shown here) is either derived via head-movement of the participle upwards in the tree, or is the result of a base-generated participle-object order in accordance with the rightward-specifier

hypothesis of Guasti (1996) for Italian causatives. Although the actual morpheme which is necessary to achieve the augmented structure differ in Italian and English (in the former it is a light verb selecting for an adjectival small clause, while in the latter it is the particle realizing the small clause predicate), the structural change induced is identical in the two languages.

Turning again to the motion verb constructions, the switch from an unergative to an unaccusative or causative syntax should be accompanied by a change in the light verb. The unergative structure, we assume, will involve an agent-selecting light verb DO, with an incorporated event-denoting nominal (à la Hale and Keyser 1993). The causative structure, on the other hand, will involve a light-verb CAUS selecting a small clause (as discussed above), where the verb name is merely describing a manner of motion. This switch is exactly analogous to the switch between the agentive and causative structures for *eat* illustrated above. The relevant structures are represented by trees as in (26) below:





In both the verb of consumption and the verb of motion cases, the introduction of a small clause into the syntactic structure makes available an alternation which otherwise is not licensed by the selectional properties of the verb. Since we have argued that the introduction of the small clause allowed by CAUS is correlated with a change in the requirement that the external argument be intentional (*The sea* is only a possible subject of *eat* when the small clause is present), we predict that when the SC structure occurs with a verb of motion, the subject of the verb of motion should no longer have to be intentional/agentive: it should be able to be a CAUSE, rather than an intentional agent.

This isn't, generally speaking, the case. In fact, the Agent requirement on the subject of the verb of motion is still present, as can be seen in (27) below:

(27) *Anxiety ran Mary to her house.

How can we account the absence of the observed interpretive effects of the SC structure with verbs of motion constructions here? We address this problem in the next section.

7. ALLOWING SEMANTIC EFFECTS AND THE SOLUTION TO THE AGENTIVITY PUZZLE

We have argued, above, that telicity is not the crucial factor in licensing the motion verb-PP constructions discussed in this paper. In particular, we have argued against Wechsler's selection-based closed-scale restriction on resultatives for these PPs, showing that, although the Theme argument is co-selected by the verb and the PP, there is no closed-scale requirement. In contrast, we have shown that the structural effect of the addition of a PP, giving rise to a small clause structure, is what is crucial in the licensing of these constructions.

Nonetheless, Wechsler’s closed-scale restriction is a genuine effect within adjectival resultatives, and his explanation of this effect, while not adequate for the motion-verb constructions, does shed light on restrictions that can only derive from the semantic properties of the adjectives involved and their interaction with the selectional properties of the verbs. We would like to suggest that the agentivity problem in manner of motion constructions that we note above, will find its ultimate solution in this domain as well. The syntax licenses the structures, but it is a semantic property of the verb which determines how the agentivity of the subject interacts with the unfolding of the event denoted by the Small Clause. Below, we offer some new evidence bearing on this issue which suggests that a homomorphism requirement on the causing event and the Path event interacts with the intentionality of the subject to constrain the available range of alternations.¹³

Agentivity is a long-standing puzzle in motion constructions. Particularly mysterious is the sense of ‘double’ agentivity which they entail, in the typical case. Not only is the external argument walking in the causative *John walked Mary home*, but so is the Theme. In the unaccusative version, *Mary walked home*, “Mary”, the Theme, is also a walker—an Agent of walking—despite the unaccusative syntax. This sense of two ‘agents’ in the causative has been central to discussions of the construction since Jackendoff

(1990) and many others, including, most recently, Rappaport-Hovav and Levin (1999).

We argue that the unavailability of a non-agentive subject in cases like (27) is a combination of two independent semantic factors which may be differentially associated with verb meanings: an agentivity/intentionality requirement which may be imposed by the ‘manner’ component of the verb, and the possibility that the verb encodes a Path argument. These two semantic properties define a four-way paradigm of manner verb classes, each of which behaves differently in causatives with respect to the intentionality of the external argument and the ‘accompanying action’ interpretation of the causing event. We will show that the intentionality requirement in the causative is independent of the ‘accompanying action’ requirement. The sensation that the two requirements correlate is a side effect of the fact that, in the canonical cases like *run* and *walk*, both properties are present in the verb.¹⁴

Verbs which can appear with a directional PP fall into four distinct categories defined by their Agent and Path implications. We’ve provided examples of each of the four types in the Table 1, and examples of them occurring with a directional PP in (28):

Table 1

	+Path	-Path
+Agent	walk, run	whistle, hiss
-Agent	roll, float	shudder

- (28) (a) Mary walked to the store.
 (b) The log rolled along the beach.¹⁵
 (c) The bullet whistled through the window.
 (d) The train shuddered into the station.

All of these verbs can be used, intransitively, to describe a manner of motion event with a Path-specifying PP. How can we detect the difference between a selected Path PP and an unselected one, if the structures of (28a-d) are identically, involving an unaccusative small clause? A test which confirms the different selectional properties of these verbs can be seen in the following extraction data, modeled on that in Folli (2001):

- (29) (a) How far did Sue walk?
 (b) How far did the log roll?
 (c) *How far did the bullet whistle?
 (d) *How far did the train shudder?

The contrast between (29a-b) on the one hand, and (29c-d) on the other, confirms the selectional difference we propose above. The verbs *walk* and *roll* optionally select their Path argument (in the form of the PP Small Clause), while the verbs *whistle* and *shudder* do not. The fact that this lexical information is missing from *whistle* and *shudder* affects the interpretability of these verbs when a trace instead of a full PP is in the position of the predicate of the SC. Essentially, although the PP is in the same structural location in (29a-d), *walk* and *roll* have a selectional relationship to it, while *whistle* and *shudder* do not. The PP in the latter cases is purely structurally licensed.

Let's now consider each of these motion verbs in a causative syntax, paying attention to whether the causing event and the caused event must occur coterminously, and whether the subject may be non-intentional.

To begin, let us consider the causative possibilities for a non-Path, non-Agent verb like *shudder*:

- (30) (a) *The wind shuddered the cart across the parking lot.
 [-intentional], [+accompanying]
- (b) *Bill shuddered the shopping cart across the parking lot.
 (e.g. by giving it a hard push).
 [+intentional], [-accompanying]
- (c) *Bill shuddered the cart across the parking lot.
 [+intentional], [+accompanying]

There is no well-formed causative of this verb, whether the external argument is non-intentional and accompanying the motion, as in (30a), intentional and not accompanying the motion, as in (30b), or intentional and accompanying the motion, as in (30c).

What about verb that is [+Agent], [-Path], like *whistle*?

- (31) (a) *The teakettle whistled Mary into the kitchen.
 [-intentional], [+accompanying]
- (b) Mary whistled Rover to her side.
 [+intentional], [-accompanying]
- (c) *Mary whistled Rover down the path.
 (where both Mary and Rover are going down the path)

beach), when there is an intentional subject but no accompanying motion (as in (32b), and when there is both (as in (32c)). We especially wish to call attention to the fact that the accompanying-motion reading is *necessary* when the external argument is inanimate: when it is animate, the accompanying-motion reading is optional.

Finally, consider the [+Agent], [+Path] verb *walk* in these configurations:

(33) (a) *The wind walked the dog into the house.

[-intentional], [+accompanying]

(b) *John walked the child onto the stage.

[+intentional], [-accompanying]

(e.g. he mimed walking confidently in the wings and then the child was encouraged and walked onstage herself).

(c) Mary walked John to his house.

[+intentional], [+accompanying]

The subject of *walk* must both be an Agent and the action that the agent does must be cotemporaneous with the Theme's traveling along the Path. It doesn't seem to necessarily be the case that the agent's action has to be an instance of

the motion described by the verb, but the agent's action, whatever it is, must be coterminous with the motion event: it cannot be temporally dissociated from it:

- (34) (a) The boy jumped the action figure across the table.
(b) Sue ran the car into the wall.
(c) John danced the puppet across the stage.
(d) Mary walked the bookshelf across the room.

In (34a), the boy is not himself jumping; in (34b), Sue is not running, in (34c), John is not dancing, and in (34d) Mary's action of laboriously moving the bookcase forward one corner at a time would not normally be described as 'walking'. Nonetheless, the action of the boy holding the action figure, Sue directing the car, John manipulating the puppet strings, and Mary manipulating the shelf, the causing event and the motion event overlap totally.

Recall that the notion of selection played a central role in Wechsler's semantic account of the closed-scale adjectival predicates above. When a resultative is formed on a subcategorized argument, an event-object homomorphism, in the sense of Krifka (1992), is imposed: because of this homomorphism, the adjective must be both scalar and have an endpoint. We

follow Rappoport and Levin (1999) in assuming that a similar effect of double-selection is in effect with these verbs of manner of motion. When an argument is selected for both by the verb and by the small clause, there is a necessary connection between the unfolding of the causing event and the unfolding of the caused event — they must be homomorphic, or in Rappoport and Levin’s terms, temporally dependent. Both [+Path] verbs like *walk* and *roll* and the PPs in the SC specify a semantic path. Consequently, what we term an event-Path homomorphism is imposed on these resultatives: the causing event must unfold coterminously with the traversal of the Path.

There is a crucial distinction between *walk* and *roll*, however: *walk* also specifies that its external argument be intentional (i.e. a possible ‘walker’), but with *roll*, either an intentional or non-intentional external argument is possible. Since *walk* can occur in the unaccusative frame, as we have demonstrated above (*John walked to the store*), we therefore conclude that some verbs which specify intentional arguments can occur with such argument in an unaccusative structure. The reader may have noticed that even *roll*, when it occurs with an intentional argument, can be interpreted as being performed agentively: *John rolled down the hill on purpose*. We argue that, just as in the case with *walk*, this is not a diagnostic for an unergative version of *roll*. In other words, we argue that relationship between the Spec-vP position and “agentivity” is not

symmetrical: something which appears in Spec-vP must be a potential Causer, whether intentional or non-intentional, but an intentional argument may appear in other positions than Spec-vP.

To confirm this, we give Italian examples which demonstrate that both *rotolare* ‘roll’, and the unaccusative verb *cadere*, ‘fall’, continue to exhibit the characteristic *essere* selection typical of unaccusatives even when the subject is clearly performing the action on purpose:

- (35) (a) Gianni é caduto/*ha caduto apposta.
 John is fallen / has fallen on purpose.
- (b) Gianni é rotolato/*ha rotolato giu apposta.¹⁶
 John is rolled/has rolled down on purpose.

In short, what we mean by an ‘intentional’ verb, like *walk*, is one which *must* be done intentionally. Non-intentional verbs, like *roll*, do not specify that they cannot be done intentionally; rather, being non-intentional means that they don’t *have* to be intentional, although they may be.

To return to the remaining two classes, in the *whistle* and *shudder* examples, the PP is the only element in the construction which contributes a Path argument. Therefore, there is no necessary connection between the

unfolding of the causing event and the unfolding of the resulting Path-traversal. In *John whistled the dog to his side*, the times of the whistling and the appearance of the dog can be almost completely overlapping, or entirely separated.

The differing selectional relationships to the Path argument, therefore, give an explanation of the different temporal properties of the causing and resulting events of those two classes of verb. What about the problem that we started this section with? Recall that we concluded, based on the evidence from verbs of consumption, that a causative with a SC structure could have as its subject any appropriate cause, intentional or not. The CAUS light verb itself does not impose a selectional restriction of that type on its subject.

In fact, that is exactly what we do see with the purely Path-selecting verb *roll*. In the causative, a non-intentional (and non-rolling!) external argument is possible, provided we get the accompanied-action reading as specified by the Path argument, as in (36a-b) below. With an intentional causer, on the other hand, the accompanied-action reading is not needed (36c):

- (36) (a) The tide rolled the log up the beach.
 (b) *The slope rolled the ball past Mary's house.
 (c) John rolled the ball to the child.

Crucially, an intentional external argument is exempt from the effects of the event-Path homomorphism requirement, but a non-intentional one is not; this is essentially the same effect that we see in our verb of consumption alternation in section 5 above.

Walk is different in that it specifies both an Agent and a Path. In *roll*, the agent's action and the traversal of the path can be separate events, because *roll* only requires a path. With *walk*, the homomorphism extends to the action of the Agent as well, since the Agent is specified by the verb. Recall that, even when the causing action of the Agent isn't actually *walking*, the accompanying-action reading must apply. It is the dual-selection property of *walk* that simultaneously enforces the event-Path homomorphism for intentional Agents and outlaws non-intentional subjects: *walking* is a manner of motion that can only be done on purpose, and hence can only be caused by an agent acting on purpose. It is the fact that *walk* specifies both an Agent and a Path that permits it to appear in an unaccusative syntax like *Mary walked to the store*, in contrast to the Agent-only verbs like *whistle*. Consider the contrasting examples in (37) below:

- (37) (a) Mary walked into the room
 b. *Mary whistled into the room.

- c. The bullet whistled into the room.

The crucial difference, of course, is between (37a) and (37b) where we see that *walk* may have an intentional Agent even in the unaccusative syntax, but *whistle* can't. The verbs of sound emission may appear in the unaccusative syntax only when the Theme argument is making the sound non-agentively — i.e. when the Theme is making noise by virtue of its motion along a Path. Because *walking* can be the manner in which a Path traversal unfolds, both the semantic requirements of *walk* may be satisfied at once, within the unaccusative small clause.

To summarize: The famous 'accompany' reading is enforced by Wechsler's observation that 'double' selection enforces a homomorphism requirement, in these cases, the homomorphism is between the causing event and the path-traversal event. The agentivity requirement is a separate property of these verbs. When the verb is specified as both agentive and path-denoting, the result is the appearance of a counterexample to the generalization that the subject of CAUS need not be intentional. In fact, verbs of motion which do not have the animacy requirement, such as *roll*, allow non-animate subjects of CAUS, as predicted. With verbs like *walk* which do have an animacy requirement, we see that not only must the homomorphism effect hold, it must

hold with the additional restriction that the causer of the causing event must be animate.

5 CONCLUSION

In this paper, we have addressed the division of labor between the syntax and the semantics with respect to the formation of a particular kind of construction: motion verbs with directional PPs. We showed that the usual analysis of the causal connection between endpoint telicity and the availability of a causative alternation for motion verbs is incorrect. We showed that the notion of telicity as an “endpoint” of an event is not relevant for all cases; in fact what we have called “threshold” telicity is much more common. Neither kind of telicity, however, is required for the formation of a directed-motion causative. Rather, we argue that it is a specific syntactic configuration which licenses the additional argument necessary in the causative construction. We adopt a purely structural version of the Small Clause hypothesis, where there is no telicity requirement on the part of the secondary predicate. This allows an account of the familiar range of unaccusative diagnostics in these constructions. Further, we show that a structural perspective on these constructions is strengthened by

the tight connection between the type of vP involved, the type of complement it selects, and the nature of the external argument in its specifier.

Although we espouse a purely structural account of the argument structure properties of these constructions, and have accordingly shown that an account which relies on the semantics of event structure cannot work, there are a number of reasons to think that other semantic or Encyclopedic properties do affect the availability of the alternation with certain kinds of verbs. In particular, we addressed the ‘accompanying action’ and ‘agentivity’ interpretations which often are entailed by motion verbs in these syntactic configurations. We offered an account which places the responsibility for these restrictions on semantic (or Encyclopedic) knowledge about the meanings of these verbs and what seem to be their selectional properties. We argue that the constellation of interpretive facts concerning these verbs can be neatly accounted for if there is an event-Path homomorphism requirement imposed by the Path meaning associated with these verbs. A natural question which arises, then, is what the implications of this kind of semantic restriction are for syntactic approaches to argument structure. Our view, like that of Marantz (1997), is that the syntax makes structures available which the semantics must interpret. Therefore, there can be such a thing as a restriction on an alternation which arises simply because the semantics of the component parts do not

integrate in an Encyclopedically acceptable scenario (compare *Colorless green ideas*). These restrictions themselves are not unstructured; rather, they crucially depend on notions such as animacy, path, and internal causation, which are well-known as building blocks of conceptual structure.

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¹ A third well-known family of analyses treats such constructions as instances of “complex predicates” in a particular sense: the verb and the secondary predicate together project a complex object-taking predicate. Such an analysis is adopted by DiSciullo and Williams (1987) and Neeleman (1994), among many others.

² See Abusch 1986, Pustejovsky 1991, Rappoport-Hovav and Levin 1999, and Vam Valin and Lapolla 1997 for other arguments in favour of a distinction between causation and telicity.

³ The examples in brackets are taken from Hay et al (1999, pag 8).

⁴ Notice that is in fact the interpretation that this kind of sentence has in Italian, where constructional threshold telicity doesn't seem to be a combinatorial possibility.

⁵ See Schein 2002

⁶ Crucially, for Borer now the difference between English type languages and Slavic type languages lies in the absence of marking for AspQ in the former, which in turn explain the fact that in English the realisation of the object in the specifier of such projection is obligatory in quantity events (i.e. thereby giving Verkuyl's generalization).

⁷ We are, of course, using *subcategorize* here as a purely descriptive term; we do not necessarily wish to imply commitment to an architecture which involves lexical argument structure or subcategorization frames at this point.

⁸ See also Hay (1998) for a similar classification of predicates in *closed-range adjectives* (i.e., adjectives associated with a scale with a maximal value) and *open-range adjectives* (i.e., adjectives for which it is not possible to identify a maximal value).

⁹ Of course, *We danced tired* is well-formed as a depictive, meaning that *we* were *tired* during the dancing, but understanding it as resultative, where tiredness is an effect of the dancing, is not grammatical.

¹⁰ Notice that the preposition *around* is ambiguous between an atelic and telic interpretation. On the former, it simply means continuously, in a circular way. When telic, it means that a complete circuit of something, with a beginning and an endpoint, has occurred (*John walked around the house in five minutes/for five minutes*). To disambiguate these two senses here, we use *around and around*, which is purely atelic.

¹¹ Of course, this is not surprising on an account like that of Jackendoff, who proposes the presence of covert PATH arguments in the semantic structure.

¹² Thanks to Erin O'Bryan for drawing these examples to our attention.

¹³ Rappoport & Levin (1999) argue for a notion of 'complex' vs 'simple' events that enforces a similar notion to the homomorphism requirement of Weschler; that of 'temporal dependence' between the two sub-events in a resultative construction.

¹⁴ For a discussion of these effects within a Hale and Keyser framework, see Mateu (2001).

¹⁵ Of course, when the subject of *roll* is animate, the rolling event maybe intentional, as in *John rolled down the hill on purpose*. See the discussion of unaccusative verbs with intentional arguments below.

¹⁶ Although *rotolare* is better with *ha* than *cadere* is, this is due to the fact that *rotolare* is optionally transitive, so the *ha rotolare* sequence, while ungrammatical in this structure, is familiar from transitive constructions; it's a type of garden-path effect.