34. Event semantics

Claudia Maienborn

Since entering the linguistic stage in the late sixties, Davidsonian event semantics has taken on an important role in linguistic theorizing. Davidson's (1967) central claim is that events are spatiotemporal things, i.e., concrete particulars with a location in space and time. This enrichment of the underlying ontology has proven to be of great benefit in explaining numerous combinatorial and inferential properties of natural language expressions. This article will trace the motivation, development, and applications of event semantics during the past decades and provide a picture of current views on the role of events in natural language meaning. Besides introducing the classical Davidsonian paradigm and providing an ontological characterization of events, the article discusses the Neo-Davidsonian turn with its broader perspective on eventualities and the use of thematic roles and/or decompositional approaches. Further topics are the stage-level/individual-level distinction, the somewhat murky category of states and some results of recent psycholinguistic studies that have tested the insights of Davidsonian event semantics.

1. Introduction

Since entering the linguistic stage in the late sixties, Davidsonian event semantics has taken on an important role in linguistic theorizing. The central claim of Donald Davidson's seminal (1967) work "The logical form of action sentences" is that events are spatiotemporal *things*, i.e., concrete particulars with a location in space and time. This enrichment of the underlying ontology has proven to be of great benefit in explaining numerous combinatorial and

inferential properties of natural language expressions. Most prominent among the many remarkable advances achieved within the Davidsonian paradigm since then have been the progress made in the theoretical description of verb semantics, including tense and aspect, and the breakthrough in analyzing adverbial modification. Numerous monographs and collections attest to the extraordinary fruitfulness of the Davidsonian program; see, e.g., Rothstein (1998), Tenny & Pustejovsky (2000), Higginbotham, Pianesi & Varzi (2000), Lang, Maienborn & Fabricius-Hansen (2003), Austin, Engelberg & Rauh (2004), Maienborn & Wöllstein (2005), Dölling, Heyde-Zybatov & Schäfer (2008) to mention just a few collections from the last decade.

In the course of the evolution of the Davidsonian paradigm, two moves have turned out to be particularly influential in terms of expanding and giving new direction to this overall approach. These are, first, the "Neo-Davidsonian turn" initiated by Higginbotham (1985, 2000) and Parsons (1990, 2000), and, secondly, Kratzer's (1995) merger of event semantics with the stage-level/individual-level distinction.

The Neo-Davidsonian approach has lately developed into a kind of standard for event semantics. It is basically characterized by two largely independent assumptions. The first assumption concerns the arity of verbal predicates. While Davidson introduced event arguments as an *additional* argument of (some) verbs, Neo-Davidsonian accounts take the event argument of a verbal predicate to be its *only* argument. The relation between events and their participants is accounted for by the use of thematic roles. The second Neo-Davidsonian assumption concerns the distribution of event arguments: they are considered to be much more widespread than originally envisaged by Davidson. That is, Neo-Davidsonian approaches typically assume that it is not only (action) verbs that introduce Davidsonian event arguments, but also adjectives, nouns, and prepositions. Thus, event arguments are nowadays widely seen as a trademark for predicates in general. For this broader notion of events, which includes, besides events proper, i.e., accomplishments and achievements in Vendler's (1967) terms, also processes and states, Bach (1986) coined the term "eventuality".

The second milestone in the development of the Davidsonian program is Kratzer's (1995) event semantic treatment of the so-called stage-level/individual-level distinction, which goes back to Carlson (1977) and, as a precursor, Milsark (1974, 1977). Roughly speaking, stage-level predicates (SLPs) express temporary or accidental properties, whereas individual-level predicates (ILPs) express (more or less) permanent or inherent properties. On Kratzer's (1995) account, the SLP/ILP-distinction basically boils down to the presence or absence of an extra event argument. Stage-level predicates are taken to have such an additional event argument, while individual-level predicates lack it. This difference in argument structure is then exploited syntactically by the assumption, e.g., of different subject positions for SLPs and ILPs; see Diesing (1992). Since then interest has been directed towards the role of event arguments at the syntax/semantics interface.

These developments are accompanied by a newly found interest in the linguistic and ontological foundation of events. To the extent that more attention is paid to less typical events than the classical 'Jones buttering a toast' or 'Brutus stabbing Caesar', which always come to the Davidsonian semanticist's mind first, there is a growing awareness of the vagueness and incongruities lurking behind the notion of events and its use in linguistic theorizing. A particularly controversial case in point is the status of *states*. The question of whether state expressions can be given a Davidsonian treatment analogous to process and event expressions (in the narrow sense) is still open to debate.

All in all, Davidsonian event arguments have become a very familiar "all-purpose" linguistic instrument over the past decades, and recent years have seen a continual extension of possible applications far beyond the initial focus on verb semantics and adverbials also including a growing body of psycholinguistic studies that aim to investigate the role of events in natural language representation and processing.

This article will trace the motivation, development, and applications of event semantics during the past decades and provide a picture of current views on the role of events in natural language meaning. Section 2 introduces the classical Davidsonian paradigm, providing an overview of its motivation and some classical and current applications, as well as an ontological characterization of events and their linguistic diagnostics. Section 3 discusses the Neo-Davidsonian turn with its broader perspective on eventualities and the use of thematic roles. This section also includes some notes on decompositional approaches to event semantics. Section 4 turns to the stage-level/individual-level distinction outlining the basic linguistic phenomena that are grouped together under this label and discussing the event semantic treatments that have been proposed as well as the criticism they have received. Section 5 returns to ontological matters by reconsidering the category of states and asking whether indeed all of them, in particular the referents introduced by so-called "statives", fulfill the criteria for Davidsonian eventualities. And, finally, section 6 presents some experimental results of recent psycholinguistic studies that have tested the insights of Davidsonian event semantics. The article concludes with some final remarks in section 7.

2.   Davidsonian event semantics

2.1.   Motivation and applications

On the standard view in Pre-Davidsonian times, a transitive verb such as *to butter* in (1a) would be conceived of as introducing a relation between the subject *Jones* and the direct object *the toast*, thus yielding the logical form (1b).

(1)   a.   Jones buttered the toast.

    b.   BUTTER (jones, the toast)

The only individuals that sentence (1a) talks about according to (1b) are Jones and the toast. As Davidson (1967) points out such a representation does not allow us to refer explicitly to the action described by the sentence and specify it further by adding, e.g., that Jones did it slowly, deliberately, with a knife, in the bathroom, at midnight. What, asks Davidson, does *it* refer to in such a continuation? His answer is that action verbs introduce an additional hidden event argument that stands for the action proper. Under this perspective, a transitive verb introduces a three-place relation holding between the subject, the direct object and an event argument. Davidson's proposal thus amounts to replacing (1b) with the logical form in (1c).

(1)   c. $\exists e$ [BUTTER (jones, the toast, e)]

This move paves the way for a straightforward analysis of adverbial modification. If verbs introduce a hidden event argument, then standard adverbial modifiers may be simply analyzed as first-order predicates that add information about this event; cf. article 54 (Maienborn & Schäfer) *Adverbs and adverbials* on the problems of alternative analyses and further details of the Davidsonian approach to adverbial modification. Thus, Davidson's classical sentence (2a) takes the logical form (2b).

(2) a. Jones buttered the toast in the bathroom with the knife at midnight.

   b. ∃e [BUTTER (jones, the toast, e) & IN (e, the bathroom) & INSTR (e, the knife) & AT (e, midnight)]

According to (2b), sentence (2a) expresses that there was an event of Jones buttering the toast, and this event was located in the bathroom. In addition, it was performed by using a knife as an instrument, and it took place at midnight. Thus, the verb's hidden event argument provides a suitable target for adverbial modifiers. As Davidson points out, this allows adverbial modifiers to be treated analogously to adnominal modifiers: Both target the referential argument of their verbal or nominal host.

> »Adverbial modification is thus seen to be logically on a par with adjectival modi-fication: what adverbial clauses modify is not verbs but the events that certain verbs introduce.«   Davidson (1969/1980: 167)

One of the major advances achieved through the analysis of adverbial modifiers as first-order predicates on the verb's event argument is its straightforward account of the characteristic entailment patterns of sentences with adverbial modifiers. For instance, we want to be able to infer from (2a) the truth of the sentences in (3). On a Davidsonian account this follows directly from the logical form (2b) by virtue of the logical rule of simplification; cf. (3'). See, e.g., Eckardt (1998, 2002) on the difficulties that these entailment patterns pose for a classical operator approach to adverbials such as advocated by Thomason & Stalnaker (1973), see also article 54 (Maienborn & Schäfer) *Adverbs and adverbials*.

(3) a. Jones buttered the toast in the bathroom at midnight.

   b. Jones buttered the toast in the bathroom.

   c. Jones buttered the toast at midnight.

   d. Jones butterd the toast with the knife.

   e. Jones buttered the toast.

(3') a. ∃e [BUTTER (jones, the toast, e) & IN (e, the bathroom) & AT (e, midnight)]

   b. ∃e [BUTTER (jones, the toast, e) & IN (e, the bathroom)]

   c. ∃e [BUTTER (jones, the toast, e) & AT (e, midnight)]

   d. ∃e [BUTTER (jones, the toast, e) & INSTR (e, the knife)]

   e. ∃e [BUTTER (jones, the toast, e)]

Further evidence for the existence of hidden event arguments can be adduced from anaphoricity, quantification and definite descriptions among others: Having introduced event arguments, the anaphoric pronoun *it* in (4) may now straightforwardly be analyzed as referring back to a previously mentioned event, just like other anaphoric expressions take up object referents and the like.

(4) It happened silently and in complete darkness.

Hidden event arguments also provide suitable targets for numerals and frequency adverbs as in (5).

(5) a. Anna has read the letter three times / many times.

   b. Anna has often / seldom / never read the letter.

Krifka (1990) shows that nominal measure expressions may also be used as a means of

measuring the event referent introduced by the verb. Krifka's example (6) has a reading which does not imply that there were necessarily 4000 ships that passed through the lock in the given time span but that there were 4000 passing events of maybe just one single ship. That is, what is counted by the nominal numeral in this reading are passing events rather than ships.

(6)   4000 ships passed through the lock last year.

Finally, events may also serve as referents for definite descriptions as in (7).

(7)   a.   the fall of the Berlin Wall
        b.   the buttering of the toast
        c.   the sunrise

See, e.g., Bierwisch (1989), Grimshaw (1990), Zucchi (1993), Ehrich & Rapp (2000), Rapp (2007) for event semantic treatments of nominalizations; cf. also article 51 (Grimshaw) *Deverbal nominalizations*. Engelberg (2000: 100ff) offers an overview of the phenomena for which event-based analyses have been proposed since Davidson's insight was taken up and developed further in linguistics.

The overall conclusion that Davidson invites us to draw from all these linguistic data is that events are *things* in the real world like objects; they can be counted, they can be anaphorically referred to, they can be located in space and time, they can be ascribed further properties. All this indicates that the world, as we conceive of it and talk about it, is apparently populated by such things as events.

2.2.   Ontological properties and linguistic diagnostics

Semantic research over the past decades has provided impressive confirmation of Davidson's (1969/1980: 137) claim that "there is a lot of language we can make systematic sense of if we suppose events exist". But, with Quine's dictum "No entity without identity!" in mind, we have to ask: What kind of things *are* events? What are their identity criteria? And how are their ontological properties reflected through linguistic structure?

None of these questions has received a definitive answer so far, and many versions of the Davidsonian approach have been proposed, with major and minor differences between them. Focussing on the commonalities behind these differences, it still seems safe to say that there is at least one core assumption in the Davidsonian approach that is shared more or less explicitly by most scholars working in this paradigm. This is that eventualities are, first and foremost, *particular spatiotemporal entities* in the world. As LePore (1985: 151) puts it, "[Davidson's] central claim is that events are concrete particulars – that is, unrepeatable entities with a location in space and time." As the past decades' discussion of this issue has shown (see, e.g., the overviews in Lombard 1998, Engelberg 2000, and Pianesi & Varzi 2000), it is nevertheless notoriously difficult to turn the above ontological outline into precise identity criteria for eventualities. For illustration, I will mention just two prominent attempts.

Lemmon (1967) suggests that two events are identical just in case they occupy the same portion of space and time. This notion of events seems much too coarse-grained, at least for linguistic purposes, since any two events that just happen to coincide in space and time would, on this account, be identical. To take Davidson's (1969/1980: 178) example, we

wouldn't be able to distinguish the event of a metal ball rotating around its own axis during a certain time from an event of the metal ball becoming warmer during the very same time span. Note that we could say that the metal ball is slowly becoming warmer while it is rotating quickly, without expressing a contradiction. This indicates that we are dealing with two separate events that coincide in space and time.

Parsons (1990), on the other hand, attempts to establish genuinely linguistic identity criteria for events: "When a verb-modifier appears truly in one source and falsely in another, the events cannot be identical." (Parsons 1990: 157). This, by contrast, yields a notion of events that is too fine-grained; see, e.g., the criticism by Eckardt (1998: § 3.1) and Engelberg (2000: 221–225). What we are still missing, then, are ontological criteria of the appropriate grain for identifying events. This is the conclusion Pianesi & Varzi (2000) arrive at in their discussion of the ontological nature of events:

> » […] the idea that events are spatiotemporal particulars whose identity criteria are moderately thin […] has found many advocates both in the philosophical and in the linguistic literature. […] 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. «   Pianesi & Varzi (2000: 12)

We can conclude, then, that the search for ontological criteria for identifying events will probably continue for some time. In the meantime, linguistic research will have to build on a working definition that is up to the demands of natural language analysis.

What might also be crucial for our notion of events (besides their spatial and temporal dimensions) is their inherently relational character. Authors like Parsons (1990), Carlson (1998), Eckardt (1998), and Asher (2000) have argued that events necessarily involve participants serving some function. In fact, the ability of Davidsonian analyses to make explicit the relationship between events and their participants, either via thematic roles or by some kind of decomposition (see sections 3.2 and 3.3 below), is certainly one of the major reasons among linguists for the continuing popularity of such analyses. This feature of Davidsonian analyses is captured by the statement in (8), which I will adopt as a working definition for the subsequent discussion; cf. Maienborn (2005a).

(8)   *Davidsonian notion of events:*
        Events are particular spatiotemporal entities with functionally integrated participants.

(8) may be taken to be the core assumption of the Davidsonian paradigm. Several ontological properties follow from it. As spatiotemporal entities in the world, events can be perceived, and they have a location in space and time. In addition, given the functional integration of participants, events can vary in the way that they are realized. These properties are summarized in (9):

(9)   *Ontological properties of events:*
        a.   Events are perceptible.
        b.   Events can be located in space and time.
        c.   Events can vary in the way that they are realized.

The properties in (9) can, in turn, be used to derive well-known linguistic event diagnostics:

(10)   ***Linguistic diagnostics for events:***
      a.   Event expressions can serve as infinitival complements of perception verbs.
      b.   Event expressions combine with locative and temporal modifiers.
      c.   Event expressions combine with manner adverbials, comitatives, etc.

The diagnostics in (10) provide a way to detect hidden event arguments. As shown by Higginbotham (1983), perception verbs with infinitival complements are a means of expressing direct event perception and thus provide a suitable test context for event expressions; cf. also Eckardt (2002). A sentence such as (11a) expresses that Anna perceived the event of Heidi cutting the roses. This does not imply that Anna was necessarily aware of, e.g., who was performing the action; see the continuation in (11b). Sentence (11c), on the other hand, does not express direct event perception but rather fact perception. Whatever it was that Anna perceived, it made her conclude that Heidi was cutting the roses. A continuation along the lines of (11b) is not allowed here; cf. Bayer (1986) on what he calls the *epistemic neutrality* of event perception vs. the *epistemic load* of fact perception.

(11)   a.   Anna saw Heidi cut the roses.
      b.   Anna saw Heidi cut the roses, but she didn't recognize that it was Heidi who cut the roses.
      c.   Anna saw that Heidi was cutting the roses (*but she didn't recognize that it was Heidi who cut the roses).

On the basis of the ontological properties of events spelled-out in (9b) and (9c), we also expect event expressions to combine with locative and temporal modifiers as well as with manner adverbials, instrumentals, comitatives and the like – that is, modifiers that elaborate on the internal functional set-up of events. This was already illustrated by our sentence (2); see article 54 (Maienborn & Schäfer) *Adverbs and adverbials* for details on the contribution of manner adverbials and similar expressions that target the internal structure of events.

    This is, in a nutshell, the Davidsonian view shared (explicitly or implicitly) by current event-based approaches. The diagnostics in (10) provide a suitable tool for detecting hidden event arguments and may therefore help us to assess the Neo-Davidsonian claim that event arguments are not confined to action verbs but have many further sources, to which we will turn next.

3.   The Neo-Davidsonian turn

3.1.   The notion of eventualities

Soon after they took the linguistic stage, it became clear that event arguments were not to be understood as confined to the class of action verbs, as Davidson originally proposed, but were likely to have a much wider distribution. A guiding assumption of what has been called the *Neo-Davidsonian paradigm*, developed particularly by Higginbotham (1985, 2000) and Parsons (1990, 2000), is that any verbal predicate may have such a hidden Davidsonian argument as illustrated by the following quotations from Higginbotham (1985) and Chierchia (1995).

    » The position *E* corresponds to the 'hidden' argument place for events, originally suggested by Donald Davidson (1967). There seem to be strong arguments in favour of, and little to be said against, extending Davidson's idea to verbs other

than verbs of change or action. Under this extension, statives will also have *E*-positions. «   Higginbotham (1985: 10)

» A basic assumption I am making is that every VP, whatever its internal structure and aspectual characteristics, has an extra argument position for eventualities, in the spirit of Davidson's proposal. […] In a way, having this extra argument slot is part of what makes something a VP, whatever its inner structure. «

Chierchia (1995: 204)

Note that already some of the first commentators on Davidson's proposal took a similarly broad view on the possible sources for Davidson's extra argument. For instance, Kim (1969: 204) notes: "When we talk of explaining an event, we are not excluding what, in a narrower sense of the term, is not an event but rather a state or a process." So it was only natural to extend Davidson's original proposal and combine it with Vendler's (1967) classification of situation types into *states*, *activities*, *accomplishments* and *achievements*. In fact, the continuing strength and attractiveness of the overall Davidsonian enterprise for contemporary linguistics rests to a great extent on the combination of these two congenial insights: Davidson's introduction of an ontological category of events present in linguistic structure, and Vendler's subclassification of different situation types according to the temporal-aspectual properties of the respective verb phrases; cf., e.g., Piñón (1997), Engelberg (2002), Sæbø (2006) for some more recent event semantic studies on the lexical and/or aspectual properties of certain verb classes.

The definition and delineation of events (comprising Vendler's *accomplishments* and *achievements*), processes (*activities* in Vendler's terms) and states has been an extensively discussed and highly controversial topic of studies particularly on tense and aspect. The reader is referred to the articles 48 (Filip) *Aspectual class and Aktionsart* and 98 (Smith) *Tense and aspect*. For our present purposes the following brief remarks shall suffice:

First, a terminological note: The notion "event" is often understood in a broad sense, i.e. as covering, besides events in a narrow sense, processes and states as well. Bach (1986) has introduced the term "eventuality" for this broader notion of events. In the remainder of this article I will stick to speaking of events in a broad sense unless explicitly indicated otherwise. Other labels for an additional Davidsonian event argument that can be found in the literature include "spatiotemporal location" (e.g. Kratzer 1995) and "Davidsonian argument" (e.g. Chierchia 1995).

Secondly, events (in a narrow sense), processes, and states may be characterized in terms of dynamicity and telicity. Events and processes are dynamic eventualities, states are static. Furthermore, events have an inherent culmination point, i.e., they are telic, whereas processes and states, being atelic, have no such inherent culmination point; see Krifka (1989, 1992, 1998) for a mereological characterization of events and cf. also Dowty (1979), Rothstein (2004).

Finally, accomplishments and achievements, the two subtypes of events in a narrow sense, differ wrt. their temporal extension. Whereas accomplishments such as expressed by *read the book, eat one pound of cherries, run the 100m final* have a temporal extension, achievements such as *reach the summit, find the solution, win the 100m final* are momentary changes of state with no temporal duration. See Kennedy & Levin (2008) on so-called *degree*

achievements expressed by verbs like *to lengthen, to cool*, etc. The variable aspectual behavior of these verbs – atelic (permitting the combination with a *for*-PP) or telic (permitting the combination with an *in*-PP) – is explained in terms of the relation between the event structure and the scalar structure of the base adjective; cf. (12).

(12)   a.   The soup cooled for 10 minutes.   (atelic)

       b.   The soup cooled in 10 minutes.   (telic)

Turning back to the potential sources for Davidsonian event arguments, in more recent times not only verbs, whether eventive or stative, have been taken to introduce an additional argument, but other lexical categories as well, such as adjectives, nouns and also prepositions. Motivation for this move comes from the observation that all predicative categories provide basically the same kind of empirical evidence that motivated Davidson's proposal and thus call for a broader application of the Davidsonian analysis. The following remarks from Higginbotham & Ramchand (1997) are typical of this view:

> » Once we assume that predicates (or their verbal, etc. heads) have a position for events, taking the many consequences that stem therefrom, as outlined in publications originating with Donald Davidson (1967), and further applied in Higginbotham (1985, 1989), and Terence Parsons (1990), we are not in a position to deny an event-position to any predicate; for the evidence for, and applications of, the assumption are the same for all predicates. «

<div align="right">Higginbotham & Ramchand (1997: 54)</div>

As these remarks indicate, nowadays Neo-Davidsonian approaches often take event arguments to be a trademark not only of verbs but of predicates in general. We will come back to this issue in section 5 when we reconsider the category of states.

3.2.   Events and thematic roles

The second core assumption of Neo-Davidsonian accounts, besides assuming a broader distribution of event arguments, concerns the way of relating the event argument to the predicate and its regular arguments. While Davidson (1967) introduced the event argument as an additional argument to the verbal predicate thereby augmenting its arity, Neo-Davidsonian accounts use the notion of thematic roles for linking an event to its participants. Thus, the Neo-Davidsonian version of Davidson's logical form in (2b) for the classical sentence (2a), repeated here as (13a/b) takes the form in (13c).

(13)   a.   Jones buttered the toast in the bathroom with the knife at midnight.
       b. $\exists$e [BUTTER (jones, the toast, e) & IN (e, the bathroom) & INSTR (e, the knife) & AT (e, midnight)]

       c. $\exists$e [BUTTER (e) & AGENT (e, jones) & PATIENT (e, the toast) & IN (e, the bathroom) & INSTR (e, the knife) & AT (e, midnight)]

On a Neo-Davidsonian view, all verbs are uniformly one-place predicates ranging over events. The verb's regular arguments are introduced via thematic roles such as AGENT, PATIENT, EXPERIENCER, etc., which express binary relations holding between events and their participants; cf. article 18 (Davis) *Thematic roles* for details on the nature, inventory and hierarchy of thematic roles. Note that due to this move of separating the verbal predicate from

its arguments and adding them as independent conjuncts, Neo-Davidsonian accounts give up to some extent the distinction between arguments and modifiers. At least it isn't possible anymore to read off the number of arguments a verb has from the logical representation. While Davidson's notation in (13b) conserves the argument/modifier distinction by reserving the use of thematic roles for the integration of circumstantial modifiers, the Neo-Davidsonian notation (13c) uses thematic roles both for arguments such as the agent *Jones* as well as for modifiers such as the instrumental *the knife*; see Parsons (1990: 96ff) for motivation and defense and Bierwisch (2005) for some criticism on this point.

3.3. Decompositional event semantics

The overall Neo-Davidsonian approach is also compatible with adopting a decompositional perspective on the semantics of lexical items, particularly of verbs; cf. articles 16 (Bierwisch) *Semantic features and primes* and 17 (Engelberg) *Frameworks of decomposition*. Besides a standard lexical entry for a transitive verb such as *to close* in (14a) that translates the verbal meaning into a one-place predicate CLOSE on events, one might also choose to decompose the verbal meaning into more basic semantic predicates like the classical CAUSE, BECOME etc; cf. Dowty (1979). A somewhat simplified version of Parsons' "subatomic" approach is given in (14b); cf. Parsons (1990: 120).

(14)   a.   *to close:* $\lambda y\, \lambda x\, \lambda e$ [CLOSE (e) & AGENT (e, x) & THEME (e, y)]

      b.   *to close:* $\lambda y\, \lambda x\, \lambda e$ [AGENT (e, x) & THEME (e, y) & $\exists$e' [CAUSE (e, e')
           & THEME (e', y) & $\exists$s [BECOME (e', s) & CLOSED (s) & THEME (s, y)]]]

According to (14b) the transitive verb *to close* expresses an action e taken by an agent x on a theme y which causes an event e' of y changing into a state s of being closed. On this account a causative verb introduces not one hidden event argument but three. See also Pustejovsky (1991, 1995) for a somewhat different conception of a decompositional event structure.

Additional subevent or state arguments as introduced in (14b) might also be targeted by particular modifiers. For instance, the repetitive/restitutive ambiguity of *again* can be accounted for by letting *again*, roughly speaking, have scope over either the causing event e (= repetitive reading) or the resulting state s (= restitutive reading); cf., e.g., the discussion in von Stechow (1996, 2003), Jäger & Blutner (2003). Of course, assuming further implicit event and state arguments, as illustrated in (14b), raises several intricate questions concerning, e.g., whether, when, and how such subevent variables that depend upon the verb's main event argument are bound. No common practice has evolved so far on how these dependent event arguments are compositionally treated. See also Bierwisch (2005) for arguments against projecting any except the highest event argument onto the verb's argument structure.

This might be the right place to add a remark on a further tradition of decompositional event semantics that goes back to Reichenbach (1947). Davidson's core idea of introducing event arguments can already be found in Reichenbach (1947), who, instead of adding an extra argument to verbal predicates, assumed a more general "event function" [p]*, by which a proposition p is turned into a characteristic property of events; see Bierwisch (2005) for a comparison of the Davidsonian, Neo-Davidsonian and Reichenbachian approaches to events. (Note that Reichenbach used the two notions "event function" and "fact function" synonymously.)

Thus, Reichenbach's way of introducing an event variable for the verb *to butter* would lead to the representation in (15a). This in turn yields (15b) as Reichenbach's version of the logical form for the classical sentence (2a).

(15) a. [BUTTER (x, y)]*(e)

  b. ∃e [[BUTTER (jones, the toast)]*(e) & IN (e, the bathroom) & INSTR (e, the knife) & AT (e, midnight)]

As Bierwisch (2005: 20) points out, Reichenbach's and Davidson's event variables were intended to account for roughly the same range of phenomena, including an analysis of adverbial modification in terms of conjunctively added event predicates.

Note that Kamp & Reyle's (1993) use of the colon to characterize an event e by a proposition p in DRT is basically a variant of Reichenbach's event function; cf. also article 38 (Kamp & Reyle) *Discourse Representation Theory*. Further notational variants are Bierwisch's (1988, 1997) INST-operator e INST p, or the use of curly brackets {p}(e) in Wunderlich (1997). All these are different notational versions for expressing that an event e is partially characterized by a proposition p.

Reichenbach's event function offers a way to pursue a decompositional approach to event semantics without being committed to a Parsons'-style proliferation of subevent variables (with their unclear binding conditions) as illustrated in (14b). Thus, a (somewhat simplified) Bierwisch-style decomposition for our sample transitive verb *to close* would look like (16).

(16) *to close:* λy λx λe [e: CAUSE (x, BECOME (CLOSED (y))]

As these remarks show, there is a considerable range of variation exploited by current event semantic approaches as to the extent to which event and subevent variables are used and combined with further semantic instruments such as decompositional and/or thematic role approaches.

4. The stage-level/individual-level distinction

4.1. Linguistic phenomena

A particularly prominent application field for contemporary event semantic research is provided by the so-called stage-level/individual-level distinction, which goes back to Carlson (1977) and, as a precursor, Milsark (1974, 1977). Roughly speaking, stage-level predicates (SLPs) express temporary or accidental properties, whereas individual-level predicates (ILPs) express (more or less) permanent or inherent properties; some examples are given in (17) vs. (18).

(17) *Stage-level predicates*
  a. adjectives: *tired, drunk, available, ...*
  b. verbs: *speak, wait, arrive, ...*

(18) *Individual-level predicates*
  a. adjectives: *intelligent, blond, altruistic, ...*
  b. verbs: *know, love, resemble, ...*

The stage-level/individual-level distinction is taken to be a conceptually founded distinction that is grammatically reflected. Lexical predicates are classified as being either SLPs or ILPs. In the last years, a growing list of quite diverse linguistic phenomena have been associated with this distinction. Some illustrative cases will be mentioned next; cf., e.g., Higginbotham & Ramchand (1997), Fernald (2000), Jäger (2001), Maienborn (2003: §2.3) for commented overviews of SLP/ILP diagnostics that have been discussed in the literature.

Subject effects:

Bare plural subjects of SLPs have, besides a generic reading ('Firemen are usually available.'), also an existential reading ('There are firemen who are available.') whereas bare plural subjects of ILPs only have a generic reading ('Firemen are usually altruistic.'):

(19) a. Firemen are available. (SLP: generic + existential reading)
      b. Firemen are altruistic. (ILP: only generic reading)

There-coda:

Only SLPs (20) but not ILPs (21) may appear in the coda of a *there*-construction:

(20) a. There were children sick. (SLP)
      b. There was a door open.

(21) a. *There were children tall. (ILP)
      b. *There was a door wooden.

Antecedents in when-conditionals:

ILPs cannot appear as restrictors of *when*-conditionals (provided that all argument positions are filled with definites; cf. Kratzer 1995):

(22) a. When Mary speaks French, she speaks it well. (SLP)
      b. *When Mary knows French, she knows it well. (ILP)

Combination with locative modifiers:

SLPs can be combined with locative modifiers (23a), while ILPs don't accept locatives (23b):

(23) a. Maria was tired / hungry / nervous in the car. (SLP)
      b. ??Maria was blond / intelligent / a linguist in the car. (ILP)

Adherents of the stage-level/individual-level distinction take data like (23) as strong support for the claim that there is a fundamental difference between SLPs and ILPs in the ability to be located in space; see, e.g., the following quote from Fernald (2000: 24): "It is clear that SLPs differ from ILPs in the ability to be located in space and time."

Complements of perception verbs:

Only SLPs, not ILPs, are admissible as small clause complements of perception verbs:

(24) a. Johann saw the king naked. (SLP)

  b. *Johann saw the king tall. (ILP)

Depictives:

SLPs, but not ILPs, may build depictive secondary predicates:

(25) a. Paul$_i$ stood tired$_i$ at the fence. (SLP)

  b. Paul has bought the books$_i$ used$_i$.

(26) a. *Paul$_i$ stood blond$_i$ at the fence. (ILP)

  b. *Paul has bought the books$_i$ interesting$_i$.

Further cross-linguistic evidence that has been taken as support for the stage-level/individual-level distinction includes the alternation of the two copula forms *ser* and *estar* in Spanish and Portuguese (see Maienborn 2005c for a critical discussion), two different subject positions for copular sentences in Scottish Gaelic (e.g. Ramchand 1996), or the Nominative/Instrumental case alternation of nominal copular predicates in Russian (e.g. Geist 2006).

In sum, the standard perspective under which all these contrasts concerning subject effects, *when*-conditionals, locative modifiers, and so on have been considered is that they are distinct surface manifestations of a common underlying contrast. The *stage-level/individual-level hypothesis* is that the distinction of SLPs and ILPs rests on a fundamental (although still not fully understood) conceptual opposition that is reflected in multiple ways in the grammatical system. The following quotation from Fernald (2000) is representative of this view:

> » Many languages display grammatical effects due to the two kinds of predicates, suggesting that this distinction is fundamental to the way humans think about the universe. «   Fernald (2000: 4)

Given that the conceptual side of the coin is still rather mysterious (Fernald (2000: 4): "Whatever sense of permanence is crucial to this distinction, it must be a very weak notion"), most stage-level/individual-level advocates content themselves with investigating the grammatical side (Higginbotham & Ramchand (1997: 53): "Whatever the grounds for this distinction, there is no doubt of its force"). We will come back to this issue in section 4.3.

4.2. Event semantic treatments

A first semantic analysis of the stage-level/individual-level contrast was developed by Carlson (1977). Carlson introduces a new kind of entities, which he calls "stages". These are spatiotemporal partitions of individuals. SLPs and ILPs are then analyzed as predicates ranging over different kinds of entities: ILPs are predicates over individuals, and SLPs are predicates over stages. Thus, on Carlson's approach the stage-level/individual-level distinction amounts to a basic difference at the ontological level. Kratzer (1995) takes a different direction locating the relevant difference at the level of the argument structure of the corresponding predicates. Crucially, SLPs have an extra event argument on Kratzer's account,

whereas ILPs lack such an extra argument. The lexical entries for a SLP like *tired* and an ILP like *blond* are given in (27).

(27) a.   *tired:* λx λe [TIRED (e, x)]

  b.   *blond:* λx [BLOND (x)]

This argument structural difference may now be exploited for selectional restrictions, for instance. Perception verbs, e.g., require an event denoting complement; see the discussion of (11) in section 2.3. This prerequisite is only fulfilled by SLPs, which explains the SLP/ILP difference observed in (24). Moreover, the ban of ILPs from depictive constructions (see (25) vs. (26)) can be traced back to the need of the secondary predicate to provide a state argument that includes temporally the main predicate's event referent.

    A very influential syntactic explanation for the observed subject effects within Kratzer's framework has been proposed by Diesing (1992). She assumes different subject positions for SLPs and ILPs: Subjects of SLPs have a VP-internal base position; subjects of ILPs are base-generated VP-externally. In addition, Diesing formulates a so-called *Mapping Hypothesis,* which serves as a syntax/semantics interface condition on the derivation of a logical form. (Diesing assumes a Lewis-Kamp-Heim style tripartite logical form consisting of a non-selective quantifier Q, a restrictive clause (RC), and a nuclear scope (NS).) Diesing's (1992) Mapping-Hypothesis states that VP-material is mapped into the nuclear scope, and VP-external material is mapped into the restrictive clause. Finally, Diesing takes the VP-boundary to be the place for the existential closure of the nuclear scope. The different readings for SLP and ILP bare plural subjects follow naturally from these assumptions: If SLP subjects stay in their VP-internal base position, they will be mapped into the nuclear scope and, consequently, fall under the scope of the existential quantifier. This leads to the existential reading; cf. (28a). Or they move to a higher, VP-external subject position, in which case they are mapped into the restrictive clause and fall under the scope of the generic operator. This leads to the generic reading; cf. (28b). ILP subjects, having a VP-external base position, may only exploit the latter option. Thus, they only have a generic reading; cf. (29).

(28) a.   ∃ex [NS FIREMEN (x) & AVAILABLE (e, x)]   (cf. Kratzer 1995: 141)

  b.   Gen ex [RC FIREMEN (x) & IN (x, e)] [NS AVAILABLE (e, x)]

(29) Gen x [RC FIREMEN (x)] [NS ALTRUISTIC (x)]

Kratzer's account also offers a straightforward solution for the different behavior of SLPs and ILPs wrt. locative modification; cf. (23). Having a Davidsonian event argument, SLPs provide a suitable target for locative modifiers, hence, they can be located in space. ILPs, on the other hand, lack such an additional event argument, and therefore do not introduce any referent whose location could be further specified via adverbial modification. This is illustrated in (30)/(31). While combining a SLP with a locative modifier yields a semantic representation like (30b), any attempt to add a locative to an ILP must necessarily fail; cf. (31b).

(30) a.   Maria was tired in the car.

  b.   ∃e [TIRED (e, maria) & IN (e, the car)]

(31) a.   */??Maria was blond in the car.

  b.   [BLOND (maria) & IN (???, the car)]

Thus, on a Kratzerian analysis, SLPs and ILPs indeed differ in their ability to be located in space (see the above quote from Fernald), and this difference is traced back to the presence vs. absence of an event argument. Analogously, the event variable of SLPs provides a suitable target for *when*-conditionals to quantify over in (22a), whereas the ILP case (22b) lacks such a variable; cf. Kratzer's (1995) *Prohibition against Vacuous Quantification*.

A somewhat different event semantic solution for the incompatibility of ILPs with locative modifiers has been proposed by Chierchia (1995). He takes a Neo-Davidsonian perspective according to which *all* predicates introduce event arguments. Thus, SLPs and ILPs do not differ in this respect. In order to account for the SLP/ILP contrast in combination with locatives, Chierchia then introduces a distinction between two kinds of events: SLPs refer to *location dependent events* whereas ILPs refer to *location independent events;* see also McNally (1998). The observed behavior wrt. locatives follows on the assumption that only location dependent events can be located in space. As Chierchia (1995: 178) puts it: "Intuitively, it is as if ILP were, so to speak, unlocated. If one is intelligent, one is intelligent nowhere in particular. SLP, on the other hand, are located in space."

Despite all differences, Kratzer's and Chierchia's analyses have some important commonalities. Both consider the SLP/ILP contrast in (30)/(31) as a grammatical effect. That is, sentences like (31a) do not receive a compositional semantic representation; they are grammatically ill-formed. Kratzer and Chierchia furthermore share the general intuition that SLPs (and only those) can be located in space. This is what the difference in (30a) vs. (31a) is taken to show. And, finally, both analyses rely crucially on the idea that at least SLPs, and possibly all predicates, introduce Davidsonian event arguments.

All in all, Kratzer's (1995) synthesis of the stage-level/individual-level distinction with Davidsonian event semantics has been extremely influential, opening up a new field of research and stimulating the development of further theoretical variants and of alternative proposals.

4.3. Criticisms and further developments

In subsequent studies of the stage-level/individual-level distinction two tendencies can be observed. On the one hand, the SLP/ILP contrast has been increasingly conceived of in information structural terms. Roughly speaking, ILPs relate to categorial judgements, whereas SLPs may build either categorial or thetical judgements; cf., e.g., Ladusaw (1994), McNally (1998), Jäger (2001). On this move, the stage-level/individual-level distinction is usually no longer seen as a lexically codified contrast but rather as being structurally triggered.

On the other hand there is growing skepticism concerning the empirical adequacy of the stage-level/individual-level hypothesis. Authors such as Higginbotham & Ramchand (1997), Fernald (2000), and Jäger (2001) argue that the phenomena subsumed under this label are actually quite distinct and do not yield such a uniform contrast upon closer scrutiny as a first glance might suggest.

For instance, as already noted by Bäuerle (1994: 23), the group of SLPs that support an existential reading of bare plural subjects is actually quite small; cf. (19a). The majority of SLPs, such as *tired* or *hungry* in (32) behaves more like ILPs, i.e., they only yield a generic reading.

(32)   Firemen are hungry / tired.   (SLP: only generic reading)

In view of the sentence pair in (33) Higginbotham & Ramchand (1997: 66) suspect that some notion of *speaker proximity* might also be of relevance for the availability of existential readings.

(33)   a.   (Guess whether) firemen are nearby/at hand.
         b.   ?(Guess whether) firemen are far away/a mile up the road.

There-constructions, on the other hand, also appear to tolerate ILPs, contrary to what one would expect; cf. the example (34) taken from Carlson (1977: 72).

(34)   There were five men dead.

Furthermore, as Glasbey (1997) shows, the availability of existential readings for bare plural subjects – both for SLPs and ILPs – might also be evoked by the context; cf. the following examples taken from Glasbey (1997: 170ff).

(35)   a.   Children are sick.   (SLP: no existential reading)
         b.   We must get a doctor. Children are sick.   (SLP: existential reading)

(36)   a.   Drinkers were under-age.   (ILP: no existential reading)
         b.   John was shocked by his visit to the Red Lion. Drinkers were under-age, drugs were on sale, and a number of fights broke out while he was there.
                                                               (ILP: existential reading)

As these examples show, the picture of the stage-level/individual-level contrast as a clear-cut, grammatically reflected distinction becomes a lot less clear upon closer inspection. The actual contributions of the lexicon, grammar, conceptual knowledge, and context to the emergence of stage-level/individual-level effects still remain largely obscure. While the research focus of the stage-level/individual-level paradigm has been directed almost exclusively towards the apparent grammatical effects of the SLP/ILP contrast, no major efforts were made to uncover its conceptual foundation, although there has never been any doubt that a definition of SLPs and ILPs in terms of the dichotomy "temporary vs. permanent" or "accidental vs. essential" cannot be but a rough approximation. Rather than being a mere accident, this missing link to a solid conceptual foundation could be a hint that the overall perspective on the stage-level/individual-level distinction as a genuinely grammatical distinction that reflects an under-lying conceptual opposition might be wrong after all. The studies of Glasbey (1997), Maienborn (2003, 2004, 2005c) and Magri (2008, 2009) point in this direction. They all argue against treating stage-level/individual-level effects as grammatical in nature and provide alternative, pragmatic analyses for the observed phenomena. In particular, Maienborn argues against an event-based explanation objecting that the use of Davidsonian event arguments does not receive any independent justification in terms of the event criteria discussed in section 2.2 in such stage-level/individual-level accounts. The crucial question is whether all state expressions, or at least those state expressions that express temporary/accidental properties, i.e. SLPs, can be shown to introduce a Davidsonian event argument. This takes us back to the ontological issue of a proper characterization of states.

5.   Reconsidering states

As mentioned in section 3.1 above, one of the two central claims of the Neo-Davidsonian paradigm is that *all* predicates, including state expressions, have a hidden event argument. Despite its popularity this claim has seldom been defended explicitly. Parsons (1995, 2000) is among the few advocates of the Neo-Davidsonian approach who have subjected this assumption to some scrutiny. And the conclusion he reaches wrt. state expressions is rather sobering:

> » Based on the considerations reviewed above, it would appear that the underlying state analysis is not compelling for any kind of the constructions reviewed here and is not even plausible for some (e.g., for nouns). There are a few outstanding problems that the underlying state analysis might solve, […] but for the most part the weight of evidence seems to go the other way. «   (Parsons 2000: 88)

Parsons (2000) puts forth his so-called *time travel argument* to make a strong case for a Neo-Davidsonian analysis of state expressions; but cf. the discussion in Maienborn (2007). In any case, if the Neo-Davidsonian assumption concerning state expressions is right, we should be able to confirm the existence of hidden state arguments by the event diagnostics mentioned in section 2.2; cf. (10). Maienborn (2003, 2005a) examines the behavior of state expressions wrt. these and further event diagnostics and shows that there is a fundamental split within the class of non-dynamic expressions: State verbs such as *sit, stand, lie, wait, gleam,* and *sleep* meet all of the criteria for Davidsonian eventualities. In contrast, stative verbs like *know, weigh, own,* and *resemble* do not meet any of them. Moreover, it turns out that copular constructions behave uniformly like stative verbs, regardless of whether the predicate denotes a temporary property (SLP) or a more-or-less permanent property (ILP).

The behavior of state verbs and statives with respect to perception reports is illustrated in (37). While state verbs can serve as infinitival complements of perception verbs (37a-c), statives, including copula constructions, are prohibited in these contexts (37d-e). (The argumentation in Maienborn (2003, 2005a) is based on data from German. For ease of presentation I will use English examples in the following.)

(37)   *Perception reports:*
  a. I saw the child sit on the bench.
  b. I saw my colleague sleep through the lecture.
  c. I noticed the shoes gleam in the light.
  d. *I saw the child be on the bench.
  e. *I saw the tomatoes weigh 1 pound.
  f. *I saw my aunt resemble Romy Schneider.

Furthermore, as (38a-c) shows, state verbs combine with locative modifiers, whereas statives do not; see (38d-g).

(38)   *Locative modifiers:*
  a. Hilda waited at the corner.
  b. Bardo slept in a hammock.
  c. The pearls gleamed in her hair.
  d. *The dress was wet on the clothesline.

e.   *Bardo was hungry in front of the fridge.

f.   *The tomatoes weighed 1 pound besides the carrots.

g.   *Bardo knew the answer over there.

Three remarks on locatives should be added here. First, when using locatives as event diagnostics we have to make sure to use true event-related adverbials, i.e., locative VP-modifiers. They should not be confounded with locative frame adverbials such as those in (39). These are sentential modifiers that do not add an additional predicate to a VP's event argument but instead provide a semantically underspecified domain restriction for the overall proposition. Locative frame adverbials often yield temporal or conditional interpretations (e.g. 'When he was in Italy, Maradona was married.' for (39c)) but might also be interpreted epistemically, for instance ('According to the belief of the people in Italy, Maradona was married.'); see Maienborn (2001) for details and cf. also article 54 (Maienborn & Schäfer) *Adverbs and adverbials*.

(39)   *Locative frame adverbials:*

a.   By candlelight, Carolin resembled her brother.

b.   Maria was drunk in the car.

c.   In Italy, Maradona was married.

Secondly, we are now in a position to make more precise what is going on in sentence pairs like (23), repeated here as (40), which are often taken to demonstrate the different behavior of SLPs and ILPs wrt. location in space; cf. the discussion in section 4.

(40)   a.   Maria was tired / hungry / nervous in the car.   (SLP)

b.   ??Maria was blond / intelligent / a linguist in the car.   (ILP)

Actually, this SLP/ILP contrast is not an issue of *grammaticality* but concerns the *acceptability* of these sentences under a temporal reading of the locative frame; cf. Maienborn (2004) for a pragmatic explanation of this *temporariness effect*.

Thirdly, sentences (38d/e) are well-formed under an alternative syntactic analysis that takes the locative as the main predicate and the adjective as a depictive secondary predicate. Under this syntactic analysis sentence (38d) would express that there was a state of the dress being on the clothesline, and this state is temporally included in an accompanying state of the dress being wet. This is not the kind of evidence needed to substantiate the Neo-Davidsonian claim that states can be located in space. If the locative were a true event-related modifier, sentence (38d) should have the interpretation: There was a state of wetness of the dress, and this state is located on the clothesline. (38d) has no such reading; cf. the discussion on this point between Rothstein (2005) and Maienborn (2005b).

Turning back to our event diagnostics, the same split within the group of state expressions that we observed in the previous cases also shows up with manner adverbials, comitatives and the like – that is, modifiers that elaborate on the internal functional structure of events. State verbs combine regularly with them, whereas statives do not, as (41) shows. Katz (2003) dubbed this the *Stative Adverb Gap*.

(41)   *Manner adverbials etc.:*

a.   Bardo slept calmly /with his teddy / without a pacifier.

b.   Carolin sat motionless / stiff at the table.

    c.   The pearls gleamed dully / reddishly / moistly.

    d.   *Bardo was calmly /with his teddy / without a pacifier tired.

    e.   *Carolin was restlessly / patiently thirsty.

    f.   *Andrea resembled with her daughter Romy Schneider.

    g.   *Bardo owned thriftily / generously much money.

There has been some discussion on apparent counterexamples to this Stative Adverb Gap such as (42). While, e.g., Jäger (2001), Mittwoch (2005), Dölling (2005) or Rothstein (2005) conclude that such cases provide convincing evidence for assuming a Davidsonian argument for statives as well, Katz (2000, 2003, 2008) and Maienborn (2003, 2005a,b, 2007) argue that these either involve degree modification as in (42a) or are instances of *event coercion*, i.e. a sentence such as (42b) is, strictly speaking, ungrammatical but can be "rescued" by inferring some event argument to which the manner adverbial may then apply regularly; see the discussion in section 6.2. For instance, what John is passionate about in (42b) is not the state of being a Catholic but the activities associated with this state (e.g. going to mass, praying, going to confession). If no related activities come to mind for some predicate such as *being a relative of Grit* in (42'b) then the pragmatic rescue fails and the sentence becomes odd. According to this view, understanding sentences such as (42b) requires a non-compositional reinterpretation of the stative expression that is triggered by the *lack* of a regular Davidsonian event argument.

(42)   a.   Lisa firmly believed that James was innocent.

         b.   John was a Catholic with great passion in his youth.

(42')   b.   ??John was a relative of Grit with great passion in his youth.

See also Rothmayr (2009) for a recent analysis of the semantics of stative verbs including a decompositional account of stative/eventive ambiguities as illustrated in (43):

(43)   a.   Hair obstructed the drain.   (stative reading)

         b.   A plumber obstructed the drain.   (preferred eventive reading)

A further case of stative/eventive ambiguities is discussed by Engelberg (2005) in his study of dispositional verbs such as German *helfen* (*help*), *gefährden* (*endanger*), *erleichtern* (*facilitate*). These verbs may have an eventive or a stative reading depending on whether the subject is nominal or sentential; cf. (44). Trying to account for these readings within the Davidsonian program turns out to be challenging in several respects. Engelberg advocates the philosophical concept of *supervenience* as a useful device to account for the evaluative rather than causal dependency of the effect state expressed by these verbs.

(44)   a.   Rebecca helped Jamaal in the kitchen.   (eventive)

         b.   That Rebecca had fixed the water pipes helped Jamaal in the kitchen. (stative)

In view of the evidence reviewed above, it seems justified to conclude that the class of statives, including all copular constructions, does not behave as one would expect if they had a hidden Davidsonian argument, regardless of whether they express a temporary or a permanent property. What conclusions should we draw from these linguistic observations concerning the ontological category of states? There are basically two lines of argumentation that have been pursued in the literature.

    Maienborn takes the behavior wrt. the classical event diagnostics in (10) as a sufficiently strong linguistic indication of an underlying ontological difference and assumes that only

state verbs denote true Davidsonian eventualities, i.e., *Davidsonian states*, whereas statives resist a Davidsonian analysis but refer instead to what Maienborn calls *Kimian states,* exploiting Kim's (1969, 1976) notion of temporally bound property exemplifications. Kimian states may be located in time and they allow for anaphoric reference, Yet, in lacking an inherent spatial dimension, They are ontologically "poorer", more abstract entities than Davidsonian eventualities; cf. Maienborn (2003, 2005a, b, 2007) for details.

Authors like Dölling (2005), Higginbotham (2005), Ramchand (2005) or Rothstein (2005) take a different track. On their perspective, the observed linguistic differences call for a more liberal definition of eventualities that includes the referents of stative expressions. In particular, they are willing to give up the assumption of eventualities having an inherent spatial dimension. Hence, Ramchand (2005: 372) proposes the following alternative to the definition offered in (8):

(45)   Eventualities are abstract entities with constitutive participants and with a constitutive relation to the temporal dimension.

So the issue basically is whether we opt for a narrow or a broad definition of events. 40 years after Davidson's first plea for events we still don't know for sure what kind of *things* event(ualitie)s actually are.

6.   Psycholinguistic studies

In recent years, a growing interest has emerged in testing hypotheses on theoretical linguistic assumptions about event structure by means of psycholinguistic experiments. Two research areas involving events have attracted major interest within the still developing field of semantic processing; cf. articles 15 (Bott et al.) *Experimental methods*, 103 (Frazier) *Meaning in psycholinguistics*. These are the processing of underlying event structures and of event coercion.

6.1.   The processing of underlying event structures

The first focus of interest concerns the issue of distinguishing different kinds of events in terms of the complexity of their internal structure. Gennari & Poeppel (2003) show that the processing of event sentences such as (46a) takes significantly longer than the processing of otherwise similar stative sentences such as (46b).

(46)   a.   The visiting scientist solved the intricate math problem.   (eventive)
        b.   The visiting scientist lacked any knowledge of English.   (stative)

This processing difference is attributed to eventive verbs having a more complex decompositional structure than stative verbs; cf. the Bierwisch-style representations in (47).

(47)   a.   *to solve:* $\lambda y\, \lambda x\, \lambda e$ [e: CAUSE (x, BECOME (SOLVED (y)))]
        b.   *to lack:* $\lambda y\, \lambda x\, \lambda s$ [s: LACK (x, y)]

Thus, the study of Gennari & Poeppel (2003) adduces empirical evidence for the event vs. state distinction and it provides experimental support for the psychological reality of structuring natural language meaning in terms of decompositional representations. This is, of course, a highly controversial issue; cf. the argumentation in Fodor, Fodor & Garrett (1975), de Almeida (1999) and Fodor & LePore (1998) against decomposition, and see also the more differentiated perspective taken in Mobayyen & de Almeida (2005).

McKoon & Macfarland (2000, 2002), taking up a distinction made by Levin & Rappaport Hovav (1995) investigate two kinds of causative verbs, viz. verbs denoting an externally caused event (e.g. *break*) as opposed to verbs denoting an internally caused event (e.g. *bloom*). Whereas the former include a causing subevent as well as a change-of-state subevent, the latter only express a change of state; cf. McKoon & Macfarland (2000: 834). Thus, the two verb classes differ wrt. their decompositional complexity. McKoon & Macfarland describe a series of experiments that show that there are clear processing differences corresponding to this lexical distinction. Sentences with external causation verbs take significantly longer to process than sentences with internal causation verbs. In addition, this processing difference shows up with the transitive as well as the intransitive use of the respective verbs; cf. (48) vs. (49). McKoon & Macfarland conclude from this finding that the causing subevent remains implicitly present even if no explicit cause is mentioned in the *break*-case. That is, their experiments suggest that both transitive and intransitive uses of, e.g., *awake* in (49) are based on the same lexical semantic event structure consisting of two subevents. And conversely if an internal causation verb is used transitively, as *wilt* in (48a), the sentence is still understood as denoting a single event with the subject referent being part of the change-of-state event.

(48)   *Internal causation verbs:*

    a.   The bright sun wilted the roses.
    b.   The roses wilted.

(49)   *External causation verbs:*
    a.   The fire alarm awoke the residents.
    b.   The residents awoke.

In sum, the comprehension of *break*, *awake* etc. requires understanding a more

complex event conceptualization than that of *bloom*, *wilt* etc. This psycholinguistic finding corroborates theoretically motivated assumptions on the verbs' lexical semantic representations. See also Härtl (2008) on a more thorough and differentiated study on implicit event information. Härtl discusses whether, to what extent, and at which processing level implicit event participants and implicit event predicates are still accessible for interpretation purposes.

Most notably, the studies of McKoon & Macfarland (2000, 2002) and Gennari & Poeppel (2003) provide strong psycholinguistic support for the assumption that verb meanings are represented and processed in terms of an underlying event structure.

6.2.   The processing of event coercion

The second focus of psycholinguistic research on events is devoted to the notion of *event coercion*. Coercion refers to the forcing of an alternative interpretation when the compositional machinery fails to derive a regular interpretation. In other words, event coercion is a kind of rescue operation which solves a grammatical conflict by using additional knowledge about the involved event type; cf. also article 25 (de Swart) *Mismatches and coercion*. There are two types of coercion that are prominently discussed in the literature. The first type, the so-called *complement coercion* is illustrated in (50). The verb *to begin* requires an event-denoting complement and forces the given object-denoting complement *the book* into a contextually appropriate event reading. Hence, sentence (50) is reinterpreted as expressing that John began, e.g., to read the book; cf., e.g., Pustejovsky (1995), Egg (2003).

(50)   John began the book.

The second kind, the so-called *aspectual coercion* refers to a set of options for adjusting the aspectual type of a verb phrase according to the demands of a temporal modifier. For instance, the punctual verb *to sneeze* in (51a) is preferably interpreted iteratively in combination with the durative adverbial *for five minutes*, whereas the temporal adverbial *for years* forces a habitual reading of the verb phrase *to smoke a morning cigarette* in (51b), and the stative expression *to be in one's office* receives an ingressive reinterpretation due to the temporal adverbial *in 10 minutes* in (51c); cf., e.g., Moens & Steedman (1988), Pulman (1997), de Swart (1998), Dölling (2003), Egg (2005). See also the classification of aspectual coercions developed in Hamm & van Lambalgen (2005).

(51)   a.   John sneezed for five minutes.
        a.   John smoked a morning cigarette for years.
        b.   John was in his office in 10 minutes.

There are basically two kinds of theoretical accounts that have been developed for the linguistic phenomena subsumed under the label of event coercion: type-shifting accounts (e.g., Moens & Steedman 1988, de Swart 1998) and underspecification accounts (e.g., Pulman 1997, Egg 2005); cf. articles 24 (Egg) *Semantic underspecification* and 25 (de Swart) *Mismatches and coercion*. These accounts and the predictions they make for the processing of coerced expressions have been the subject of several psycholinguistic studies; cf., e.g., de Almeida (2004), Pickering McElree & Traxler (2005) and Traxler et al. (2005) on complement coercion and Piñango, Zurif & Jackendoff (1999), Piñango, Mack & Jackendoff (2006), Pickering et al. (2006), Bott (2008a, b), Brennan & Pylkkänen (2008) on aspectual coercion. The crucial question is whether event coercion causes additional processing costs, and if so at which point in the course of meaning composition such additional processing takes place. The results obtained so far still don't yield a fully stable picture. Whether processing differences are detected or not seems to depend partly on the chosen experimental methods and tasks; cf. Pickering et al. (2006). Pylkkänen & McElree (2006) draw the following interim balance: Whereas complement coercion always raises additional processing costs (at least without contextual support), aspectual coercion does not appear to lead to significant processing difficulties. Pylkkänen & McElree (2006) propose the following interpretation of these results: Complement coercion involves an ontological type conflict between the verb's request for an event argument and a given object referent. This ontological type conflict requires an immediate and time-consuming repair; otherwise the compositional process would break down. Aspectual coercion, on the other hand, only involves sortal shifts within the category of events that do not seem to affect composition and should therefore best be taken as an instance of semantic underspecification. For a somewhat more differentiated picture on the processing of different types of aspectual coercion see Bott (2008a).

7. Conclusion

Although psycholinguistic research on event structure might be said to be still in its infancy, the above remarks by some pioneer studies already show that Davidsonian events are about to develop into a genuine subject of psychological research on natural language. Hidden event arguments, as introduced by Davidson (1967), have not only proven to be of great benefit in explaining numerous combinatorial and inferential properties of natural language expressions,

such that they show up virtually everywhere in present-day assumptions about linguistic structure. In addition, there is growing evidence that they are also psychologically real. Admittedly, we still don't know for sure what kind of things events actually are. Nevertheless, 40 years after they appeared on the linguistic scene, Davidsonian events continue to be both an indispensable everyday linguistic instrument and a constant source of fresh insights into the constitution of natural language meaning.

8. References

Asher, Nicholas 2000. Events, facts, propositions, and evolutive anaphora. In: J. Higginbotham, F. Pianesi & A. Varzi (eds.). *Speaking of Events*. Cambridge, MA: MIT Press, 123–150.

Austin, Jennifer, Stefan Engelberg & Gesa Rauh (eds.) 2004. *Adverbials. The Interplay between Meaning, Context, and Syntactic Structure*. Amsterdam: Benjamins.

Bach, Emmon 1986. The algebra of events. *Linguistics and Philosophy* 9(1), 5–16.

Bäuerle, Rainer 1994. Zustand – Prozess – Ereignis. Zur Kategorisierung von Verb(al)phrasen. *Wuppertaler Arbeitspapiere zur Sprachwissenschaft* 10, 1–32.

Bayer, Josef 1986. The role of event expressions in grammar. *Studies in Language* 10(1), 1–52.

Bierwisch, Manfred 1988. On the grammar of local prepositions. In: M. Bierwisch, W. Motsch & I. Zimmermann (eds.). *Syntax, Semantik und Lexikon*. Berlin: Akademie-Verlag, 1–65.

Bierwisch, Manfred 1989. Event nominalizations: Proposals and problems. In: W. Motsch (ed.). *Wortstruktur und Satzstruktur*. Berlin: Akademie-Verlag, 1–73.

Bierwisch, Manfred 1997. Lexical information from a minimalist point of view. In: Ch. Wilder, H.-M. Gärtner & M. Bierwisch (eds.). *The Role of Economy Principles in Linguistic Theory*. Berlin: Akademie-Verlag, 227–266.

Bierwisch, Manfred 2005. The event structure of CAUSE and BECOME. In: C. Maienborn & A. Wöllstein (eds.). *Event Arguments: Foundations and Applications*. Tübingen: Niemeyer, 11–44.

Bott, Oliver 2008a. *The Processing of Events*. Ph.D. Dissertation. Universität Tübingen.

Bott, Oliver 2008b. Doing it again and again may be difficult, but it depends on what you are doing. In: N. Abner & J. Bishop (eds.). *Proceedings of West Coast Conference on Formal Linguistics (= WCCFL) 27*. Somerville, MA: Cascadilla Proceedings Project, 63–71.

Brennan, Jonathan & Liina Pylkkänen 2008. Processing events: Behavioral and neuromagnetic correlates of aspectual coercion. *Brain and Language* 106(2), 132–143.

Carlson, Gregory N. 1977. *Reference to Kinds in English*. Ph.D. Dissertation. University of California at Irvine. Published 1980 by New York: Garland.

Carlson, Gregory N. 1998. Thematic roles and the individuation of events. In: S. Rothstein (ed.). *Events and Grammar*. Studies in Linguistics and Philosophy 70. Dordrecht: Kluwer, 35–51.

Chierchia, Gennaro 1995. Individual-level predicates as inherent generics. In: G. N. Carlson & F. J. Pelletier (eds.). *The Generic Book*. Chicago, London: University of Chicago Press, 176–223.

Davidson, Donald 1967. The logical form of action sentences. In: N. Resher (ed.). *The Logic of Decision and Action*. Pittsburgh: University of Pittsburgh Press, 81–95. Reprinted in D. Davidson (ed.). *Essays on Actions and Events*. Oxford: Clarendon Press, 1980, 105–122.

Davidson, Donald 1969. The individuation of events. In: N. Resher (ed.). *Essays in Honor of Carl G. Hempel*. Dordrecht: Reidel, 216–234. Reprinted in D. Davidson (ed.). *Essays on Actions and Events*. Oxford: Clarendon Press, 1980, 163–180.

de Almeida, Roberto G. 1999. What do category-specific semantic deficits tell us about the representation of lexical concepts? *Brain and Language* 68, 241–248.

de Almeida, Roberto G. 2004. The effect of context on the processing of type-shifting verbs. *Brain and Language* 90, 249–261.

de Swart, Henriëtte 1998. Aspect shift and coercion. *Natural Language and Linguistic Theory* 16(2), 347–385.

Diesing, Molly 1992. *Indefinites*. Cambridge, MA: MIT Press.

Dölling, Johannes 2003. Flexibility in adverbal modification: Reinterpretation as contextual enrichment. In: E. Lang, C. Maienborn & C. Fabricius-Hansen (eds.). *Modifying Adjuncts*. Berlin: de Gruyter, 511–552.

Dölling, Johannes 2005. Copula sentences and entailment relations. *Theoretical Linguistics*, 31(3), 317–329.

Dölling, Johannes, Tatjana Heyde-Zybatow & Martin Schäfer (eds.) 2008. *Event Structures in Linguistic Form and Interpretation*. Berlin: de Gryuter.

Dowty, David R. 1979. *Word Meaning and Montague Grammar. The Semantics of Verbs and Times in Generative Semantics and in Montague's PTQ*. Dordrecht: Reidel.

Eckardt, Regine 1998. *Adverbs, Events and Other Things. Issues in the Semantics of Manner Adverbs*. Linguistische Arbeiten 379. Tübingen: Niemeyer.

Eckardt, Regine 2002. Event semantics. In: F. Hamm & T. E. Zimmermann (eds.). *Semantics*. Linguistische Berichte, Sonderheft 10. Hamburg: Buske, 91–128.

Egg, Markus 2003. Beginning novels and finishing hamburgers. Remarks on the semantics of *to begin*. *Journal of Semantics* 20(2), 163–191.

Egg, Markus 2005. *Flexible Semantics for Reinterpretation Phenomena*. Stanford, CA: CSLI.

Ehrich, Veronika & Irene Rapp 2000. Sortale Bedeutung und Argumentstruktur: *ung*-Nominalisierungen im Deutschen. *Zeitschrift für Sprachwissenschaft* 19(2), 245–303.

Engelberg, Stefan 2000. *Verben, Ereignisse und das Lexikon*. Tübingen: Niemeyer.

Engelberg, Stefan 2002. Intransitive accomplishments and the lexicon: The role of implicit arguments, definiteness, and reflexivity in aspectual composition. *Journal of Semantics* 19(4), 369–416.

Engelberg, Stefan 2005. Stativity, supervenience, and sentential subjects. In: C. Maienborn & A. Wöllstein (eds.). *Event Arguments: Foundations and Applications*. Tübingen: Niemeyer, 45–68.

Fernald, Theodore B. 2000. *Predicates and Temporal Arguments*. Oxford, New York: Oxford University Press.

Fodor, Janet D., Jerry A. Fodor & Merrill Garrett 1975. The psychological unreality of semantic representations. *Linguistic Inquiry* 6(4), 515–532.

Fodor, Jerry A. & Ernest LePore 1998. The emptiness of the lexicon: Reflections on James Pustejovsky's "The Generative Lexicon". *Linguistic Inquiry* 29(2), 269–288.

Geist, Ljudmila 2006. *Die Kopula und ihre Komplemente. Zur Kompositionalität in Kopulasätzen*. Tübingen: Niemeyer.

Gennari, Silvia & David Poeppel 2003. Processing correlates of lexical semantic complexity. *Cognition* 89(1), 27–41.

Glasbey, Sheyla 1997. I-level predicates that allow existential readings for bare plurals. In: A. Lawson (ed.). *Proceedings of Semantics and Linguistic Theory (= SALT) VII*. Ithaca, NY: CLC, 169–179.

Grimshaw, Jane 1990. *Argument Structure*. Cambridge, MA: MIT Press.

Hamm, Fritz & Michiel van Lambalgen 2005. *The Proper Treatment of Events*. Oxford: Blackwell.

Härtl, Holden 2008. *Implizite Informationen: Sprachliche Ökonomie und interpretative Komplexität bei Verben*. studia grammatica 68. Berlin: Akademie-Verlag.

Higginbotham, James 1983. The logic of perceptual reports: An extensional alternative to situation semantics. *Journal of Philosophy* 80(2), 100–127.

Higginbotham, James 1985. On semantics. *Linguistic Inquiry* 16(4), 547–593.

Higginbotham, James 1989. Elucidations of meaning. *Linguistics and Philosophy* 12(4), 465–517.

Higginbotham, James 2000. On events in linguistic semantics. In: J. Higginbotham, F. Pianesi & A. Varzi (eds.). *Speaking of Events*. New York, Oxford: Oxford University Press, 49–79.

Higginbotham, James 2005. Event positions: Suppression and emergence. *Theoretical Linguistics* 31(3), 349–358.

Higginbotham, James, Fabio Pianesi & Achille Varzi (eds.) 2000. *Speaking of Events*. New York, Oxford: Oxford University Press.

Higginbotham, James & Gillian Ramchand 1997. The stage-level/individual-level distinction and the mapping hypothesis. *Oxford University Working Papers in Linguistics, Philology & Phonetics* 2, 53–83.

Jäger, Gerhard 2001. Topic-comment structure and the contrast between stage level and individual level predicates. *Journal of Semantics* 18(2), 83–126.

Jäger, Gerhard & Reinhard Blutner 2003. Competition and interpretation: The German adverb wieder ('again'). In: E. Lang, C. Maienborn & C. Fabricius-Hansen (eds.). *Modifying Adjuncts*. Berlin: de Gruyter, 393–416.

Kamp, Hans & Uwe Reyle 1993. *From Discourse to Logic. Introduction to Modeltheoretic Semantics of Natural Language, Formal Logic and Discourse Representation Theory*. Dordrecht: Kluwer.

Katz, Graham 2000. Anti Neo-Davidsonianism: Against a Davidsonian semantics for state sentences. In: C. Tenny & J. Pustejovsky (eds.). *Events as Grammatical Objects. The Converging Perspectives of Lexical Semantics and Syntax*. Stanford, CA: CSLI, 393–416.

Katz, Graham 2003. Event arguments, adverb selection, and the Stative Adverb Gap. In: E. Lang, C. Maienborn & C. Fabricius-Hansen (eds.). *Modifying Adjuncts*. Berlin: de Gruyter, 455–474.

Katz, Graham 2008. Manner modification of state verbs. In: L. McNally & Ch. Kennedy (eds.). *Adjectives and Adverbs. Syntax, Semantics, and Discourse*. Oxford: Oxford University Press, 220–248.

Kennedy, Christopher & Beth Levin 2008. Measure of change: The adjectival core of degree achievements. In: L. McNally & Ch. Kennedy (eds.). *Adjectives and Adverbs. Syntax, Semantics, and Discourse*. Oxford: Oxford University Press, 156–182.

Kim, Jaegwon 1969. Events and their descriptions: Some considerations. In: N. Rescher (ed.). *Essays in Honor of Carl G. Hempel*. Dordrecht: Reidel, 198–215.

Kim, Jaegwon 1976. Events as property exemplifications. In: M. Brand & D. Walton (eds.). *Action Theory. Proceedings of the Winnipeg Conference on Human Action*. Dordrecht, Boston: Reidel, 159–177.

Kratzer, Angelika 1995. Stage-level and individual-level predicates. In: G. N. Carlson & F. J. Pelletier (eds.). *The Generic Book*. Chicago, London: University of Chicago Press, 125–175.

Krifka, Manfred 1989. Nominal reference, temporal constitution and quantification in event semantics. In: R. Bartsch, J. van Benthem & P. van Emde Boas (eds.). *Semantics and Contextual Expression*. Dordrecht: Foris, 75–115.

Krifka, Manfred 1990. Four thousand ships passed through the lock: Object-induced measure functions on events. *Linguistics and Philosophy* 13(5), 487–520.

Krifka, Manfred 1992. Thematic relations as links between nominal reference and temporal constitution. In: I. Sag & A. Szabolcsi (eds.). *Lexical Matters*. Stanford, CA: CSLI, 29–53.

Krifka, Manfred 1998. The origins of telicity. In: S. Rothstein (ed.). *Events and Grammar*. Dordrecht: Kluwer, 197–235.

Ladusaw, William 1994. Thetic and categorical, stage and individual, weak and strong. In: M. Harvey & L. Santelmann (eds.). *Proceedings of Semantics and Linguistic Theory (= SALT) IV*. Ithaca, NY: CLC, 220–229.

Lang, Ewald, Claudia Maienborn & Cathrine Fabricius-Hansen (eds.) 2003. *Modifying Adjuncts*. Berlin: de Gruyter.

Lemmon, Edward J. 1967. Comments on D. Davidson's "The Logical Form of Action Sentences". In: N. Resher (ed.). *The Logic of Decision and Action*. Pittsburgh: University of Pittsburgh Press, 96–103.

LePore, Ernest 1985. The semantics of action, event, and singular causal sentences. In: E. LePore & B. McLaughlin (eds.). *Actions and Events: Perspectives on the Philosophy of Donald Davidson*. Oxford: Blackwell, 151–161.

Levin, Beth & Malka Rappaport-Hovav 1995. *Unaccusativity: At the Syntax-Lexical Semantics Interface*. Cambridge, MA: MIT Press.

Lombard, Lawrence B. 1998. Ontologies of events. In: S. Laurence & C. Macdonald (eds.). *Contemporary Readings in the Foundations of Metaphysics*. Oxford: Blackwell, 277–294.

Magri, Giorgio. 2008. A theory of individual level predicates based on blind scalar implicatures (extended version). Manuscript MIT (http://web.mit.edu/gmagri/www/).

Magri, Giorgio 2009. A theory of individual-level predicates based on blind mandatory scalar implicatures. *Natural Language Semantics* 17(3), 245–297.

Maienborn, Claudia 2001. On the position and interpretation of locative modifiers. *Natural Language Semantics* 9(2), 191–240.

Maienborn, Claudia 2003. *Die logische Form von Kopula-Sätzen*. studia grammatica 56. Berlin: Akademie-Verlag.

Maienborn, Claudia 2004. A pragmatic explanation of the stage level/individual level contrast in combination with locatives. In: B. Agbayani, V. Samiian and B. Tucker (eds.). *Proceedings of the Western Conference on Linguistics (= WECOL) 15*. Fresno, CA: CSU, 158–170.

Maienborn, Claudia 2005a. On the limits of the Davidsonian approach: The case of copula sentences. *Theoretical Linguistics* 31(3), 275–316.

Maienborn, Claudia 2005b. Eventualities and different things: A reply. *Theoretical Linguistics* 31(3), 383–396.

Maienborn, Claudia 2005c. A discourse-based account of Spanish *ser/estar*. *Linguistics* 43(1), 155–180.

Maienborn, Claudia 2007. On Davidsonian and Kimian states. In: I. Comorovski & K. von Heusinger (eds.). *Existence: Semantics and Syntax*. Dordrecht: Springer, 107–130.

Maienborn, Claudia & Angelika Wöllstein (eds.) 2005. *Event Arguments: Foundations and Applications*. Tübingen: Niemeyer.

McKoon, Gail & Talke Macfarland 2000. Externally and internally caused change of state verbs. *Language* 76(4), 833–858.

McKoon, Gail & Talke Macfarland 2002. Event templates in the lexical representations of verbs. *Cognitive Psychology* 45(1), 1–44.

McNally, Louise 1998. Stativity and theticity. In: S. Rothstein (ed.). *Events and Grammar*. Dordrecht: Kluwer, 293–307.

Milsark, Gary L. 1974. *Existential Sentences in English*. Ph.D. Dissertation. MIT. Published 1976 by Bloomington, IN: Indiana University Linguistics Club.

Milsark, Gary L. 1977. Toward an explanation of certain peculiarities of the existential construction in English. *Linguistic Analysis* 3(1), 1–29.

Mittwoch, Anita 2005. Do states have Davidsonian arguments? Some empirical considerations. In: C. Maienborn & Angelika Wöllstein (eds.). *Event Arguments: Foundations and Applications*. Tübingen: Niemeyer, 69–88.

Mobayyen, Forouzan & Roberto G. de Almeida 2005. The influence of semantic and morphological complexity of verbs on sentence recall: Implications for the nature of conceptual representation and category-specific deficits. *Brain and Cognition* 57(2), 168–171.

Moens, Marc & Mark Steedman 1988. Temporal ontology and temporal reference. *Computational Linguistics* 14(2), 15–28.

Parsons, Terence 1990. *Events in the Semantics of English*. *A Study in Subatomic Semantics*. Cambridge, MA: MIT Press.

Parsons, Terence 1995. Thematic relations and arguments. *Linguistic Inquiry* 26(4), 635–662.

Parsons, Terence 2000. Underlying states and time travel. In: J. Higginbotham, F. Pianesi & A. Varzi (eds.). *Speaking of Events*. New York, Oxford: Oxford University Press, 81–93.

Pianesi, Fabio & Achille C. Varzi 2000. Events and event talk: An introduction. In: J. Higginbotham, F. Pianesi & A. Varzi (eds.). *Speaking of Events*. New York, Oxford: Oxford University Press, 3–47.

Pickering, Martin J., Brian McElree & Matthew J. Traxler 2005. The difficulty of coercion: A response to de Almeida. *Brain and Language* 93(1), 1–9.

Pickering, Martin J., Brian McElree, Steven Frisson, Lillian Chen & Matthew J. Traxler 2006. Underspecification and aspectual coercion. *Discourse Processes* 42(2), 131–155.

Piñango, Maria M., Edgar Zurif & Ray Jackendoff 1999. Real-time processing implications of enriched composition at the syntax-semantics interface. *Journal of Psycholinguistic Research* 28(4),

395–414.

Piñango, Maria M., Jennifer Mack & Ray Jackendoff 2006. Semantic combinatorial processes in argument structure: Evidence from light-verbs. In: *Proceedings of the Annual Meeting of the Berkeley Linguistics Society (= BLS) 32*.

Piñón, Christopher 1997. Achievements in an event semantics. In: A. Lawson & E. Cho (eds.). *Proceedings of Semantics and Linguistic Theory (= SALT) VII*. Ithaca, NY: CLC, 276–293.

Pulman, Stephen G. 1997. Aspectual shift as type coercion. *Transactions of the Philological Society* 95(2), 279–317.

Pustejovsky, James 1991. The syntax of event structure. *Cognition* 41(1–3), 47–81.

Pustejovsky, James 1995. *The Generative Lexicon*. Cambridge, MA: MIT Press.

Pylkkänen, Liina & Brian McElree 2006. The syntax-semantics interface: On-line composition of meaning. In: M. A. Gernsbacher & M. Traxler (eds.). *Handbook of Psycholinguistics*. 2nd edition. New York: Elsevier, 537–577. 1st edition 1994.

Ramchand, Gilian C. 1996. Two subject positions in Scottish Gaelic: The syntax-semantics interface. *Natural Language Semantics* 4(2), 165–191.

Ramchand, Gilian C. 2005. Post-Davidsonianism. *Theoretical Linguistics*. 31(3), 359–373

Rapp, Irene 2007. „Was den Besuch zum Ereignis macht" – eine outputorientierte Analyse für die Verb-Nomen-Konversion im Deutschen. *Linguistische Berichte* 208, 407–437.

Rawlins, Kyle 2008. Unifying *illegally*. In: J. Dölling, T. Heyde-Zybatow & M. Schäfer (eds). *Event Structures in Linguistic Form and Interpretation*. Berlin: de Gruyter, 81–102.

Reichenbach, Hans 1947. *Elements of Symbolic Logic*. New York: Macmillan.

Rothmayr, Antonia 2009. *The Structure of Stative Verbs*. Amsterdam: Benjamins.

Rothstein, Susan 1998. *Events and Grammar*. Dordrecht: Kluwer.

Rothstein, Susan 2004. *Structuring Events: A Study in the Semantics of Lexical Aspect*. Oxford: Blackwell.

Rothstein, Susan 2005. States and modification: A reply to Maienborn. *Theoretical Linguistics* 31(3), 375–381.

Stechow, Arnim von 1996. The different readings of *wieder* "again": A structural account. *Journal of Semantics* 13(2), 87–138.

Stechow, Arnim von 2003. How are results represented and modified? Remarks on Jäger & Blutner's anti-decomposition. In: E. Lang, C. Maienborn & C. Fabricius-Hansen (eds.). *Modifying Adjuncts*. Berlin: de Gruyter, 417–451.

Tenny, Carol & James Pustejovsky (eds.) 2000. *Events as Grammatical Objects. The Converging Perspectives of Lexical Semantics and Syntax*. Stanford, CA: CSLI.

Thomason, Richmond H. & Robert C. Stalnaker 1973. A semantic theory of adverbs. *Linguistic Inquiry* 4(2), 195–220.

Traxler, Matthew J., Brian McElree, Rihana S. Williams & Martin J. Pickering 2005. Context effects in coercion: Evidence from eye movements. *Journal of Memory and Language* 53, 1–25.

Vendler, Zeno 1967. *Linguistics in Philosophy*. Ithaca, NY: Cornell University Press.

Wunderlich, Dieter 1997. CAUSE and the structure of verbs. *Linguistic Inquiry* 28(1), 27–68.

Zucchi, Alessandro 1993. *The Language of Propositions and Events*. Dordrecht, Kluwer.

Claudia Maienborn, Tübingen (Germany)