

Explorations in Semantics

Structuring Events

Susan Rothstein

Structuring Events

A Study in the Semantics of Lexical Aspect

Susan Rothstein

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Explorations in Semantics

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Preface

This book grew out of two unanswered questions and one observation that I was left with when I was finishing writing *Predicates and their Subjects* (Rothstein 2001a). First, I knew that I had argued for a syntactic analysis of resultative predication, and for a mechanism for interpreting that structure, but that I had said nothing about what it meant, and, in any case, my theory of predication did not deal very elegantly with the question of intransitive resultatives such as *sing the baby asleep*. Secondly, while developing an analysis of progressives of *be* + AP in the last chapter of the book, I had begun by making the general assumption that achievements did not occur in the progressive – although there are, of course, exceptions. However, when I looked more closely at the data, I saw that there were so many exceptions that a general assertion that achievements did not occur in the progressive just could not be maintained. So what was going on with progressive achievements still had to be made clear. The observation, which I had written about but not explored in any depth, was that there existed homogeneous count nominals such as *fence*, *wall* and *lawn*. At the time, the summer of 1997, I had no idea that the three issues would come together in what would turn out to be a theory of lexical aspect.

I began thinking about progressive achievements in the fall of 1997, and gave a number of talks at which I began to develop the idea that the progressive operator applied to a VP headed by an achievement forces a type shift in the VP and results in an accomplishment into which the meaning of the achievement is incorporated. The fact that my work on aspect grew from there into this book is due to various circumstances and people who I want to thank here. Ewald Lang, Catherine Fabricius-Hansen and Claudia Maienborn invited me to speak on secondary predication at the Oslo Conference on Adjuncts which they organized in the fall of 1999, and this forced me to sit down and think about resultatives, and how resultatives can be analyzed as triggering a type-shifting operation from activities into derived accomplishments. My friend Paula Pranka-Neimitz, who had written her dissertation together with me at MIT, sat me down at her kitchen table one morning when I was visiting her in Germany in February 2000 (while her boys were entertaining my daughter) and asked me what I was working on, and by the time I had finished explaining

it to her, the parallelism between type-shifting from achievements to accomplishments and from activities to accomplishments had become clear. Then Fred Landman pointed out in the question period, when I presented the results on resultatives at the Tel Aviv Department colloquium in the spring of 2000, that the incremental structures I was using to try and constrain the distribution of resultative predicates were very similar to those I was using to restrict the distribution of progressive achievements. From there, the step to working on a theory of accomplishments and incrementality, and then onward to lexical classes, was obvious. It was not until later, when I came to think in detail about the relation between lexical classes and telicity, that I began to distinguish between singular and atomic events, and then the relevance of the comparison with the homogeneous count predicates allowed me to pull the whole thing together. This is also probably the place to acknowledge my intellectual debt to a number of published works which helped me enormously in understanding what lexical aspect is. Outstanding among these are David Dowty's book *Word Meaning and Montague Grammar* (1979), Manfred Krifka's papers on telicity (especially his 1992 and 1998 papers), Fred Landman's 1992 paper on the progressive, and Hans Kamp's two papers on the logic of events (1979a and b). The influence of these last two on this book is less obvious because in the end I deleted a long discussion of foundational issues from the last chapter, to be written up (I hope) and published separately. But the effect on my thinking was no less important because of that.

The book begins with a critical overview of Vendler classes and some of the most central concepts in theories of aspect, including quantization, cumulativity, stages, telicity and atelicity. Chapters 2 and 3 provide in-depth case studies of two constructions which make use of operations of lexical shift. Chapter 2 discusses progressive achievements, where the progressive applied to an achievement-headed VP shifts the VP from an achievement predicate to an accomplishment whose culmination is in the denotation of the achievement. Chapter 3 analyzes resultative predicates which can appear with activity verbs, and trigger a shift from an activity to an accomplishment reading. I argue that both constructions provide evidence that there are such things as "accomplishment structures," and chapter 4 provides an account of what an accomplishment is. I argue against Krifka's claim that what is special about an accomplishment is that it has an "incremental" or gradual relation with its theme, and I show that what characterizes an accomplishment is that it consists of an activity which is incrementally related to a gradual change of state, and give a precise characterization of what incrementality is. In chapter 5, I show how the theory of incrementality allows us to explain how the derived accomplishments analyzed in chapters 2 and 3 work. Chapters 6 and 7 analyze telicity. I show that while lexical aspect is a property of verbal heads, telicity and atelicity are properties of VPs. We see that a theory of telicity based on Krifka's notions of quantization and cumulativity does not work. Instead, I argue that the distinction between telic and atelic VPs is based on a distinction between atomic sets (sets where a unique criterion for individuating atoms is given) and singular

but non-atomic sets, which turn out to be homogeneous. Chapter 8 pulls together the issues in the book, presenting a general theory of lexical aspect, in which aspectual classes constrain the way in which events can be individuated.

Various parts of the book have been presented at conferences and seminars, and I would like to thank the audiences for very helpful comments (and in many cases the organizers for forcing me to give the talks). The progressive paper was presented at the seminar of the Formal Semantics Group at the Jerusalem Institute for Advanced Studies in the fall of 1997, the Tel Aviv Department colloquium in the spring of 1998, the 14th annual meeting of the Israel Association for Theoretical Linguistics held in Be'er Sheva in June of 1998, the Bergamo Conference on Tense and Aspect also in June 1998, and at the Workshop on Aspect at the University of Tübingen in the fall of 1998. I am particularly grateful to Andrea Bonomi for comments on the version presented at the Bergamo conference which made me think much more carefully about issues in the semantics of accomplishments. An earlier version of chapter 2 of this book, based on these talks, has been accepted for publication in a volume edited by Jim Higginbotham, Fabio Pianesi, and Alessandra Giorgi. The talk on which chapter 3 is based was originally presented at the Oslo Conference on Adjuncts in the fall of 1999, at the Tel Aviv Department Colloquium and at the 16th annual meeting of the Israel Association for Theoretical Linguistics at Tel Aviv in 2000. A very early version of chapter 3 appeared in E. Lang, C. Fabricius-Hansen, and C. Maienborn (eds.), *Papers from the Oslo Conference on Adjuncts* (ZAS Papers in Linguistics 17), and a revised version of this appears in the *Handbook on Adjuncts*, with the same editors (2003). Manfred Krifka's comments on versions of these papers were most helpful.

Parts of chapters 4 and 5, containing the theory of accomplishments, were presented in a workshop on predication at ZAS in Berlin and at the Paris conference on Tense and Aspect, both in the fall of 2000, at a colloquium at ZAS in February 2001, at an ISF-sponsored workshop on Aspect in Be'er Sheva in June of 2001, and at the Trondheim seminar on Predication in the fall of 2001. A very early version of part of chapter 4 appears as "What are Incremental Themes?" in G. Jaeger, A. Strigin, C. Wilder, and N. Zhang (eds.), *Papers on Predicative Constructions* (ZAS Papers in Linguistics 22). A paper related to some of this material will appear as "Derived Accomplishments and Lexical Aspect" in J. Guéron and J. Lacarme, *The Syntax of Time*, to be published by MIT Press. I presented much of this material at a course I taught at the LOT winter school in Leiden in January 2002. I spent the academic year 2001–2 on sabbatical as a guest of the Institute of Linguistics at Utrecht (UiL–OTS), and I thank my colleagues there for their hospitality. During that year, I presented what turned into chapter 8 at UiL–OTS, at the University of Paris VII, at the University of Groningen, and at the University of Stuttgart.

Various people commented on parts of the manuscript, and I would like to thank them. In particular, I'd like to thank Hana Filip for discussions and comments on chapters 1 and 4, and Hans Kamp for discussions of the material in chapters 6–8. While I was at Utrecht, I enjoyed conversations with Kriszta

Sendroi and Anna Mlynarczyk. At Bar-Ilan, I have learned much about aspect from my students, especially Pavel Braginsky, Anna Anikaev, Dafna Yitchaki, and Irena Shpinel, and from my colleagues Yael Greenberg and Gabi Danon, all of whom met early in the morning (too early) to discuss aspect. Anita Mittwoch, Sally McConnell-Ginet, my colleagues Joel Walters and Jonathan Fine, and my brother Joe Rothstein were all valiant in supplying judgements, usually via email. Fred Landman has discussed many of the issues in this book with me and commented on various drafts in various forms, and his insight and comments have been invaluable.

References to my daughter Dafna in the examples, and the surrounding discussion, should not just be taken as cuteness. Accompanying a child in the early years of her life when she is learning and acquiring all sorts of skills (such as walking, reading, and skipping) provides a unique opportunity to look in “slow-motion” at what an event actually does consist of and what kind of events normally fall in the denotations of common lexical predicates. Taking the time to look at what these events actually comprise turned out to have a considerable effect on how I began to think about what event individuation and event classification actually are. So in a very real way Dafna has accompanied this book since its inception, and although I have never really understood what it means to say that an academic book is “for” someone (after all, I wrote it because I wanted to), there is nonetheless a sense in which this book is for her, with love.

S. R.

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Chapter 1

Verb Classes and Aspectual Classification

1.1 Introduction

This book is about lexical aspect. Aspect traditionally concerns itself with what Comrie (1976) calls “different ways of viewing the internal temporal constituency of a situation” (pp. 3, 5). The intuition behind this definition is that while tense relates the temporal location of a situation or “eventuality” to some other temporal reference point such as the time of utterance, aspect is concerned with the structural properties of the event itself. Within the study of aspect, linguists make a distinction between grammatical and lexical aspect. Some people take this to be a formal distinction between aspectual properties expressed by a grammatical category and/or characterized by a particular inflectional morphology (for example the French *imparfait* or the *passé simple*), and aspectual distinctions which are lexicalized or characterized by derivational morphology or which are not characterized morphologically at all. However, the distinction I am interested in here is not formal but semantic, and is more or less the distinction formulated by Smith (1991) as a distinction between situation aspect and viewpoint aspect (see also Filip 1993, 2000, and the discussion on the distinction between “telic” and “perfective” in Bertinetto 2001). Lexical aspect, sometimes called “Aktionsart” and corresponding to Smith’s situation aspect, covers distinctions between properties of event-types denoted by verbal expressions, which linguists have tried to capture by classifying verbs into verb classes. Grammatical aspect, in particular the contrast between perfective and imperfective, concerns the distinction in perspective on events, or Smith’s “viewpoint aspect.” (1) shows a contrast in lexical aspect between a state and an accomplishment, while (2) shows a contrast between an imperfective and perfective use of the verb *built* (where the imperfective can be naturally replaced by the progressive):

- (1)a. Mary *loved* John very much. (*state*)
b. Mary *built* a house. (*accomplishment*)
- (2)a. He lived in a hotel while he *built/was building* the house. (*imperfective*)
b. He *built* the house and then sold it for profit. (*perfective*)

This book is concerned with lexical aspect and the properties we can ascribe to event types in the denotations of particular lexical items. I assume that the events in the denotation of *build a house* have essentially the same properties whether the expression is used imperfectively or perfectly, and that it therefore makes sense to ask what these properties are. The interaction of lexical aspect and grammatical aspect is an important and fascinating question (see, for example, Smith 1991), but it is beyond the scope of this book.

A number of questions stand at the center of the study of lexical aspect. First are aspectual properties, properties of linguistic expressions or of events “in the real world.” Aristotle’s original discussion of the aspectual distinction between “kinesis” (movements) and “energia” (actualities), both in the *Metaphysics* 1048 and in the *Nicomachean Ethics* 1074, naturally reads as a characterization of kinds of actions, rather than expressions. He contrasts actions which are complete in themselves (energia) and classified as atelic, such as seeing and thinking and being happy (roughly what we call states and activities), and actions which are inherently incomplete and which are directed towards an end, such as building a house or learning a poem, which we call accomplishments and classify as telic. Much recent linguistic work has stressed that aspectual distinctions are distinctions between linguistic expressions and are not properties of events in themselves. Thus Krifka (1998) writes:

it is misleading to think that a particular event can be called “telic” or “atelic”. For examples, one and the same event of running can be described by *running* (i.e. by an atelic predicate, or by *running a mile* (i.e. a telic, or delimited, predicate). Hence the distinction between telicity and atelicity should not be one in the nature of the object described, but in the description applied to the object. (p. 207)

While linguists have continued to talk as if aspectual properties are properties of entities “out there” in the world (see, for example, Bach 1981, 1986, and Parsons 1990, chapter 3), the idea that aspectual properties are properties of event descriptions, or of events under a particular description, is supported by the theory of fine-grained event individuation argued for in Parsons (1990) and Landman (2000). They argue that events are only individuable under particular descriptions, and do not have any inherent atomic structure themselves (see also Partee 1999 and Filip 1993). On the other hand, a strong argument in favour of a theory in which events themselves have properties comes from Kamp (1979a,b), who argues that *change* is a primitive concept, and that the distinction between static events and events of change is a primitive distinction in any theory. That a particular collection of real world “happenings” can be described by both telic and non-telic expressions is undeniable, and I shall assume that lexical aspect deals with properties of linguistic expressions. However, we will come back to the challenge of Kamp’s theory in chapter 8, where we will discuss what the basis of aspectual classification is.

A separate but related issue concerns the nature of lexical aspectual classifications. Vendler (1957, 1967) showed that a classification into states, activities, achievements and accomplishments is very useful in terms of predicting the linguistic behavior of verbal predicates, and it is this classification which has become most influential over the last 35 years. But are lexical classes just accidental generalizations over properties of lexical items, or are they constraints on possible meanings, and if the latter, where do they come from?

A third set of issues concerns the relation between the telic/atelic distinction and the classification of predicates into lexical aspectual classes, and the related issue of at what syntactic "level" the classifications should apply. Intuitively, states and activities are atelic, as they do not involve changes of state, whereas achievements and accomplishments are telic. Does this mean that verb classes just subdivide the telic/atelic groups one stage further? And is it verbs or Verb Phrases which should be so categorized anyway? It was Verkuyl (1972) who pointed out that accomplishment verbs such as *build* differ in telicity depending on the properties of their direct objects. *Build* normally heads a telic VP, but it heads an atelic VP when it has a bare plural or mass nominal as a direct object. "Telic" *build* can be modified by *in α time*, while "atelic" *build* is naturally modified by *for α time*. If a verb is an activity, the properties of the direct object do not affect the telicity of the VP:

- (3)a. Mary built two houses *for an hour/in an hour.
- b. Mary built houses for a week/*in a week.
- (4)a. John pushed the cart for an hour/*in an hour.
- b. John pushed carts for an hour/*in an hour.

Some (e.g., Dowty 1979) have taken the data in (3) to mean that it is really VPs that should be classified as accomplishments or activities. This position is strengthened by the contrast between (4) and (5), where *push* also heads a telic VP:

- (5) John pushed the cart a mile/to the edge of the park in an hour/*for an hour.

Verkuyl himself has argued (Verkuyl 1972, 1993) that the data in (3–5) shows that it is minimally VPs which should be classified as telic and atelic, and that there is good evidence that telicity is really a property of sentences. This is because of sentences such as (6), where the properties of the subject nominal determine the telicity of the sentence:

- (6)a. John discovered the secret room in a few weeks.
- b. Children have been discovering that secret room for generations.

Verkuyl claims, more strongly, that classification into Vendlerian verb classes is linguistically irrelevant, and that the only relevant question is how the

aspectual properties of the VP are derived compositionally. He argues that verbs can be classified essentially into dynamic or non-dynamic (what he calls [\pm ADD ON]), and that nominals are classified according to whether or not they determine a specified quantity [\pm SQA]. VPs denote stative eventualities when the V is [$-$ ADD-ON] and the nominal is [\pm SQA]. Atelic VPs are derived when the V is [$+$ ADD-ON] and the nominal is [$-$ SQA], and telic VPs are derived when the V is [$+$ ADD-ON] and the nominal is [$+$ SQA]. He claims explicitly that any more fine-grained aspectual classification of verbal heads is linguistically irrelevant. This gives a classification into states, activities and accomplishment VPs, making no reference to achievements, and treating lexical classes as by-products of the theory, rather than theoretical entities in themselves.

In this book, I am going to argue against this position. I assume that events are countable entities which are individuable, relative to a particular description. Verbs denote sets of events and are classified into lexical classes depending on the properties of the events in their denotations relative to that particular description. I shall assume, following Parsons (1990) and Landman (1995, 2000), that verbs denote sets of events or an event (or eventuality) type, and that thematic roles denote functions from sets of events to their participants; and we can thus talk of the event-type denoted by V as showing the properties which determine the lexical class of the V.

I will argue in the course of the book that lexical aspectual classes are not generalizations over verb meanings, but sets of constraints on how the grammar allows us to individuate events. Telicity and atelicity are properties of verb phrases, and the status of the VP with respect to telicity will depend on the interaction of the meaning of the V with other elements in the VP. It will follow from the meaning (or properties) of an accomplishment that the structure of its direct object will determine whether it heads a telic or atelic VP, and it will follow from the meaning of the activity that a VP consisting only of an activity V+direct object will always be atelic regardless of the properties of that direct object. Certain measure and directional phrases, though, can make such VPs telic. This is essentially the standpoint taken by Krifka (1986, 1989, 1992, 1998) but I shall differ from him over what constitutes the relevant properties of accomplishments. I show why we can expect bare plural subjects to affect the telicity of achievement VPs in the same way that bare plural direct objects affect telicity of accomplishments; the atelicity of (6b) comes from the same sources as the atelicity of (3b).

These theoretical claims require an account of what the properties of the lexical aspectual classes are, so that we can explain how they interact with arguments and modifiers to get the effects in (1)–(6), and in order to explain how apparent movement between lexical classes is possible. The aim of this book is to give an account of the semantic basis of the lexical classes and to support the claims made in the previous paragraph.

The structure of the book is as follows. This chapter gives an introduction to the well-known linguistic properties of verb classes and the semantic

properties which are assumed to underlie them, in particular homogeneity, cumulativity and quantization. We identify states, achievements, activities, and accomplishments, as well as a fifth class, semelfactives. Chapters 2 and 3 provide in-depth case studies of two constructions in English in which we get aspectual shift: operations in which a VP headed by a verb from one aspectual class denotes a set of events in a different verbal class. In the first case, progressive VPs are headed by achievement verbs. This is intuitively problematic since it makes little sense to talk of near punctual events as being “in progress,” and there are indeed achievements which cannot naturally appear in the progressive, such as (7a,b). However, (7c) and (7d) are perfectly acceptable and the question is how:

- (7)a. #John is spotting his friend.
- b. #Mary is noticing that it is raining.
- c. The tram is arriving at the tram stop.
- d. We are reaching the mountain top.

The second construction is the resultative construction, illustrated in (8), where an atelic activity verb heads a VP which can be telic when a resultative predicate is added:

- (8)a. Mary hammered the metal for an hour/*in an hour.
- b. Mary hammered the metal flat *for an hour/in an hour.
- c. John sang for an hour/*in an hour.
- d. John sang the baby asleep *for an hour/in an hour.

The data in (7/8) could be taken as evidence against assigning verbs to particular aspectual classes, but I argue against this conclusion and show that the original lexical head is incorporated, with its original meaning, into a derived accomplishment. These case studies will be of central importance to the theory: the fact that there are shifting operations into accomplishment structures is evidence that lexical classes are not accidental generalizations over lexical meanings, but are independently characterizable templates, or schemas, which constrain lexical meanings. In chapter 4, I present a theory of the structure of accomplishments, and in chapter 5 I show how this supports the shift operations postulated in chapters 2 and 3. Chapters 6 and 7 discuss telicity. I argue against Krifka’s account of telicity in terms of quantization *vs.* cumulativity, and show that telicity is not about being able to calculate the endpoint of an event in VP, but about being able to identify the atoms in VP and thus being able to count them. Chapter 8 returns to the question of where the aspectual classes come from. I argue that the aspectual classes constitute a set of constraints on what eventualities are linguistically individuable, and draw some general conclusions about what a theory of aspect based on the results in this book should look like.

1.2 Aspectual Classes of Verbs

1.2.1 The four aspectual classes

The classic twentieth-century philosophical sources for classifying verbs into aspectual classes are Ryle (1949), Vendler (1957, 1967), and Kenny (1963). Ryle crucially distinguished between achievements and accomplishments; accomplishments are changes of state which have some “task” associated with them, whereas achievements are changes of state without such an associated task – in other words the bare change of state itself. Kenny ignores Ryle’s distinction and concentrates on the differences between states, activities and performances, where performances are events which have a natural endpoint. He is concerned mainly with accomplishments, but tacitly he would probably categorize achievements as performances. It is Vendler’s (1957) four-way classification into states, activities, achievements, and accomplishments, encompassing both Ryle’s and Kenny’s intuitions, which has proved most fruitful and relevant for linguistic research, and which provides the basis for Dowty’s seminal semantic analysis (1979). This is the classification which I will present below. Smith (1991) adds a fifth class, semelfactives, which I will largely ignore here, but these will come into their own and play a crucial role in the theory of why we have the lexical classes we do, which I will present in chapter 8.

Dowty (1979) discusses and develops Vendler’s (1957, 1967) classification of verbal predicates into four different classes according to their logical entailments, interactions with temporal modifiers, and interaction with tense. The account I present here draws heavily on his discussion.

The four-way classification is into **states**, **activities**, **achievements**, and **accomplishments**. Crudely, states are non-dynamic situations, such as *be happy* or *believe*; activities are open-ended processes, such as *run*; achievements are near-instantaneous events which are over as soon as they have begun, such as *notice*; and accomplishments are processes which have a natural endpoint, such as *read the book*. Further examples from Dowty are given below:

States	Activities	Achievements	Accomplishments
<i>know</i>	<i>run</i>	<i>recognize</i>	<i>paint a picture</i>
<i>believe</i>	<i>walk</i>	<i>spot/notice</i>	<i>make a chair</i>
<i>have</i>	<i>swim</i>	<i>find/lose</i>	<i>deliver a sermon</i>
<i>desire</i>	<i>push a cart</i>	<i>reach</i>	<i>draw a circle</i>
<i>love</i>	<i>drive a car</i>	<i>die</i>	<i>recover from an illness</i>
<i>understand</i>			<i>build a house</i>
<i>be happy</i>			

Dowty (1979, chapter 3) discusses a number of problems with this classification, and revises and refines some of the distinctions, including subdivisions into verbs which do and verbs which do not have agentive subjects. But while we will be concerned (in chapter 8) with some of the problems which he