

Inner aspect and phases

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Introduction

In this paper I discuss several syntactic properties of inner aspect¹ and what these properties can tell us about derivations in narrow syntax. I argue for the presence of an aspectual projection (AspP) between vP and VP (see also Travis 1991, 2000) that syntactically instantiates an object-to-event mapping via an Agree relation. Furthermore, we see that AspP and everything dominated by AspP defines a syntactic space in which elements must appear in order to contribute to the aspectual interpretation of the predicate (see also MacDonald 2008, forthcoming). Interestingly, however, the time at which these elements are calculated is not until later in the derivation, at the phase. This study contributes to our understanding of narrow syntactic derivations by providing alternative support from inner aspectual phenomena for a cyclic interpretation of the verbal predicate.

In section 1, I discuss what aspectual information the durative phrase and the time span adverbial actually provide about a predicate. In section 2, I discuss the distinct aspectual interpretations and distributions of bare plurals and mass nouns; we will see that a proper account of them includes an aspectual projection (AspP) between vP and VP. In section 3, I provide evidence for a domain of aspectual interpretation which defines a space in which elements must appear in order to contribute to the aspectual interpretation of the predicate. In section 4, I discuss properties of stative predicates; I argue that statives lack AspP and that this explains the systematic lack of properties argued in previous sections to be dependent on the presence of AspP. In section 5, we see evidence that the time at which the aspect of the predicate is determined in the narrow syntactic derivation is at Transfer to CI at the vP phase.

¹ I use the terms inner aspect and (a)telicity interchangeably here to refer to the same phenomenon.

1. The durative phrase and time span adverbial

The durative phrase (e.g. *for an hour*) and time span adverbial (e.g. *in an hour*) are widely used in the literature on inner aspect as a test to determine the (a)telicity of a predicate. For this reason it is important to clarify exactly what they tell us about the (a)telicity of a predicate. I take as a telic predicate a predicate that describes an event as having an endpoint. I take as an atelic predicate a predicate that describes an event that lacks an endpoint. Standardly, the aspectual relevance of the durative phrase is only considered under a single-event (or semelfactive) interpretation of the event described by a predicate (Borer 2005; Ramchand 2003; Ritter & Rosen 1998; Schmitt 1996; Vendler 1967; Verkuyl 1993, among others). The following statement from Verkuyl (2000: 170) is indicative of this: “An adverbial such as *for an hour* applied to [*Judith ate a sandwich*] excludes the single-event interpretation of [*Judith ate a sandwich*], the result being some other form of aspectuality (a queer sort of repetition)...” Thus, on a single-event interpretation of a predicate the durative is incompatible with a telic predicate, as in (1a), and compatible with an atelic predicate, as in (1b).

- (1) a. John drank a beer # for an hour.
 b. John drank beer for an hour.

The predicate in (1a) describes an event that has an endpoint; when the beer is finished, the event is finished. The durative is incompatible with this predicate. The predicate in (1b) describes an event that does not have an endpoint.² The durative is compatible with this predicate. Although, this single-event approach to the interpretation of the durative phrase, as just outlined above, is the standard way to approach data of these sort, a large

² Note that because (1b) is in the past, there is an interpretation that the event ends. This is not to be confused with an event having an endpoint. For note that there is no entailment that the event described in (1b) actually does end, there is only an implicature: (i) *John drank beer last night and in fact he is still drinking beer now*. The beer drinking event continues to the utterance time; it therefore cannot have an endpoint per se. Note, as expected, that with the telic predicate in (1a) this is not possible: #*John drank a beer last night, and in fact he is still drinking it now*. Since there is an endpoint to the event, and it takes place in the past, it cannot continue to the utterance time. In MacDonald (forthcoming) the interaction of inner aspect and tense, and its significance for understanding event structure is discussed.

number of authors have noted that a durative phrase is in fact compatible with a telic predicate under an iterative interpretation (Alsina 1999; Jackendoff 1996; Moltmann 1991; Schmitt 1996; Smith 1991; Tenny 1987; Verkuyl 1972; and Vanden Wyngaerd 2001).³ The data in (2) illustrate this.

- (2) a. John spotted a plane for an hour.
 b. John carried a goat into the barn for an hour.

The interpretation of (2a) is that John spotted a plane over and over for an hour. There was an indefinite number of plan-spotting subevents that took place for an hour. The interpretation of (2b) is that John carried a goat into the barn over and over for an hour. There was an indefinite number of goat-into-the-barn-carrying subevents that took place for an hour. Additionally, observe that, as noted in Moltmann (1991), the object undergoing the action of the verb is required to be the same object in each of the iterated subevents. That is, in (2a), the same plane must be spotted, and in (2b) the same goat must be carried into the barn over and over again. I refer to this type of telic iterative interpretation in which the same object undergoes the action expressed by the verb in each of the iterated subevents as a *Sequence of Identical Events (SIE)* interpretation.⁴ Considering that an SIE interpretation is elicited by the durative in these utterances, we can explain straightforwardly why the durative in (1a) is incompatible; once a beer is drunk, under normal pragmatic circumstances, it cannot be drunk again (Jackendoff 1996 makes this point). For the same pragmatic reasons, the durative is incompatible with the sentences in (3) below; the object undergoing the action expressed by the verb cannot undergo the action more than once.

- (3) a. John ate a cake # for ten minutes.
 b. John built a house # for a month.

The durative is only incompatible, then, when an SIE interpretation is pragmatically odd, therefore, I conclude that syntactically the durative is compatible with all aspectual predicate types.⁵ Moreover, I assume that the durative adjoins to vP (or at an EP above vP (Borer 2005; Travis 2000),

³ Cross-linguistically, there is variation with respect to whether an iterative interpretation is available in the presence of a durative phrase. See footnote 5.

⁴ Filip (1999) refers to this as the “resettability of the denoted happening” (114).

⁵ This is the case for English, but not for Spanish or Russian in which the durative does not elicit an *SIE* interpretation (MacDonald 2006, forthcoming).

and modifies the event described by the predicate (Alsina 1999; Larson 2003).⁶ Observe in (4) that the durative is grammatical in the *do so* construction, which I take as evidence that it is adjoined higher up in the verb phrase.

- (4) a. John drank beer for an hour and Frank did so for two.
 b. Frank played soccer for ten minutes and John did so for twelve.

The interpretation elicited by the durative depends on the telicity of the predicate (Tenny 1987; Alsina 1999). An event described by a telic predicate is interpreted as having an end. The durative forces an interpretation in which the event must continue for the time that the durative specifies. Thus, a telic event with a durative is interpreted as reaching an end over and over for a specified amount of time. The result is an indefinite number of telic subevents that repeat for the amount of time specified by the durative.⁷ Observe that the time span adverbial can target the end of each of these iterated subevents:

- (5) a. John carried a goat into the barn in 30 seconds (for an hour straight).
 b. John dragged a log into the shed in 10 seconds (for an hour straight).

In a situation in which a goat keeps running out of the barn, the sentence in (5a) is grammatical under the interpretation that each time the goat ran out it took John 30 seconds to carry it back into the barn and this occurred for an hour straight. A similar interpretation is available in (5b).

Atelic predicates describe events as not having an end. Observe that the time span adverbial is incompatible with atelic predicates (Borer 2005; Dowty 1979, etc):⁸

⁶ Following Alsina (1999) and Larson (2003) I assume that the durative phrase modifies *event stuff*. Dowty (1979) and Moltmann (1991) assume that the durative phrase modifies *time stuff*. If the durative modifies temporal intervals it is not immediately clear how to account for the SIE interpretation of telic predicates vs. the lack of SIE interpretation of atelic predicates. Nevertheless, whether the durative modifies events or time intervals, it is not immediately clear why there should be an obligatory wide scope effect of singular indefinite NPs as noted in (2).

⁷ The SIE interpretation results only when the NPs are singular. With a bare plural a different type of iterative interpretation results. See section 2 for a discussion.

⁸ The time span adverbial is not actually incompatible with atelic predicates, but it can target the beginning of the event. Dowty (1979), Filip (1999), and Thompson

- (6) a. John drank beer # in ten minutes.
 b. John carried the goat # in ten minutes.

In the presence of the durative an atelic event is interpreted as continuing essentially uninterrupted (i.e. without reaching an end) for the amount of time specified by the durative. Observe this in the activities in (7).⁹

- (7) a. John drank beer for an hour.
 b. John drove the car for an hour.

I conclude that the durative phrase is syntactically compatible with all aspectual predicate types and depending on the telicity of the predicate it elicits different interpretations. With atelic predicates, an uninterrupted interpretation results, and with telic predicates an SIE interpretation results, in which an indefinite number of iterated subevents continue for the amount of time specified by the durative. Additionally, as is standardly assumed, the time span adverbial targets the end of the event expressing the amount of time that passes before the end takes place. As such, it is only compatible with telic predicates (But see footnote 8).

2. Bare plurals and mass nouns aspectually

In this section, I discuss the distinct aspectual interpretations and distributions of bare plurals (BPs) and mass nouns (MNs). To account for BPs and MNs aspectually, I propose that there is an aspectual projection (AspP) between vP and VP with which they establish distinct relations.

The aspectual effect of BPs and MNs on a predicate is standardly taken to be the same; they turn a telic predicate into an atelic predicate (Borer 2005; Dowty 1979; Pustejovsky 1991; Thompson 2006; Verkuyl 1972, etc.). Consider data that seem to support this BP-MN assumption (8-9).

- (8) a. John ate a pizza #for an hour.
 b. John drank a soda #for an hour.

(2006) note this. This fact about the time span adverbial is not immediately relevant to the present discussion, thus when I point out the incompatibility of the time span adverbial, I mean that it cannot target the end of the event.

⁹ This is also true for stative predicates, which are atelic. See section 4 for a discussion of some of the properties of stative predicates.

- (9) a. John ate pizza/pizzas for an hour.
 b. John drank soda/sodas for an hour.

The sentences in (8–9) show that the presence of a BP or MN internal argument makes the durative phrase compatible where it once was not. However, the presence of a time span adverbial shows that there is a difference in aspectual interpretation elicited by BPs and MNs:

- (10) a. John ate pizzas in ten minutes for an hour straight.
 b. John drank sodas in three minutes for an hour straight.
- (11) a. John ate pizza #in ten minutes for an hour straight.
 b. John drank soda #in three minutes for an hour straight.

With a BP internal argument (10a) the time span adverbial is compatible under an interpretation that for each pizza John ate, he ate it in ten minutes, and he did this for an hour straight.¹⁰ This is reminiscent of the SIE interpretation discussed in the previous section, in which the time span adverbial targeted the end of each iterating subevent. Here the time span is playing the same role, thus the predicates in (10) with a BP internal argument are telic. The durative forces the telic event to iterate an indefinite number of times and the BP provides an indefinite number of similar objects (i.e. different pizzas) to undergo the action expressed by the verb in each of the iterated subevents. In the presence of the BP there is a *Sequence of Similar Events (SSE)* interpretation: in (10a) John ate one pizza, then another pizza and so on. An SSE interpretation is available with the BP *sodas* in (10b) as well. No such interpretation is available in (11) in the presence of the MN. The MN elicits only an atelic interpretation, as is standardly assumed, and as such, the time span adverbial is incompatible. Given these facts, I conclude that BPs and MNs have distinct aspectual interpretations. MNs elicit an atelic interpretation of the predicate, and BPs elicit an SSE interpretation of

¹⁰ Thanks to John Bailyn for pointing out to me this interpretation of the BP with a time span adverbial. Note also that Filip (1999: 66), referencing Fillmore and Kay (1991), observes a similar fact about the following datum: *Pat built houses (*) in six months*. She notes that it is “acceptable if it has a generic (habitual) interpretation... whereby each [building event] is associated with a different house whose construction took six months.” (10) above illustrates that the time span adverbial is compatible with a BP under a non-habitual interpretation as well, resulting in one type of iterative interpretation.

the predicate.¹¹ Let us consider the aspectual distributions of MNs and BPs. Consider the ditransitive structures in (12–13).

- (12) a. John carried goats into the barn in ten minutes (for an hour straight)
 b. John pushed carts into the store in three minutes (for an hour straight)
- (13) a. John carried mud into the barn # in ten minutes (for an hour straight)
 b. John pushed ice into the store # in ten minutes (for an hour straight)

In (12a) there is a BP internal argument and as expected an SSE interpretation is available in which one goat after another was carried into the barn in ten minutes for an hour straight. An SSE interpretation is also available in (12b). No such interpretation is available for the MN in (13), and as such the time span adverbial is out. The MN, as expected, elicits only an atelic interpretation of the predicate. Consider BPs and MNs as the complements of a goal preposition (14–15).¹²

- (14) a. John carried a goat into barns for an hour.
 b. John pushed a cart into stores for an hour.

¹¹ The SSE interpretation elicited by BPs is a multiple events interpretation of a predicate. It is worth noting that not all multiple events interpretations have the same aspectual effect. For example, note that a distributive interpretation does not make the durative phrase compatible: (i) *Every boy drank a beer #for an hour*. This does not mean that one boy drank a beer, then another boy drank a beer and so on for an hour. The durative phrase can only take scope within the distributive operator resulting in the interpretation that one boy drank a beer for an hour, another boy drank a beer for an hour etc. This does not license the durative like the SSE interpretation does. Consider the multiple events interpretation elicited under habitual interpretation: (ii) *John ate an apple (for breakfast) for a year*. Under a habitual interpretation, there is no longer the requirement that the same object under the action expressed by the verb. In (ii), it cannot be the same apple in each of the iterated apple-for-breakfast-eating events. Different properties arise under this habitual multiple events interpretation.

¹² Note that what I refer to as a goal preposition is a preposition that typically expresses that a goal is reached, e.g. *to, into, onto*. These prepositions induce a telic interpretation when surfacing with a transitive activity, although, see footnote 16. I do not consider a preposition such as *toward* or *at* (on the non-location interpretation of *at*) a ‘goal’ preposition per se, because they never entail that a goal is reached. I consider them ‘directional’ prepositions; they express the direction of the event. This is only a matter of terminology. Nevertheless, note that directional prepositions do not induce telicity when they surface with transitive activities: *John pushed the car (toward/at the building) for an hour/#in an hour*.

- (15) a. John carried a goat into water for an hour.
 b. John pushed a goat onto mud for an hour.

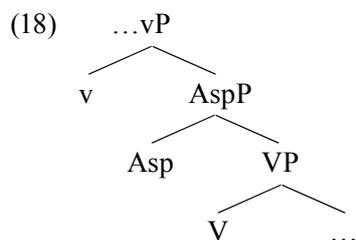
The BP in (14a) elicits an SSE interpretation in which a goat was carried into one barn, then another barn and so on for an hour. The MN in (15a) does not elicit an atelic interpretation; the only interpretation available is one in which a goat was carried into water, then back out, and back into it again for an hour. This is an SIE interpretation. Observe, as expected, that the time span adverbial together with the durative is compatible with both sets of sentences from (14–15) as illustrated in (16–17).

- (16) a. John carried a goat into barns in ten minutes (for an hour straight).
 b. John pushed a cart into stores in ten minutes (for an hour straight).

- (17) a. John carried a goat into water in ten minutes (for an hour straight).
 b. John pushed a cart into mud in ten minutes (for an hour straight).

These sentences are a bit pragmatically odd because the same goat and cart undergo the action expressed by their respective verbs in each of the iterated events; however, as long as there is a situation in which the same goat or cart is removed from the barn/water or store/mud respectively (perhaps in a competition in which John is timed to see how fast, or how many times, he can repeat these actions), the sentences are pragmatically fine. Once the contexts are set up, these predicates are perfectly compatible with the time span adverbial in conjunction with the durative phrase. Thus, as a complement of a goal preposition MNs do not elicit an atelic interpretation, while BPs do elicit an SSE interpretation. BPs and MNs have distinct aspectual distributions.

In order to account for the distinct aspectual interpretations and distributions of BPs and MNs, I claim that there is an aspectual head (AspP) between vP and VP with which BPs and MNs establish distinct relations (18).



I claim that BPs move to Spec, AspP and MNs Agree with Asp. This straightforwardly accounts for their distributions. The most immediate consequence of this proposal is that neither BP nor MN external arguments can affect the aspectual interpretation of the predicate (Tenny 1987), because they are structurally higher than AspP. This expectation is shown to be borne out in (19–20).

- (19) a. Wildlife ate a sheep in ten minutes / #for ten minutes.
 b. Livestock destroyed the barn in ten minutes / #for ten minutes.
- (20) a. Bears ate a sheep in ten minutes (#for an hour straight).
 b. Animals destroyed the barn in ten minutes (#for an hour straight).

Observe in (19) that in the presence of a MN external argument the durative phrase is not compatible with these predicates. Recall that in the presence of a MN internal argument with predicates of this type (see 9) the durative becomes compatible; if the MN had an aspectual effect, we would expect the same results. Moreover, observe that the time span adverbial is compatible, and in (19a) it expresses that ten minutes passed before wildlife ate (and finished) a sheep. Just as a MN external argument does not affect the telicity of the predicate, a BP external argument does not either. The BPs in (20) do not elicit an SSE interpretation of the predicates. Ignoring the time span adverbial for the moment, observe that the durative is simply ungrammatical. Recall from (9) that, like MN internal arguments, in the presence of a BP internal argument, the durative phrase becomes compatible. In the presence of the BP external argument in (20), however, the durative is not compatible. Moreover, note that crucially (20a) does not mean that one bear ate a sheep, then another bear ate a sheep and so on for an hour straight. Finally, note that the time span adverbial targets the end of the event, but there is only one event end to target; after ten minutes passed the single sheep eating event was over, and there were no more. Thus, MN external arguments do not elicit an atelic interpretation of the predicate, and BP external arguments do not elicit an SSE interpretation of the predicate. Under the hypothesis that MNs Agree with Asp and BPs move into Spec,AspP to elicit an SSE interpretation, these facts follow straightforwardly. BP and MN external arguments cannot establish the necessary kind of relation with AspP because they are structurally higher than AspP. In addition, observe that the only subjects that can contribute to aspectual interpretation are derived subjects. The derived subjects of passives and unaccusatives exemplify this in (21–22) respectively.

- (21) a. The bottle of beer was drunk #for an hour
 b. Bottles of beer were drunk in three minutes for an hour straight.
 c. Beer was drunk #in three minutes/for an hour.
- (22) a. An animal escaped for an hour.
 b. Animals escaped for an hour.
 c. Wildlife escaped # in three minutes/for an hour.

In the (a) examples the predicate is telic, as evidenced by the incompatibility of the durative with the passive (see 21a) and by the SIE interpretation elicited by the durative with the unaccusative in (22a). In the presence of a BP (b examples), an SSE interpretation is elicited,¹³ and in the presence of a MN (c examples) an atelic interpretation results. Let us consider the movement account of BPs in more detail.

I assume that on an SSE interpretation BPs behave like existential quantifiers.¹⁴ I claim that they must bind a variable inside a syntactic domain of aspectual interpretation defined as everything dominated by AspP in order to elicit the SSE interpretation. For now I simply assume the existence of this domain, but in the section 3 I provide motivation for it. Evidence for the movement of BPs comes from what appears to be an island for BP movement in (23).

- (23) a. # John destroyed a row of houses in ten minutes for an hour.
 b. # John ate a box of cookies in ten seconds for an hour.

The BPs in (23) do not elicit an SSE interpretation. (23a) does not mean that John destroyed one house in ten minutes, then another in ten minutes and so on for an hour. Likewise, (23b) does not mean that John ate one cookie in ten seconds, then another in ten seconds and so on for an hour.

¹³ Note that the time span adverbial is grammatical with the passivized accomplishment in (21b), but not with the achievement in (22b). Essentially, achievements pattern with activities with respect to the time span adverbial (Dowty 1979) and as such only the beginning of the event can be modified. See MacDonald (2006, forthcoming) for a syntactic explanation for why achievements pattern with activities in this way.

¹⁴ There does seem to be another reading of BPs available, most likely what Carlson (1977) refers to as a group reading of the BP in which the BP's denotation is vague. I claim that on an SSE interpretation BPs are existential quantifiers, and consequently do not have the group reading.

The lack of an SSE interpretation can be explained if we assume that the complex NPs in (23) do not allow the BP to move out to Spec,AspP to elicit the SSE interpretation. Let us consider the Agree account of MNs in more detail.

I claim that the Agree relation with Asp is the syntactic instantiation of the object-to-event mapping well-known in studies on inner aspect (Verkuyl 1972; Krifka 1989).¹⁵ The object-to-event mapping occurs when a property of the internal argument affects the aspectual interpretation of the entire predicate. This is illustrated in (24).

- (24) a. John drank a pitcher of beer # for ten minutes / in ten minutes.
 b. John drank beer for ten minutes /# in ten minutes.

The noun phrase in (24a) *a pitcher of beer* has a property that elicits a telic interpretation of the predicate. The noun phrase in (24b) *beer* has a property that elicits an atelic interpretation of the predicate. This is the object-to-event mapping. I refer to the property of an internal argument NP that participates in this object-to-event mapping as a [q] feature ([q] for *specific quantity of A* (Verkuyl 1972)). If the NP that Agrees with and values Asp is [+q] the predicate can be interpreted as telic.¹⁶ If the NP that Agrees with

¹⁵ I do not assume a Krifkian homomorphism. The exact nature of this object-to-event mapping is tangential to the main focus of this paper. See Borer (2005), Filip (1999), Hay, Kennedy and Levin (1999), MacDonald (2006, forthcoming), Tenny (1987), and Verkuyl (1972) for different implementations of the object-to-event mapping.

¹⁶ I say *can be interpreted as telic* because of the existence of transitive activity predicates in which the [+/-q] feature of the internal argument does not affect the aspectual interpretation of the predicate: *John pushed the car/stereo equipment for an hour/#in an hour*. Although note that when a goal PP is added, these predicates behave exactly like the predicates in (24): *John pushed the car into the garage #for an hour/in an hour*. *John pushed equipment into the garage for an hour/#in an hour*. MacDonald (2006) argues that the goal PP here adds a property that the predicates in (24) already possess: an event feature that expresses that the event has an end (cf. Snyder's (1995) *null telic morpheme*). Transitive activities project AspP, but the object-to-event mapping is irrelevant without this extra property. Note that the property introduced by the goal PP cannot be the same property of the internal argument entering into the object-to-event mapping; otherwise, the goal PP would not be required for a telic interpretation of the predicate; what is more, we would not expect that a [-q]NP could overrule the aspectual effect of the goal PP. This asymmetry strongly suggests that two independent properties are responsible for the range of aspectual phenomenon in

and values Asp is [-q] (e.g. a MN), the predicate will be interpreted as atelic.¹⁷ The Agree relation captures a local relation that an NP has with the verb phrase in which the core aspectual interpretation of the predicate is affected. The core aspectual interpretation of a predicate is the basic telic/atelic distinction. This local relation, and its affect on the core interpretation of the predicate, is on a par with the local relation between a verb and its DP complement. When the complement of the verb varies, the core meaning of the predicate varies as well (Marantz 1984).

3. The domain of aspectual interpretation

We have seen that external arguments cannot contribute to aspectual interpretation, while internal arguments can. This distribution hints at a syntactic space below AspP in which elements must appear in order to contribute to the aspectual interpretation of the predicate. In this section, I consider more elements structurally higher and lower than AspP and their effect on the aspectual interpretation of the predicate.

Hay, Kennedy and Levin (1999) observe that the CAUSE head that introduces the external argument causer in causative-inchoative alternations does not contribute to the aspectual interpretation of the predicate. As has been observed (Borer 2005; Dowty 1979; Hay, Kennedy and Levin 1999 among others), the predicates in (25) are ambiguous between a telic interpretation and an atelic interpretation.¹⁸

English. One property is involved to the object-to-event mapping (and implicates AspP) and the other is directly involved event structure (and implicates event features). See MacDonald (forthcoming) in which the consequences of these two independent properties of English inner aspect are explored.

¹⁷ Borer (2005) puts forth sentences similar to *John found water in ten minutes/#for ten minutes*. as an example of a predicate that takes a MN (i.e. a [-q]NP) internal argument but yet still surfaces as telic. MacDonald (2006, forthcoming) argues that a sentence like this falls into a class of predicates he terms *psych-achievements* in which the surface subject is an experiencer and derived from a position below AspP yet higher than the surface direct object. This predicts that the argument that Agrees with Asp, and enters into the object-to-event mapping, is the derived subject. Observe that in the presence of a MN subject the durative phrase improves: *Wildlife found the body of water for an hour*. Also a BP subject elicits an SSE interpretation as well: *Animals found the body of water for an hour*.

¹⁸ Dowty (1979) calls these *degree-achievements* and claims that there is an ambiguity between an achievement and an activity interpretation. Hay, Kennedy, and

- (25) a. The soup cooled for an hour/in an hour.
 b. The kingdom expanded for a week/in a week.

Hay, Kennedy and Levin (1999) observe that when the external argument is added, the ambiguity is not affected, as illustrated in (26).

- (26) a. Neal cooled the soup for an hour/in an hour.
 b. Neal expanded the kingdom for an hour/in an hour.

They rightly conclude that the CAUSE head does not contribute to the aspectual interpretation of the predicate.

As we have seen above, transitive activities (27) can be turned into accomplishments by the addition of a goal PP (28); this is a widely observed fact (Borer 2005; Dowty 1979; Pustejovsky 1991; Verkuyl 1972).

- (27) a. John carried the goat #in an hour/for an hour.
 b. John pushed the cart #in an hour/for an hour.

- (28) a. John carried the goat into the barn in an hour/for an hour.
 b. John pushed the cart into the store in an hour/for an hour.

The time span adverbial in (27) is out because the predicate is atelic. In the presence of the durative in (27), there is an uninterrupted event interpretation. In (28), on the other hand the time span adverbial is compatible, and the durative elicits an SIE interpretation of the predicate. In the presence of the goal PP, the predicate is interpreted as telic. Consider the lack of aspectual effect of location PPs when added to the sentences from (27):

- (29) a. John carried the goat (in the barn) #in an hour/for an hour.
 b. John pushed the cart (in the store) #in an hour/for an hour.

In contrast to goal PPs, location PPs do not affect the atelicity of the predicate; they remain atelic. Moreover, observe a structural difference between location PPs and goal PPs indicated by the ungrammaticality of goal PPs and the grammaticality of the location PPs in the *do so* construction:

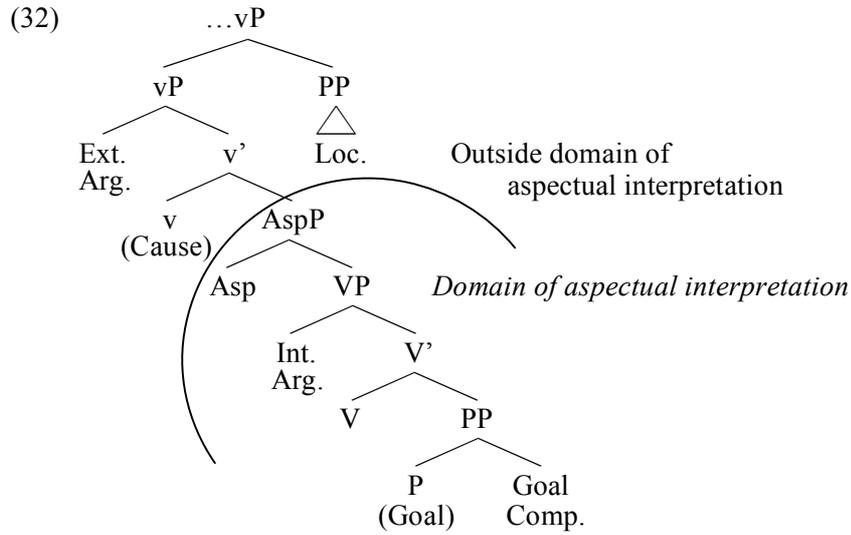
Levin (1999) claim that the ambiguity is between and accomplishment and an activity interpretation. The exact nature of the ambiguity is irrelevant here. What is important is that there is an ambiguity and that the causer does not affect this ambiguity. Nevertheless, note that if Dowty (1979) is correct, the time span adverbial is modifying the beginning of the event here. See footnote 8.

- (30) a. ??John carried the goat into the barn and Frank did so into the church.
 b. ??John pushed the stool into the store and Frank did so into the church.
- (31) a. John carried the goat in the barn and Frank did so in the church.
 b. John pushed the cart in the store and Frank did so in the church.

That the goal PPs are ungrammatical suggests that goal PPs are lower in the verb phrase (see also Larson 1988), and that location PPs are grammatical suggests that they are adjoined to vP. A difference in ability to contribute to the telicity of the predicate corresponds to a difference in structural position.¹⁹

The CAUSE head that introduces an external argument does not contribute to the aspectual interpretation of the predicate. Location PPs, which are adjoined to vP, do not contribute to the aspectual interpretation of the predicate. BP and MN external arguments do not contribute to the aspectual interpretation of the predicate either. The only elements that contribute to the aspectual interpretation of the predicate are internal arguments (BPs and MNs), complements of goal prepositions (BPs) and goal PPs themselves. These findings are summarized in the tree in (32).

¹⁹ Note that being low in the verb phrase is a necessary but not sufficient condition for a PP to contribute to aspectual interpretation. Observe that directional PPs are not grammatical in the *do so* construction, suggesting that they are low in the verb phrase: ??*John carried the bag toward the store and Frank did so toward the church.* Nevertheless, they do not contribute to the aspectual interpretation of the predicate, as noted in footnote 12. See also footnote 16.



From the tree in (32), it is apparent that there is a limited syntactic space within which an element must appear in order to contribute to the aspectual interpretation of the predicate. I refer to this space as the domain of aspectual interpretation. It is defined as the aspectual projection AspP and everything AspP dominates. If this domain exists, we can explain straightforwardly why neither external arguments, location PPs, nor CAUSE can contribute to the aspectual interpretation of the predicate. They are outside of the domain of aspectual interpretation.

4. Statives

The previous sections have argued for the existence of an aspectual projection between vP and VP that has specific properties associated with it:

1. Agree with Asp syntactically instantiates the object-to-event mapping;
2. Movement to Spec,AspP of a BP elicits an SSE interpretation; and
3. AspP defines a domain of aspectual interpretation. In this section, as further support that these properties are associated with AspP I discuss stative predicates and claim that statives differ minimally from eventives syntactically by lacking this AspP projection in their phrase structure. There are three straightforward predictions to be made from this claim. Statives should

1. Lack the object-to-event mapping,
2. BPs should not elicit an object-to-event mapping, and
3. There should be no domain of aspectual interpretation; i.e. goal PPs should not elicit a telic interpretation when combined with

a stative predicate. We will see that these predictions are borne out, and that furthermore, by assuming that statives lack AspP, the present analysis extends straightforwardly to a recent analysis of *do so* by Hallman (2004).

Observe that the nature of the internal arguments in the stative predicates in (33) varies from a [+q]NP to a [-q]NP without affecting the telicity of the predicate.

- (33) a. John owed a car/money for a week/#in a week.
 b. John owned a stereo/stereo equipment for a week/#in a week.

Statives are atelic irrespective of the [+/-q] nature of the internal argument NP as evidenced by the uninterrupted interpretation of the durative phrase and the incompatibility of the time span adverbial.²⁰ There is no object-to-event mapping with stative predicates. The first prediction is borne out. Now consider the interpretation of BPs with in (34).

- (34) a. John owed cars for a month.
 b. John owned books for a month.

There is an interpretation of these sentences in which John owed one car, then another and then another for a month (34a) and in which John owned one book then another and then another for month (34b) which is arguably an SSE interpretation. Nevertheless, I suggest that this is a result of the vague denotation of BPs (see footnote 14) and that in fact there is no SSE interpretation. Recall from section 2 above that under an SSE interpretation, BPs are compatible with both a time span adverbial and a durative phrase. Observe that this is not the case with BPs appearing with stative predicates (35).

- (35) a. John owed cars (#in a day) for a month straight.
 b. John owned books (#in a day) for a month straight.

²⁰ There may be some interpretation of the time span adverbial with stative predicates, but it is not clearly a counterfactual or incomplete interpretation. The time span adverbial seems to only be able to express the amount of time before some event occurs that results in the state expressed by the stative. So, *John owned a car in a week.*, if there is an interpretation, only seems to mean that one week passed before something happened resulting in the state John owning the car. This is different from the interpretations elicited with eventive predicates.

There is no interpretation available in which John owed one car in a day, then another in a day and so on for a month straight (35a). Likewise in (35b) there is no comparable interpretation. The second prediction is borne out. Consider now the lack of aspectual effect that the presence of a goal PP has on the predicate headed by a stative (36).

- (36) a. John owed a car (to the bank) for a week /#in a week.
 b. John loved the game (to the core) for a year /#in a year.

Irrespective of the presence of the goal PP the predicates are atelic. If there is no AspP in statives, then there is no domain of aspectual interpretation either. If there is no domain of aspectual interpretation, then the goal preposition is interpreted outside the domain and cannot contribute to the aspectual interpretation of the predicate; it cannot turn the atelic statives into telic predicates. These three sets of facts can be explained quite straightforwardly if we assume that they result from the lack of AspP in the syntax of stative predicates.

This proposal for stative predicates also fits in well with an account of *do so* from Hallman (2004). Hallman (2004: 304) argues, on independent grounds, that the *do* of *do so* is an "...overt reflex of a functional head that licenses the external argument in eventive VPs...", and *so* replaces the constituent selected by this *do* which "...must be marked as [+eventive]." (Hallman 2004: 306). Essentially, eventive predicates (i.e. activities, accomplishments and achievements) can participate in *do so* constructions, and statives cannot. This is shown in (37a–c) for activities, accomplishments and achievements respectively and in (38) for statives.

- (37) a. John drove the car and Frank did so too.
 b. John ate a cake and Frank did so too.
 c. John caught a raccoon and Frank did so too.

- (38) a. ?John owns a book and Frank does so too.
 b. ?John owes money to the bank and Frank does so too.

Note that the statives in the *do so* construction are odd on the reading that is made more salient in the following constructions, as noted in Jackendoff (1983).

- (39) a. ??What John did was own a book.
 b. ??What John did was owe money to the bank.

rides” the [q] feature of the external argument. If the external argument could directly contribute to the aspectual interpretation of the predicate we would not expect the direct object to affect the aspectual interpretation of the predicate as it does. Consequently, I assume that the external arguments in (40) indirectly participate in the object-to-event mapping through the fake reflexive. That is the value of the [q] feature of the fake reflexive is determined by the external argument. Once, the value of the [q] feature of the fake reflexive is determined, the reflexive establishes an Agree relation with Asp instantiating the object-to-event mapping. This entails that the telicity of the predicate cannot be calculated minimally until the external argument merges; otherwise the [q] feature of the reflexive would not have a value with which to value Asp. Although AspP defines a domain in which elements must appear to contribute to the aspectual interpretation of the predicate, the aspect of the predicate is not calculated minimally until the external argument merges, until vP. Moreover, consider evidence that suggests that the aspect of the predicate is not calculated any higher than vP either. That is, evidence that suggests that the aspect of a predicate is calculated at the phase, where arguably all syntactic relations take place, as suggested by (Chomsky 2007).

Recall from above that degree-achievements can appear with both the time span adverbial and the durative phrase as a result of their aspectual ambiguity, illustrated again in (42).

- (42) a. John cooled the soup in ten minutes / for ten minutes.
 b. The king expanded the empire in a month / for a month.

Interestingly, nevertheless, this aspectual ambiguity is lost when the same verbs are found in idioms (43).

- (43) a. John cooled his jets in ten minutes/#for ten minutes.
 b. John cooled his heels #in ten minutes/ for ten minutes.

The idiom in (43a) roughly means to relax; only the time span adverbial is compatible. The idiom in (43b) roughly means to wait; only the durative phrase is compatible. Observe a similar set of facts with the verb *read*, which has been noted to be aspectually ambiguous as well (Dowty 1979; Borer 2005), as evidenced by the compatibility of both the time span adverbial and durative phrase, illustrated in (44a).

- (44) a. John read her the newspaper in ten minutes/for ten minutes.
 b. John read her the riot act #in ten minutes/for ten minutes.

Although both the time span adverbial and durative phrase are compatible with the predicate in (44a), when *read* is used in the idiom in (44b) (which roughly means to give a harsh warning), only the durative phrase is compatible. At the very least the data in (43–44) indicate that there are idioms whose aspect is specified (McGinnis 2002; Glasbey 2007). Independently, Svenonius (2005) observes a relation between phases and idioms; idioms do not seem to cross phase boundaries. If we take this observation together with the observation that the aspectual class of an idiom is specified, we can conclude that aspectual class is determined within the phase. Assuming this to be correct and taking it together with the conclusions from above that the aspect of a predicate cannot be calculated until vP, we can draw a more general conclusion that the aspect of a predicate is calculated at the phase, when Transfer to CI takes place. This conclusion adds support to a phase-based account of syntactic derivations (Chomsky 2007). Moreover, it provides evidence that the phenomenon of inner aspect is constrained by narrow syntax, and, by extension, inner aspect can contribute to our understanding of the nature of narrow syntax.

6. Conclusions

I have argued that there is an aspectual projection (AspP) between vP and VP. One important consequence of the presence of this projection is a domain of aspectual interpretation defined as AspP and everything dominated by AspP. Only elements within the domain of aspectual interpretation can contribute to the aspectual interpretation of the predicate. Interestingly, nevertheless, these elements are not calculated until vP, until the phase. That is, the aspect of a predicate is not determined until Transfer to CI. In this way, inner aspect provides alternative support to a phased-based account of narrow syntactic derivation. It provides support that the interpretation of predicates occurs cyclically.

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