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Events and Event Talk
An Introduction

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1. Preamble

We speak of actions and other events with the same easiness with which we speak of people and other objects. We say of John that he is bright and of Bill's lecture that it is boring. We say of John's father that he is taller than Bill's and of John's life that it is better than Bill's. We say of Clark Kent that he is Superman and of Clark Kent's death that it is the death of Superman. The pervasiveness of this talk does not by itself imply that there are such things as events—that events are to be included in an inventory of the world over and above people and material objects. But one can hardly question that some theory of events is needed if one is to make sense of such talk at all. Moreover, we often speak in such a way as to suggest—implicitly—that we are talking about events. We say that Brutus stabbed Caesar with a knife. If this statement is taken to assert that a certain three-place relation obtains among Brutus, Caesar, and a knife, then it is hard to explain why our statement entails that Brutus stabbed Caesar (a statement that involves a different, two-place relation). But if we take our statement to assert that a certain event occurred (namely, a stabbing of Caesar by Brutus) *and* that it had a certain property (namely, of being done with a knife), then the entailment is straightforward. Again, these reasons do not constitute a proof that there are such entities as events. But if we are interested in an account of how it is that certain statements mean what they mean, and if the meaning of a statement is at least in part determined by its logical relations to other statements, then one can hardly ignore the relevance of facts such as these.

In the last five decades, these considerations have been the focus of considerable debate among philosophers, as well as among linguists and logicians.[1] Especially since the publication of Donald Davidson's (1967b) article 'The Logical Form of Action Sentences', it has been generally agreed that a great many natural language phenomena can be explained if (and—according to some

authors—only if) we make room for logical forms in which reference to or quantification over events is genuinely admitted. Nominalization, adverbial modification, tense and aspect, factives, anaphora, plurals, naked infinitives, singular causal statements, temporal reasoning—all of these (to mention just a few) are topics that have led to the formulation of sophisticated event-based semantic theories. At the same time, a number of philosophical questions arise as soon as an ontology of events is taken into serious consideration. Are events entities of a kind? If so, how do they differ from other kinds of entities, for example, from material objects? Are events particulars or universals? Concrete or abstract? What are their identity and individuation criteria? What is their place in the causal network? Naturally, some of these questions have puzzled philosophers for a long time. But the increasing importance of the event concept, determined by its applications in semantics and linguistic analysis, has given such questions new impetus, and since the publication of Davidson's article a number of metaphysical theories have been put forward concerning the nature of events and eventlike entities.

To some extent, these two directions of research (the development of event-based semantic theories and the development of metaphysical theories about events) are independent. It is possible to work out an event-based semantics of tense and aspect (say) without explicitly committing oneself to any specific metaphysics of events, and it is possible to work out a metaphysical theory without drawing out all its implications for, and applications to, natural language semantics. All the same, in this case as in others (for instance, talk about properties or numbers), there are deep connections between metaphysical and semantic issues. Answers to questions of one sort (Was Brutus's stabbing of Caesar the same event as Brutus's killing of Caesar?) may depend on the answers one gives to questions of the other sort (What is the logical form of the statement that they were the same event?). More concretely, it is a fact that philosophers tend to rely on their linguistic intuitions when it comes to metaphysical arguments, and linguists rely implicitly on their intuitions about the nature of events when it comes to articulating a semantic theory. There is, accordingly, a distinct need for mutual cooperation in this area. The purpose of this volume is to go some way in this direction and to offer a vivid, up-to-date indication of some fruitful lines of interaction between the philosophical and linguistic articulations of the event concept.

In the remainder of this introduction, we review the main themes and set some common background to the chapters that follow. Section 2 gives an overview of the main theories of events that have been put forward in recent philosophical and linguistic literature. Section 3 focuses on the issue of event identity and individuation, which has been largely debated in the literature and whose significance underlies a number of arguments examined in the other chapters of the book. Section 4 introduces the link between events and language by reviewing the basic features of Davidson's account of the logical form of action sentences. Finally, section 5 deals with developments and linguistic applications, with special emphasis on the themes explicitly addressed in the rest of the book.

2. The Nature of Events

It will be helpful to identify some criteria for differentiating event theories. The main criterion is whether a theory categorizes events as universals (things that can recur or be instantiated at different places and times) or as particulars (things that occur at a specific place and time). This is an absolute distinction, not a matter of degree. We may, moreover, classify a theory according to whether it treats events as “thick” (concrete) or as “thin” (abstract) entities, and this is a matter of degree. An event is thick to the extent that it prevents other events from occurring in the same place at the same time. Some theories impose maximum thickness; other theories (the majority) allow for the possibility that distinct events occur in the same place at the same time, though the degree to which this is possible is a matter of controversy. We could also differentiate event theories according to the degree of reality that they ascribe to events. Some authors, for instance, take events to be basic entities, entities to be included in the basic ontological inventory. Others deny existence to events in favour of “ontological parsimony”, arguing that every seemingly event-committing statement can in principle be paraphrased in terms of event-neutral statements. And between these two extremes (the eventists and the eliminativists) there are those who avoid the language of reduction while also denying that events and objects are coordinate and equally basic. We shall not consider here the eliminativist approach. But we shall see that the other positions are variously exemplified in the theories that take events at face value.

2.1. Events as Universals

The idea that events are universals has been defended most notably by Richard Montague and by Roderick Chisholm. It is a conception that has not found many applications in recent works; but it is worth starting from because it immediately provides a good indication of the delicate interplay between metaphysical and semantic issues. (The reader will find concrete evidence of this interplay in Johannes Brandl’s chapter and in the first section of James Higginbotham’s chapter.)

According to Montague, events are properties, specifically properties of moments or intervals of time:

> The event of the sun’s rising will be the property of being a moment at which the sun rises, and events in general will form a certain class of properties of moments [or intervals] of time. (1969: 149–150)

(Whether an event is a property of moments or of intervals depends on whether the event is *instantaneous*, such as two balls coming into contact, or *protracted*, such as the American presidential campaign.) Montague’s account is thus reductionist. Events are not entities of a kind; they are, rather, a kind of property, and to say that a certain event P occurs at a moment t (in a world i) is simply to say that the property P is exemplified by t (in i).[2] Naturally, this is meant as a characterization of what Montague called *generic* events (what some authors

would call event types). A generic event such as the sun's rising recurs every morning in the same sense in which the property of being a chair 'recurs' in every single chair. In fact, Montague also recognized *particular* events, such as the rising of the sun that we witnessed this morning. But for Montague the distinction between generic and particular events is not categorical. Particular events are not tokens of a type. They, too, are properties, albeit properties of a very restricted sort, 'properties of a great degree of particularity' (p. 176). Particular events are properties of such a degree of particularity as to be exemplified only once.

Chisholm, too, takes events to be recurrable entities, rejecting any categorical distinction between events that do in fact recur and events that occur only once. Chisholm's account, however, is based on an assimilation of events to states of affairs (i.e., entities that can be the objects of propositional attitudes) rather than to properties:[3]

> A proposition could be defined as any state of affairs which is necessarily such that either it or its negation does not occur. . . . An event is any contingent state of affairs which is not a proposition and which implies change. (1970: 20)

In other words, an event is a state of affairs that is not time-bound and that therefore is such that both it and its negation may occur. (If it does not imply change, Chisholm calls it a state, but we may ignore this distinction here.) The sun's rising is such an event because it occurred this morning but did not occur last night, whereas the sun's rising this morning is not an event (it is a proposition) because it is necessarily such that either it occurred or its negation did.

Now, one of the main intuitions behind the view that events are universals, whether in Chisholm's or Montague's form, is that it provides a simple account of certain familiar ways of speaking. We say that the sun rose this morning and that the same thing happened yesterday. We complain that a certain inconvenient event—missing a train connection—happened to us twice in a row. We say that John takes the same walk every evening. If events are recurrables, then these assertions can be taken literally and Montague's and Chisholm's theories give us a metaphysics supporting this account: there is something—that walk of John's—which occurs over and over every evening. On the other hand, the interesting question here is precisely whether such assertions are to be taken literally. When we say

(1) John takes the same train every evening

we are not implying that John travels exactly on the same rail car every evening. The word 'same' in this context does not express individual identity but, rather, type identity, and we naturally understand (1) as

(1a) There is a route along which, every evening, John travels by train.

We mean to say that every evening John takes a train of the same type, departing approximately at the same time and from the same station and for the same des-

tination. At least, this is what we mean if our ontology includes trains, understood as physical objects. So the question is whether our talk of events give us any reason to change our attitude.

Davidson (1970), and most authors since, have answered in the negative. The sentence

(2) John takes the same walk every evening

can be paraphrased as

(2a) There is a route along which, every evening, John takes a walk

in perfect analogy to the paraphrase of (1) as (1a). Of course, it is by no means clear that every case of event recurrence can be understood along these lines. (See Brandl's chapter.) Moreover, paraphrasability is a necessary but not a sufficient condition for doing away with certain seeming ontological commitments. Nevertheless, if sentences that seem to imply the existence of recurrent events can be analysed in such a way as to imply only the occurrence of events of the same type, then the main linguistic motivation for endorsing a metaphysics of recurrable (universal, generic) events is undercut. As Higginbotham points out in his chapter, once particular events are admitted, the natural thing to do is to commence with these and to obtain generic events as kinds by whatever procedure is at work in similar cases (e.g., object kinds).

It is probably for this reason that a metaphysics of events as universals has not found many supporters in recent literature. But there is another point worth making, and this concerns the fact that both Montague and Chisholm treat events as *thin* entities. Properties and states of affairs alike have very fine-grained identity conditions, and many of them may therefore be instantiated in the same place at the same time. In Montague's theory, for instance, one would naturally distinguish between the generic event of the sun's rising and the generic event of the sun's rising solemnly since not every moment *t* that exemplifies the property of being a rising of the sun exemplifies the property of being a solemn rising of the sun. Likewise, these events would be distinct for Chisholm since one can have different propositional attitudes towards them (and, for Chisholm, states of affairs are identical just in case they are objects of the same propositional attitudes). What about particular events? Here the two theories deliver different diagnoses. Take the question of whether Brutus's stabbing of Caesar is the same event as Brutus's killing of Caesar. Montague's treatment is neutral with respect to this question. That highly particular property that was the stabbing of Caesar and that highly particular property that was the killing of Caesar may very well turn out to be the same property (under different names), in which case we would be talking of one and the same event; or they may turn out to be different properties, in which case we would be talking of distinct events. For Chisholm, by contrast, only the second answer is available, for certainly we can have different propositional attitudes towards the stabbing and towards the killing. (We might know that Brutus killed Caesar but not that he stabbed him.) By the same pattern, Chisholm's theory distinguishes Brutus's killing of Caesar from his

violent killing of Caesar, his killing Caesar with a knife, his killing Caesar intentionally, and so on. Indeed, Chisholm would insist that Brutus's killing of Caesar must be distinguished also from Brutus's killing of the Roman emperor. For we can say of the latter, but not of the former, that had Rome been a republic at that time, the event in question would not have occurred. The adequacy of such an argument is not unproblematic, and we shall come back to this issue in section 3. But insofar as it reflects Chisholm's views, it gives an idea of the extreme consequence that the theory may have and that most authors have found unacceptable.[4] From this perspective the neutrality of Montague's theory is noteworthy. But it leaves a deep gap between semantics and metaphysics, and most authors would regard this, too, as a limitation rather than a virtue of the theory.

2.2. Events as Particulars

Let us, then, consider the view that events are particulars. Here it is possible to distinguish a much wider variety of philosophical positions, which we may display ideally along the continuum determined by the thick/thin coordinate.

At one extreme we find the theory of W. V. O. Quine. A Quinean event is constituted by the totality of what occupies (i.e., goes on at, or perhaps is exemplified at) a certain spatiotemporal region:

> Physical objects . . . are not to be distinguished from events. . . . Each comprises simply the content, however heterogeneous, of some portion of space-time, however disconnected or gerrymandered. (1960: 131).

On this view, events and objects collapse into a single category of four-dimensional entities, and the problem of explaining our event talk extends to the problem of explaining our talk of ordinary entities *tout court*. However, one need not go that far. One can accept a Quinean ontology of events while at the same time insisting on a more traditional ontology of objects as three-dimensional entities that *endure* through time (as urged, e.g., by Davidson 1985b). What matters is that if events are indeed construed so as to completely fill their spatiotemporal location, much of our event talk is better explained as involving different descriptions of the same events rather than descriptions of different events. If the Earth is rotating and simultaneously heating up, then the rotation and the heating up of the Earth are one and the same event even though, of course, the property of rotating and the property of heating up are distinct. If through exactly the same spatiotemporal span John swims the Hellespontus, catches a cold, and counts his blessings (to use an example from Davidson 1967c: 125), then again these events are one and not three, in spite of the different descriptions.

Note that in this latter example the exact spatiotemporal location of the event is no straightforward matter. More generally, there are events for which it seeems preposterous to postulate the existence of a determinate spatiotemporal boundary. *Where* exactly did John catch a cold? *When* exactly did the industrial revolution begin? *What* exactly are the spatiotemporal boundaries of an event

such as Lady Di's campaign to internationaly ban the use of land mines? Some may take these questions seriously and conclude that a Quinean ontology is inherently vague or that it is an ontology of vague entities (entities with vague spatial or temporal boundaries). However, for a Quinean, those are semantic questions, not metaphysical ones. They are instances of the general question: What events are we talking about? And this question may not have a definite answer simply because our way of speaking may be vague, not because we may be speaking about vague entities. (To each region of space-time there is a corresponding unique, determinate event. But a locution such as 'Lady Di's campaign' is just too poor to uniquely and determinately pick out any such event.)

Quine's view occupies one extreme position on the thick/thin continuum, corresponding to the thickest possible theory. At the other extremity, the continuum is open-ended: there is no thinnest possible account of events as particulars. There is, however, a certain account that is radically thin (or so people have been arguing) insofar as it distinguishes an indefinitely large number of events that can occur in the same place at the same time. This is the account of those philosophers, such as Jaegwon Kim, who construe events as property exemplifications:

> We think of an event as a concrete object (or *n*-tuple of objects) exemplifying a property (or *n*-adic relation) at a time. (1973: 8)

Exactly what is meant by the locution 'exemplifying' is a delicate issue. Moreover, there is some uncertainty about what is to count as a property in the relevant sense. Presumably running and stabbing count, whereas being self-identical or greater than five do not count, but there are no obvious criteria for making a thorough demarcation (see Kim 1976). At any rate, leaving these issues aside, it is clear that this account tends to multiply the number of events far beyond the thick account of Quine. John's swimming the Hellespontus, his catching a cold, and his counting his blessings are regarded as three distinct events in Kim's account insofar as they involve exemplifications of distinct properties; and clearly enough, identical events must be exemplifications of the same properties (or relations) by the same objects (or *n*-tuples) at the same time. Likewise, when we speak of Brutus's stabbing of Caesar, we are not, in this account, speaking of his killing of Caesar: for the first event is the exemplification (by Brutus and Caesar) of the binary relation expressed by the predicate 'stabbing', whereas the second event is an exemplification (by the same Brutus and Caesar) of the relation expressed by the predicate 'killing'. Since these two relations are distinct, so are the events. In fact, by the same pattern, Brutus's stabbing of Caesar is to be distinguished also from his violent stabbing of Caesar, his knifing of Casear, his murderous knifing of Caesar, and so on. All of these are to be counted as different events (rather than different descriptions of the same event) because they are exemplifications of different properties.

At least, this is how Kim himself understands the property-exemplification account. For Kim, the constitutive property or relation of an event is the one

named by the predicative part of an appropriate description of that event. So if two event names involve predicates with different intensions (as in the above examples) they denote distinct events. It is precisely this ontological proliferation that makes Kim's a radically thin theory (and which makes Kim's events much more similar to Chisholm's proposition-like entities than to Quine's concrete entities). However, one may resist this classification. As Jonathan Bennett (1988) has observed, one could subscribe to Kim's metaphysics without subscribing to his semantics: the metaphysical thesis that Brutus's stabbing of Caesar was an exemplification of a certain relation, *R*, does not by itself imply the semantic thesis that any name of that event must contain a predicate that fully connotes *R*. Accordingly, we may pick out *R* by the predicate 'stabbing', but that is not to say that *R* is the relation of stabbing. It is, more likely, a relation that is only partially described by that predicate. Should the need arise, we could describe it more fully as, say, 'stabbing with a sharp knife, violently, and in such a way as . . .' and so on. It is the same for Brutus's killing of Caesar. Surely the relation involved in this event, call it *R′*, includes the relation of killing. But it seems perfectly plausible to suppose that *R′* is much more specific than that. If we wanted to be more precise, we could describe it as 'killing with the help of a sharp knife, and in such a way as . . .' and so on. When fully spelled out, this relation may even turn out to be the same relation as *R*. And in that case the two event names 'Brutus's stabbing of Caesar' and 'Brutus's killing of Caesar', though obviously distinct with regard to their senses, would have the same actual reference. A similar account, of course, would apply to Brutus's violent killing, his murderous knifing, and so forth. From this point of view, the property-exemplification account is not necessarily thin. It enjoys the same sort of neutrality as Montague's account—a neutrality that leaves a gap between semantics and metaphysics. (For more on this way of separating out semantic and metaphysical aspects, see the exchange between Kim 1991 and Bennett 1991, 1996.)

There are many variants of Kim's theory, from the early proposals of Richard Martin (1969) and Alvin Goldman (1970) to Barwise and Perry's (1983) theory of situations. Moreover, interesting generalizations of the theory can be obtained by relaxing the requirement that the participants of an event be concrete objects. For instance, allowing an event to consist in the exemplification of a property by another *event* (or the exemplification of a relation by an *n*-tuple some members of which are events rather than objects) makes room for 'higher order events' such as Brutus's stabbing of Caesar causing Caesar's death. (See Peterson 1989, 1997.) All of these theories share Kim's insight that events are very thin entities. In each case, however, the underlying metaphysics is compatible with the more neutral semantic account suggested by Bennett.

Be it as it may, between the radically thick position of Quine and the radically thin position of Kim there is a lot of middle ground. We find here those theories that allow for the possibility of two or more events occurring simultaneously in the same place (contra Quine) while resisting the tendency to multiply events on the basis of mere linguistic differentiations (contra Kim). David-

son is perhaps the chief representative of this intermediate position, at least in his early works.[5] For Davidson, events are identified by their position in the causal network, and it seems plausible to suppose, on the one hand, that events with different causal relations may occur at the same spatiotemporal region and, on the other hand, that events corresponding to different descriptions may have the same causal relations:

> Events are identical if and only if they have exactly the same causes and effects. Events have a unique position in the framework of causal relations between events in somewhat the same way objects have a unique position in the spatial framework of objects. (1969: 179)

Of course, whether or not particular events have the same causes and effects is itself a question that involves issues of sameness, for causes and effects may themselves be events. Moreover, whether an event *x* causes an event *y* is itself a question that seems to rest on identity issues: in Davidson's (1967a) own relational account, *x* caused *y* just in case *x* and *y* are identical with events described in some true causal law; in an alternative, counterfactual account (Lewis 1973; Swain 1978), *x* caused *y* just in case *y* would not have occurred had *x* not occurred, and this, too, calls for some identity criteria, namely, criteria for identity across possible worlds. So Davidson's principle should not be taken as expressing a necessary and sufficient condition to *establish* sameness of events but rather as expressing a central ingredient of the event concept. If John's catching a cold and his counting his blessings have different causes or effects, then they are distinct events (obviously), even if they occur in the same place and at the same time; otherwise they are one and the same.

Incidentally, that causation is a relation between individual events is a thesis that Davidson (see 1967a) has explicitly defended. One might suppose that the causal relata are facts and that a statement such as

(3) Sirhan's shot *caused* Robert Kennedy's death

could be analysed as a sentential compound in which the causal predicate is replaced by a causal connective, as in

(3a) Sirhan shot, *and as a consequence* Robert Kennedy died.

But this—Davidson argues—is impossible. For, on the one hand, causal contexts are referentially transparent: if Robert Kennedy is the Democratic candidate, then (3a) has the same truth value as

(4) Sirhan shot, *and as a consequence* the Democratic candidate died.

On the other hand, there is a well-known argument (due essentially to Frege) to the effect that referentially transparent sentential contexts are fully truth-functional.[6] Thus, the italicized connective in (3a) would have to be truth-functional, which is absurd: even though 'Robert Kennedy died' and 'the *Titanic* sank' have the same truth value, (3a) need not (and in fact does not) have the same truth value as

(5) Sirhan shot, *and as a consequence* the *Titanic* sank.

If accepted, this argument does not only lend support to the idea that the causal network may provide a comprehensive framework for identifying events. It also lends support to the very idea that events are objects of reference and quantification in the first place. Any eliminativist account would *have* to analyse (3) along the lines of (3a), thus facing Davidson's objection. (See Horgan 1978, 1982, for some ways of resisting this line of reasoning.[7])

As it turns out, not many authors followed Davidson's specific account of event identity in terms of causal relations. Davidson (1985b) himself eventually rejected it, opting for a Quinean account instead. Nevertheless, the idea that events are spatiotemporal particulars whose identity criteria are moderately thin—the idea, that is, that events are somewhat intermediate between Quine's and Kim's characterizations—has found many advocates both in the philosophical and in the linguistic literature. In some cases (e.g., Brand 1977, 1984) the idea comes with the claim that events are truly basic entities, ontologically on a par with material objects. In other cases (e.g., Lombard 1979, 1986) the idea comes instead with the suggestion that events are in some way dependent entities, that all truths about events supervene on truths about objects and their properties.[8] These theories are different from Davidson's. But they all share with Davidson's the hope for a "middle ground" account of the number of particular events that may simultaneously occur in the same place.

3. Identity and Indeterminacy

This being the general philosophical background, it is apparent that the links between semantic and metaphysical issues are subtle and tricky. Different conceptions of events tend to suggest different answers when it comes to assessing the referential pattern of our event names; but no metaphysical theory includes a general recipe for determining the reference of the event names used in ordinary language (hence for determining the truth or falsity of an identity statement of the form 'event *x* is the same as event *y*').

Bennett takes all this as evidence that although there are limits to what we can say about events (about specific events, as well as about events in general), no systematic theorizing about events is possible:

> The meanings of ordinary [event] nominals don't lie at any determinate point in the Quine-to-Kim continuum. The facts that give truth to predications on a nominal include much more than just the fact actually expressed by the nominal (so Kim is wrong), and they must be connected with the expressed fact by some closer link than merely being about the same zone (so the Quinean is wrong). That is as far as we can go with any general account of the matter; from there on, it depends on local context and unprincipled intuitions. (1988: 128)

This may well be too drastic a conclusion. One wonders, for instance, whether this sort of indeterminacy does not also arise in the case of ordinary material

objects. Arguably, whatever indeterminacy our concept of an object may involve, we seem to be able to theorize about objects and to account for the semantics of our talk about objects. Why should the case of events be any worse? (See, e.g., Lombard 1998 for this line of reply.)

We do not aim to answer this question here. But notice that the relevant sense of indeterminacy is not just one of vagueness. We have seen, in connection with Quine's theory, that there are event names which are vaguely defined insofar as they do not specify the exact spatiotemporal boundaries of their referents. This introduces a certain degree of indeterminacy in our event talk, but in a way that calls for a general theory of vagueness—a theory that must in any case be provided to account for the semantics of a great deal of natural language expressions (including names and descriptions of material objects). The indeterminacy that threatens the semantics of our event talk, in the sense here under examination, is one that arises even in the absence of vagueness. Let us suppose that we know the exact spatiotemporal location of the events we are talking about. Let us suppose, in particular, that '*x*' and '*y*' pick out events that occur exactly in the same spatiotemporal zone. Is there any way of articulating an answer to the question of whether *x* and *y* are distinct events? To the extent that this challenge gets a negative response, to that extent the semantics of our event names is indeterminate.

It is instructive, here, to look at one line of argument that has often been invoked precisely to articulate answers of the desired sort. It is based on the obvious idea that events, like any other entities, must satisfy Leibniz's principle of the indiscernibility of identicals. Thus, events that can be shown to have different properties—different contingent, modal, temporal, or causal properties—must be distinct. Critics of Quine and Davidson have often relied on such arguments to provide support for a more fine-grained account of event individuation.

Consider, for instance, the stabbing and the killing of Caesar by Brutus. Quine as well as Davidson—and many other philosophers who occupy a moderate position on the thick/thin continuum of event theories—would say that these are one and the same event under different descriptions. But one could argue thus: (a) Caesar could have survived the stabbing; (b) Caesar could *not* have survived the killing; thus, (c) the stabbing and the killing have different (modal) properties and must be distinguished. (By the same pattern, one could indeed argue that Brutus's stabbing of Caesar must be distinguished also from his violent stabbing of Caesar, his knifing of Caesar, and so on. So this line of argument would seem to provide independent support to a Kimean semantics of event names, contrary to Bennett's analysis.)

Is this line of argument acceptable? The underlying intuition, of course, is that there are possible worlds in which Brutus stabbed Caesar without killing him (e.g., because the stabbing inflicted only a flesh wound) and possible worlds in which Brutus killed Caesar without stabbing him (e.g., by strangling him). This intuition can hardly be questioned, except for a determinist. But does it follow from these possibilities that two distinct events *actually* occurred? Does it follow that Brutus committed two actions?

There are two ways of cashing out the above intuition, depending on whether our event talk is understood *de dicto* or *de re*. Let us look at both of them. Compare the two premises of the argument:

(6) Brutus's stabbing of Caesar could have been survived by Caesar.
(7) Brutus's killing of Caesar could not have been survived by Caesar.

In a *de dicto* reading, the first one reads

(6a) There is a possible world *w* such that Brutus's stabbing of Caesar in *w* is survived by Caesar in *w*.

This amounts to the assertion that there is a possible world *w* in which the description 'Brutus's stabbing of Caesar' picks out an event that does not result in Caesar's death (e.g., because it inflicted only a flesh wound)—which is certainly true except for a radical essentialist or a radical determinist. The second premise reads

(7a) There is no possible world *w* such that Brutus's killing of Caesar in *w* is survived by Caesar in *w*.

And this is true too, if not analytic. No event in any world *w* can satisfy the description 'Brutus's killing of Caesar' unless it results in Caesar's death. Thus, in a *de dicto* reading, both premises of the argument are naturally accepted. However, in this reading the truth of (6) and (7) does not support the conclusion of the argument that Brutus performed two actions. For if we are interested in the temporal properties of the events that *actually* occurred—the events picked out by the descriptions 'Brutus's stabbing of Caesar' and 'Brutus's killing of Caesar' in *this* world—then we should not look at the *alternative* referents of our event names. Obviously, if those names have different senses (and in our example they surely do), they could have different referents. (Clearly, 'the morning star' and 'the evening star' could have different referents.) But that is not the issue. The issue is not whether our two event names *could* have different referents. It is whether they *do* have different referents, whether they have different referents in *this* world. So, in a *de dicto* reading the premises may well be true, but the argument is not valid. The conclusion does not follow.

It is the *de re* reading that matters, then. But in a *de re* reading, (6) and (7) are in the same boat:

(6b) Brutus's stabbing of Caesar—that particular event—is such that there is a possible world *w* in which *it* is survived by Caesar.
(7b) Brutus's killing of Caesar—that particular event—is such that there is no possible world *w* in which *it* is survived by Caesar.[9]

If the stabbing *is* the killing, then *that particular event* is the same in both cases, so (6b) and (7b) cannot be both true. (Which of them is false will depend on whether one takes being survived by Caesar to be an essential property of the event in question.) If, on the other hand, the stabbing is not the same as the killing, then we are certainly speaking of two different events, and perhaps we can

say that (6b) and (7b) are both true. But this opposition is *prior* to our modal speculations—it cannot be inferred from them and calls for independent grounds. In short, as Neale (1990: §4.6) has pointed out, on a *de re* reading the argument is valid but question begging: one can have reasons to accept both premises only if one already has reasons to distinguish between Brutus's stabbing of Caesar and his killing of Caesar in the first place.[10] Since the *de re* reading is the only one that matters (and since in a *de dicto* reading the argument is invalid anyway), this means that the argument fails to establish the intended conclusion.

Of course, the argument still presents a problem for those who wish to identify the stabbing and the killing. For if these are one and the same event, there are only two options: either one denies (6) or one denies (7). The denial of (7) seems awkward: how could Caesar survive his killing? So one seems to be forced to reject (6), and that is a radically essentialist route to take.

This problem is only apparent, though. Surely there is some awkwardness in the denial of (7), that is,

(8) Brutus's killing of Caesar could have been survived by Caesar.

Even in a *de re* reading, this statement sounds very implausible. But what follows from this? It follows that such a statement is not a good way of expressing the proposition that the event we are talking about could have been survived by Caesar—the proposition that being followed by Caesar's death is not an essential property of our event. If we think that that proposition is true, then we would rather express it by using a different sentence. In particular, if we think the event in question is nothing but Brutus's stabbing of Caesar, we would express our proposition by asserting (6), for that way of speaking is not at all awkward. Awkwardness is a guide to pragmatics, not to ontology.

Here is a different way of making this point. Consider a purely temporal version of the argument examined above (as in Thomson 1971). Brutus stabs Caesar at time t, but Caesar only dies at a later time, t'. (Let us not worry now about the exact coordinates of these two times.) How can the stabbing be the same as the killing in this case? How can a killing occur before the death of the victim? The answer is that if we think the stabbing *is* the killing, then only one event occurred at t, although we cannot *call it* a killing until we have a death, at t'. We have two event names, 'Brutus's stabbing of Caesar' and 'Brutus's killing of Caesar', and these two names clearly have different senses. At t, when Brutus takes his stab at Caesar, the first name can be used to refer to what happened: Brutus's stabbing of Caesar has indeed taken place. The other event name cannot be used to refer to that event at t, for obviously we cannot say that we have a killing until we have a death, and that only takes place at t'. So at t only one event name names an event. But when Caesar's death does take place, at t', we *can* refer to the stabbing by the name 'Brutus's killing of Caesar'. For then, at t', our event does fit this description. At t one of the names refers, and the other does not; at t' they both refer, and they may well refer to the same event: different senses, same reference.

Bennett (1973) and Anscombe (1979) actually pointed out that this sort of awkwardness may arise all the time: a person cannot be called a killer before the death of the victim, and a man cannot truly be referred to as the father of the president before one of his children is elected president. When Clinton was elected, no new individual was brought to life. Rather, Clinton became the forty-second president and Clinton's father became the father of the forty-second president. (Clinton's father might even have been deceased at the time of the election, but that would not prevent us from referring to him as the father of the forty-second president, now and in the future.) Likewise, then, an event may come to acquire new properties as the result of later happenings. The act performed by Brutus, the stabbing of Caesar, became a killing when Caesar became dead. Or so one could coherently argue.[11]

Of course, in the specific case at issue there is room for disagreement. One can insist that every killing must *include* the death of the victim as a part. (This was Thomson's 1971 point.) If so, then one cannot accept that the stabbing and the killing are one and the same; rather, one would say that the stabbing is a proper part of the killing—that the killing is the (temporally scattered) mereological fusion of the stabbing *and* the death. But this different attitude need not involve a different metaphysics. On the contrary, one could still agree with the above account of what happened: just one event at t (a stabbing) and one event at t' (a death). Only, in the account above, 'Brutus's killing of Caesar' is just another name for the first event; in the alternative account it would be a name for the mereological fusion. (Compare: there is one fountain pen on the table, with a nice cap. One of us uses 'the pen' to refer exclusively to the writing instrument, without the cap. The other uses 'the pen' to refer to the writing instrument *and* the cap. A minor disagreement; a difference in our idiolects—but we can easily resolve it without revising our ontologies.)

As a final example, consider a causal version of the argument (Goldman 1971, Lewis 1986). We can say of Brutus's stabbing of Caesar that it caused Caesar's death. But the statement that Brutus's killing of Caesar caused Caesar's death sounds awkward. More strikingly, we can say of Sihran's pulling of the trigger that it caused the gun's going off; but the statement that Sihran's assassination of Robert Kennedy caused the gun's going off sounds bizarre. (See Regine Eckardt's chapter in this volume for more examples of this sort.)

There is no doubt that such examples bring out a problematic feature of our event talk. But in these cases the same analysis may be offered as in the temporal examples considered above. A statement such as

(9) The killing of Kennedy caused the gun to go off

is bizarre. But if the pulling of the trigger and the killing of Kennedy are one and the same event—if the pulling *became* the killing upon Kennedy's death—the bizarre sound can be removed by paraphrasing (9) as

(9a) The event which (as things turned out) was the killing of Kennedy by Sirhan caused the gun to go off.

This is no different from the way the bizarre sound of a statement such as (10) is removed by paraphrasing it as (10a):

(10) The widow stuck her husband with a knife.
(10a) The person who (as things turned out) is now the widow stuck her husband with a knife.

(See Anscombe 1979.) One could go even further in this line, defending the identification of shooting and killing by analysing every action sentence ‘*x* ed *y*’ as a causal statement ‘*x* caused *y* to be ed’ (Lombard 1978a). Davidson (1985a) himself had something similar in mind, though he would rather say that the analysis should display two events: somehing *x* did and something that happened to *y*, the first event qualifying as a cause of the second. Be that as it may, the main point remains:

> We cannot speak of an action as [an] action that has [a certain consequence] until the time of the consequence arrives. But the arrival of the consequence does not change the cause. It merely changes what we can, in the present tense, say of it. (Davidson 1985a: 236–237)[12]

4. Events and Logical Form

So much for issues relating to explicit event talk and the seeming indeterminacy involved in the referential pattern of the names and descriptions that we can use to pick out events explicitly. Let us now review the idea, mentioned at the beginning, that much ordinary discourse involves *implicit* reference to (or quantification over) events. It is indeed in this form that the notion of event has acquired a dominant role in recent semantic theorizing, and it is mainly with this idea that the other chapters of the book are concerned.[13]

One could, in fact, argue that our understanding of an event name *x* is in some way parasitic on our understanding of a sentence that reports the event referred to by *x* but without explicitly employing *x*. This is so because most event names (such as ‘Caesar’s death’) are descriptive expressions obtained by nominalizing a sentence (‘Caesar died’). Accordingly, although such sentences do not explicitly contain event-referring expressions, it seems plausible to suggest that their logical form does in some way imply an ontology of events. (Some authors would rely on the mechanics of nominalization also to explain the links and differences between event talk and fact talk, following the footsteps of Vendler 1967b.[14] See Nicholas Asher’s chapter in this volume for more on this subject.)

4.1. Hidden Quantification

A first articulated formulation of this view may be traced back to Frank Ramsey:

> ‘That Caesar died’ is really an existential proposition, asserting the existence of an event of a certain sort, thus resembling ‘Italy has a king’, which asserts the existence of a man of a certain sort. The event which is

> of that sort is called the death of Caesar, and should no more be confused with the fact that Caesar died than the king of Italy should be confused with the fact that Italy has a king. (1927: 37)

The same suggestion—that many ordinary sentences imply an ontology of events through the use of verbs, if not through explicit naming—is also scattered in the work of other early authors, most notably Hans Reichenbach (1947), Arthur Prior (1949), and Gilbert Ryle (1949). It is, however, Donald Davidson's (1967b) article that made the suggestion explicit, and it is this article that most authors regard as a seminal contribution toward an understanding of our event talk. According to Davidson, verbs of action such as 'stabbed', 'died', or 'swimmed' involve implicit existential quantification over events. More precisely, they are to be analysed as containing one more argument place than usually recognised, and this place is occupied by a hidden quantified variable ranging over actions (a type of event). Insofar as existential quantification is ontologically revealing, this means that such an account involves an ontology of events: events are entities to which we implicitely refer when we use action verbs.

Take, for example, a sentence such as

(11) Brutus stabbed Caesar.

In ordinary logic textbooks, this is analysed as an "atomic" sentence, a sentence consisting of a binary predicate, 'stabbed', flanked by two singular terms, 'Brutus' and 'Caesar'. In Davidson's analysis, by contrast, (11) is not atomic. It is, rather, an existentially quantified sentence involving a three-place predicate with a bound event variable. It asserts that a stabbing of Caesar by Brutus took place—that is, overlooking tense-related complexities, that there exists some event e which was a stabbing of Caesar by Brutus. In other words, (11) is analysed as in (11b) rather than (11a):

(11a) Stabbed(Brutus, Caesar).
(11b) e(Stabbing(Brutus, Caesar, e)).

From the perspective of generative grammar, this amounts to the hypothesis that the thematic grid of a verbal predicate has an extra (eventive) position

(12) stab: x, y, e

in such a way that the verb 'stab' is true of things x, y, and e if and only if e is a stabbing of y by x. This extra position is subject to the usual repertoire of semantic and syntactic manipulations that affect ordinary variables. It is not, however, subject to the usual mechanisms of thematic discharge, such as thematic marking. Rather, the event variable is bound by default existential closure. (See Heim 1982, Higginbotham 1985.)

There are several reasons underlying this analysis. One that played a major role in Davidson's original arguments is that it allows for a simple and effective solution to the problem of the variable polyadicity of action verbs, which we mentioned at the beginning of section 1. This is the problem, pointed out by

Anthony Kenny (1963: Ch. 8), of accounting for the various apparent logical relations between a sentence such as (11) and any of the following:

(13) Brutus stabbed Caesar violently.
(14) Brutus stabbed Caesar with the knife.
(15) Brutus stabbed Caesar violently with the knife.

Clearly, (15) entails (and is not entailed by) the conjunction of (13) and (14), each of which in turn entails (11). Yet there is no clear way one can do justice to such logical connections in standard predicate logic. One cannot just treat (11) and (13) through (15) as atomic sentences built up with the help of distinct, logically autonomous predicates with various numbers of argument places:

(13a) Stabbed-violently(Brutus, Caesar).
(14a) Stabbed-with(Brutus, Caesar, the knife).
(15a) Stabbed-violently-with(Brutus, Caesar, the knife).

For in that case the relevant entailments could only be explained in terms of *ad hoc* meaning postulates. Nor can one just treat (11), (13), and (14) as elliptic for (15), or of some suitably detailed extension of (15), for that would presuppose the existence of a definite upper bound to the number of adverbial modifications that can affect a verb such as 'stabbed'.[15] In short, one cannot do justice to the relevant logical connections by treating action verb phrases as ordinary predicates. By contrast, Davidson's analysis enhances the internal structure of such phrases—hence their intimate relationships—by allowing the function of adverbial expressions such as 'violently' and 'with the knife' to be explained in terms of predication of events. In Davidson's construal, (13) through (15) are analysed as (13b) through (15b), and standard predicate logic becomes fitted for explaining the relevant adverb-dropping inferences:

(13b) *e*(Stabbing(Brutus, Caesar, *e*) & Violent(*e*)).
(14b) *e*(Stabbing(Brutus, Caesar, *e*) & With(the knife, *e*)).
(15b) *e*(Stabbing(Brutus, Caesar, *e*) & Violent(*e*) & With(the knife, *e*)).

(This account is not dissimilar from other cases of "sub-atomic semantics", to use Parsons's 1990 expression. A Davidsonian analysis of the internal structure of 'stabbed' makes it possible to appreciate the relationships between (11) and (13) through (15) just as, say, a Russellian analysis of 'the knife' will account for the relationships between (14) and

(16) Brutus stabbed Caesar with a knife.

In both cases, standard logic does the job as soon as the relevant sentences are associated with a suitable logical form.)

There are several other linguistic phenomena—besides adverbial modification—that can be offered as evidence for an event-based analysis of this sort. For instance, quantification over events seems necessary to account for certain relationships between implicit and explicit reference to events. Compare (13) with

(17) Brutus's stabbing of Caesar was violent.

In a Davidsonian/Russellian analysis there is a very close link between these two sentences, namely, the same link that exists between (16) and (14). Sentence (13) asserts the existence of a violent stabbing; sentence (17) asserts the existence *and uniqueness* of a violent stabbing. Likewise, the analysis appears to do justice to the logical structure of arguments that involve explicit and implicit quantification over events (Parsons 1985: 237), as in

(18) Whenever there is a killing, there is a death.
(19) Brutus killed Caesar in the Senate.
(20) Therefore, somebody died in the Senate.

This is also true for arguments in which the event quantification is lexicalised exclusively through a temporal adverbial (Rothstein 1995), as in

(18a) Whenever somebody is killed, somebody dies.

Additional evidence along these lines (e.g., concerning the analysis of tensed statements, plurals, or perceptual reports) can be found in the chapters that follow.[16] Here it will suffice to point out that to deal with a wider spectrum of phenomena some authors have found reasons to emendate Davidson's account in various ways. For instance, building on a suggestion of Hector-Neri Castañeda (1967)—initially rejected by Davidson (1967c)—Terence Parsons (1980, 1985) and others have advocated an analysis in which the event participants are separated out, placing the subject (agent) and the object (patient) in different conjuncts along with the other thematic roles (such as the instrumental role of 'with the knife').[17] In this account, (11b) is further analysed as

(11c) *e*(Stabbing(*e*) & Subject(Brutus, *e*) & Object(Caesar, *e*))

(and (13b) through (15b) expanded accordingly). This allows one to do justice, for instance, to the entailment by (11) of

(21) Brutus did something to Caesar

which cannot be explained if (11) is analysed as in (11b).

How are these accounts related to the metaphysical questions concerning the nature of events and their identity criteria? It may be observed that they appear to be relatively neutral. True, insofar as events are treated as first-order variables of quantification, these accounts imply that events must be particulars rather than universals. But there seem to be no major implications concerning the nature of such particulars with respect to the thick/thin coordinate. Indeed, Kim has argued that his notion of an event is perfectly compatible with a semantic account of action sentences à la Davidson—that is, that there are no irreconcilable differences between 'Davidson's theory of event discourse as a semantical theory' and 'the property-exemplification account of events as a metaphysical theory' (1976: 42). Things are not so smooth, however. For one thing, not all accounts à la Davidson are equally neutral. Parsons (1985) has noted that the

refined account exemplified by (11c) may force distinctions with respect to which Davidson's original account remains neutral. For example, suppose Amelie plays a clarinet sonata. Then the events reported by the following sentences:

(22) Amelie played a sonata
(23) Amelie played the clarinet

must be distinguished in Parsons's account since the object of the former is a sonata whereas the object of the latter is a clarinet. (At least, this is what one is forced to do if both 'a sonata' and 'the clarinet' are treated as instances of the same thematic role 'Object', as Parsons does.) In Davidson's account, by contrast, one may maintain that (22) and (23) report one and the same event, which was both a playing of a sonata and a playing of the clarinet.

Another, more significant example concerns the adverb-dropping account discussed above in connection with (11) and (13) through (15). If we treat 'violently' as a predicate of the event *e* which was a stabbing of Caesar by Brutus, then the stabbing and the violent stabbing are not to be distinguished ontologically (just as the stabber and the violent stabber need not be distinct). This is indeed compatible with a Kimean metaphysics. But it is compatible *only if* we follow Bennett in purging that metaphysics from all of its semantic connotations (as discussed in section 2.2). Otherwise we would need a different account of the logic of 'violently'—and of adverbial modification generally.

Similarly, consider the scenario discussed by Eckardt in her chapter in this volume. Pat came home late last night, because of a traffic jam, and she started cooking spaghetti at 11 p.m. The statement

(24) The traffic jam caused Pat's cooking spaghetti late

is true (say). But the statement

(25) The traffic jam caused Pat's cooking spaghetti

is up for grabs. Some (e.g., Eckardt) would regard it as false. Others (following Davidson) would insist that (25) is about the same event as (24) and must therefore have the same truth value as (24) in spite of the appearances.[18] Hence, the possibility of dropping the modifier 'late' in (24) depends crucially on our intuitions concerning the identity of the relevant events. This means that a Davidsonian solution to Kenny's problem is not neutral with regard to such intuitions.

Of course, if (24) were understood as a statement about facts rather than events—contra Davidson's argument in section 2.2—then the issue would not arise.[19] For, on the one hand, it is uncontroversial that facts have very fine identity criteria; on the other hand, the logical form of (24) and (25) would not be an existential but a sentential compound:

(24a) There was a traffic jam, and as a consequence Pat cooked spaghetti late.
(25a) There was a traffic jam, and as a consequence Pat cooked spaghetti.

It is an interesting question whether or to what extent the temptation to attribute different truth values to statements such as (24) and (25), if not to statements such as (6) and (7), depends on a tendency to read these statements as expressing fact causation. If so, then Kim's compatibility statement might be right after all, except that whereas one is concerned with event talk, the other seems more concerned with fact talk.

4.2. Problems and Alternatives

Davidson's analysis (with or without the refinements stemming from the work of Parsons and others) has been extremely influential, lending further support to the idea that events are to be included in the domain of ordinary discourse. It is not, however, the only viable account. And it has its own problems.

Let us focus on adverbial modification. Davidson's point is that adverb-dropping inferences such as those linking (13) through (15) to (11) must be explained as a matter of logical form rather than lexical semantics. And the evidence for this view is also psychological: speakers of English do make such inferences even in the absence of the relevant lexical competence. (It is not necessary to know what "stab" means in order to see that (13) implies (11).) However, the burden of the claim rests on the availability of clear criteria for separating matters of meaning and matters of form. As Bennett (1988: 166) points out, presumably the inference from (26) to (27)

(26) John is a grandfather
(27) John is a parent

depends on the meaning of the relevant predicates, 'grandfather' and 'parent'. Yet the inference becomes valid as a matter of logical form as soon as (26) is analysed as

(26a) x y(Father(John, x) & Parent(x, y)).

More generally, there is the fact that the adverb-dropping inferences do not always go through. For example, a Davidsonian analysis of

(28) Jones filled the tank halfway

would yield the wrong result, sanctioning the inference to

(29) Jones filled the tank

(see Thomason and Stalnaker 1973: 218). So here one is *forced* to resort to matters of meaning—'halfway' is just not the sort of adverb that can be dropped (unlike, say, 'patiently' or 'in the garage'). This might well be the right thing to say, disregarding Davidson's own views on matters of form. The point of an event-based analysis of action sentences—one could insist—is to treat adverbs as predicates of events, not to claim that all adverbs can be dropped. And the fact that some adverbs cannot be dropped is the natural analogue of the fact that certain adjectives (predicates of objects) cannot be dropped. Compare

(30) This is a metal sphere.
(31) This is a half sphere.

The same goes for such problematic adverbs as ‘allegedly’ and the like: alleged events may or may not take place, so they are not, of course, a kind of events.[20] But this sort of reply is still deficient. To use an example from Verkuyl (1993: 245ff), the adverb-dropping pattern may fail in other cases—for instance, when the subject phrase involves a monotone-decreasing quantifier:

(32) At most three students filled the thank in the garage.

Here ‘in the garage’ cannot be dropped. Yet this cannot be explained by reference to the semantics of the modifier; for that same modifier *can* be dropped in

(33) Jones filled the thank in the garage

to reach the conclusion in (29).

In his chapter in this volume, Verkuyl argues that such difficulties bear witness to Davidson’s bias in favour of first-order predicate logic. Even the intuitive evidence offered by Davidson at the very beginning of his 1967b article is—according to Verkuyl—biased. Take a context such as

(34) Jones filled the thank. He did it in the garage.

Davidson wants the antecedent of ‘it’ to be a singular term and he takes this to be one reason for introducing events as particulars. But consider the following, similar example:

(35) Three students filled the thank. They did it in the garage.

Here there might have been three, two, or even just one event jointly perfomed in the garage by the three students. Hence, Verkuyl concludes that the anaphoric reference of the pronoun ‘it’ is sloppy and should be treated accordingly. And this, for Verkuyl, calls for an analysis in terms of lambda abstraction of the sort familiar from the literature on *do so*-constructions, as in

(36) Jones filled the thank and Piet did so too.

(See Verkuyl 1972: 142ff. For more material on the delicate issue of anaphoric reference to events, see also Alice ter Meulen’s chapter in this volume.)

On the face of it, these objections appear to undermine Davidson’s rationale for introducing events in the ontology. We still have reasons to take event talk seriously inasmuch as our language involves explicit reference to and quantification over events. But as far as the indirect reference of action sentences is involved, one may want to resist the event-based account.

Are there any alternatives? If we wish to stay within the bounds of ordinary first-order logic, the answer is arguably in the negative. But if we are willing to allow for higher order types, as urged by Verkuyl, then a different approach is available. It consists in treating adverbial and prepositional phrases literally as predicate modifiers. Syntactically this is straightforward: if P is an n-place

predicate and M is a modifier, then $M(P)$ is an n-place predicate too. This leads to the following alternative analysis of (13) through (15):

(13c) Violently(Stabbed)(Brutus, Caesar).
(14c) With-the-knife(Stabbed)(Brutus, Caesar,).
(15c) With-the-knife(Violently(Stabbed))(Brutus, Caesar).

And the semantic explanation is straightforward too. An n-place predicate P is naturally interpreted as an n-place relation on the given domain D; a modifier M can be interpreted, accordingly, as a function sending each n-ary relation to a (different) n-ary relation. Of course, one must be careful and distinguish different kinds of modifiers. Some will restrict the extension of their arguments, as is the case with the standard modifiers in (13) through (15). In these cases, $M(P)x$ entails Px, so the modifier is droppable. Others cases will yield the opposite result and $M(P)x$ will entail not-Px. This is what happens with the modifier 'half-way' in (28), or 'half' in (31), which therefore are not droppable. Other cases are possible too, depending on how the extension of the argument is modified. But the taxonomy is relatively simple, so a modest apparatus could be sufficient to keep the logic under control without resorting to a mass of meaning postulates.

One advantage of this account—whose main features go back to Montague (1970)[21]—is that it would allow one to stay close to the surface. In some cases, this would even result in greater perspicuity, as with the pair

(37) Brutus cruelly stabbed Caesar violently.
(38) Brutus stabbed Caesar cruelly and violently.

As Parsons (1970) pointed out, a Davidsonian analysis of the relevant difference would involve a complicated story involving quantification and identity. By contrast, the predicate-modifier analysis would represent the difference between (37) and (38) in the obvious way:

(37a) Cruelly(Violently(Stabbed))(Brutus, Caesar).
(38a) Cruelly(Stabbed)(Brutus, Caesar) & Violently(Stabbed)(Brutus, Caesar).

In some cases, however, it is the event-based account that seems to fare better. For example, Taylor (1985: 17ff) has pointed out that a Davidsonian analysis allows one to do justice to the ambiguity involved in a sentence such as

(39) Henry gracefully ate all the crisps.

The distributive reading (Henry ate each of the crisps gracefully) corresponds to the logical form in (39a), whereas the collective reading (Henry's eating of the crisps was overall graceful) corresponds to (39b):

(39a) x(Crisp(x) e(Eating(Henry, x, e) & Graceful(e))). (distributive)
(39b) e(x(Crisp(x) Eating(Henry, x, e)) & Graceful(e)). (collective)

The rival theory cannot account for the difference so easily. The distributive reading is straightforward, but the collective reading calls for the full apparatus of lambda abstraction:

(39c) x(Crisp(x) Gracefully(Eat)(Henry,x)). (distributive)
(39d) Gracefully(y x(Crisp(x) Eat(y,x))(Henry). (collective)

4.3. Events and States

One important feature that the predicate-modifier analysis shares with the event-based account is a natural uniformity among different sorts of modification (e.g., adjectival and adverbial modification) which is lost in the standard algorithm for translating English into first-order logic. Indeed, the predicate-modifier analysis applies to all sorts of adverbial modification, whether the context is an action sentence or a stative sentence, as in

(40) Caesar loved Brutus wholeheartedly.
(41) John is extremely happy.

Can a similar account be given in Davidsonian fashion? If action sentences are given an analysis that exploits the event-as-particular idea, can a similar account be extended to stative sentences?

A number of authors (beginning with Montmarquet 1980) have answered in the affirmative. The suggestion is that the domain of quantification should be extended to contain individual *states*, as well as events, and that the semantics feature stative variables, as well as eventive ones. Thus, for instance, a basic stative sentence such as

(42) Caesar loved Brutus

should not be analysed as atomic:

(42a) Loved(Caesar, Brutus).

Rather, its logical form should be construed as (42b), or perhaps as (42c), in perfect analogy to (11b) and (11c):

(42b) s(Loving(Caesar, Brutus, s)).
(42c) s(Loving(s) & Subject(Caesar, s) & Object(Brutus, s)).

The modifier 'wholeheartedly' in (40) would, of course, be treated accordingly, as a (droppable) predicate of the state s. Thus, the analysis would be beneficial for the same reasons put forward in the case of action sentences: descriptive fittingness, explanatory adequacy, simplification in the combinatorics, and so forth.

A detailed articulation of this proposal was given by Parsons (1987/88, 1990), but with the acknowledgment that the evidence in favour of the "underlying state analysis" is much less conclusive than that in favour of the "underlying event analysis". In this volume, Parsons reconsiders the problem. He shows that the tests that lend support to the event analysis do not seem to work in the case of stative predicates. The evidence is meager in many cases and absent (if not running counter to the thesis) in others. To illustrate, consider what Parsons calls the *modifier nonconjunction* criterion. It amounts to the aforemen-

tioned fact that, with eventive predicates, the truth of (13) and (14) does not entail that of (15):

(13) Brutus stabbed Caesar violently.
(14) Brutus stabbed Caesar with the knife.
(15) Brutus stabbed Caesar violently with the knife.

The point here is that even if both (13) and (14) are true, they may be made so by different events, so that the truth of (15) does not follow. Parsons takes this property as criterial for his event analysis, arguing that the facts in (13) through (15) are correctly predicted by such an analysis but remain unexplained in a theory that does not quantify over individual events. In the case of stative predicates, however, these neat results cannot be easily replicated. For there are circumstances when it actually seems possible to import the modifiers from the antecedent sentences while preserving truth. Consider:

(43) Socrates lies in the marketplace.
(44) Socrates lies under an awning.
(45) Socrates lies in the market under an awning.

If this were really the case, it would constitute counterevidence to the underlying state analysis because it would show that stative sentences may violate the nonconjunction criterion.

This is not, however, Parsons's conclusion. The force of the entailment from (43) and (44) to (45) lies in the fact that people cannot be in different places at the same time. But this is an empirical fact, not a logical fact. If it were possible for people to violate this law, then the inference would be invalid. If it were possible for Socrates to be in different places (or, more generally, in different states) at the same time, then the seeming counterevidence to the underlying state analysis would be blocked. And that this is possible is shown by Parsons with reference to a simple scenario: just suppose that people can travel in time. Suppose, for instance, that Socrates is in the marketplace at a given time *t*, and suppose that at a later time $t' > t$ he time-travels back to *t*, but to a different place, under an awning. Now, under the hypothesis that there is just one Socrates, it must be concluded that at *t* the very same person is in two different places (states). Hence the truth of (45) does not follow any more from that of (43) and (44), and the modifier nonconjunction test is successful. Parsons's conclusion, then, is that the seeming failure of the underlying state analysis is due to interfering factors leading to a confusion between empirical and logical possibilities. As soon as these factors are detected, the tests that lend support to the underlying event analysis now also work properly in the case of stative sentences.

At this point one might be tempted to go even further. One might be tempted to go for an enlarged theory that quantifies over all sorts of property instances (tropes). Though this is not Parsons's proposal, it certainly suggests itself. But then a serious difficulty arises for we appear to be condemned to an infinite regress. If 'Caesar loved Brutus' is regimented as asserting, among other things, the existence of a state *s*, which was a loving and whose subject was Caesar,

then why should not '*s* was a loving' be analysed as asserting, among other things, the existence of a state s', which was a being-a-loving and whose subject was s? What prevents us from further analysing (42c) as

(42d) $s\ s'$(Being-a-love(s') & Subject(s,s') & Subject(Caesar,s) & . . .).

And if that is allowed, then what prevents us from iterating this analysis over and over?

This slippery slope was pointed out by Bennett (1988: 177, following a remark of Zemach 1978: 87). We need not be bothered by the possibility of infinite regress if what is being offered is only a "logic of language" (as Bennett calls it). But, of course, the difficulty is a real one if what is being offered is a psychology—an account of the logical principles that operate (unconsciously) in the mind of a native speaker of a language such as English. As with the problematic entailments mentioned in section 4.2, we are facing here the delicate boundary between strenght and limits of event-based semantics.

5. Linguistic Applications

We need not go any deeper into the analysis of the pros and cons of this approach to logical form. Our purpose was simply to set up the general background for the remainder of the book, and we refer to the chapters that follow for further illustrations and critical discussion. Let us simply add that, in spite of the difficulties that we have mentioned, psychological considerations play also a positive role in explaining the success of Davidson-style semantics among linguists. Especially from the perspective of generative grammar, one of the guiding principles for conceptual and empirical linguistic inquiry is adequacy with respect to language acquisition. A semantic theory—a theory of the meaning/form connections—must be capable of explaining not only what competent speakers of a given language know about the way semantic values are attached to syntactic structures, but also how competent speakers come to have such a knowledge. Such an explanation is possible only insofar as the theory of linguistic knowledge is learnable by a child on the basis of his or her ordinary, limited experience (as Davidson himself has argued at length in 1983). And this, in turn, requires that the semantic theory be restrictive enough not to entail a search space that is too wide for a language learner. From this point of view, the hypothesis that predicates introduce an extra position for events (and states) provides for a theory of semantic combinatorics that appears to be restrictive in the desired sense, at least if compared with alternative accounts of the sort mentioned above, which rely heavily on higher-order machinery.

By way of conclusion, let us now take a look at two concrete lines of development growing out of such a general background. One of these concerns the telicity/atelicity distinction, and is discussed in some length (and from different perspectives) in Higginbotham's and Verkuyl's chapters; the other line is the treatment of adverbial quantification, and ties in with the chapters by Denis Delfitto and Alessandro Lenci with Pier Marco Bertinetto.

5.1. Aspectual Phenomena and the Telicity/Atelicity Distinction

The notion of telicity arises in connection with sentences such as those in (46) through (49), which seem to convey the idea that the relevant events reach a sort of privileged end point, or *telos*:

(46) John ate an apple.
(47) John ran home.
(48) John reached the top.
(49) John died.

In (46), not only is it the case that the event in question (the eating of the apple) is finished. It must also be true that a certain goal, the telos or *terminus ad quem*, has been attained—for example, that the whole apple has been consumed in the course of the eating. Similarly, the truth of (47) does not require only that the subject was involved in an activity of running directed towards home; it is also necessary that the telos—namely, John's being at home—is obtained by virtue of that very running. Concerning (48) and (49), it may be observed that in these cases there is no explicit mention of an activity leading to the relevant teloi. Nonetheless, the truth of these sentences require that the teloi be attained.

Teloi are "privileged" end points of events in the following sense. If we are told (47), we know not only that the event of running performed by John and directed towards his own place got to an end but also that that event could not have possibly continued any further. On the other hand, there are infinitely many ways in which an event of a similar kind could have finished: John might have stopped running halfway home, almost close to home, far away from home, and so on. In each case a continuation (until the telos 'John is at home' is reached) seems to be possible. *Atelic* sentences, by contrast, do not involve such a notion of privileged end point:

(50) John ate apples.
(51) John ate.
(52) John ran.
(53) John pushed the cart.

As in (46) through (49), these examples are about finished events. However, there is a sense in which the reported events in (50) through (53) might well have continued: John might have eaten more apples, he might have run a little longer, he might have pushed the cart some distance further. In this sense, the notion of atelicity does not simply capture the fact that, for example, in (50) no telos is specified. The point is that a telos for (50) cannot even be envisaged.

This intuitive characterisation of the telic/atelic distinction can be given firmer empirical grounds by resorting to the well-known *for-time*/*in-time* adverbial test. It can be observed, in fact, that sentences that have been classed as telic can be modified by in-time adverbials but not for-time ones.

(54) John ate an apple in/*for ten minutes.
(55) John ran home in/*for ten minutes.

(56) John reached the top in/*for ten minutes.
(57) John died in/*for ten minutes.

Conversely, atelic sentences admit the latter and yield unfelicitous results with the former:

(58) John ate apples #in/for ten minutes.
(59) John ate #in/for ten minutes.
(60) John ran #in/for ten minutes.
(61) John pushed the cart #in/for ten minutes.

Finally, the telic/atelic distinction is affected by the nature of the arguments the verb combines with. Thus (54), where the direct object is countable, is telic, whereas (58), with a bare plural, is atelic. Similarly, (55), with a prepositional locative phrase, is telic, whereas (60), where such a phrase is missing, is atelic.

The problems that must be addressed are therefore the following: why can't for-time adverbials felicitously combine with telic predicates, and conversely, why can't in-time adverbials combine with atelic predicates? What is the role of arguments in allowing or disallowing telicity? And, finally, what does the telic/atelic distinction amount to in an event-semantics framework? What are its ontological implications?

5.21. Event-based Accounts

An event-based approach to these questions seems promising. One possibile answer to the last questions is to follow Parsons (1990) and directly stipulate the distinction by means of two predicates, *Cul* and *Hold*, meant to apply to telic and atelic events (and states), respectively. In this way, the difference between, say, (46) and (50) can be expressed through the logical forms

(46a) e t(Eating(e) & Subject(e, John) & Object(e, an apple) & Cul(e, t)).
(50a) e t(Eating(e) & Subject(e, John) & Object(e, apples) & Hold(e, t)).

(Again, we omit here tense-related complexities.) *Cul* is a two-place relation holding between an event e and a time t if and only if e culminates (reaches the telos) at t. On the other hand, *Hold* is meant to apply to an event e and a time t if and only if the event is developing at t.[22] If an event satisfies *Cul* it also satisfies *Hold*, but the converse may fail. So (50a) might be true even when (46a) is not.

Although it captures some intuitions behind the telic/atelic distinction, such a proposal does not seem capable of providing an answer to some of the questions above. For instance, it cannot explain the role of direct objects in the determination of the telic/atelic distinction nor the observed patterns with in-time and for-time adverbials.[23] The role of direct objects suggests that the telic/atelic distinction should be better seen as a property of complex eventive predicates—that is, as a property of verb-phrase predicates—and as stemming from the interaction between the interpretive properties of the verb and those of the direct object. Using the relation *part-of* as the basic structuring device, Krifka (1989, 1992)

implements such an idea within an algebraic semantics, splitting the carrier for the model into two lattice-theoretic structures, one for ordinary objects and one for events.[24] He then defines a number of higher order predicates and relations characterising different reference types. For instance, *cumulative* reference—the property holding of predicates that are closed under the join operation—can be used to model masses (e.g., *wine*; *bread*); bare plurals (*apples*); and in the eventive domain, atelic predicates (*drink wine*; *eat apples*). Indeed, given two quantities of wine, apples, bread, and so on, their join is still a quantity of wine, apples, bread, and so on. Likewise, in the eventive domain, given two runnings e_1 and e_2, it seems straightforward to conclude that their mereological sum (the lattice join $e_1 \sqcup e_2$) is still a running.

In telic cases, the corresponding predicates have *quantised* reference—that is, given two events in the extension of the predicate, it is never the case that one is part-of the other. In the eventive case, this means that no proper part of an eating-an-apple event is an eating-an-apple event. Krifka also tries to find a counterpart of the notion of telos, by exploiting the idea of *terminal point*.[25] Intuitively, the terminal point of an event is the last time in the temporal trace of the event. Then an eventive predicate P has the *set terminal point* property if and only if any given event e in the extension of P is such that all of its parts that are in P have the same terminal point as e. This characterisation of telicity straightforwardly applies to predicates with quantised reference. In these cases, in fact, the set of parts of e that are in the extension of the quantised predicate P consists only of e, so that the terminal point condition is satisfied. On the other hand, it is easy to see that cumulative predicates lack the set terminal point property, thus showing justice to their atelicity.[26]

As for the impact of argument, Krifka proposes that aspectual shifts are due to the fact that the referential properties of the argument can carry over to those of the eventive predicate. Thus, the quantised reference of *an apple* forces the corresponding property on the predicate *eat an apple*. Conversely, the cumulativity of *apples* determines the cumulativity of *eat apples*. The necessary connection between the verbal predicate and the argument is provided by the thematic relation holding between them, which acts as an homomorphism between the objectual and the eventive domain.

Krifka's proposal has been quite influential and has inspired a number of works that explore the consequences of the theory in various languages (Filip 1992; Ramchand 1997; Singh 1998). Criticisms have also been raised. For instance, Verkuyl (1993 and this volume) points out that some of Krifka's basic properties do not work the way they should. To illustrate, Verkuyl observes that every verb is cumulative and that every thematic relation is cumulative. Hence the differences between (46) and (50) should be accounted for by exploiting only the different denotations of the objects. Krifka treats bare plurals as involving existential quantification over the size of the denoted set—analysing the bare plural *apples* as

(62) $y\ n(\ldots \mathrm{Apple}(y, n) \ldots)$.

This makes bare plurals basically akin to such expression as *some apples*, in that they both involve an unspecified number of objects. However, *some apples* induces telic readings, as in

(63) John ate some apples in ten minutes,

whereas bare plural objects induce atelicity. In the end, it is not clear how to deal with the different status of (46) and (50) and as a consequence that the capability of satisfactorily dealing with aspectual composition is not granted.

It is worth observing that in Krifka's theory, the telic/atelic distinction applies to (complex) predicates rather than to events themselves. One consequence of this view (emphasized in Krifka 1998) is that the distinction itself is a matter of description—that is, one and the same event can be described as falling in the extension of a quantised predicate in a telic construction or in the extension of a cumulative predicate in an atelic construction. This means that (46) and (50) (and (51)) can both be made true by the same event, *just as with the stabbing/killing case*. The alternative account—which a broadly Davidsonian event semantics makes available—consists in taking the notion of telos at face value and letting a distinguished individual event correspond to it. This is the possibility explored by Higginbotham in his chapter in this volume. Higginbotham argues that telic sentences differ from atelic ones because the logical form of the former involves a pair of eventive variables, whereas the logical form of the latter contains only one variable. The two variables of the telic case are such that the first refers to the *processual* part of the reported event and the second to the *telos*. For example, for a sentence such as

(64) John ate an apple in ten minutes

we have a structured truth-maker consisting of two parts, e_1 and e_2, such that e_1 is the eating activity John was engaged in, e_2 is the telos of that activity (e.g., the state consisting in the apple's being in John's stomach), and the two stand to each other in the relation expressed by the relevant in-time adverbial:

(64a) e_1 e_2(Eating(John, an apple, e_1, e_2) & In-ten-minutes(e_1, e_2)).

In other words, in Higginbotham's view, teloi are explicitely represented in the truth conditions of telic sentences and have an encoding at the level of logical form, thus becoming available for syntactic manipulations.[27] (This is not to say that events must be multiplied to account for the relevant semantic difference. The point is that the logical form of a telic sentence such as (64) calls for a complex truth-maker consisting of two events, whereas the logical form of an ordinary atelic requires only a simple truth-maker consisting of a single event. But one can always identify the latter event with part of the complex event—namely, the processual part.)

One consequence of this view is that the relationship between (a)telicity and (in)homogeneity is reversed: whereas the common attempt was to explain telicity from inhomogeneity (and/or cumulativity; see above), now it turns out that the former entails the latter. Indeed, a telic event *e* is nonhomogeneous since its

proper parts either lack a telos or, if they have one, it cannot be of the same type as that of *e.* Conversely, homogeneity/cumulativity entails atelicity; that is, whenever the eventive predicate applying to event *e* also applies to its proper parts, that predicate cannot be telic.

Given the conceptual priority of (a)telicity with respect to such properties as cumulativity and quantisation and the referential treatment of telicity, it would seem that aspectual shifts must be explained in a different manner than Krifka's. The absence of telic readings in a sentence such as (50), *John ate apples*, now points towards a role of direct objects in the identification of the telos—therefore in the identification of complex events. There are at least two options in this respect, depending on the underlying hypothesis concerning the way teloi are introduced in syntax. The first option is the one explored by Higginbotham in his chapter. Suppose that the complex/simplex event distinction is lexically encoded—that is, that the lexicon has two distinct lexical entries for a verb such as *eat*, one with a simplex event, yielding atelic readings, and the other with a complex event, accounting for telic readings. Then it must be the case that bare plurals and mass nouns objects fail (either syntactically or semantically) to be involved in the telos. The second option is that verbal lexical entries only encode the simplex event variant, and that the simplex/complex event distinction corresponds to structural differences. That is, the telos (event) arises only when given syntactic structural relationships hold between the verb(al projection) and the direct object, possibly with the crucial contribution of functional categories.

A question related to the origin of teloi concerns the role of verbal lexical predicates. If the distinction between simplex and complex events is lexically encoded, does the predicate *eat* of the complex variant classify both events or just the first (the processual part)? If the second alternative turns out to be better, so that the verbal predicate does the same job in the two variants, how should the telos be classified? These questions seems less important if the second, structural alternative sketched above is taken. For in this case the basic predicate classifies the same entities—namely, processual parts—both in telic and in atelic sentences. The status of the telos, on the other hand, is determined by whatever plays a role in the structural mechanisms responsible for the complex event reading (functional categories, the direct object, and the verb itself).

Let us conclude by observing that the telicity/atelicity opposition constitutes an interesting case study also for those theories that advocate a nonrealist position with regard to an ontology of events. [28] A leading account is Henk Verkuyl's (1993 and this volume). Rejecting the idea that the thematic grids of verbs (and logical forms tout court) include an event position, Verkuyl attempts to reconstruct aspectual facts by resorting to (abstract) times structures and noun phrase denotations, using the tools of generalised quantifier theory. In particular, he takes the meaning of a verb phrase as consisting of a function that relates the denotation of the subject to the denotation of the object at different times. Time, in turn, is given a discrete structure, basically akin to that of the natural numbers. Therefore, the role of a verb phrase denotation is to relate the subject denotation with pairs that consist of a time and an abstract *position* in the object

denotation, where the ‘position’ is conceived of as a member of a given partition of the noun denotation. To use a metaphore, the verb provides a clock whose functioning specifies a *path* for the subject through the object denotation. It is from this basic structure—the path in the object denotation—that aspectual phenomena stem.

One of Verkuyl’s goals is to explain the apparent role of cardinality information, concerning the direct obejct denotation, in the telic/atelic distinction. Already in his 1972 work, Verkuyl pointed out that what distinguishes telicity-inducing objects from atelicity-inducing ones is some abstract notion pertaining to cardinality, which he called SQA (specified quantity of A, where A is the noun denotation). Thus a direct object such as *an apple* differs from the bare plural *apples* in that the former has a constraint on the cardinality of its denotation (one element), which the second lacks. Generalising this property to all the determiners to which the +SQA specification applies, and given that the verb denotation (the clock) works on members of a partition of the nominal phrase denotation, if the latter does not have a specified cardinality then the partition lacks a specified cardinality as well. But this means that it is not possible to determine when the clock *stops*. This, Verkuyl argues, is the basis of the distinction between telicity and atelicity. When there is cardinality information, there is also a determinate point at which the clock stops (i.e., a point in the noun denotation from which there is no way to continue the *path* any further)—thus telicity. When cardinality information is missing, no such a determinate end point in the abstract *path* can be specified—thus atelicity.

The notion of event plays no role in this account. Verkuyl explicitly argues that the notion is not a primitive one for linguistic theory; it is, rather, a side effect of the working of the apparatus he proposes.[29]

5.2.2. The Role of Morphosyntax

While refining the basic conceptual tools, it is also possible that the chances of event-based semantics to contribute to an explanation of aspectuality depend on the acknowledgment of greater explanatory role for syntax and morphosyntax.[30] That such a flexibility is most probably needed is shown by recent comparative works (e.g., Ramchand 1997; Singh 1998) that call attention to facets of aspectuality so far ignored or overlooked. It has been noted, for instance, that there are languages—for example, Hindi or Scottish Gaelic—in which aspectual shifts are virtually absent. In these languages the aspectual value of a sentence seems to be solely determined by the nature of the aspectual morphemes and by case-theoretical considerations, and it is substantially unaffected by changes in the direct argument. Given the role aspectual shifts have played in the theoretical discussion about events and aspect, it is possible that a closer analysis of these facts will reveal the necessity to redefine the roles of syntax, morphosyntax, and semantics in accounting for aspectuality.

A similar picture concerning the architecture of the theory of aspectuality seems to emerge also from the analysis of the interplay between the telicity/ate-

licity dimension and the related perfective/imperfective distinction. For instance, Romance languages morphologically distinguish imperfective and perfective aspects, the former being available to express the so-called *continuous* aspect.[31] This morphological distinction is absent in English.[32] And the question arises of the place of the continuous aspect in the telic/atelic distinction. Is such a distinction applicable in this case? There is some evidence that the answer should be in the negative, given that the traditional in-time/for-time test does not seem to apply (compare Mittwoch 1980):

(65) *John mangiava una mela in/per dieci minuti.
John ate (IMPERFECT) an apple in/for ten minutes.

(66) *John mangiava mele in/per dieci minuti.
John ate (IMPERFECT) apples in/for ten minutes.

These examples are ungrammatical, in the semelfactive reading, with both kinds of adverbials—though the in-time version is acceptable with the habitual reading. That is, (65) and (66) cannot mean that John was in the process of eating an apple/apples and that that process lasted ten minutes. On the other hand, the in-time/for-time test applies to Romance perfective forms, mirroring the results obtained in English:

(67) John mangiò/ha mangiato una mela in/*per dieci minuti.
John ate (PERFECT)/has eaten an apple in/for ten minutes.

(68) John mangiò/ha mangiato mele *in/per dieci minuti.
John ate (PERFECT)/has eaten apples in/for ten minutes.

Thus, it seems that the telic/atelic distinction applies only to perfective predicates. Depending on the place of continuous imperfective predicates in the theory, these facts might therefore require a major rethinking of the role of the distinction itself.[33]

In this connection, it is interesting to observe that the events discussed by Davidson (and by most linguists afterwards) correspond to the "terminated" events: *John ate apples*, *Jones buttered the toast*, *Brutus killed Caesar*, and so on.[34] These events are on a par with regard to terminativity regardless of whether the reporting sentence is atelic (as in the first case) or telic—that is, regardless of whether the event might or might not have continued. Virtually all the theoretical setups proposed in the literature, including those rejecting event semantics, concur on this point: descriptively, the "events" they consider are all terminated. The relevance of the notion of *terminativity* might be difficult to see if attention is limited to English data. But it becomes very clear when constrasting the continuous (imperfective) and the perfective aspects of, say, Romance or Slavonic:

(69) John mangiò/ha mangiato una mela. (finished)
John ate(PERFECT)/has eaten an apple.

(70) John mangiava una mela. (not finished)
John ate (IMPERFECT) an apple.

There is a clear sense in which the event of (69), even in the atelic version with the mass noun object, is terminated at the utterance time. By contrast, (70) leaves open the possibility for the event to be still going on at the utterance time—that is, it need not be terminated.

The phrases that require nonfinished events are not limited to the continuous verbal forms of Romance or Slavonic. The eventive nominals of most (if not all) languages have the same property: noun phrases such as *the eating* or *the conference* do not necessarily refer to finished events, this specification being usually being provided by the context:

(71) La conferenza fu noiosa e me ne andai. (finished)
The conference was (PERFECT) boring and I left.

(72) La conferenza era noiosa e me ne sono andato. (not finished)
The conference was (IMPERFECT) boring and I left.

In (71) the conference must be over at the time of utterance, whereas in (72) it might still be going on.

These considerations, together with the derivational link between event nominals and verbal forms, suggest that "nonterminated" events are more basic than finished ones. At least, they provide evidence against the hypothesis that one kind of event sentence is more basic than the other.[35] More generally, these considerations pose a challange to any theory of events, however construed. For one must explain, first, how imperfective continuous sentences differ from perfective ones.[36] And, second, it must be possible to explain why continuous sentences do not participate in the telic/atelic distinction, whereas perfective sentences do.

5.2 Quantifying on Events

We conclude by looking at the material discussed in the chapters by Delfitto and Lenci with Bertinetto.

Within event semantics, it has become customary to analyse such adverbs as *often*, *always*, *rarely*, and the like as devices of quantification, elaborating on a suggestion by Lewis (1975).[37] For instance, (73) can be given the form in (73a), where *often* is analysed as a determiner in the sense of the theory of generalised quantifiers—namely, as a relation between two predicate-like denotations:

(73) Last year, John often fainted.
(73a) (Many t) [Part(t, Last-year)] e(At(e, t) & Fainting(e) & Subject(John, e)).

The development of this so-called *relational* analysis of generic and habitual sentences has further exploited the possibility of quantifying over eventive variables by hypothesising the existence of a hidden quantifier, *Gen*, endowed with a sort of universal force and responsible for intensional effects observed with generics and habituals.[38] For example:

(74) When he was young, John smoked.
(74a) (Gen t)[Young(John, t)] e(Smoking(e) & At(e, t) & Subject(John, e)).

Now, one problem for this analysis concerns the *origin* of the hidden quantifier *Gen*. It has been suggested that *Gen* is a sort of default choice, exploited whenever a quantificational format is provided by the syntax without any explicit quantifier being available. (See, e.g., Krifka et al. 1995.) This proposal, however, is open to the objection that there are languages that exploit overt morphemes to encode habituality, so that the alleged default behavior of *Gen* in, say, English would be construed as a language-specific phenomenon. Furthermore, even in languages in which no such morphemes are available, habitual/generic readings show distributional restrictions that one would not expect if *Gen* were a real default option. Thus, contrast (75) with (76):

(75) John fumò.
John smoked (PERFECT).

(76) John fumava.
John smoked (IMPERFECT).

In Italian, the use of the imperfective tense allows the habitual reading of (76), whereas the perfective past permits only the semelfactive reading of (75). However, if *Gen* were a real default option, we would expect an habitual reading with (76) also, contrary to facts. More generally, besides languages that overtly mark habitual readings, we find languages—such as the Romance ones—that morphologically distinguish between perfective and imperfective verbal forms and invariably use the latter to express habituality. These observations point towards a role of verbal morphology in ruling habitual/semelfactive readings and require the relational analysis to be more specific about the origin of *Gen*.

Another problem for the relational account concerns the quantificational analysis itself and is common in cases of overt and hidden (habitual/generic) quantification. Despite analogies with the semantics of quantification in the nominal domain, there are clear syntactic differences in the verbal domain that need to be addressed. In general, the strict structural relationships found in the nominal domain (a determiner that combines both syntactically and semantically with a nominal predicate—the restrictor—forming a generalised quantifier) are lost with adverbial quantification.

Moving from this background, Delfitto and Bertinetto's chapter in this volume is an attempt to clarify the interactions between morphosyntax and semantics by focusing on the role of aspectual morphology in habituals and semelfactive readings. Their suggestion is that aspectual morphology directly encodes quantificational information. Accordingly, they propose to unify adverbial quantification with its counterpart in the nominal domain. Following a line of analysis going back to Larson (1988) and recently revived by Giorgi and Pianesi (1997), Delfitto and Bertinetto hypothesise that the thematic grid of verbal predicates has both an eventive and a temporal position to discharge, the latter being assigned to a temporal argument. The role of aspectual morphology would then be to regulate the form and substance of generalised quantification over time, acting much in the same way as determiners in the nominal phrases. In this

view, imperfective morphology gives rise to an explicit syntactic format for generalised quantification over times, which is independent of the presence or absence of overt adverbs of quantification.[39] On the other hand, perfective morphology has no quantificational import: unless an explicit quantificational adverb is present, which by itself requires a generalised quantifier format, ordinary semelfactive readings are the result of default existential closure of the event position.[40] If correct, this account would solve both the problems discussed above: *Gen* is not a default device but is introduced by the imperfective morphology. Furthermore, generalised quantification in the verbal domain becomes even structurally similar to that obtaining with nominal phrases.[41]

In a similar spirit, Lenci and Bertinetto's contribution focuses on another problem of the '*Gen* as a default' theory. We have already observed, with reference to (76), that if *Gen* were a real default, we would expect generic/habitual readings to obtain in Italian with perfect tenses also, contrary to facts. The "default" theory seems to yield the right predictions when confronted with English facts such as

(77) a. In 1956 the members of this club always wore a hat.
b. In 1956 the members of this club wore a hat.

Both these sentences can have a "characteristic" reading (it was a characteristic of members of this club that in 1956 they wore a hat), and in both cases the underlying quantificational force seems to be universal. Thus—the argument of the default theory goes—whenever habitual readings are at stake and there is no overt quantificational adverb, a default adverb *Gen* is exploited. [Notice that such an argument rests on the (implicit) hypothesis that the quantificational format alone suffices to explain the core properties of generic/habituals. Both (77a) and (77b) have a "characteristic" reading, and this is due to the quantificational format, regardless of the quantifier.]

Lenci and Bertinetto observe that if the hypothesis were true—that is, if there were one and the same quantificational format for generic/habitual readings in which quantificational adverbs and the default *Gen* freely alternate—we would expect any given quantificational adverb to yield the same interpretive result (modulo quantificational force) regardless of other factors. But this expectation is not fullfilled, as shown by the following examples:

(78) (L'anno scorso) John è spesso andato al cinema con Maria.
(Last year) John often went (PERFECT) to the cinema with Maria.

(79) (L'anno scorso) John andava spesso al cinema con Maria.
(Last year) John often went (IMPERFECT) to the cinema with Maria.

Both (78) and (79) have the same quantificational adverb, *spesso* (*often*). However, only (79) has a truly habitual meaning (reporting a past habit of John). The perfective sentence (78), by contrast, is a *factual* statement to the effect that John often went to the cinema with Maria. This suggests that the "characteristic" meaning of habitual sentences is not due to the same format in which the quan-

tificational adverb participates. Moreover, we must admit that *Gen* is present as soon as habitual/generic readings are available, regardless of the presence or absence of overt quantificational adverbs. Thus, in the end Lenci and Bertinetto's morale is germane to Delfitto and Bertinetto's: the carrier of the relevant properties of generics/habituals is the verbal morphology, and its contribution must be clearly distinguished from that of quantificational adverbs.[42]

Notes

1. See Casati and Varzi (1997) for an annotated bibliography.

2. Montague famously characterized properties as intensional entities, functions from possible worlds to sets of possible individuals. Thus, in effect, on this account an event such as the sun's rising is ultimately identified with a function—namely, a function that yields, for each world i, a set of moments t (those moments at which the sun rises).

3. We focus here on Chisholm's early views (1970, 1971). For an account of Chisholm's (1990) more recent theory, we refer to Brandl's contribution to this volume. See also Brandl (1997) and Zimmerman (1997).

4. For some discussion, see Davidson (1971), Johnson (1975), Lombard (1978b).

5. See especially Davidson (1967b, 1969, 1970). Davidson (1985b) accepted Quine's identity criterion in terms of sameness of spatiotemporal location.

6. The argument is known as the "slingshot" since Barwise and Perry (1981).

7. Even among the event realists, various authors since Vendler (1967a) have objected to Davidson's line, arguing that at least some causal statements concern facts rather than events. See Mellor (1995) for an extended account. Needless to say, the issues has been the focus of an intense debate about the nature of causation that goes far beyond the scope of this volume.

8. The issue of dependence has its roots in Strawson (1959: Ch. 1). See Moravcsik (1968) and Tiles (1981) for critical discussion.

9. We use standard possible world terminology here. One can reformulate both readings in terms of counterparts, if one will. In that case, the *de re* reading would amount to the statement that there is a possible world w in which the counterpart of the given event is survived by Caesar.

10. This way of putting the analysis is not quite neutral with respect to the issue of contingent identity. Davidson (1969: 171) said that the stabbing, though in fact identical with the killing, was not necessarily so. Kripke (1972) would say that the stabbing, if in fact identical with the killing, was necessarily so. We side with Kripke here, as most people today would. If Davidson were right, however, if it were possible for events to be identical as a matter of contingent fact, then the charge of circularity does not quite apply. In that case we could speculate on the modal properties of the killing and the stabbing and we could argue that these properties are distinct without begging the question of whether the killing and the stabbing are in fact identical. (We would only beg the question of whether they are necessarily identical.) The main point then becomes that the nonidentity argument, as formulated, is seriously incomplete, as there are no prima facie reasons to assume the premises to begin with.

11. Besides Anscombe, Bennett, and Davidson, this line of thought has been put forward in Vollrath (1975) and Grimm (1977) and discussed in Thalberg (1975) and White (1979/80). See Pfeifer (1989) for an extensive appraisal.

12. Of course, a Davidsonian is willing to admit that there is a sense in which the gun's going off was caused, not by Sihran's killing of Robert Kennedy, but by his pulling of the trigger. This is the sense in which 'was caused' is understood as 'is causally explained'. However, explanations relate statements, not events (Davidson 1967a: 161).

13. Some of the material reviewed in this section is also reviewed in other parts of the book. We include it here for the sake of completeness.

14. Vendler (1967b: Ch. 5) distinguished between perfect and imperfect nominals. The former include expressions such as *Mary's performance of the song* and *Mary's performing of the song*, in which the process of nominalization is complete and which can tolerate articles and prenominal adjectives (*Mary's beautiful performance*). Imperfect nominals, by contrast, are divided into *that* clauses and gerundives, such as *That Mary performed the song* or *Mary's performing the song*. These are nominals that still have—as Vendler neatly puts it—a verb alive and kicking inside them, so they tolerate tenses, auxiliaries, adverbs, and negation (*That Mary had performed the song*; *Mary's painfully performing the song*; *Mary's not performing the song*). The metaphysical hypothesis is that events are the referents of perfect nominals, whereas facts or states of affairs are the referents of imperfect nominals. The death of Socrates (an event) can be redescribed, in some appropriate circumstances, as the calm death of Socrates; but that Socrates died calmly is necessarily a different fact than the fact that Socrates died. For more details, see Nicholas Asher's chapter in this volume, especially section 2.1.

15. Rescher (1967) suggested that it would suffice to have a maximum number of *categories* of adverbial modifications—e.g., Manner, Time, and so on. But the problem reappears as soon as we admit (naturally) that a category can be instantiated more than once in the same sentence.

1.6 A comprehensive overview may be found in Parsons (1990). On perceptual reports see Higginbotham (1983) and Vlach (1983); on plurals see Schein (1993).

17. Similar accounts have been put forward inter alia by Carlson (1984), Bennett (1988), and Dowty (1989).

18. Davidson would of course agree that (25), if true, would sound awkward. But Davidson would also insist that statements such as this might be understood as causal explanations rather than singular causal statements proper. See note 11.

19. Another possibility is to construe causation as a relation between properties or "aspects" of events. See, for example, Dretske (1977), Sanford (1985), and the exchange in Stern (1993) and Peterson (1994).

20. Davidson himself considered this line of reply in his 1967b article. See also Davidson (1985a).

21. Seminal contributions in this direction have also been made, more or less independently, by Clark (1970, 1974), Parsons (1970), and Rennie (1971) and further developed inter alia by Schwartz (1975), Cresswell (1979), Fulton (1979), and Clark (1986). For a different approach, relaxing the characterisation of action predicates to accommodate variable polyadicity, see Grandy (1976) and Graves (1994).

22. Apparently, *Hold* also applies to states (Parsons 1990) in such a way that $Hold(s,t)$ is true if and only if the subject of s is in state s at t.

23. For a critical discussion of Parsons's aspectual theory, see Lascarides (1988) and Verkuyl (1993 and this volume).

24. On the algebraic approach to event-based semantics, see Bach (1981, 1986), Link (1983, 1987, 1998), and Landman (1991), and Moltmann (1997). On the limits and strengths of the relation *part-of* as a basic structuring device, see Pianesi and Varzi (1994, 1996a, 1996b).

25. See also the discussion above about privileged “end points”.

26. One might notice that the set terminal point property, as defined by Krifka, works because it applies vacuously to predicates with quantised reference. Then, one might wonder whether there is any class of predicate to which such a property applies nonvacuously. They would be predicates *P* such that if *e* is in *P* then *e* has proper subparts that are in the extension of *P* and that share the same set terminal point as *e*—that is, predicates that are telics but do not have quantised reference. If no such predicates exist in natural languages, then a theory exploiting the set terminal point notion should provide an explanation for this fact. Also, in case such predicates do not exist, it is reasonable to ask whether the connection between quantisation and telicity should not go the opposite way than that explored by Krifka—namely, that it is quantisation/inhomogeneity that is determined by telicity.

27. On this point, see Higginbotham’s discussion of purpose clauses.

28. There are also more traditional treatments, of course. See, for example, Taylor (1977), Mourelatos (1978), and Dowty (1979).

29. At places, Verkuyl seems to admit that event reference (construed as discourse referents in the manner of Discourse Representation Theory) has a role to play in discourse phenomena.

30. This is in a way obvious within a broad Davidsonian perspective, where the emphasis is on matters of logical form (and where logical form is a byproduct of syntax and morphosyntax).

31. For a discussion of some properties of the imperfect tense in Romance languages, see Delfitto and Bertinetto (1995 and this volume), Giorgi and Pianesi (1995, 1997), Ippolito (1997), Hopelman and Roehrer (1980). See also the chapter by Lenci and Bertinetto in this volume.

32. It can be argued that English lacks not only a morphological means to express the continuous aspect but also such an aspect altogether. (See, e.g., Giorgi and Pianesi 1997 and Bonomi 1998.) The English form that expresses the closest meaning is the progressive construction, which nevertheless needs to be distinguished from true continuous forms because it has an intensional meaning that the former lack.

33. The continuous aspect has been discussed, under the headin of *neutral* aspect, by Smith (1991).

34. Terminativity is not a side effect of tense, as the events of such sentences remain terminated if the tense is changed to the future. It is interesting, though, that the present-tense versions of these sentence do not exist (unless such sentences are interpreted habitually). On the other hand, as pointed out in the text, nonterminative readings are available when an imperfective verbal form is used, regardless of tense. Incidentally, our use of such terms as *finished* or *terminated* is completely intuitive and pretheoretical. It should not be confused with the *terminative/durative* opposition exploited by Verkuyl (1993 and this volume). His classification is built on the basis of the in-time and for-time test and correspond to the distinction between telics and atelics.

35. For an attempt at reversing the perspective, see Giorgi and Pianesi (1997), who argued in favour of taking “continous events” as linguistically primitive, all the others (including the “terminated ones” of ordinary English sentences) being derived by means of aspectual manipulation.

36. The explanation cannot simply be that in both cases you have the same event variable and that the difference is merely a matter of perspective, with continuous sentences allowing the speaker to locate his or her viewpoint within the event and perfective sentences disallowing such a possibility. The real question is why this should be so.

37. See also de Swart (1991), Kamp and Reyle (1993), and Rothstein (1995).

38. The relational analysis of generic and habitual sentences has been developed as a response to the difficulties encountered by a previous theory (Carlson 1977a, 1977b) whereby unary, rather than binary, operators were posited. A good survey of the topic can be found in Krifka et al. (1995). At the same time, it has became increasingly clear that focus/topic considerations play a role in the choice of the material that fills the restriction or the nuclear scope of the quantified clause: see Rooth (1985, 1995), Diesing (1992), Chierchia (1995), and Delfitto and Bertinetto (this volume).

39. In their discussion of the relationships between imperfectivity and habituality, Delfitto and Bertinetto do not try to link habituality and the other interpretive possibility open to (Romance) imperfective forms—namely, the continuous/neutral aspect. Yet it seems that in languages that distinguish perfective and imperfective verbal forms (and lack dedicated habitual morphemes) habituality or genericity goes together with imperfectivity rather than with perfectivity. This is significant since it bears on the nature of verbal aspectuality and its interpretive role. A possible line of explanation, suggested by Delfitto and Bertinetto themselves and by Lenci and Bertinetto, is to hypothesise the presence of a functional category (Asp). Noting that the imperfective is no aspect—for instance, it does not affect the simplex/complex event distinction of section 5.1—one can conclude that imperfective tenses do not contribute an Asp category by themselves (see Giorgi and Pianesi 1997, 1998). Continuous readings would then be associated with such aspectual configurations. Habituals and generics, on the other hand, would arise because of the presence of a null Asp morpheme, which is interpretively spelled out as *Gen*. Finally, the incompatibility of habituals with perfective predicates could be a consequence of the fact that perfective morphology actually contributes its own aspectual projection, thereby preventing the possibility that the same category be realised as *Gen*.

40. In the case of overt adverbs of quantification with perfective predicates, the intensional component, typical of habituals/generics, is absent, thus showing the crucial role of imperfectivity for licensing the “characterising” reading of habituals.

41. Technically, Delfitto and Bertinetto adopt a feature-theoretic solution (Chomsky 1995). The imperfective morphology contributes a noninterpretable feature [+*quant*] to Asp, which must be checked or erased by the interpretable temporal feature of the temporal argument or of the verb phrase when the latter functions as a predicate of times. Checking, in turn, requires movement of the relevant phrase. As a result, a structural configuration is formed in which all the elements necessary for generalised quantification are explicitely given: the determiner *Gen*, because of the imperfective morphology, and the two phrases that contribute the temporal predicates, by virtue of the movement.

42. This is so despite the fact that both Delfitto and Bertinetto and Lenci and Bertinetto give a quantificational analysis of habituality. The idea (not explicitely addressed in either chapter) is that the quantificational format established by the imperfective verbal morphology also encodes the intensionality of habituals, whereas quantificational adverbs are neutral with respect to the intensionality/extensionality dimension.

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