

The Structure of Bounded Events

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To explain the semantic and syntactic compositionality of bounded interpretations, I propose here that events with a definite end point involve interpretation of the verb and either a bounded direct object or a bounded PP in the checking domain of Asp(ect)P, whereas unbounded events involve interpretation in a projection lower in the clause. This analysis explains the syntactic behavior of the ambiguous adverb *quickly*. In addition, it follows from the analysis that durative adjuncts are adjoined to VP, while time frame adjuncts are adjoined to AspP. Constructions involving preposition stranding, scope of *only*, parasitic gaps, and semantic restrictions on adjunct PP objects support this approach.

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This article is concerned with how semantic information regarding aktionsart is represented in the syntax. The term *aktionsart*, or *aspect*, refers to the internal temporal structure of events.¹ An example of an aspectual distinction is the contrast between (1a) and (1b); in (1a), the event of writing is viewed as continuous, whereas in (1b), the event of writing is viewed as finished.

- (1) a. Mary was writing a book.
b. Mary wrote a book.

I propose here that, assuming the minimalist framework, a syntactic analysis of contrasts such as that between (1a) and (1b) is available in terms of feature checking; events with a definite end point such as the one in (1b) involve interpretation of the verb and either a bounded direct object or a bounded PP in the checking domain of Asp(ect)P, whereas events with no end point specified such as the one in (1a) require that VP constituents be located in a projection lower in the clause than AspP for interpretation.

Evidence for this structural distinction comes from the syntactic distribution of the ambiguous adverb *quickly*, which can modify either the manner or the end point of an event. I argue that when *quickly* modifies the manner, it is adjoined to VP, and when it modifies the end point, it is adjoined to AspP. This approach explains certain linear order restrictions and preposing facts involving *quickly*.

Next, I investigate the syntax of durative and time frame adjuncts, arguing that, depending on whether the adjunct modifies the duration or the end point of the event, it is adjoined to VP or to AspP. Data involving preposition stranding, scope of *only*, and parasitic gap constructions

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¹ The term *event* used here is a generic term intended to include different aspectual types; it does not refer to a particular aspectual class (e.g., events vs. states).

support this approach. In addition, I argue that extending Diesing's (1990, 1992) Mapping Hypothesis to the interpretation of the objects of adjunct PPs explains a restriction on the interpretation of the objects of time frame adjuncts.

1 The Semantics of Telicity

1.1 Boundedness

Much semantic work on aktionsart assumes Vendler's (1967) classification of events into the four classes in (a) of (2)–(5); an example of each is given in (b) of (2)–(5).

- (2) a. Accomplishments: events that have a duration and a definite end point
b. Mary drew the circle.
- (3) a. Achievements: events that have a definite end point, but are instantaneous
b. Mary found the treasure.
- (4) a. States: events that are ongoing in time
b. Mary knew French.
- (5) a. Activities: processes or “happenings” that are ongoing in time
b. Mary pushed the cart.

Vendler claimed that it is the verb that determines aspectual class. However, as many authors have discussed, the aspectual classification of events is also influenced by the verb's arguments, as well as by adjunct PPs, morphological distinctions such as perfect-imperfect, and so on (e.g., Dowty 1979, Tenny 1987, 1994, Smith 1991). For example, the contrast between (6a), which is an accomplishment, and (6b), which is an activity, illustrates the influence of the direct object on aktionsart.

- (6) a. Mary ate the apple.
b. Mary ate apples.

Given that aktionsart seems to be determined by several different elements, much recent work has claimed that the aspectual classes proposed by Vendler are not the primitives of aktionsart; rather, aktionsart results from the combination of features of the verb, noun phrases, PP adjuncts, and so on (Verkuyl 1972, 1989, 1993, 1999, Jackendoff 1991, Pustejovsky 1991, Zagana 1993). I will assume this approach here.

The aspectual distinction that I focus on here is telicity; events that have a distinct, definite, and inherent end point are telic, and those that are ongoing in time are atelic. An example of a telic event is (2b), repeated in (7a); the drawing event is interpreted as having a distinct end point, which is the point in time at which the circle is finished being drawn. The event in (5b), repeated in (7b), is atelic; the pushing of the cart does not have a particular end point specified. The study of telicity goes back to Aristotle and has a long tradition in the philosophical and semantic literature (Aristotle, Kenny 1963, Dowty 1979, Bach 1981, 1986, Mourelatos 1981, Smith 1991, and references therein).

- (7) a. Mary drew the circle.
 b. Mary pushed the cart.

A test that has been widely used to distinguish telic and atelic events is illustrated in (8); *in an hour* is compatible only with telic events, and *for an hour* only with atelic events (Vendler 1967, Dowty 1979).

- (8) a. Mary ate an apple in an hour.
 b. *Mary ate an apple for an hour.
 c. Mary walked for an hour.
 d. *Mary walked in an hour.

I follow Jackendoff (1991), who argues that telic events have the feature [bounded] while atelic events do not; an entity is bounded if it is conceptualized as having a clear boundary in time and/or space (see also Verkuyl and Zwarts 1992).² For example, individuals are bounded by having a particular shape, while portions of matter are not bounded in time or space. The direct object of (9) is an example of a temporally bounded DP.

- (9) The students performed the play.

A key feature of Jackendoff's analysis is that the feature [bounded] applies to DPs, Vs, and PPs. This approach makes possible a unified explanation for the role of the direct object and adjunct PPs in determining the telicity of the event, in terms of the contribution of the feature [bounded].³

1.2 Compositionality of Telicity

The sentences in (10a–i) illustrate the compositional nature of telicity. As is shown by their (in)compatibility with the PPs *in a week* and *for a week*, (10a) is telic and (10b) is atelic. These examples illustrate the influence of the direct object on telicity; the bounded verb *built* in combination with the definite noun phrase direct object *the house*, which is bounded, results in a telic reading, while the same verb with the bare plural direct object *houses*, which is unbounded, results in an atelic reading.

² Jackendoff assumes the features [+bounded] and [–bounded], while I use only the feature [bounded]; an element not specified with that feature is unbounded.

³ There has been discussion in the literature over the correct semantic notion involved in aspectual phenomena. Depraetere (1995) argues for a distinction between boundedness and telicity, claiming that a telic event has an inherent, intended end point, while a bounded event has an actual temporal boundary. It is not clear to me that the distinction between potential and realized end points is a grammatically relevant distinction. However, I think that Depraetere's emphasis that boundedness may apply to the beginning as well as the end of an event is an idea that merits further discussion (see Travis 2005).

- (10) a. John built the house in a week/*for a week.
 b. John built houses *in a week/for a week.
 c. John was building the house *in a week/for a week.
 d. John walked *in two hours/for two hours.
 e. John walked to the store in two hours/*for two hours.
 f. John walked toward the store *in two hours/for two hours.
 g. John walked to stores *in two hours/for two hours.
 h. John watched the house until 3:00.
 i. John loved Mary until last year.

As seen in (10c), the use of the progressive results in an atelic reading. The progressive marker thus does not have the feature [bounded], while other aspect markers compatible with telic readings have this feature. This is natural, given that many languages have aspectual morphemes that encode telicity distinctions, including the widely studied aspectual systems of the Slavic languages (see Brecht 1984, Smith and Rappaport 1991, and references therein). In the Russian example (11a), the verb with the perfective morpheme results in a telic reading, while in (11b), the verb without the perfective morpheme results in an atelic reading (examples from Smith and Rappaport 1991:241).

- (11) a. Ja s'el mjaso.
 I PERF-ate meat
 'I ate the meat.' (telic)
 b. Ja el mjaso.
 I ate meat
 'I was eating the meat.' (atelic)

The contrast between (10d) and (10e) shows that the addition of a goal phrase to an atelic event can result in a telic reading; *to the store* specifies a locative end point to the event by "defining a Path that terminates at the Thing or Place that serves as its argument" (Jackendoff 1991:36). Goal PPs thus have the feature [bounded] and combine with the bounded Asp head and bounded verb to result in a telic reading.

(10f) shows that the [bounded] feature of the goal PP is itself compositionally derived. The preposition must be bounded in order to result in a telic reading; *toward* defines a Path but does not specify an end point and is therefore unbounded. (10g) illustrates that the object of the preposition also plays a role; if the object is unbounded, the whole PP is unbounded and cannot contribute to a telic reading.

Example (10h) shows that adding an *until*-phrase to an atelic event can also result in a telic reading; *until* "is a function that bounds an unbounded event . . . with a time" (Jackendoff 1991: 18). (10i) illustrates that statives, which are often considered incompatible with telic readings, can be telic with an *until*-phrase; the [bounded] feature of the PP combines with the [bounded] features of the Asp and V to derive a telic reading.

To summarize this section: the configurations in (12) result in telic readings, and all other feature combinations result in atelic readings. In the following section, I propose a syntactic analysis that explains why only these combinations of features result in telic readings.⁴

- (12) a. [bounded] verb, [bounded] Aspect, [bounded] direct object
 b. [bounded] verb, [bounded] Aspect, [bounded] PP

2 Syntax of Telicity

In this section, I show that assuming a common feature for DPs, Vs, PPs, and Aspect, which all contribute to telic interpretations, makes possible a syntactic analysis of telicity within the minimalist framework in terms of feature checking (Chomsky 1993, 1994, 2000, 2001).⁵

Recent work on the syntax of aktionsart has claimed that telic readings are reflected in a particular syntactic configuration (Tenny 1987, 1994, Borer 1994, 2005, Travis 1991, 2000, Ritter and Rosen 2000, 2001; see Rosen 1999 for an overview of this work). I follow Borer, who claims that the direct object of a telic event moves to Spec,Asp(ect)P, while the direct object of an atelic event does not. I assume that AspP is located directly above vP, the position of atelic direct objects.⁶

While direct objects of telic events appear in a higher specifier position at LF in English, other languages seem to show this syntax overtly. In Scottish Gaelic, for example, the direct

⁴ Recent work on the syntax of aspect has claimed that telic interpretations are linked to accusative Case (see Schmitt 1995, Ritter and Rosen 2000, 2001). However, as the examples in (10e), (10h), and (10i) indicate, this connection is not tenable, because it is possible for elements that do not receive accusative Case to participate in determining a telic event. It is also possible, as noted by Borer (1994) and illustrated in (i), for an unaccusative and a passivized subject to participate in determining a telic reading. (I assume, following Borer, that in these instances the surface subject has raised from object position through Spec,AspP.)

- (i) a. John arrived in two seconds (flat)/*for two seconds (flat).
 b. The house was constructed in five months/*for five months.

⁵ It is standardly assumed that syntactic movement is driven by a requirement to check uninterpretable features. Pesetsky and Torrego (2001) propose that all features are interpretable, although instantiations of features may be uninterpretable; nominative Case is strong Tense, which is interpretable on T and uninterpretable on D. The present analysis suggests that uniformly interpretable features present another configuration for feature checking.

⁶ According to some of the recent work on the syntax of aspect, telic objects are licensed in Spec,AgroP, while atelic objects are licensed inside VP, a claim that is incompatible with Chomsky's (2000) proposal that eliminates Agreement projections. However, there is evidence that the landing site of objects of atelic events, as well as the landing site of objects of telic events, is outside VP and is therefore plausibly Spec,vP. First, note that objects of atelic events support antecedent-contained deletion (ACD), as shown in (ia–b), as do the objects of telic events, as shown in (ic).

- (i) a. I saw [the woman that you did [e]].
 b. I liked [the picture that Fred did [e]].
 c. I read [the book that Mary did [e]].

Copying the VP of the main clause into the ellipsis site in these examples creates an infinite regress, since the ellipsis site is itself contained in the VP, inside the direct object. I follow analyses of ACD according to which this infinite regress is avoided by assuming that the direct object moves out of VP (Lasnik 1993, Takahashi 1993, Hornstein 1994, Kennedy 1997). Therefore, given that the objects of atelic events permit ACD, they must be located outside VP at LF.

Second, binding data seem to indicate that an atelic object is located above VP at LF. As shown in (ii), an atelic direct object c-commands into a locative adjunct, resulting in a violation of Condition C.

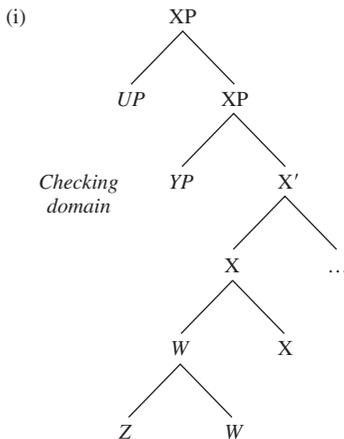
- (ii) *I saw him_i at John's_i party.

object of telic events appears to the left of the verb in direct case, as illustrated in (13a), while on an atelic reading, the direct object appears after the verb in genitive case, as in (13b) (examples from Ramchand 1993:415). (The *a* preceding the verb in (13a) is a particle that comes before the verbal noun in this construction.)

- (13) a. Bha Calum air am balach (a) fhaicinn.
 be-PAST Calum PERF the boy-DIR A see-VNOUN
 ‘Calum had seen the boy.’ (telic)
- b. Bha Calum a’ faicinn a’bhalaich.
 be-PAST Calum PROG see-VNOUN the boy-GEN
 ‘Calum was seeing the boy.’ (atelic)

Given that a telic reading results when a bounded verb, a bounded Asp, and either a bounded direct object or a bounded PP are combined, I propose that telic readings are the result of feature checking of the [bounded] feature between the verb and Asp heads with either a direct object or a PP. Since within the minimalist framework, feature checking takes place only within a checking domain (Chomsky 1993),⁷ the syntactic constituents that contribute to a telic reading must be in a local relation with each other at LF; they are all in the checking domain of AspP.⁸ The configurations that result in telic readings, leaving aside irrelevant details, are thus as in (14a), for telic readings with a bounded direct object, and (14b), for telic readings with a bounded PP.⁹

⁷ The definition of checking domain is illustrated in (i), where UP, YP, W, and Z are in the checking domain of the head X (Chomsky 1993:12).

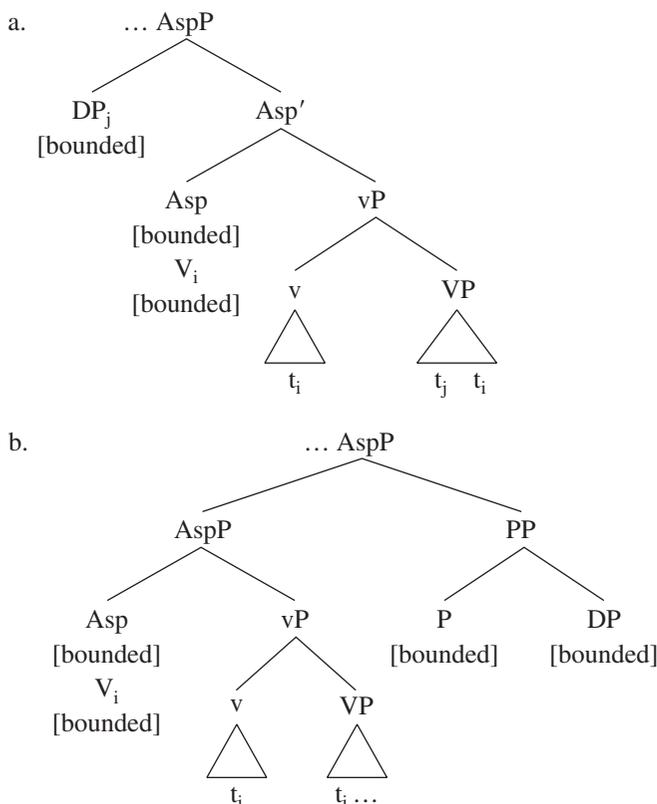


⁸ I assume that the external argument is base-generated in Spec,VP and raises to a higher inflectional projection. For discussion of surface subjects that participate in the aspectual composition of the event, see footnote 4.

⁹ Travis (2005) argues that the position of aspectual calculation, AspP, is located within vP. She shows that in German, extraction is permitted from direct objects that measure out an event, as in (i).

- (i) [Artikel]_j habe ich schon einmal [einen *t_i]* in nur einer Woche geschrieben.
 articles have I already once one in only one week written
 ‘As for articles, I already wrote one once in only one week.’

Assuming, following Diesing (1990), that extraction is permitted only from direct objects within VP (corresponding to

(14) *Syntactic configurations for telic events*

Evidence that bounded direct objects and PPs play the same role in the syntax in contributing to telic readings (both contribute a [bounded] feature) comes from a restriction on telic readings. As noted by Jackendoff (1991), a telic reading is not available when a telic event is combined with a bounded PP, as shown by the contrasts between (15a) and (15b) and between (15c) and (15d). Assuming, following Chomsky (1993), that features are checked only once, when a bounded direct object or PP is in the configuration for feature checking, the feature [bounded] is checked,

vP in current theorizing), this indicates that a direct object that contributes to a telic reading, and hence the AspP projection, is located within vP. However, it is not clear that this argument is valid. Diesing claims that extraction from a direct object that is outside VP is illicit because it results in a violation of the Subjacency Condition, which bars extraction out of an ungoverned position. Given Travis's claim that direct objects that measure out an event move to Spec,AspP, extraction from within these phrases should be unacceptable as a violation of Subjacency. Therefore, the extraction fact in (i) seems to present a puzzle to analyses according to which objects that measure out an event move to a specifier position, which, as far as I know, includes all recent analyses.

Note, more generally, that the current proposal contrasts with recent analyses of aspect that claim that the end state is represented lower in the structure than the initial part of the event (Ritter and Rosen 2000, 2001, Tenny 2000, Travis 2000). According to the present analysis, the opposite is true: the end state is represented above the initial part of the event. The arguments in sections 3 and 4 present extensive evidence for this structure.

and it cannot be checked again. Thus, if there is both a bounded PP and a bounded object, one of these elements will not be able to check its feature, and the derivation will crash.¹⁰

- (15) a. John ate bagels until 3:00.
 b. *John ate the bagel until 3:00.
 c. John walked until 3:00.
 d. *John walked to the store until 3:00.

This feature-checking approach to telicity also correctly predicts that telic readings can be derived from atelic readings, while atelic readings cannot be derived from telic readings; since telic readings are the result of checking [bounded] features, the addition of an unbounded element will not block that checking and the resulting telic reading. For example, there is no unbounded PP that, when combined with a telic event, results in an atelic reading, whereas a bounded PP can combine with an atelic event to derive a telic event.

However, the addition of a [bounded] feature can result in the shift from an atelic to a telic reading, as in (10e) and (10h–i), repeated here as (16a–c). Recall that in (16a) (= (10e)), the addition of the goal phrase *to the store* to an atelic event results in a telic reading, and in (16b–c) (= (10h–i)), the addition of an *until*-phrase to an atelic event also results in a telic reading.¹¹

¹⁰ An anonymous reviewer points out that recent analyses of goal *to*-PPs as in *John ran to the store* claim that they are arguments of the verb (see Hoekstra and Mulder 1990, Tungseth 2005). This view is compatible with the present analysis; if *to*-PPs are arguments of the verb, they raise to Spec,AspP to participate in checking of their [bounded] feature and contribute to a bounded interpretation.

¹¹ Two observations are in order here. First, a reviewer provides the following sentences as a counterexample to the claim that events may not shift from bounded to unbounded; (ia) includes a bounded event that becomes unbounded with the addition of *every day* in (ib).

- (i) a. John ate an apple. (bounded)
 b. John ate an apple every day. (unbounded)

In fact, it is not the case that the sentence in (ib) has changed from unbounded to bounded; rather, as discussed by de Swart (1998), (ib) is an example of coercion. A repetitive reading is forced by the presence of the frequency adverbial *every day*, resulting in a reading with a series of events, each of which is still a bounded event. Examples of coercion are thus not counterexamples to the claim that a telic event may not become atelic.

Second, the reviewer notes examples such as (ii), where the atelic (iia) does not become telic in (iib), despite the addition of the *to*-PP. This seems to indicate that some markers of telicity “win out” over others.

- (ii) a. John pushed carts. (atelic)
 b. John pushed carts to the store. (atelic)

(iib) is acceptable for me only with an implied measure of time, which can be made overt with the addition of a phrase such as *all day long*, as in (iii).

- (iii) John pushed carts to the store all day long.

Given that (iib) requires a reading with a covert measure of duration, this is plausibly another example of a telic event coerced into an atelic interpretation because of the presence of a (covert or overt) frequency expression.

- (16) a. John walked to the store in two hours/*for two hours.
- b. John watched the house until 3:00.
- c. John loved Mary until last year.

3 Syntax of *Quickly*

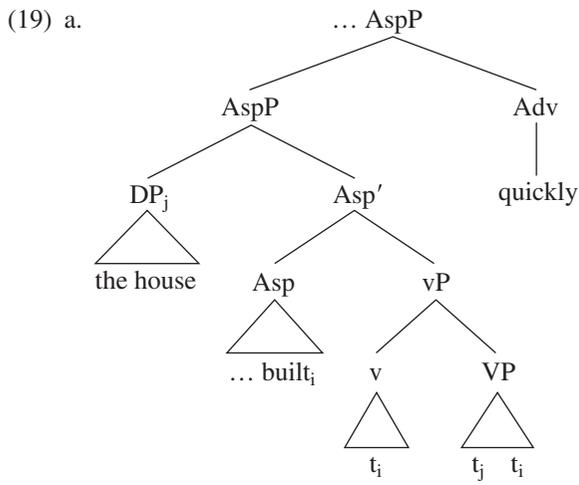
Syntactic evidence for the structure proposed here for telic events comes from an ambiguity shown by the adverb *quickly*. As discussed by Travis (1988) and Pustejovsky (1991), (17) has two readings: it could mean that John moved fast while he was building the house (the *manner* reading), or it could mean that the whole event of building the house took a short period of time (the *whole event* reading).

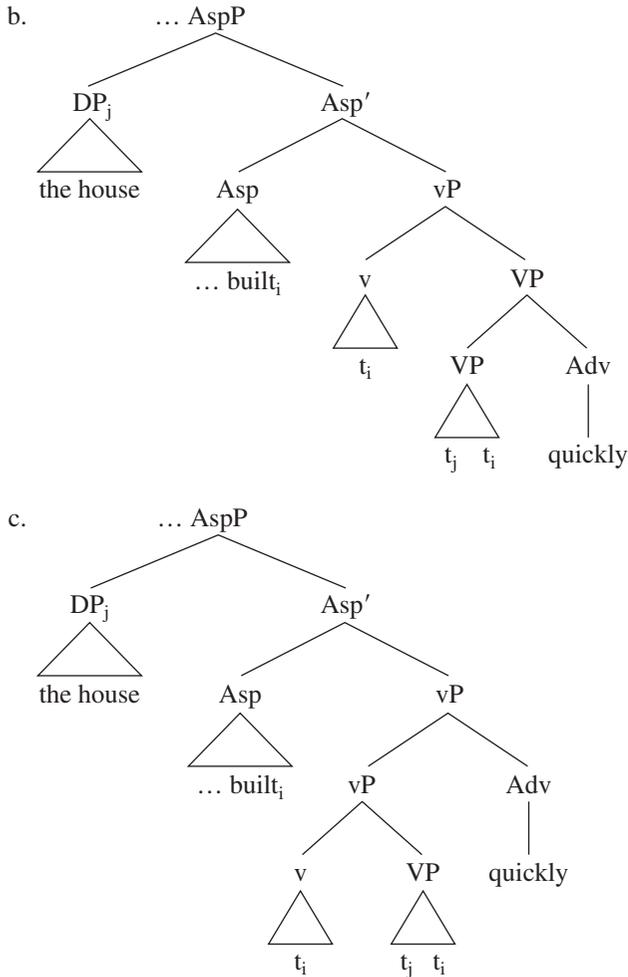
- (17) John built the house quickly.
- Manner reading: John moved fast while he was building the house.
- Whole event reading: The event of building the house took a short period of time.

The whole event reading is only available with telic events. When *quickly* occurs with atelic events, the only reading available is the manner reading: (18) can only mean that the manner in which John pushed the cart was quick.

- (18) John pushed the cart quickly.
- Manner reading: John moved fast while he was pushing the cart.
- *Whole event reading: The event of pushing the cart took a short period of time.

Given the syntax introduced for telic versus atelic events in section 3, I propose that on the whole event reading, *quickly* is adjoined to AspP, where the constituents of telic events are located at LF, as shown in (19a). In contrast, on the manner reading of *quickly*, it is adjoined to VP or to vP, as shown in (19b) and (19c).





Evidence for this claim comes from linear order facts. As shown in (20a), when an unambiguous manner adverb such as *carefully* precedes *quickly*, *quickly* can receive either a manner or a whole event interpretation. However, when *quickly* occurs before *carefully*, as in (20b), it can receive only the manner interpretation. This is predicted by the claim that on the manner reading, *quickly* is attached lower than on the whole event reading, since an unambiguous manner adverb will be attached only in the lower position.

(20) a. John built the house carefully quickly.

Manner reading: John moved fast while he was building the house in a careful manner.

Whole event reading: The event of John's building the house in a careful manner took a short period of time.

b. John built the house quickly carefully.

Manner reading: John moved fast while he was building the house in a careful manner.

*Whole event reading: The event of John's building the house in a careful manner took a short period of time.

Preposing data also support this analysis. The only reading available for (21), where *quickly* occurs in clause-initial position, is the whole event reading.¹²

(21) Quickly, John built the house.

*Manner reading: John moved fast while he was building the house.

Whole event reading: The event of building the house took a short period of time.

Assuming that clause-initial adverbs are moved, the analysis proposed here explains this fact naturally, given the Shortest Movement Condition (Chomsky 1993). Movement is permitted only from AspP-adjoined position, by the following reasoning. There are three possible derivations for a sentence with clause-initial *quickly*: one in which the adverbial has moved from VP-adjoined position, one in which it has moved from vP-adjoined position, and one in which it has moved from AspP-adjoined position. These three derivations have the same array (the same choice of lexical items) and hence are comparable with respect to economy considerations. However, the derivation in which the adverbial moves from AspP-adjoined position rules out the derivations in which the adverbial moves from vP-adjoined or VP-adjoined position, because the derivation with movement from AspP involves movement that is shorter than the movement involved if movement takes place from vP- or VP-adjoined position. The interaction of the ambiguous adverb *quickly* with telicity thus supports the claim that telic events are composed in AspP, while atelic events are composed lower in the structure. (Note that the present proposal does not require that an atelic event be represented with less structure.)

4 Syntax of Time Frame and Durative Adjuncts

In this section, I discuss the syntax of time frame and durative adjuncts, showing that their syntactic position is predicted by the approach to the syntax of telicity adopted here. In contrast to the locative and temporal PPs *to the store* and *until 3:00*, which contribute to the aspectual composition of the event by adding a [bounded] feature, the PPs *in an hour* and *for an hour*, used as tests for telicity, do not seem to contribute a [bounded] feature; it is not possible to derive a telic event from an atelic one or vice versa with these PPs, as shown in (22a–d).¹³

¹² Note that (21) may have another, irrelevant reading, where the time leading up to the event of building the house was a short period of time, as in *Shortly thereafter, John built the house* (see Travis 1988 and Pustejovsky 1991 for discussion).

¹³ A reviewer inquires whether a *for*-PP bounds an event. Following Jackendoff (1991), I here take bounding in the temporal domain to be placing a bound on the length of time of an event until its completion: 'a speaker uses a bounded constituent to refer to an entity whose boundaries are in view or of concern; one can think of the boundaries as within the current field of view' (p. 19). Assuming this approach, we can say that a *for*-phrase measures the duration of an event but does not bring the end point into view. The fact that a *for*-phrase does not make direct reference to an end

- (22) a. The enemy destroyed the city in two years.
 b. *The enemy destroyed the city for two years.
 c. John slept for two hours.
 d. *John slept in two hours.

The syntax proposed in section 3 for telicity makes possible a straightforward account of the syntax of these adjuncts. Given that *in*-PPs specify how long it takes for the end point to come about, and assuming that a modifier must be in a local syntactic relation with what it modifies, I propose that they are adjoined to AspP. On the other hand, given that *for*-PPs describe the duration of the event without reference to an end point, I propose that these adjuncts are adjoined to vP or VP.¹⁴ (If a *for*-PP were adjoined to VP within a bounded AspP, the locality requirement on modification of the PP would not be met.)

4.1 Preposition Stranding

Evidence for the different structural positions of *for*- and *in*-PPs comes from preposition-stranding data. As shown by the contrast between (23a) and (23b), *for*-PPs permit preposition stranding, while *in*-PPs do not. I assume, following Hornstein and Weinberg (1981), that the possibility of preposition stranding depends upon LF incorporation of the preposition into the verb. If we further assume, following Uriagereka's (1988) and Borer's (1994) proposal that at LF, the heads of all phrases within the VP incorporate into the verb, we can capture the facts. Given that *for*-adjuncts are adjoined to VP, *for* will incorporate at LF, permitting stranding, while *in* will not incorporate and thus will not permit stranding.¹⁵

- (23) a. How many hours did you push that cart for?
 b. *How many hours did you read that book in?

time is shown by the fact that it is possible to extend the duration of an event described by a *for*-phrase, as in (ia), while this is not possible with an *in*-phrase, as in (ib).

- (i) a. Mary pushed the cart for ten hours and kept right on pushing the cart.
 b. *Mary read the book in ten hours and kept right on reading the book.

Also, note that it is the durative readings of the *for*- and *in*-PPs that are relevant to this discussion. The reading of the *in*-PP in (iia), where the event of leaving is to begin five minutes from the moment of speech, and the reading of the *for*-PP in (iib), where the end state of Mary's being in Boston is interpreted to last for three days, are not considered in this discussion.

- (ii) a. John will leave in five minutes.
 b. Mary is going to Boston for three days.

¹⁴ A reviewer suggests another account of the syntactic difference between *for*- and *in*-PPs. Since *for*-PPs enter into the aspectual calculation, they have to be present before the position of aspectual calculation (AspP) is merged, but because *in*-PPs do not enter into the aspectual calculation, they are not present before AspP is merged. Since I assume that *for*-PPs do not telicize an event (see discussion in footnote 13), it does not seem possible to implement this idea in a straightforward way. It is also not clear what would prevent the presence of the *in*-PP before AspP is merged.

¹⁵ Note that *until*-phrases, which contribute to a telic interpretation, behave like *in*-phrases, and unlike *for*-phrases, in not allowing stranding, as shown in (i).

- (i) *What time/When did you read that book until?

4.2 Scope of Only

Further evidence for the proposal that *in*-PPs are adjoined to AspP, while *for*-PPs can be adjoined to VP, comes from data involving the scope of *only*. As shown in (24a–b), preverbal *only* can associate with the object of the preposition of *for*-PPs, but not with the object of the preposition of *in*-PPs; (24a) may mean ‘It was for only an hour that John pushed the cart’, but (24b) may not mean ‘It was in only an hour that John read the book’.

- (24) a. John only pushed the cart for an HOUR.
 Meaning: It was for only an hour that John pushed the cart.
 b. *John only read the book in an HOUR.
 Meaning: It was in only an hour that John read the book.

Note that the unacceptability of (24b) does not seem to be a purely semantic effect, given that when *only* occurs within the PP, as in (25), it can associate with the object of the preposition.

- (25) John read the book in only an hour.

Jackendoff (1972) and Rooth (1985) argue that preverbal *only* is adjoined to VP. Evidence for this claim, noted by Jackendoff, is that preverbal *only* cannot associate with the subject, as shown in (26) (example from Jackendoff 1972:250).¹⁶

- (26) *JOHN only gave his daughter a new bicycle.

Another piece of evidence for the VP-adjunction site of preverbal *only* is that it cannot appear before auxiliary verbs, as shown by the contrast between (27a) and (27b).

- (27) a. John will only read the book.
 b. *John only will read the book.

Given that *only* is VP-adjoined, and assuming that the associate of *only* must be within its c-command domain (see Jackendoff 1972, Rooth 1985, Tancredi 1990, and references cited therein), the present analysis explains this fact, since *only* c-commands VP-adjoined *for*-PPs, but not AspP-adjoined *in*-PPs.

4.3 Parasitic Gap Constructions

I show in this section that the analysis proposed here for the structure of durative and time frame adjuncts accounts for their distribution with respect to parasitic gap constructions.

Observe that a parasitic gap is licensed within a time frame adverbial PP, as shown in (28a), while it is not licensed within a durative adverbial PP, as shown in (28b).

¹⁶ A reviewer notes that it is not clear, if we assume the VP-internal subject hypothesis, why it is not possible to interpret the subject within the scope of the focus particle, in its base position within VP. This is in line with the observation that negative polarity item subjects are not licensed by sentential negation, as shown by (i) (see Linebarger 1987 for discussion).

(i) *Anyone didn't come to the party.

The data involving scope of *only* therefore seem to be part of a broader puzzling pattern.

- (28) a. What_i did you read t_i [in the amount of time it took her to write pg]?
 b. *What_i did you read t_i [for the amount of time it took her to write pg]?

Assuming that parasitic gaps are subject to an anti-c-command requirement, as stated in (29) (see Engdahl 1983, Culicover and Postal 2001), we can account for this contrast.

(29) *Anti-c-command requirement on parasitic gaps*

A parasitic gap cannot be c-commanded by the true gap.

Since a time frame adverbial is adjoined to AspP, it is located outside the c-command domain of the direct object trace at LF, and thus the parasitic gap is licensed. However, because a durative adverbial is adjoined to VP, it is located within the c-command domain of the direct object trace at LF, and hence the parasitic gap is not licensed.¹⁷

The distribution of parasitic gaps with durative and time frame adverbials thus supports the present claim that the time frame adverbial is adjoined to AspP, while the durative adverbial is adjoined to VP.

4.4 Specificity Effects with Time Frame and Durative Adjuncts

In this section, I point out contrasts in the acceptability of specific DP objects of *for*- and *in*-PPs, and I propose that the analysis offered here for the adjunction site of *for*- and *in*-PPs, in combination with applying Diesing's Mapping Hypothesis to adjunct PP objects, explains these contrasts.

As the examples in (30) and (31) show, the DPs permitted in the object position of *in*-PPs seem to constitute a narrower class than those permitted in the object position of *for*-PPs: while both *for*- and *in*-PPs allow indefinite DP objects (30a–b) and objects with *a few* (30c–d) and a number (30e–f), *for*-PPs also permit bare plural objects (31a) and objects with *many* (31c), *some* (31e), and *few* (31g), while *in*-PPs do not permit these objects, as shown by (31b), (31d), (31f), and (31h), respectively.¹⁸

- (30) a. John pushed the cart for an hour.
 b. John read the book in an hour.
 c. John pushed the cart for a few hours.
 d. John read the book in a few hours.
 e. John pushed the cart for two hours.
 f. John read the book in two hours.

¹⁷ As pointed out by a reviewer, we need to assume the notion ‘‘strict c-command’’ here, according to which α c-commands β if and only if α does not dominate β and every γ that dominates α also dominates β (Chomsky 1986:8), where α is dominated by β only if it is dominated by every segment of β (Chomsky 1986:7). This definition is necessary because it must be the case that the trace in Spec,AspP in (28a) does not c-command into the *in*-PP adjoined to AspP, while the trace in Spec,vP in (28b) does c-command into the PP adjoined to VP.

¹⁸ I assume that there is an independent explanation for the fact that the quantifiers *the*, *every*, *each*, and *most* are not possible with either *in*-PPs or *for*-PPs, as shown in (ia) and (ib).

- (i) a. *John pushed the cart for the/every/each/most hour(s).
 b. *John read the book in the/every/each/most hour(s).

- (31) a. John pushed the cart for hours.
 b. *John read the book in hours.
 c. John pushed the cart for many hours.
 d. ??John read the book in many hours.
 e. John pushed the cart for some hours.
 f. *John read the book in some hours.
 g. John pushed the cart for few hours.
 h. *John read the book in few hours.

The incompatibility of *in*-PPs with certain objects does not seem to be purely semantic, given that (32), with roughly the semantics of the *in*-PP construction, is possible.

- (32) It took John hours/many hours/some hours/few hours to read the book.

Diesing (1990, 1992) proposes a mapping procedure between the syntax and the semantics that divides the clause into IP and VP, as follows (Diesing 1992:10):

(33) *Mapping Hypothesis*

Material from VP is mapped into the nuclear scope.

Material from IP is mapped into a restrictive clause.

Diesing claims that indefinite DPs are ambiguous between a presuppositional and a cardinal (nonpresuppositional) reading. According to her analysis, presuppositional material is located in the restrictive clause for semantic interpretation, while nonpresuppositional material is located in the nuclear scope. Given the Mapping Hypothesis, DPs with presuppositional indefinite and strong quantifier readings are mapped to IP at LF, while DPs with cardinal readings remain within VP. According to Diesing, the following are examples of cardinal DPs: *books*, *many books*, *some books*, and *few books*. As (31) shows, these are the types of quantified DPs that are not permitted with *in*-PPs, but are permitted with *for*-PPs.

Adopting Diesing's idea that at LF, cardinal DPs are located inside VP and noncardinal DPs outside VP, we account for the contrast between *in*- and *for*-PPs; since, on the present analysis, *in*-PPs are adjoined to AspP, they permit only noncardinal DP objects, while, since *for*-PPs are adjoined either to VP or to vP, they permit either cardinal or noncardinal DP objects.¹⁹ Thus, although Diesing's study was concerned with argument DPs and did not investigate the role that the Mapping Hypothesis plays in the interpretation of adjuncts, this section has shown that the Mapping Hypothesis also holds for the interpretation of durative and time frame adjunct PP objects (see Hitzeman 1993 for related discussion of extending the Mapping Hypothesis to adjunct phrases).²⁰

¹⁹ A reviewer notes that it is possible for these PPs to appear in clause-initial position, outside the domain of the nuclear scope, as in (i).

(i) For hours, John pushed the cart.

Analyses of the construction in (i) agree that the clause-initial time PP has moved from clause-final position and thus is plausibly interpreted in its base position.

²⁰ Reviewers have noted two predictions concerning the different structures of *for*- and *in*-PPs. First, an additional

5 Conclusion

To summarize, I have argued here that telic interpretations of events involve checking of the [bounded] feature in AspP by the verb and the aspectual head either with a direct object or with an adjunct PP. The verb and direct object or adjunct PP of telic events thus involves interpretation higher in the clause than the interpretation site of atelic events. Evidence for this proposal comes from the structural ambiguity of *quickly*: when *quickly* receives a manner reading, which is compatible with both telic and atelic events, it is adjoined to VP; however, when *quickly* modifies the end point of an event, a reading compatible only with telic events, it is adjoined to AspP. Data involving linear order and preposing effects support this claim.

The analysis makes possible a syntactic account of the semantic difference between durative and time frame adjuncts: a durative adjunct, modifying the duration of the event, is adjoined to VP, while a time frame adjunct, modifying the end point of the event, is adjoined to AspP. Preposition-stranding facts, contrasts in scope of *only*, and parasitic gap data support this proposal. In addition, this analysis, in combination with Diesing's Mapping Hypothesis, explains why the object of an end point adjunct is required to be noncardinal, while the object of an adjunct with a duration reading can be cardinal or noncardinal. This has the consequence that the Mapping Hypothesis is extended to include the interpretation of the objects of adjuncts.

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piece of evidence for the claim that *for*-PPs are lower in the structure than *in*-PPs is that *for*-PPs can appear without the preposition in certain contexts, while *in*-PPs may not, as shown by the contrast between (ia) and (ib).

- (i) a. John slept (for) an hour.
 b. John read the book *(in) an hour.

Assuming that these bare DP adverbials are located low in the structure (see Morzycki 2001 for evidence for this claim), we predict that only *for*-adverbials are permitted in this construction.

Second, the line of argumentation presented here predicts that *in*-PPs are appropriate contexts for ACD but *for*-PPs are not. The data in (ii) indicate that the judgments are in the right direction.

- (ii) a. I read the book [in the same amount of time that you did [e]].
 b. ??I read the book [for the same amount of time that you did [e]].

The reviewer further notes that this line of reasoning indicates that argumental PPs may be located outside VP at LF, since indirect object PPs are compatible with ACD, as the following example shows:

- (iii) John talked [to everyone that Bill did [e]].

I follow the analysis proposed by Hornstein (1995), who argues that these examples are explained if we assume that the indirect object raises out of VP at LF in order to check Case (see also Branigan 1992 for discussion of the raising of indirect objects).

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