CHAPTER 4

EVENT STRUCTURE AND PHRASE STRUCTURE

4.1 INTRODUCTION

In the previous chapters we have seen syntactic and morphological arguments for an articulated VP structure. In this chapter I investigate what parts of semantic structure, in particular event structure, can be mapped onto the parts of the VP. I have been calling the non-lexical category within the VP Aspect mainly because of its use in Tagalog for the reduplicating morpheme, which encodes imperfective aspect. It is also used to host aspectual notions such as iterativity and distributivity in Navajo. However, we have also seen this category used for elements less obviously related to aspect such as accusative case marking and object agreement. In the interest of determining how (well) the articulated VP fits into semantic notions, I look more carefully at uses of Inner Aspect.

I begin the chapter by giving a brief overview of some treatments of event structure and VP structure over the past forty years in order to show how a simplification of representation in the semantic component along with an enrichment of structure in the syntactic component allows for a more trivial mapping from one to the other. The mapping of certain semantic components of event structure to the syntactic structure has become an active sub-domain of syntax in the last twenty years, and in particular in the last ten years. I present my own view in section 4.4.3xx of this chapter. The claim is that the components necessary to compute the Vendler predicate classes are represented in a predictable way view the configuration and features of phrase structure. Importantly, I restrict the representations to only syntactically relevant information. While there may be some variation from language to language of the type discussed in Chapter 8xx, I intend that the conclusions I reach be applicable to all languages.

1 This chapter uses material from Travis 2000.
4.2 PREPARING THE GROUND

The structure of events has long been considered the domain of philosophers and semanticists. Generally, it has been assumed that any level internal to a verb is outside the domain of syntax. Even when a phrase structure was proposed to represent subeventual structure, the framework was called Generative Semantics (e.g. McCawley 1968, 1972). More recently, however, syntacticians have suggested that there is an interaction between lexical semantics and purely syntactic structure. I outline below how this came to pass.

4.2.1 Semantic decomposition

Without giving a detailed view of the road from the phrase structure of Generative Semantics through pure semantics and back to a syntactic account of subeventual structure, I point to some developments that might explain why the intersection of semantic interests and syntactic interests occurred when it did.

McCawley (1968) within the Generative Semantic framework proposed that kill be represented as in (145a) below. (1b) shows what the representation would look like after Predicate Raising and before lexical insertion (1968: 73).

(145) a. 

\[
\text{S} \rightarrow \text{CAUSE} \text{x} \text{S} \rightarrow \text{BECOME} \text{S} \rightarrow \text{NOT} \text{S} \rightarrow \text{ALIVE} \text{y}
\]

b. 

\[
\text{S} \rightarrow \text{CAUSE} \text{x y} \rightarrow \text{BECOME} \text{ALIVE}
\]

Kill is seen as being composed of several primitive predicates. These predicates then combine into a semantically larger predicate pre-syntactically via a syntactic-like
rule of predicate raising. Once this composition has occurred, the lexical item meaning \textsc{cause become not alive}, i.e. \textit{kill}, can be inserted. In a well-known series of debates, syntacticians from the interpretativist school argued that this level of structure should not be considered to form any part of syntax. Rather, these primitive predicates that made up the meaning of a verb such as \textit{kill} belonged to the autonomous domain of semantics.

Dowty (1979) translates many of the observations of the Generative Semanticists into Montague’s semantic framework again using predicates such as \textsc{cause}, \textsc{become}. His representation of a (non-intentional) agentive accomplishment as in ‘John broke the window’ is given in (146) below (1979:124). A \textsc{do-ing} event causes a \textsc{become-ing} event.

\begin{equation}
(146) \left[ [\textsc{do} (\alpha_1, \ [\pi_n (\alpha_1, \ldots, \alpha_n)]) \hspace{1em} \textsc{cause} [\textsc{become} [\rho_m (\beta_1, \ldots, \beta_m)] ] ] \right]
\end{equation}

There is no associated syntactic structure (although, of course, some translation could be made from the brackets). Further there are no quasi-syntactic rules like predicate raising to form the transitive verb \textsc{open}. At this point, the representation makes no claims to syntactic representation or processes.

The representations of Parsons (1990) encode a certain view of ‘subatomic semantics’ which follows the tradition of Dowty and the Generative Semanticists again using predicates such as \textsc{cause} and \textsc{become}. The verb ‘close’ as in ‘Mary closes the door’ would, in fact, contain two events and one state as shown in (3) (1990:120).

\begin{equation}
(147)(e) \left[ \textsc{cul (e)} \hspace{1em} \textsc{agent (e,x)} \hspace{1em} (e') \left[ \textsc{cul(e')} \hspace{1em} \textsc{theme(e',door)} \hspace{1em} \textsc{cause(e,e')} \hspace{1em} (s) \left[ \textsc{being-closed(s)} \hspace{1em} \textsc{theme(s,door)} \hspace{1em} \textsc{hold(s)} \hspace{1em} \textsc{become(e',s)} \right] \right] \right]
\end{equation}

Here there is a culminated event, \textit{e}, which introduces the Agent, another event, \textsc{e'}, which introduces the Theme and is caused by \textit{e}, and a final state of being closed which is reached from \textit{e'}. This representation contains not only the familiar primitive predicates, but also representation of sub-events in the form of \textit{e}, \textsc{e'}, and \textsc{s}.

Pustejovsky (1991) also presents the sub-parts of events using predicates such as \textsc{cause, act}, and \textsc{become}. However, these predicates are mapped onto a level called
Event Structure, which contain only types of events. He, then, explicitly separates the semantics of the predicates from the representation of sub-parts of events. His representation of ‘John closed the door’ is given in (4) below (Pustejovksy 1991:58).

\[(148)\]

\[
\begin{array}{c}
\text{ES:} \\
\text{LCS':} \\
\text{LCS:}
\end{array}
\]

\[
\begin{array}{c}
T = \text{transition} \\
P = \text{process} \\
S = \text{state} \\
\text{[closed (the-door)]} \\
\text{[act (j, the-door) } \& \text{ closed (the-door)]}
\end{array}
\]

Within Pustejovsky’s level of representation, there is the level of the Lexical Conceptual Structure (LCS), which is much like the semantic representations of Dowty and Parsons. This level maps to another level of LCS, LCS', which pulls the LCS apart into two sub-events — one that causes the other. The first one is a process of an action and the state of the door not being closed. This event is followed by the state of the door being closed. At the level of Event Structure (ES), all that is represented is the process (P) followed by a state (S), and together these form a Transition (T).

Moens (1987) also represents event structure in such a way that events are reduced to linguistically relevant elements. The nucleus of event structure is given in (149) below (Moens 1987:47).

\[(149)\]

\[
\text{Preparatory process} \quad \text{consequent state} \\
\text{culmination}
\]

Moens uses this nucleus to represent the Aktionsart of predicates. Like Pustejovsky, he views accomplishments (culminating processes in his terms) as a process.

\[2\] I thank Brendan Gillon for bringing this work to my attention and discussing it with me.
followed by a state. As will become important to my representation later, he also represents the culmination point separately.

By picking these representatives of the development of event structure, we see a line of development that moves from a rich syntactic representation of meaning (as in Generative Semantics), to a rich semantic representation of meaning (Dowty), to a representation of meaning which clearly outlines the contribution of event structure by introducing the event variable e (Parsons), to a representation which separates the event structure information from other aspects of meaning (Pustejovsky). As we will see in what follows, by allowing some of the richness of meaning to stay within the domain of semantics, and extracting that which is particular to event structure, we might return to a version of Generative Semantics that allows syntax to encode bits meaning without running into the problem of trying to encode all of meaning in syntax.

As the semantic representations of events developed, changes were being made in the structure of the VP. These parallel changes made the interaction between the semantics of event structure and the architecture of the VP more obvious. As the semantic representations developed a structure that was less rich, the syntactic representations developed a structure that was less impoverished. In the next few sections, some of the crucial phrase structure developments are discussed, in particular VP internal subjects (e.g. Kitagawa 1986, Fukui & Speas 1986, Kuroda 1988, Koopman & Sportiche 1991), and VP shells (Larson 1988). In some sense, the verb is seen to be made up of verb segments in the tree. Interestingly, the subparts of the verb correspond, in some languages, to morphological bits. Further, these morphological bits often reflect semantic subparts of an event. Therefore, while the discussion of the existence of subparts of events had largely been kept within the disciplines of semantics and philosophy, there is evidence that natural language encodes subeventual structure morphologically and syntactically (also discussed in the era of Generative Semantics as in, for example, McCawley 1968, Morgan 1969). Though the main goal of this chapter is to argue that an articulated VP structure reflects event structure, there is the secondary goal of showing that by combining information from syntax, morphology, and semantics, one can have a clearer idea of exactly how natural language encodes subeventual structure.
4.2.2 Syntactic Articulation

While the semantic representation became more streamlined, the syntactic representation of the predicate, in the form of the VP, became more fine-tuned. Below we see two ways that the VP structure became more detailed.

4.2.2.1 VP-internal subjects

The first move to an articulated VP structure was the inclusion of the subject (external argument) within the VP. Since this argument needed to be distinguished from internal arguments, there had to be some hierarchical structure within the VP. This distinction was achieved by placing the external argument in the Spec, VP while all the other (internal) arguments were dominated by V'. We have already seen cases of languages like Malagasy and Kalagan where the external argument remains within the Spec, VP position if appropriately licensed. This structure, along with verb movement, accounts for the fact that the Agent, when it is not the subject, appears adjacent to the verb (from Guilfoyle, Hung, and Travis 1992).

(150) Malagasy

a. An-sasa-na (anasan') ny zazavavy ny lamba ny savony.
   PRES.CT.wash   DET girl   DET clothes DET soap
   literally: ‘The soap was washed (with) the clothes by the girl.’

b. [ V [ Apt tv Theme PP ] Subject ]

A by-product of this conception of phrase structure is that we can now say that the VP represents the whole event — the V and all of its arguments. The external argument is still, in some sense, external, however only with respect to V', not the VP.

It is now generally accepted that all subjects are derived in some sense. They merge into the phrase structure in a lower position and only come to be in the Spec, TP

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3 This example has been adapted to be consistent with the glosses in this book. Morpheme by morpheme glosses will change slightly as different issues are highlighted, particularly with respect to verbal morphology.

4 By having the subject within the VP, the syntactic representations more closely reflect the semantic representations given in Discourse Representation Theory of Kamp and Reyle (1993:516-519).
through movement. There is much controversy, however, concerning the details of the merged position. The main controversy involves the nature (and label) of the head that introduces the external argument. There is another related controversy, though, as to whether the lexical head, i.e. the verb or root, is responsible for a theta-role being assigned to the external argument. We have seen that Hale and Keyser (1993) propose that external arguments are added only in the S-syntax. The external argument, then, is not part of the lexical entry of a predicate. Bowers (1993), Kratzer (1996) and Pylkkänen (2002) view external arguments in a similar way where a functional category (Pre(dicate) or Voice) is responsible for the introduction and licensing of the external argument. For Pylkkänen what is crucial is the separation of the cause predicate from the head that introduces the external argument (Ext in Pylkkänen 1999 and Voice in Pylkkänen 2002). Finally, by claiming that v is a functional category, Chomsky also, in Kratzer’s terms, severs the external argument from the head. The respective trees are given below. Though all differ in the details, they have in common that the external argument is merged in a position that is different from where it appears on the surface.


\[
\begin{array}{c}
\text{PrP} \\
\text{NP} \\
\text{primary subject} \\
\text{Pr} \\
\text{Pr'} \\
\text{VP} \\
\text{NP} \\
\text{secondary subject} \\
\text{V} \\
\text{V'} \\
\text{XP} \\
\text{complement} \\
\end{array}
\quad
\begin{array}{c}
\text{VoiceP} \\
\text{DP} \\
\text{Mittie} \\
\text{Voice} \\
\text{Voice'} \\
\text{Agent} \\
\text{VP} \\
\text{DP} \\
\text{the dog} \\
\text{V} \\
\text{feed} \\
\end{array}
\]

---

5 In Hale and Keyser’s work, external arguments are ‘severed’ (as in Kratzer 1996) from the lexical representation. They are introduced in the S-syntax either by predication or by requirements of the elements in the extended projection of the lexical domain (e.g. Case, EPP).

6 Kratzer (1988: 137), however, does suggest that the external arguments of some individual level predicates are merged in the Spec, TP.

\[
\begin{align*}
\text{VoiceP} & \quad \text{Voice'} \\
\text{John} & \quad \text{Voice} \\
\text{CAUSE-P} & \quad \text{CAUSE} \\
\end{align*}
\]


\[
\begin{align*}
\text{v} & \quad \text{v'} \\
\text{vmax} & \quad \text{Subj} \\
\text{v} & \quad \text{VP} \\
\text{V} & \quad \text{Object} \\
\end{align*}
\]

In the context of the research here, I take a more traditional approach within the VP-internal subject hypothesis. While the articulation of the VP that I propose has some common denominators with, for example, Pylkkänen’s structure, I differ in two important ways. I have argued that the head that introduces the external argument, \(V_1\), is part of the lexical entry, and it is a lexical category rather than a functional category. This was important particularly for my account of Navajo. Further, as will become relevant in Chapter 7, section 7.4xx, the lexical entry is associated with an argument structure and this argument structure includes the specification of the external argument.

4.2.2.2 VP shells

A further step in the articulation of VP came when Larson (1988) proposed the Single Complement Hypothesis whereby a head may have only one complement. This, in effect, forces a binary branching structure, but further forces the generation of additional heads to license multiple internal arguments. For the string in (152a) then, a tree like that in (152b) would have to be created.

(152) a. The children put their books on the shelf.

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7 Baker and Stewart (1999), using data from the serial verb language Edo, also propose that Voice and v be separate heads.
Two VPs must be generated so that each head has only one complement. Note that the upper V, \( V_1 \), is empty.\(^8\) This position will eventually be filled when the \( V_2 \) put undergoes head movement from this lower V position to the higher \( V_1 \) position. Schematically, verbs with three arguments of the type Agent, Theme, Goal will place their Agent in the Spec, \( V_1 \)P, the Theme in the Spec, \( V_2 \)P, and the Goal as the complement of \( V_2 \) following the version of the theta-hierarchy espoused by, for example, Larson (1988) and Baker (1988). This theta-role template is shown in (153).

\[
\begin{array}{c}
\text{DP} \\
\text{the children} \\
\text{\( V_1 \)P} \\
\text{\( V_1' \)} \\
\text{\( V_2 \)P} \\
\text{\( V_2' \)} \\
\text{DP} \\
\text{their books} \\
\text{\( V_2 \)PP} \\
\text{put} \\
\text{on the shelf}
\end{array}
\]

As the VP becomes more articulated, questions are raised. First, why should there be so much syntax in a single word? Here we have the lexical entry \textit{put} which requires two separate heads to realize all of its arguments. Secondly, is the placement of arguments accidental — Agents being in the Spec, \( V_1 \)P, Themes in the Spec, \( V_2 \)P?

\(^8\)Consistent with the previous chapters, I use the terms \( V_1 \) and \( V_2 \) here to represent the top and lower V respectively. Larson did not distinguish these diacritically which most likely reflects his use of the distinct heads as simply segments of the one V.
4.2.2.3  *Lexical semantics in syntax*

A further development in the understanding of VP structure is outlined in Hale and Keyser (1993, 2002).\(^9\) Through an investigation of the nature of denominal verbs such as *shelve*, Hale and Keyser (H&K 1993) propose that, in fact, all English verbs contain more syntax. Unlike Larson, however, they propose that the syntax contributes semantics as well. A Larsonian-type representation for ‘put the books on the shelf’ is given in (154a). Combining structure from Larson with ideas of Hale & Keyser, we might create the L-syntax derivation of *shelve* is given in (154b) below.\(^10\)

\[(154)\]

\[a.\]

\[\begin{array}{c}
V_1, P \\
\downarrow \\
DP \\
\downarrow \\
V_1' \\
\downarrow \\
V_1, P \\
\downarrow \\
DP \\
\downarrow \\
V_2, P \\
\downarrow \\
the books \\
\downarrow \\
PP \\
\downarrow \\
P \\
\downarrow \\
DP \\
\downarrow \\
the shelf \\
\end{array}\]

\[b.\]

\[\begin{array}{c}
V_1, P \\
\downarrow \\
DP \\
\downarrow \\
V_1' \\
\downarrow \\
V_1, P \\
\downarrow \\
DP \\
\downarrow \\
V_2, P \\
\downarrow \\
the books \\
\downarrow \\
PP \\
\downarrow \\
P \\
\downarrow \\
NP \\
\end{array}\]

In (8b) the single verb *shelve* is represented by four syntactic heads — N, P, and two Vs. All of these heads contribute meaning, however. The meaning of N is clear, this

\[^9\] Hale and Keyser’s work will be discussed in more detail in Chapter 6.

\[^10\] Hale and Keyser (2002) propose a different account from the one given in Hale and Keyser (1993). I follow more closely the original account, but also change the details of that account to fit more closely the structure being argued for here.
is the endpoint of the action, the shelf, and P contributes a locative relation like the preposition on. The top V, the one with the Agent in its Spec position, is CAUSE and the bottom V is BE/BECOME. Further, the theta-roles of the arguments will be determined by the structure in which they appear. In other words, it is not accidental that the theta-roles appear where they do. A Theme will be interpreted as such because it appears in a particular position, for example in the Spec of a V that takes either a PP or an AP complement.\(^{11}\)

H&K have contributed the following things to our discussion. The heads of an articulated VP do, now, have semantic content — Agents will always be the subject of V,P, while the Theme will be the subject of V\(_2\)P.\(^ {12}\) Further the placement of arguments is predictable from the structure. However, we are now left with a monomorphemic verb that has a lot of syntax and a parallel amount of semantics.\(^ {13}\)

### 4.3 Semantics in the Syntax

Given what we have seen about the simplification of semantic representations of complex events and the parallel fine-tuning of the structure of the VP, we can now ask about the correlations between the two. We know that we do not want to put all of semantics in the syntax but want rather to constrain the elements that appear in the syntax to exactly those elements that the syntactic component will make use of. I will sketch here a view of VP structure that suggests that it characterizes those elements of semantics that distinguish aspectual verb classes.\(^ {14}\)

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\(^{11}\) In Hale and Keyser (1993, 2002), the structures are slightly different. The Theme would be in Spec, PP.

\(^{12}\) For Hale and Keyser (1993, 2002), only the inner subject would be part of the argument structure of the root.

\(^{13}\) It is arguable that shelf is bimorphemic. Other denominal verbs appear to be monomorphemic such as saddle. Deadjectival verbs such as redden are clearly bimorphemic and thin\(\text{TRANS/INTRANS}\) appear monomorphemic. The problem will be that all of them will have the same amount of syntax and semantics regardless of the overt morphological structure.

\(^{14}\) Viewing phrase structure as a mirror of event structure has become a bit of a cottage industry. I have tried to give a range of references throughout this work but certainly not an exhaustive list. Some of the nicest and earliest examples of work done on this topic was either produced by Hoekstra (e.g. 1988, 1992) or inspired by him (den Dikken 1992, Sybesma 1992). Some collections also give a sampling of what is being done currently, e.g. Kempchinsky and Slabakova (2005) and Erteschik-Shir and Rapoport (2005).
4.3.1 Theta-roles and UTAH

VP structure could be viewed as encoding theta-relations. In other words, the function of the heads could be viewed as simply providing appropriate specifier and complement positions to hold the relevant arguments and the order of these arguments would follow some theta-hierarchy. This is a view that can be constructed with a combination of Larson’s justification for VP-shells along with Baker’s Theta-hierarchy.15

(155) Agent > Theme > Location

(156)

The articulation of the VP here further allows an articulation of the theta-grid by creating a hierarchy of arguments that is represented syntactically.

4.3.2 Predicates and LCS

The articulation of the VP also provides a syntactic representation of the hierarchy of the operators in a system like Dowty’s. An obvious way to map the types of semantic structures that we have seen in section 4.2.1, is by creating a verbal head for every semantic operator such as DO, CAUSE, BECOME, etc. In Dowty’s system the semantic operators reflect the characterization of the different classes, and, in turn, suggest a mapping of event structure to phrase structure. A summary (and simplification) of Dowty’s classification is given below (from Dowty 1979:123-124). I have organized the representation to make the next step in the mapping to syntax more trivial.

15 See Grimshaw (1990: 7-10, 175: fn.1)) for a discussion of different theta-hierarchies.
4.4 THE SYNTAX OF EVENT STRUCTURE

My view of the mapping of event structure onto phrase structure owes a lot to Pustejovsky’s work on the structure of events. In a way, the research presented here takes his structures more seriously than he does as it extends them into the domain of syntax. While many of the details may vary, the overall assumption here is that the sub-events proposed in Pustejovsky’s work may be represented as sub-trees, or more particularly, sub-VPs in the syntax. Given that Pustejovsky’s research is the cornerstone of the proposals presented here, I review some of it in detail.

A question that might be raised is whether grammar should represent sub-events, or whether sub-events are simply a matter of world knowledge. For instance, Pustejovsky divides build a house into the sub-event of house-building and the final state of built-house. These two sub-events are represented in the grammar of the semantic system (more precisely the level of ES (Event Structure)). One could imagine, however, that the fact that a house is built at the end of a house-building process need not be part of the grammar, but could simply be left to non-linguistic knowledge. Pustejovsky argues that sub-events must be encoded in the grammar since the grammar may refer to them in ways to be discussed in more detail below. I extend this sort of argument into the area of syntax. The argument will be that if syntax may alter or refer to particular properties of a predicate, then these properties must be encoded in the syntax.

4.4.1 The precursor: Generative Semantics

There is an obvious debt to the framework of Generative Semantics in the work of Hale and Keyser. It is important to note, however, that the framework presented here is able to avoid some of the problems that were encountered within Generative Semantics. The
goal here is to posit syntactic structure for elements that are *syntactically* relevant. In other words, as Pustejovsky points out, his framework does not attempt to exhaustively reduce predicates to primitives.\(^{16}\)

In addition, the current syntactic framework, being more fine-tuned, is able to represent distinctions that did not exist in the 1970s. More specifically, sentential complementation can be more precise. A sentential complement can come in a variety of sizes such as CP, IP, vP, VP and not just S.\(^{17}\) It is this fine-tuning that allows one to distinguish between *kill* and *cause to die* in response to Fodor’s famous criticism of Generative Semantics (Fodor 1970). Foreshadowing the analysis of causatives that will be outlined in Chapter 6, *kill* as a lexical (L-syntax) causative would have the structure in (158a) while *cause to die* as a productive (S-syntax) causative would have a structure like (158b). The important distinction is that *die* represents one event, while *cause to die* represents two event.

(158) a. \[\textit{kill} \quad [V_1 - \text{Asp} - V_2] \]

\[ \text{DP} \quad V_1' \quad \text{AspP} \]
\[ \text{CAUSE, e} \quad \text{Asp'} \quad \text{Asp} \]
\[ \text{DP} \quad V_2' \quad \text{Asp} \quad V_2' \quad \text{V}_3 \quad \sqrt{\text{kill}} \]

\(^{16}\) In Pustejovsky’s words he is proposing a “generative theory of word meaning, but one very different from the generative semantics of the 1970s... we are suggesting that lexical decomposition proceed in a *generative* fashion rather than the traditional *exhaustive* approach” (Pustejovsky 1991:53).

\(^{17}\) This sort of specific selection can be found in the work of Rochette (1988) for sentential complementation and is used more widely now.
In both cases a *cause* lexical item is selecting a verbal complement, but in the case of the L-syntax causative, ASPP is selected. In the case of the s-syntax causative, EP is selected. Now we can address the three arguments against the *cause to die* analysis of *kill*. I suggest that all three differences in the construction point to the presence of an embedded V₁ in the *cause to die* structure.

Fodor gives three environments which distinguish *kill* from *cause to die*.¹⁹ In the first environment, the second part of the construction refers back to an embedded event in the first part of the construction. In (159a) and (159c) we see that both constructions work similarly when the whole complex event is referred to. The difference arises when (159b) and (159d) are compared. The *it did so* refers to the event of the plant dying. This is possible with *cause to die* but not *kill*.

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¹⁸ Most likely these productive causative morphemes also consist of a V₁ and V₂ with a zero V₂ but I do not give the details of this here.

¹⁹ I change his examples slightly but not in a way that is important to the discussion at hand.
(159)  a. John caused the plant to die and it surprised me that he did so.
    b. John caused the plant to die and it surprised me that it did so.
    c. John killed the plant and it surprised me that he did so.
    d. * John killed the plant and it surprised me that it did so.

In the second case, two conflicting temporal PPs are added to a slight complication of the construction. This works with cause to die where the causing (the manner of which has additionally been specified) occurs on one day and the dying occurs on another day. This does not work with kill, however.

(160)  a. John caused the plant to die on Sunday by cutting it on Saturday.
    b. * John killed the plant on Sunday by cutting it on Saturday.

Lastly, a means adverbial is added. With a cause to die structure, the structure is ambiguous with the means adverbial either modifying the cause predicate or the die predicate. This is most clearly seen by determining which argument, John or Bill, acts as the external argument of swallow. With the kill example, only the argument John can control the empty subject of swallow.

(161)  a. John caused Bill to die by swallowing his tongue. (ambiguous)
    b. John killed Bill by swallowing his tongue. (not ambiguous)

What is common to all of these environments is the appearance of two separate events in the cause to die case and only one event in the kill case. As long as an account for kill has capture the fact that it is only one event, then the problems encountered by the Generative Semantics proposal do not arise. In the account presented here, cause to die represents two events, while kill is just one.

Now we investigate a possible way of mapping event structure to syntax. The aim is to show how the syntax can provide the appropriate representation for the interpretative
component. I do this first by presenting the data we want to account for and then present a phrase structure proposal.

4.4.2 Aspectual predicate classes

Pustejovsky’s aim in constructing a system of sub-event types is to create a grammar that will generate the different aspectual classes. As a bit of background on these classes, we will assume the four classes of Vendler (1967): State, Activity, Achievement, Accomplishment. There are a variety of tests that have been proposed to distinguish these classes. Below I give a brief summary of these tests and how they may be used for English. Of necessity, I am glossing over some of the controversies that surround not only the tests but also the class divisions.

Vendler’s (1967) classification of verbs into four classes can be captured in the following table. The table, taken from Verkuyl (1989: 44), uses the Vendler’s own descriptions of the verb classes to set up a feature system with two features [+/definite] and [+/process]. Vendler’s exact words are given below (Vendler 1967: 106).

Accomplishments ‘A was drawing a circle at t means that t is on the time stretch in which A drew that circle.’ Activities ‘A was running at time t means that time instant t is on a time stretch throughout which A was running.’ Achievements ‘A won a race between t₁ and t₂ means that the time instant at which A won that race is between t₁ and t₂.’ States ‘A loved somebody from t₁ to t₂ means that at any instant between t₁ and t₂ A loved that person.’ The feature [+/definite] correlates with the vs. a/any. The feature [+/process] correlates with the use of time periods vs. time instants.

A table giving the four verb classes with the relevant features is provided in (162).
[+definite] captures the fact that, like Accomplishments, Achievements are telic. [-process] is intended to capture the fact that, like States, Achievements are not durative.

There are tests that have been proposed to distinguish which class a predicate belongs to. I present just two of the more common tests below. A test that will be used throughout to distinguish between +/-definite will be the use of frame \((in \ t)\) and duration \((for \ t)\) adverbials. This can be seen as coinciding with ‘the time stretch/instance’ mentioned by Vendler above.20

(163) a. Mary wrote a letter \((\checkmark \text{in 3 minutes}/\ast \text{for 3 minutes})\).
   b. Mary ran \((\ast \text{in 3 minutes}/\checkmark \text{for 3 minutes})\).
   c. Mary found the key \((\checkmark \text{in 3 minutes}/\ast \text{for 3 minutes})\).21
   d. Mary was tired \((\ast \text{in 3 minutes}/\checkmark \text{for 3 minutes})\).

A test that has been used to determine the value +/- Process of a predicate is the use of the English progressive. States and achievements typically resist appearing in this form as the data below show.

(164) a. Mary was writing a letter.
   b. Mary was running.
   c. * Mary was finding a key.
   d. * Mary was being tired.

---

20 Use of these tests has created a bit of controversy. Many languages allow flexibility through coercion. For example, (163d) becomes fine with the frame adverbial if we measure the time up to the point where Mary became tired. (163b) becomes fine with the frame adverbial if we imagine a task of running a certain amount. I discuss coercion in Chapter 8xx.

21 I have changed the choice of verb to exemplify achievements for reasons that become clear in Chapter 7 and 8. The problem is that certain achievements are very easily coerced.
There has been a debate as to where the membership to these classes should be encoded, in the lexicon attached to the verb or at some level in the syntax where phrasal material is available. Given that material in construction with the predicate such as objects and goal PPs may affect which class it belongs to, it is fairly clear that phrasal material is needed and that information from the syntax must enter the computation. Pustejovsky puts it in the following manner (Pustejovsky 1991: 52) and explains how his structures are necessary.

If membership in one of these aspectual classes is viewed as a projection of lexical properties of the verb, then how is it that the aspectual properties of a sentence may change as the result of other factors, such as adverbials (both durative and frame), the structure of the noun phrase (NP) in an argument position (e.g. definite vs. bare plural), or the presence of a prepositional phrase? In the sections that follow, we will explain these behaviors, which have come to be known as ‘type-shifting’ phenomena (Bach, 1986), in terms of a configurational theory of event structure. We show how the tests normally used as diagnostics for membership in one class or another fall out as the principled consequence of different event structures. Thus, we are able to abandon the feature-based approach to aspect which is generally assumed (e.g. Verkuyl, 1972) in favor of a highly restricted, topological theory of how events are structured.

Before turning to Pustejovsky’s structures and my syntactic translation of his structures, I go through some of the type-shifting cases he mentions. At this point, I restrict myself to three constituents that must enter into the computation — the verb, its object, and goal PP or end-state.\(^2\)

First we can see in (165), some of the aspectual information must come from the predicate itself. In the examples below we control for the input of the object by choosing the same type in both cases. Only the predicate head changes. The verb build with a singular object is an accomplishment while push with a singular object is an activity (using the PP adverbial tests).

\(^2\) We return to the affect of adverbials on a predicate in Chapter 8.
As noted by Verkuyl (1972), however, the presence of and type of object is also crucial. *Run* is an activity while *run a mile* is an accomplishment. *Build* with a singular object is an accomplishment, *build* with a bare plural is an activity.

Verkuyl labels the quality of the object that is necessary to encode an accomplishment as [+SQA] (Specified Quantity of A). If a number is included with the plural, the predicate remains an accomplishment. What has happened in these cases is that the object that measures out the action is given a definite size, which in turn gives the event a specific end-point.

As we have seen, then, we need to know something about the object as well as something about the predicate. We also need to know something about other arguments of the verb as can be seen below. By adding a goal NP or a result XP to a VP, the predicate may change from an activity to an accomplishment. Basically what is happening in these cases is that an endpoint has been added.
Further, as in the case of an object which measures an event, the internal shape of these constituents is also important. And, as in the case of the VP, the shape of this constituent is determined by its head and the arguments of the head. This is easiest to show with goal PPs.\textsuperscript{23} If the head itself is not telic, the PP is not telic (see (169b)). If the head is telic but the prepositional object is [-SQA], the PP is not telic (see (169c)).

\textbf{(169)a.} Mary ran to the store (√ in 3 hours/*for 3 hours). \hspace{1cm} \textbf{ACCOMPLISHMENT}
\textbf{b.} Mary ran towards the store (*in 3 hours/√ for 3 hours). \hspace{1cm} \textbf{ACTIVITY}
\textbf{d.} Mary ran to stores (*in 3 hours/√ for 3 hours). \hspace{1cm} \textbf{ACTIVITY}

Other elements may also affect what I will, following Depraetere (1995), the boundedness of the predicate. For example, viewpoint aspect such as the English progressive changes a telic situation to an atelic situation as is shown in (170).

\textbf{(170) Information depends on viewpoint morphology}
\textbf{a.} Mary built a cart (√ in 3 hours/*for 3 hours).
\textbf{b.} Mary was building a cart (*in 3 hours/√ for 3 hours).

I will set this last sort of change aside until Chapter 8 in the discussion of coercion.

\section*{4.4.3 Event structure representation}

Let us sum up a bit where we are. It appears that several factors must conspire to determine the aspectual verb class of a predicate — the head of the predicate and its

\textsuperscript{23} I have had mixed results with sentences like ‘Mary hammered the metal flatter and flatter for three hours’ ‘Mary stretched it longer for three minutes’.
internal arguments. I take the direction taken by many others (e.g. Borer 1994, Higginbotham 2000, Hoekstra 1992, van Hout 1996, Kratzer 2004, Snyder 1995, Sybesma 1992) that accomplishments are activities plus an endpoint. In other words, in order to form an accomplishment, an endpoint needs to be made available.

Looking just at the difference between activities and accomplishments, we have seen that the difference is in the presence (accomplishments) or absence (activity) of a natural endpoint. This is made quite clear in Pustejovsky’s representations. We have seen a bit of his system above, but I give a broader overview next.

Pustejovsky’s simplest representation is for a State as it has no subparts. This is shown in (171) below, with an example in (172).

(171) STATE (S): a single event, which is evaluated relative to no other event

Examples: be sick, love, know

Structural representation:

\[
\text{S} \quad \text{e}
\]

(172) a. The door is closed.

\[
\text{ES:} \quad \text{S} \quad \text{e}
\]

LCS': [closed (the-door)]
LCS: [closed (the-door)]

A process (in the terms I’m using here, an activity) has subparts of smaller events that comprise a larger event. Further, there is a sense of duration.

(173) PROCESS (P): a sequence of events identifying the same semantic expression

Examples: run, push, drag
Structural representation:

\[ P \]

\[ e_1 .. e_n \]

(174) a. Mary ran.

b. ES:

\[ P \]

\[ e_1 .... e_n \]

LCS': 

\[ \text{[run (m)]} \]

LCS:

\[ \text{[run (m)]} \]

Finally, a transition is a shift from one event to another opposite event. In Pustejovsky’s words a transition is ‘an event identifying a semantic expression, which is evaluated relative to its opposition’ (Pustejovsky 1991: 56).24 His transitions include the two aspectual predicate classes — achievements and accomplishments.

(175) TRANSITION (T): an event identifying a semantic expression, which is evaluated relative to its opposition

Examples: give, open, build, destroy

Structural representation:

\[ T \]

\[ E_1 \]

\[ \text{[E2]} \]

Below we see a case where the representation is used to represent an achievement (in (176)) and a case where it is used to represent an accomplishment (in (177)).

\[24 \text{ Of course this characterization of transitions is not new. Pustejovsky cites many others including Aristotle.} \]
(176) a. The door closed.
b. ES:
\[
\begin{array}{c}
T \\
P \\
S
\end{array}
\]
LCS': 
\[
\begin{array}{c}
[\text{closed (the-door)}]
\end{array}
\]
LCS: 
\[
\begin{array}{c}
[\text{closed (the-door)}]
\end{array}
\]

The transition here is shown from one point of the door being not closed to the door being closed.\(^{25}\) Below we see where an overt activity is added to the first part of a transition. Here the door becomes closed due to John’s doing something. The first event is seen as a conjunction of John’s acting on the door and the door being not closed.

(177) a. John closed the door.
b. ES:
\[
\begin{array}{c}
T \\
P \\
S
\end{array}
\]
LCS': 
\[
\begin{array}{c}
[\text{closed (the-door)}]
\end{array}
\]
\[
\begin{array}{c}
[\text{act (j, the-door)}]
\end{array}
\]
\[
\begin{array}{c}
&[\text{closed (the-door)}]
\end{array}
\]
LCS: 
\[
\begin{array}{c}
[\text{act (j, the-door)}, \text{become (closed (the-door))}]
\end{array}
\]

(177) represents a typical accomplishment. By viewing accomplishments as being a combination of a process with a final state, we can ask the question of whether this is represented in the syntax. Pustejovsky gives further examples where the syntactic division between the process and the final state is clearer. We saw above the representation for a process event such as ‘Mary ran’. As Pustejovsky points out, if this process is given an endpoint in the form of a PP, then the event becomes a transition (or

\(^{25}\) The state of NOT CLOSED is linked to P (Process) in Pustejovsky’s work. In the text, however, Pustejovsky points out that the inchoative use of ‘close’ expressed a shift from one state to another. This discrepancy will become important in my characterization of achievements.
an accomplishment in our terms). This is shown below where a transition is formed from the process ‘Mary ran’ to a further transition ‘to the store’ (Pustejovsky 1991:63).\(^{26}\)

(178) Mary ran to the store.

\[
\text{ES:}\quad \begin{array}{c}
\ P \\
\text{< P, T>}
\end{array}
\]

\[
\text{LCS':}\quad \begin{array}{c}
\text{Mary ran} \\
\text{to the store}
\end{array}
\]

\[
\text{LCS:}\quad \begin{array}{c}
[\text{run}(m)] \\
[\text{at } (m, \text{the-store})]
\end{array}
\]

We have a similar process when a resultative AP ‘flat’ is added to the activity ‘Mary hammered the nail’ (Pustejovsky 1991:65).

(179)a. Mary hammered the metal.

b. Mary hammered the metal flat.

(180)

\[
\text{ES:}\quad \begin{array}{c}
\ P \\
\text{< P, T>}
\end{array}
\]

\[
\text{LCS':}\quad \begin{array}{c}
\text{Mary hammer} \\
\text{the metal flat}
\end{array}
\]

\[
\text{LCS:}\quad \begin{array}{c}
[\text{hammer}(m, \text{the-metal})] \\
[\text{flat } (x)]
\end{array}
\]

Part of Pustejovsky’s goal in developing these representations is to provide a way to account for the scope of certain adverbials. These ambiguities have figured in the literature for many years (see e.g. Morgan 1969, Dowty 1979) pointing to subparts of events. Three relevant examples are given below — manner adverbs like ‘rudely’ or ‘quickly’ that are ambiguous between an event or manner reading, adverbs like ‘almost’

\(^{26}\) Pustejovsky (1991:64) states “the PP acts like a function from processes to transitions”. It is not clear to me here why the transition does not overtly express the ‘not at the store’ state associated with the initial process. The same questions arises for the next structure where ‘not flat’ is not expressed overtly in the structure.
that can modify beginning point or endpoint, and ‘again’ which can have a repetitive or restitutive reading.

In (181) we see that the adverb ‘rudely’ can modify the whole event (‘It was rude of Lisa to depart’) or the manner in which Lisa departed (e.g. without saying goodbye).

(181) Lisa rudely departed.

In terms of Pustejovsky’s representations, the adverb would have scope over either the whole T, or just the P. The relevant representations are given below.

(182) a. $T$
   $\begin{array}{c}
   \text{ES:} \\
   \text{P[rude}(P)\text{]} \\
   \text{S} \\
   \text{LCS':} \\
   [\text{departed } (x)] \\
   [\text{act}(x) \& \text{departed } (x)]
   \end{array}$

   b. $T$ [rude$(T)$]
   $\begin{array}{c}
   \text{ES:} \\
   \text{P} \\
   \text{S} \\
   \text{LCS':} \\
   [\text{departed } (x)] \\
   [\text{act}(x) \& \text{departed } (x)]
   \end{array}$

Another famous example of such an ambiguity is given below (see also Dowty 1979:241ff for a discussion of the use of ‘almost’).

(183) a. John almost built a house.
   b. John almost ran.

Again using Pustejovsky’s type of representations, we can have ‘almost’ modify either the process (he almost began the building process), or the final state (‘the house
was almost built’). With a process, there is only one point that can be modified and that would be the beginning of the process.

A third example of ambiguity that has gained currency in the current literature (see e.g. von Stechow 1995, Beck and Johnson 2004), is the adverb ‘again’. In a sentence such as (184) below, there can be two different readings.

(184) The door opened again.
   a. The door opened once. The wind blew it closed and then it opened again.
   b. The door was open. The wind blew it closed and then it opened again.

In the first reading, there were two opening transitions. In the second reading, there are two opened states, but only one opening transition asserted. This can also be represented on Pustejovsky’s event structures.28

One could leave the representation of event structure to the semanticists but the input of syntax to the computation of event structure is apparent through the morphological form of the verb (see e.g. Navajo) and the case assignment and syntactic position of the objects (see for example Scots Gaelic).29 Phenomena such as these suggest that the computation needs access to syntactic information. I turn then to the task of translating event structure into phrase structure in the next section.

4.4.4 Phrase Structure representation

The mapping of such an event structure as proposed by Pustejovsky is trivial once the VP has become sufficiently articulated. Many researchers have noted that endpoints are added syntactically, but there are variations on how this endpoint has been added. Below,

27 Tenny (2000:313ff) questions whether ‘almost’ is really ambiguous or just vague. I follow Pustejovsky and others in treating it as ambiguous though nothing would be lost by taking ‘almost’ out of this list of structure sensitive (and ambiguous) elements.

28 Further, the examples below show that some PPs modify only the final state in a transition.

29 The discussion of coercion in Chapter 8xx will argue that the case and position of the object are directly related to situation aspect, i.e. Aktionsart.
I give a brief overview of the use syntacticians have made of the sort of event structure proposed by Pustejovsky.

Starting first with a Larsonian type VP, we see immediately that the V₂P seems to describe a resulting state. With a predicate such as ‘put the book on the table’, the resulting state is that the book is on the table. ‘The book’ is acting semantically as the subject of ‘on the table’. Larson even calls the Theme the inner subject (Larson 1988: 342). One way of assigning predicates to the V₁ heads is to assign the V the process reading, and assign V₂ the result reading.

This structure has much in common with work that came out of researchers in Leiden, led by Teun Hoekstra (Hoekstra 1988, 1992, Mulder 1992, Sybesma 1992). Hoekstra’s structure is given in (186) below (Hoekstra 1992: 163), and Sybesma’s in (187) (Sybesma 1992:55).

(185)

(186)
There is a lower constituent which represents the final state of an accomplishment and a higher V describing the action that led to the result. Sybesma includes an Ext(ent) Phrase between the two which will become important later.

Sometimes the head of this lower constituent is overt as in (188a) and sometimes it is covert as in (188b) (taken from Hoekstra 1992).

(188)a. John ate the cake.
    b. John ate the cake up.

Hoekstra writes ‘semantically, accomplishments are complex, consisting of an activity (or process) and an object that measures out the activity. This may be a single NP, or a SC. I want to propose that this semantic complexity is always mirrored by a syntactic complexity, whereby all accomplishments would have the structure in [(186)], with a dynamic verb governing a SC’.  

The phrase structure that I propose to represent event structure is the same structure that I have argued for on syntactic and morphological grounds, given below.  

---

30 Others that have a low constituent that represents the natural endpoint of an accomplishment are e.g. Higginbotham (2000), Snyder (1995).
31 Outer Aspect will have scope over the whole event.
This phrase structure is very similar to Sybesma’s except that ExtP is AspP. It has the flavor of an Extent Phrase, however, in that is in this position that the extent of the event is computed. The structure also represents the three parts of the event given in Moen’s sketch and Dowty’s semantic decomposition both repeated below.

(190)

Preparatory process  \underline{\text{culmination}}  consequent state

(191) \textbf{STATES:} \quad V (...) \\
\textbf{ACTIVITIES:} \quad \text{DO} \quad (... V (...) ) \\
\textbf{ACCOMPLISHMENTS:} \quad \text{DO} \quad (... V (...) ) \text{ CAUSE } \text{ BECOME } \quad ( V (...) ) \\
\textbf{ACHIEVEMENTS:} \quad \text{BECOME } \quad ( V (...) ) \\

V_1 is where the preparatory process of Moens and the DO of Dowty is encoded. Asp is the point where the culmination of Moens and the BECOME of Dowty will be encoded. V_2 represents the consequent state of Moens and the event name V of Dowty.

Some fine tuning is still required but we will do this as we relate this structure to Vendler’s typology of predicates. I return to the feature system which proved fairly successful not only in distinguishing the four situation types, but also creating supercategories that were targeted by the two tests that were discussed. The relevant
features are +/-process, +/-definite. The more commonly used term for +/-definite is
telicity. Given the discussion of Moens and Dowty, it is clear how to map the features to
the structure. Process is encoded in \( V_1 \) and telicity (+/-definite) is encoded in \( \text{ASP} \).

While some of the evidence for my proposals will have to wait until later chapters, I
outline the general direction of the typology here. We start with the feature +/-process.
This represented in \( V_1 \) and is what distinguishes Achievements and States on one hand
from Accomplishments and Activities on the other. Like many others (e.g. Noonan
1992), I take States to potentially have the simplest structure, perhaps simply a \( V_2 \). If this
is the case, it is easy to see why they do not encode a process. However, for a variety of
reasons that will come up in the course of the discussion, States may also be represented
by two VP shells. For example, I follow Noonan (1992) in analyzing transitive states,
states that assign accusative case, as containing a stative \( V_1 \) (\( \text{HAVE} \)). In order to encode a
process, the \( V_1 \) must be dynamic so even these States will not be +process. As will be
argued at length in Chapter 7xx, achievements may also contain a \( V_1 \), but again these are
stative \( V_1 \)'s, not dynamic. I save a longer discussion of the class of achievements until
Chapter 7 since deciding on the membership and crucial characteristics of this class in not
straightforward.

The +/-telic (definite) feature distinguishes accomplishments and achievements
from activities and states. This feature is a computed feature that appears in \( \text{ASP} \). We
have already seen various elements that enter into this computation such as the verb head,
the object, and the goal/result XPs. Importantly, all of these are merged into the structure
at the point where \( \text{ASP} \) has to be computed. External arguments famously do not enter
into this computation. This is what an Inner Aspect structure predicts. It is not the case
that all material within the domain of \( \text{ASP} \) adds to this computation, however, and this is
where the results of Chapters 2 and 3 become important. I claim that the material in the
logical object position, \( \text{SPEC} \), \( V_3 \text{P} \), is not visible for the computation of telicity. In order
for a Theme to be able to measure out a predicate,\(^{32}\) it must have moved to Spec, \( \text{ASP} \) (or,
perhaps, have entered into an \( \text{AGREE} \) relationship with \( \text{ASP} \)). A large part of my
argumentation has depended on the case assignment of the object. If objects stay in their

\(^{32}\) As is well known, some predicates such as \textit{push} require goal phrases to mark an endpoint. The Theme
itself cannot mark the endpoint.

draft: 8/10/06
merged position in the structure, they do not measure the event.\textsuperscript{33} ASP only has access to its own SPEC, its complements and the complements within its complements. The one constituent that is outside of this domain is the merged SPEC, \( V_2 \) position (the Theme) which does not enter into the computation.

(192) Computational domain of Inner Aspect

While it looks like the Theme is excluded in an ad hoc fashion, I believe it falls out from what is the event ‘spine’ which is basically the heads and the complements within the event domain. The only specifier allowed to play a role is the one that is in a checking relation with the event related head responsible for measuring, in other words the Spec, ASP.\textsuperscript{34}

Now we give a representation for each of Vendler’s verb classes. States will have two representations depending on whether the language has a \textit{HAVE}-type \( V_1 \) for transitive statives. The two representations are given below.

---

\textsuperscript{33} There is a problem here with the second object in a double object construction which do measure out the event (\textit{Mary gave the child books for two years} vs. \textit{Mary gave the child a book for two years}). Perhaps in the case of double objects, both DPs enter into an AGREE relation with ASP. This requires more research.
We will see this in more detail in the next chapter but Achievements also have two representations depending on whether they are transitive or not. Intransitive achievements like *arrive* have a double VP structure but $V_1$ simply encodes that the event is dynamic. Inner Aspect is represented by a feature $^+$TELIC. This specification will be the result of some computation of elements within the domain of Aspect. Transitive achievements the same $V_1$ as transitive states, but they have $^+$TELIC in ASP.\(^{35}\)

Now we look at the remaining two classes. In fact, these two will basically have the same structure. The difference will be only be in the final computation of ASP. In fact, we do not want to have very different structures for these two classes as the moving

\(^{34}\) I assume that $V_2$ always has a Spec and a complement. This is discussed in Chapter 8.

\(^{35}\) It may be that apparently single VP states are in fact also double VP states but with BE rather than HAVE in $V_1$. Later in this chapter we will see that Malagasy has a stative morpheme that appears in $V_1$ but which does not assign case.
back and forth between them is apparent both within languages and across languages. I start by giving the structures for both.\textsuperscript{36}

\begin{enumerate}[\textup{(195)}]
\item \textbf{ACCOMPLISHMENT}

\begin{itemize}
\item \textit{V} \textit{P}
\item \textit{V} \textit{P}'
\item \textit{V}
\item \textit{ASPP}
\item \textit{CAUSE}_{e}
\item \textit{ASP}
\item \textit{TELIC}
\item \textit{V}
\item \textit{P}
\end{itemize}

\item \textbf{ACTIVITY}

\begin{itemize}
\item \textit{V} \textit{P}
\item \textit{V} \textit{P}'
\item \textit{V}
\item \textit{ASPP}
\item \textit{CAUSE}_{e}
\item \textit{ASP}
\item \textit{V}
\item \textit{P}
\end{itemize}

\end{enumerate}

The Dowty-like operator in \textit{V} \textit{P} indicates the process quality of both of these classes. The specification of \textit{TELIC} in \textit{ASP} for an accomplishment indicates that the computation has that value. This similarity of representation allows the flexibility needed. As we see in the two examples below, activities become accomplishments and accomplishments become activities with shifts in +/-SQA specifications.

\begin{enumerate}[\textup{(196)}]
\item \texttt{Activity} $\rightarrow$ \texttt{Accomplishment}

- Mary pushed the cart down the road (*in 3 minutes/\checkmark for 3 minutes).
- Mary pushed the cart into the garage (\checkmark in 3 hours/*for 3 hours).

\item \texttt{Accomplishment} $\rightarrow$ \texttt{Activity}

- Mary built a cart (\checkmark in 3 hours/*for 3 hours).
- Mary built carts (*in 3 hours/for 3 hours).

\end{enumerate}

Note that in the representations given above, all four classes contain two VP shells. This is unlike views where unaccusatives and passives do not have a \textit{V} \textit{P} (or a little vP) (see Chomsky 2001) or activities do not have a \textit{V} \textit{P} (see Erteschik-Shir and Rapoport 1997). One reason for doing this is, as noted, there is a flexibility in the specification of

\textsuperscript{36} \textit{CAUSE}_{e} indicates an eventive cause. We will see a case of a stative cause in Chapter 7.
classes that now is determined more by features than by structure. We will see in Chapter 8 how cases of coercion may be simply cases of feature shift.

Another reason for having a complete VP structure for all four classes comes from the morphology of a language like Malagasy. I have claimed that the prefix an-, the lexical causative morpheme, is in $V_1$ (similar to pag- in Tagalog). If this is correct, then arguably two other morphemes also appear in $V_1$ — that stative prefix a- and the unaccusative prefix i-. We can see the similarity of distribution given below.

(198) a. m-an-/ala ‘to take out’ LEXICAL CAUSATIVE
b. m-a-/loto ‘to be dirty’ STATIVE
c. m-i-/ala ‘to go out’ UNACCUSATIVE

We also find these three morphemes act similarly with respect to another morpheme in Malagasy. In Chapter 3 I argued that the prefix m- is in E and in Chapter 7 I argue that the ha- prefix encodes telicity and appears in Asp. an-, a-, and i- appear between these two morphemes in the following forms.

(199) a. m-an-ha-/vrary ‘sick’ mankarary: to make sick
b. m-a-ha-/vala ‘to go out’ mahaala: to be able to take out
c. m-i-ha-/tsara ‘good’ mihatsara: to become better

If an-, a-, and i- are all in $V_1$, then we have a morphological argument that lexical causatives, statives, and unaccusatives all have two VP shells.

Next we turn to some remaining questions. One has to do with the position of Aspect, the other has to do with the nature of the object in Spec, Asp.

4.4.5 The position of Aspect

Aspect, in this view of event structure, is sandwiched between the two VP shells. One reason for doing this, already mentioned, is that the elements that are used to compute the Aktionsart of a predicate are all generated below this projection. This rules out in principle the contribution of the external argument. It is not the case that all elements in
the domain of ASP are part of the computation, but in order to be part of the computation, they must be part of this domain.

We have seen other event related arguments that Aspect should be within the VP. As noticed by many, the presence of accusative case marking is sometimes important to the computation of Aktionsart. The relationship between case and the aspectual verb class of the predicate will be explored more in Chapter 5. It will be shown, however, that even in languages with overt object shift, VP-internal DPs can enter the computation. Further, we have seen in Chapter 3, section 3.3, that these DPs can be shown to remain within the VP. The argument has been, then, that this derived object position which places elements in the appropriate configuration to enter the computation must be VP internal.

4.4.6 The power of Aspect

Now I turn to the large and difficult issue of the nature of the DP in Spec, ASP. There are two directions that this discussion can take. We can look at the types of objects that undergo object shift in various languages. We can also look at the effect that object shift has. I look at each of these in turn.

To truly arrive at an answer as to which objects move, a large cross-linguistic survey must be done using quite subtle semantics and pragmatic tests. Here I simply point out that the issues center on notions such as definiteness, specificity, old information, affectedness of the object, and dynamic nature of the predicate. These notions all have something to do with event structure. The difference between the SQA value of ‘books’ (-SQA) vs. ‘the books’ (+SQA) might be linked to specificity or definiteness. However, indefinite non-specific DPs can still be +SQA as in ‘Mary can read a book in one day’. An object must be affected in order to enter into the computation and only dynamic predicates can be measured. Ideally we will understand just how tight the connection is and how it can vary from language to language but at this point (to me at least) the range of generalizations is still not clear.

The second issue that was raised above involves the shifts in meaning that come with the shift in objects. It has been pointed out the certain objects that have arguably moved to object position come with a concomitant shift of meaning. This shift is always
in the same direction — the new object often is crucially the affected argument of the event. Several examples are given below.

(200) Possessor Raising constructions (Korean, from Yoon 2002)
   a. John-i Mary-lul phal-ul ttaeryessta
      John-NOM Mary-ACC arm-ACC hit
      ‘John hit Mary’s arm’

   b. * Na-nun Mary-lul phal-ul po-ass-ta
      I-TOP Mary-ACC arm-ACC see-PST-DECL
      ‘I saw Mary’s arm.’

(201) Double object constructions
   a. Mary taught French to the students (but they didn’t learn it).
   b. Mary taught the students French (*but they didn’t learn it).

(202) Benefactive constructions
   a. Mary baked a cake for the children/holidays.
   b. Mary baked the children/*the holidays a cake.

(203) Spray/load constructions
   a. Mary loaded the cookies into the box (but the box wasn’t full).
   b. Mary loaded the box with cookies (*but the box wasn’t full).

There are two ways to react to this observation. One could say that, since the meaning shifts, there must be a different underlying (merged) structure. As discussed earlier, I don’t see this as a necessary conclusion. The Katz-Postal hypothesis of the 60s assumed that transformations could not affect meaning, but current views are quite different, in fact nearly the opposite. Movements often affect meaning particularly in the computation of scope relations. The other reaction, then, could be that the shift of object creates a different computation at the interface level — not so much a shift in scope but a
shift in the computation of the event. Being a particular object of a particular predicate in
the specifier of a particular event related head forces this affected reading. For example,
in (200a) above, hit will affect the DP that is in SPEC, ASP, in this case Mary, in a specific
way. In (202b), since holidays cannot be affected in the appropriate way (become a
possessor), the structure is out. Granted, this view requires a fairly rich lexical entry.
Not only do we have to encode whether or not a verb enters into a certain relation with an
accusative marked DP, the verb must be able to distinguish between DPs. In (203), both
possible DPs can have the appropriate relation but depending on which DP has that
relation, a different entailment holds.

4.5 LANGUAGE VARIATION

We have just investigated event structure and Aktionsart using English as the
exemplifying language. Languages vary, however, in how they represent the different
predicate classes. These variations are important to study as they can provide evidence
for the syntactic building blocks that are used in the construction of the different classes.
Many researchers take it as given that accomplishments are, in some sense, very
straightforward. A basic transitive verb like ‘kill’ in English, while morphologically
simple is semantically and, for some, also syntactically complex. There is a Y is killing
activity followed by an X is dead state. In order to undo the final state, something extra is
added to strip off the endpoint. Generally the progressive viewpoint aspect can be added
(They were killing the ant). In many languages, however, while a perfective form of the
verb might imply the end result, this result is not entailed. In other words, the end result
is defeasible. In the rest of this section I present data from several such languages. There
are two goals. One is empirical — simply to acquaint the reader with the data. The
second is to situate such languages in the framework being presented here and to
speculate on the relevant parameter. Given that parameters are thought to be housed
either in the lexical inventory of in the functional category system of grammar, the aim is
to show a way in which this telicity parameter might likewise located.
4.5.1 Japanese

Several works have investigated the Aktionsart of Japanese predicates (e.g. Kindaichi 1976, McClure 1995, Uesaka 1996). There is one test that suggests that there is no separate class of accomplishments, but rather, accomplishments act variably like either achievements or activities. The test that is used is the suffixation of *te-iru*. As shown below, a *te-iru* construction yields a perfect of result reading with achievements and a progressive reading with activities (examples taken from Uesaka 1996: 5-6).

(204)a. ACHIEVEMENT (RESULTING STATE OF ACTION OR PROCESS)

Ki-ga taore-te-iru

tree-NOM fall-*TE-I-PRES*

‘Trees have fallen down (and they are on the ground now).’

b. ACTIVITY (CONTINUATION OF ACTION)

John-ga asob-te-i-ru

John-NOM play-*TE-I-PRES*

‘John is playing.’

With accomplishments, however, the reading of the *te-iru* construction is ambiguous between the progressive and the perfect of result (from Uesaka 1996: 17).

(205)a. John-ga hon-o yom-te-i-ru

John-NOM book-ACC read-*TE-I-PRES*

‘John is reading the book/John has read the book.’

b. John-ga hon-o kak-te-i-ru

John-NOM book-ACC write-*TE-I-PRES*

‘John is writing the book/John has written the book.’

---

37 In a sense, even with this test, accomplishments are a separate class. They are the class of predicates that can act either like activities or achievements.
This ambiguity also surfaces with activities that have become accomplishments through addition of a goal PP (from Uesaka 1996:18).  

(206)a. John-ga hashir-te-i-ru  
\hspace{.5cm}John-NOM run-\textit{TE-I-PRES}  
\hspace{.5cm}‘John is running.’  

b. John-ga gakkoo-ni hashir-te-i-ru  
\hspace{.5cm}John-NOM school-to run-\textit{TE-I-PRES}  
\hspace{.5cm}‘John has run to school/John is running to school.’  

This variability in behaviour shows up in other tests as well, but in a way that clearly sets Japanese accomplishments apart from Japanese activities and achievements. Uesaka uses three constructions to distinguish the activity, achievement, and accomplishment predicate classes. The first two tests are familiar from the discussion above. The predicates are modified by frame adverbials and duration adverbials. In the third test, the predicates are introduced as complements to the verb \textit{owar}- ‘finish’. As we see below, activity predicates may take frame adverbials but are odd with duration adverbials and as complements to \textit{owar}- while achievement predicates cannot take frame adverbials nor can they appear as complements to \textit{owar}-.

Further, they are odd with frame adverbials (from Uesaka 1996:33-36).  

(207) Activities

a. John-wa sanjikan hashir-ta  
\hspace{.5cm}John-NOM three.hours.for run-PST  
\hspace{.5cm}‘John ran for three hours.’

\textsuperscript{38} Uesaka notes that many speakers do not allow dative goal phrases with motion verbs in Japanese. In her dialect this is possible and she points out that such constructions are reported in the literature. I refer the reader to her thesis for details.

\textsuperscript{39} She also discussed the class of states which I do not discuss here.

\textsuperscript{40} Uesaka (:35 fn. 23, 24) points out that (207b) and (207c), like in English, can be made grammatical if there is an implicit endpoint added by context or the preparatory stages are targeted in the case of (207b).
b. ? John-wa sanjikan-de hashir-ta
   John-NOM three.hours-in run-PST
   ‘John ran in three hours.’

c. ? John-wa hashir-owar-ta
   John-NOM run-finish-PST
   ‘John finished running.’

(208) ACHIEVEMENTS

a. * Saifu-wa sanjikan pocket-kara ochi-ta
   wallet-TOP three.hours.for pocket-from fall-PST
   ‘*The wallet fell from the pocket for three hours.’

b. ? Saifu-wa sanbyoo-de pocket-kara ochi-ta
   wallet-TOP three.seconds-in pocket-from fall-PST
   ‘The wallet fell from the pocket in three seconds.’

c. * Saifu-wa pocket-kara ochi-owar-ta
   wallet-TOP pocket-from fall-finish-PST
   ‘The wallet fell from the pocket in three seconds.’

Accomplishment predicates behave differently from Japanese Achievements and Activities, but also unlike English accomplishment predicates in that they appear with both frame and durative adverbials. Like English accomplishment predicates, they also can be complements to the ‘finish’ predicate (from Uesaka 1996:38-39).

(209) ACCOMPLISHMENTS

a. John-wa sanjikan tegami-o kak-ta
   John-NOM three.hours.for letter-ACC write-PST
   ‘John wrote the letter for three hours.’
b. John-wa sanjikan-de tegami-o kak-ta
   John-NOM three.hours-in letter-ACC write-PST
   ‘John wrote the letter in three hours.’

c. John-wa tegami-o kak-owar-ta
   John-NOM letter-ACC write-finish-PST
   ‘John finished writing the letter.’

The table in (210) below summarizes these findings. We can see that the three classes are distinguishable and further, as the shaded area shows, that Japanese accomplishments are different from English accomplishments. This is the distinction that I want to concentrate on here.

(210)

<table>
<thead>
<tr>
<th></th>
<th>ACTIVITIES</th>
<th>ACHIEVEMENTS</th>
<th>ACCOMPLISHMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>DURATION</td>
<td>√</td>
<td>*</td>
<td>√</td>
</tr>
<tr>
<td>FRAME</td>
<td>?</td>
<td>?</td>
<td>√</td>
</tr>
<tr>
<td>finish VP</td>
<td>?</td>
<td>*</td>
<td>√</td>
</tr>
</tbody>
</table>

It seems that Japanese accomplishments are different from English accomplishments in that their inherent endpoint isn’t a necessary part of their meaning. We know that there can be an endpoint since this endpoint is what allows the use of the frame adverbial and the selection by ‘finish’. The optional lack of the endpoint, as suggested by the licit use of the duration adverbial, is what is interesting. It is also the optional lack of the endpoint which explains why the progressive reading is possible with accomplishments — the only choice with activities. Uesaka also provides more direct evidence that the endpoint is not necessarily part of the meaning of an accomplishment predicate by showing that what is an entailment in English is merely an implicature in Japanese. This difference accounts for the impossibility of (211a) and the possibility of (211b) (adapted from Uesaka 1996:82).
In terms of the type of event composition that has been discussed above, we can assume that Japanese accomplishments optionally have the low endpoint head proposed by Hoekstra. More specifically, let us say that English accomplishments include an endpoint in their meaning. I place this endpoint (as e.g. in Hoekstra 1988 and Snyder 1995) low in the structure. The resulting computation of ASP will capture this endpoint. Japanese accomplishments would represent this endpoint only optionally.\(^{41}\) This will be reflected in the computation of ASP. If the endpoint is present, ASP will be +telic and the construction will pattern with the other +telic class, achievements. If the endpoint is not present, ASP will be computed as –telic, and the construction will pattern with the other (dynamic) –telic class, activities. Below we see that this type of accomplishment class is not unusual and exists in a range of language families.

### 4.5.2 Chinese

It has been pointed out that Chinese (Mandarin) is also a language in which accomplishment predicates do not entail their inherent endpoints.\(^{42}\) Tai (1984) gives the following examples to show this. Like in Japanese and unlike in English, the endpoint is defeasible as shown in (212a). In order to insist on the achievement of the final point, a resultative V-V compound can be formed as in (212b) (adapted from Tai 1984: 291).

\[(212)\]
\[
a. \quad * I \text{ boiled the water but it didn’t boil.} \\
b. \quad \text{Wakashi-ta } \text{keredo wakanakatta} \\
\quad \text{boil.}\text{TRANS-PST though boil.}\text{INTRANS.NEG.PST}
\]

\[^{41}\text{I suggest that there is always a complement to } V_2 \text{ and it is the specification of this endpoint that encodes the telicity of these predicates. It might be that these zero complements are vague for Japanese accomplishments or ambiguous between being telic (like } P \text{ to}) \text{ or atelic (like } P \text{ toward).}\]

\[^{42}\text{Chinese will be discussed more in Chapter 8. Interested readers should also look at a paper by Soh and Kuo (to appear) where it is shown that some predicates are telic.}\]
b. *Zhangsan sha-si-le Lisi liangci, Lisi dou mei si
   Zhangsan kill-die-PERF Lisi twice Lisi NEG die
   ‘Zhangsan killed Lisi but Lisi didn’t die.’

It is important to point out that this is very different from the system found in Slavic languages where the bare form of the verb encodes imperfective meaning. The distinction in Japanese and Chinese is not an imperfective vs. perfective distinction. In these languages, the first interpretation of the bare verb form is the telic interpretation. The implicature is that the endpoint has been reached. Further, both languages have a system of outer aspectual distinctions, viewpoint aspect distinctions, that work independently of this system of telicity. Now we turn to a very different language family which shows a similar variability in the Aktionsart system.

4.5.3 Tagalog and Malagasy

Like Chinese and Japanese, both Tagalog and Malagasy have atelic accomplishments. The facts of Tagalog are clearly presented in Dell (1983). Using terminology from Schachter and Otanes (1972), Dell discusses a productive alternation of verbs forms in Tagalog. Verbs may come either in the neutral form (N) or in the Ability and Involuntary Action form (AIA or A). As the label suggests, the neutral form is most commonly used but, like the cases of the languages discussed above, the natural endpoint of such a form is implied but not entailed. A typical example taken from this article is given below (Dell 1983:185). The relevant verb forms are indicated as being either N or A otherwise the glossing is done to be consistent with other Tagalog examples in this book.

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43 I continue to call these accomplishments though, in fact, they are not necessarily telic. They are distinguishable as a class, however, since the first reading is telic, unlike the interpretations of activities in these languages.
‘He sucked at the coconut milk, but the straw was blocked and nothing came (into his mouth).’

While the English translation given is modified to make sense in English, a more accurate translation would be something like ‘He aspirated the coconut milk but the straw was blocked so he didn’t (succeed in) aspirate(-ing) (it)’.

Not surprisingly, Malagasy, a related language, has a similar alternation. This alternation will become the focus of much of Chapter 7 so I just introduce the issue here. The examples below provide the same contrast that was seen in Tagalog. Again this is a productive alternation, again the natural endpoint of the event is part of a conversational implicature, but not entailed. The ‘neutral’ verb form is given in (214a) and (214b) shows that the endpoint is defeasible. When the verb is affixed with aha-, however, the end result is entailed as (215b) shows.

(214) MALAGASY

<table>
<thead>
<tr>
<th>a. nisambotra</th>
<th>ny alika ny zaza</th>
<th>b. ... nefa faingana loatra ilay alika</th>
</tr>
</thead>
<tbody>
<tr>
<td>PST. I. captive</td>
<td>DET dog DET child</td>
<td>but quick too that dog</td>
</tr>
<tr>
<td>‘The child caught the dog.’</td>
<td>‘... but the dog was too quick.’</td>
<td></td>
</tr>
</tbody>
</table>

(215) a. nahasambotra     | ny alika ny zaza | b. *.... nefa faingana loatra ilay alika |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>PST. A. HA. captive</td>
<td>dog DET child</td>
<td>‘... but the dog was too quick.’</td>
</tr>
<tr>
<td>‘The child caught the dog.’</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4.5.4 The telicity parameter

We have seen several languages from several language families that encode telicity in quite a different way from English and other well-studied languages. Endpoints have become definitional in determining aspectual predicate classes — achievements and accomplishments must be telic. What would be translated as accomplishments in Japanese, Chinese, Tagalog, and Malagasy, however, are not necessarily telic in their unmarked form. Importantly, however, they have some sense of telicity. The endpoint is strongly implied. In an attempt to make translations more accurate, one could use, for the neutral forms, the progressive ‘The child was catching the dog’, or add other additional information ‘The child set out to catch the dog’, ‘The child intended/tried to catch the dog’ but these are at best silent about the successful completion or worse carry a strong implicature that the completion was unsuccessful.

What appears to be different about these languages is that the verb itself is lacking (or only optionally has) whatever it takes to designate the natural endpoint. In other words, English catch is, in fact, $\sqrt{\text{catch}}$-telic while Malagasy misambotra is $\sqrt{\text{catch}}$ (+telic). Now the question is how this telicity is represented. I set out two possibilities. Which one is preferable depends more generally on where one assume the telicity value of the verb is encoded. It could be part of the meaning of the root. The root catch contains this information. An alternative is that the larger lexical entry, the one that can be spread through the various heads of the L-syntax domain, the E-word, contains a zero head that encodes telicity. Now another set of questions can be asked involving which head encodes telicity. This head could be located in the PP complement position. This would be similar to a Hoekstra/Snyder view. This head could be located in ASP where telicity is computed. The various positions of telicity is the topic of the first half of Chapter 7 so I leave a continuation of the discussion until then.

4.6 CONCLUSION

The issues raised in this chapter are large ones, and ones require more breadth and depth of study before they can be confidently given an account. One of my goals was to show that the basic phrase structure set up in Chapters 2 and 3 finds a correlation with event structure phenomena. The link between the semantics and the syntactic and
morphological representations of this semantics can be made quite direct. Further, I argue that all three components converge on having Aspect appearing internal to the VP. The other of my goals was to set up the framework needed to discuss the phenomena that are investigated in the remaining chapters. In Chapter 5 I investigate the interaction of both situation aspect and viewpoint aspect and the form of the direct object. In Chapter 6, I outline a view of the lexicon that allows, within a predetermined domain, access to both the lexicon and syntax. In Chapter 7 I look more closely at the particular make-up of achievements and in Chapter 8 I examine various places within the VP that endpoints can be represented and I suggest a syntactic representation for coercion facts.

The rest of the proposals are based on certain assumptions that I outline here. Two basic ideas are taken from de Swart (1998). One is that there are various layers of aspectual computation and the second is that, in spite of these many layers, there is still a two-way partition between situation aspect and viewpoint aspect. I give syntactic content to these claims by computing situation aspect (Aktionsart) within the VP and viewpoint aspect VP externally. The layering of the computation can occur in both domains with the hierarchy of computation is determined by the hierarchy of the syntactic heads. With these assumptions laid out explicitly, we turn to the final four chapters.