

Events and States*

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2.1 Introduction

From its very outset, the main focus of Davidsonian event semantics has been on events and processes, i.e., dynamic eventualities. Basic ontological assumptions were developed with events as paradigmatic exemplars in mind. Yet, states have also been considered as being of an essentially Davidsonian nature from very early on. At least since the Neo-Davidsonian turn, states have generally been taken to be a subcase of eventualities, on a par with events. According to this view, events and states share crucial ontological properties — those properties that characterize the overall Davidsonian program. Most importantly, they are both considered as spatiotemporal entities, i.e., concrete particulars with a location in space and time. This perspective has generated numerous fruitful insights into the semantic content and combinatorics of a diversity of natural language expressions. At the same time, there has been a growing awareness that the notion of ‘states’ is rather a cover term for a variety of static entities. Different kinds of states manifest different forms of abstractness, and their membership in the category of Davidsonian entities is therefore questionable.

The present article reviews the ontological core properties of eventualities and their linguistic reflexes that are characteristic of the Davidsonian program. And it surveys how different kinds of states that have been discussed in the literature fare in meeting these ontological criteria. This leads to a panorama of static entities both within and outside the Davidsonian realm.

The organization of the chapter is as follows: Section 2.2 introduces the core assumptions of the Davidsonian approach and later Neo-Davidsonian developments concerning the ontology of events and states. Section 2.3 discusses the famous case of the so-called ‘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 from an ontological

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perspective. Section 2.4 provides a closer look at the notion of states, differentiating between so-called Davidsonian and Kimian states. In Section 2.5, these states are contrasted with the ontological notion of ‘tropes,’ i.e., particular manifestations of properties, which has recently received renewed interest. The chapter concludes with some final remarks in Section 2.6.

2.2 Ontological core assumptions

2.2.1 Introducing events

The foundations of contemporary event semantics were laid in Donald Davidson’s seminal work ‘The logical form of action sentences’ (1967). Davidson argues for augmenting the ontological universe with a category of events, which he conceives of as spatiotemporal particulars.¹ In pre-Davidsonian times, a transitive verb such as *to butter* in (1a) would generally have been taken to introduce 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. $\exists e.[\text{BUTTER}(\text{jones}, \text{the toast}, e)]$

¹ The following overview summarizes the description of the Davidsonian program and its further Neo-Davidsonian developments provided in Maienborn (2011a). See also the introduction to the present volume by Robert Truswell.

This move paves the way for a straightforward analysis of adverbial modification. If verbs introduce a hidden event argument, then standard adverbial modifiers may simply be analysed as first-order predicates that add information about this event; see Maienborn and Schäfer (2011) on the problems of alternative analyses and further details of the Davidsonian approach to adverbial modification. Thus, Davidson's classic sentence (2a) takes the logical form (2b).

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

According to (2b), sentence (2a) expresses that there was an event e of Jones buttering the toast, and this event e was located in the bathroom. In addition, e was performed by using a knife as an instrument, and it took place at midnight. Thus, the verb's hidden event argument e 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 modification: what adverbial clauses modify is not verbs but the events that certain verbs introduce. (Davidson 1969: 298)

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). In a Davidsonian account this follows directly from the logical form (2b) by virtue of the logical rule of simplification; cf. (3'). See, for example, Eckardt (1998, 2002) on the difficulties that these entailment patterns pose for a classic operator approach to adverbials such as advocated by Thomason and Stalnaker (1973).

- (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 buttered the toast with the knife.
e. Jones buttered the toast.
- (3)' a. $\exists e[\text{BUTTER}(\text{jones, the toast, } e) \ \& \ \text{IN}(e, \text{the bathroom}) \ \& \ \text{AT}(e, \text{midnight})]$
b. $\exists e[\text{BUTTER}(\text{jones, the toast, } e) \ \& \ \text{IN}(e, \text{the bathroom})]$

- c. $\exists e[\text{BUTTER}(\text{jones, the toast, } e) \ \& \ \text{AT}(e, \text{midnight})]$
- d. $\exists e[\text{BUTTER}(\text{jones, the toast, } e) \ \& \ \text{INSTR}(e, \text{the knife})]$
- e. $\exists e[\text{BUTTER}(\text{jones, the toast, } e)]$

Further evidence for the existence of hidden event arguments can be adduced from anaphoricity, quantification and definite descriptions among other things: having introduced event arguments, the anaphoric pronoun *it* in (4) may now straightforwardly be analysed 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 is 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); see, for example, Bierwisch (1989), Grimshaw (1990, 2011), and Zucchi (1993) for event semantic treatments of nominalizations.

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

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, and 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.

2.2.2 *Ontological properties and linguistic diagnostics*

Semantic research over the past decades has provided impressive confirmation of Davidson's (1969: 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. Focusing 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 discussion of this issue in the past decades has shown (see, for example, the overviews in Lombard 1998, Engelberg 2000, Pianesi and 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 only if 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, in this account, be identical. To take Davidson's (1969: 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, for example, the criticism by Eckardt (1998, §3.1).² What we are still missing, then, are

² Eckardt (1998) argues that Parsons' approach forces us to assume that two intuitively identical events such as, for instance, an event of Alma eating a pizza greedily and an event of Alma devouring a pizza are non-identical. If Alma was eating the pizza greedily, this does not imply that she was devouring the pizza greedily. Hence, the manner adverbial only

ontological criteria of the appropriate grain for identifying events. This is the conclusion Pianesi and 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. [...] 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 and 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, is certainly one of the major reasons among linguists for the continuing popularity of such analyses. These considerations lead to the definition in (8), which I will adopt as a working definition for the subsequent discussion; cf. Maienborn (2005c).

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

The statement in (8) may be taken to be the core assumption of the Davidsonian paradigm. Several ontological properties follow from it. As concrete spatial entities, events can be perceived (9a). Furthermore, due to their spatiotemporal extension they have a location in space and time (9b). And, since they are particulars, any event of a given type will instantiate this event type in a unique manner (9c).³

applies to the eating event and not to the devouring event, which, according to Parsons, means that the two events are not identical.

³ If we conceive of events as particulars, it is only natural to also assume event types or event kinds in our ontology — quite in parallel with the well-established particular-kind dichotomy for objects (as introduced by Carlson 1977a). Interestingly, event kinds have

(9) ***Ontological properties of events:***

- a. Events are perceptible.
- b. Events can be located in space and time.
- c. Events have a unique manner of realization.

The properties in (9) can, in turn, be associated with 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 and further participant expressions (comitatives, instrumentals, 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), with the verb *see* selecting for an infinitival complement, expresses that Anna perceived the event of Heidi cutting the roses. This does not imply that Anna was necessarily aware of, for example, who was performing the action; see the continuation in (11b). Sentence (11c), on the other hand, where *see* selects for a sentential complement, 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).

See also the minimal pair in (12): we take dogs to be able to perceive events but don't concede them the capability of epistemically loaded fact perception.

only recently started to attract some attention within the Davidsonian paradigm. See the chapter by Gehrke in the present volume for an overview of recent developments concerning event kinds and their relationship to event particulars. The focus of the present chapter remains on the ontological status of events and states as particulars.

- (12) a. The dog saw Bill steal the money.
 b. *The dog saw that Bill stole the money.

Thus, when using perception verbs as event diagnostics, we have to make sure that they select for infinitival complements. Only then are we dealing with immediate event perception.

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 Maienborn and Schäfer (2011) 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.

2.2.3 The Neo-Davidsonian turn

The so-called Neo-Davidsonian turn is particularly associated with the work of Higginbotham (1985, 2000b) and Parsons (1990, 2000). This strand of research led to a significant innovation of the Davidsonian approach and its further propagation as an ontological framework for linguistic theorizing; see the chapter by Lohndal in the present volume for a more thorough discussion of different Neo-Davidsonian developments.

The Neo-Davidsonian approach 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. Thus, the Neo-Davidsonian version of Davidson's logical form in (2b) for the classic 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. $\exists e[\text{BUTTER}(\text{jones, the toast, } e) \ \& \ \text{IN}(e, \text{the bathroom}) \ \& \ \text{INSTR}(e, \text{the knife}) \ \& \ \text{AT}(e, \text{midnight})]$
 c. $\exists e[\text{BUTTER}(e) \ \& \ \text{AGENT}(e, \text{jones}) \ \& \ \text{PATIENT}(e, \text{the toast}) \ \& \ \text{IN}(e, \text{the bathroom}) \ \& \ \text{INSTR}(e, \text{the knife}) \ \& \ \text{AT}(e, \text{midnight})]$

In a Neo-Davidsonian view, verbal predicates are uniformly one-place predicates ranging over events.⁴ 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., for example, Davis (2011) for details on the nature, inventory, and hierarchy of thematic roles.⁵

The second Neo-Davidsonian assumption concerns the distribution of event arguments. While Davidson confined additional event arguments to the class of action verbs, it soon became apparent that they most probably have a much wider distribution. In fact, Neo-Davidsonian approaches typically assume that any verbal predicate may have such a hidden Davidsonian argument.

Note that already some of the first commentators on Davidson's proposal took a similarly broad view on the possible source of 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

⁴ This Neo-Davidsonian move is compatible with various conceptions of the lexicon. A lexical entry for a verb such as *to butter* could still include a full-fledged argument structure and logical form as in (i). Alternatively, Distributed Morphology accounts take the combination of the verbal predicate with its arguments via thematic roles to be part of the syntax. Under this assumption, a verb's lexical entry would only include the verbal root, for example, as in (iii). An intermediate approach has been proposed by Kratzer (1996), who argues for the separation of the external argument from the verb's lexical entry and its introduction into the composition via a functional head Voice. Thus a Kratzer-style lexical entry for *to butter* would be (ii). See the chapter by Lohndal for details.

(i) $\lambda y \lambda x \lambda e [\text{BUTTER}(e) \ \& \ \text{AGENT}(e, x) \ \& \ \text{PATIENT}(e, y)]$

(ii) $\lambda y \lambda e [\text{BUTTER}(e) \ \& \ \text{PATIENT}(e, y)]$

(iii) $\lambda e [\text{BUTTER}(e)]$

⁵ 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 is no longer possible 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 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 defence, and Bierwisch (2005) for some criticism on this point.

linguistic structure, and Vendler's subclassification of different situation types according to the temporal–aspectual properties of the respective verb phrases.

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 study, particularly in work on tense and aspect; see, for example, the overview in Filip (2011) and the chapter by Mittwoch in this volume. 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) introduces the term 'eventuality' for this broader notion of events. 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, while 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) and Rothstein (2004).

Finally, accomplishments and achievements, the two subtypes of events in a narrow sense, differ with respect to their temporal extension. Whereas accomplishments such as expressed by *read the book*, *eat one pound of cherries*, and *run the 100m final* have a temporal extension, achievements such as *reach the summit*, *find the solution*, and *win the 100m final* are momentary changes of state with no temporal duration; see, e.g., Dölling (2014).

As for the potential source of 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 and 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. (Higginbotham and Ramchand 1997: 54)

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.

2.3 The stage-level/individual-level distinction

2.3.1 *Linguistic phenomena*

A particularly prominent application field for event semantic research is provided by the so-called stage-level/individual-level distinction, which goes back to Carlson (1977a) 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 (14) vs. (15).

- (14) *Stage-level predicates:*
- a. adjectives: *tired, drunk, available, ...*
 - b. verbs: *speak, wait, arrive, ...*
- (15) *Individual-level predicates:*
- a. adjectives: *intelligent, blond, altruistic, ...*
 - b. verbs: *know, love, resemble, ...*

The stage-level/individual-level distinction is generally taken to be a conceptually founded distinction that is grammatically reflected. Lexical predicates are classified as being either SLPs or ILPs. In recent years, a growing set of quite diverse linguistic phenomena has been associated with this distinction. Some illustrative cases will be mentioned next; cf., for example, Higginbotham and Ramchand (1997), Fernald (2000), Jäger (2001), and Maienborn (2011a) 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'):

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

There-coda Only SLPs (17) but not ILPs (18) may appear in the coda of a *there*-construction:

- (17) a. There were children sick. (SLP)
 b. There was a door open.
 (18) 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):

- (19) 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 (20a), while ILPs don't accept locatives (20b):

- (20) 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 (20) as strong support for the claim that there is a fundamental difference between SLPs and ILPs in their ability to be located in space; see, for example, 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, but not ILPs, are admissible as small clause complements of perception verbs:

- (21) a. Johann saw the king naked. (SLP)
 b. *Johann saw the king tall. (ILP)

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

- (22) a. Paul_i stood tired_i at the fence. (SLP)
 b. Paul has bought the books_i used_i.

- (23) 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 (e.g., Escandell-Vidal and Leonetti 2002, Maienborn 2005a, Fábregas 2012, Roy 2013), two different subject positions for copular sentences in Scottish Gaelic (e.g., Ramchand 1996, Roy 2013), and the Nominative/Instrumental case alternation of nominal copular predicates in Russian (e.g., Geist 2006, Roy 2013).

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 between SLPs and ILPs rests on a fundamental (although still not fully understood) conceptual opposition that is reflected in multiple ways in the grammatical system. 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.

2.3.2 Event semantic treatments

A first semantic analysis of the stage-level/individual-level contrast was developed by Carlson (1977a). Carlson introduces a new kind of entity, which he calls ‘stages.’ These are spatiotemporal partitions of individuals. SLPs and ILPs are then analysed as predicates ranging over different kinds of entities: ILPs are predicates over individuals, and SLPs are predicates over stages. Thus, in Carlson’s approach the stage-level/individual-level distinction amounts to a basic difference at the ontological level. Kratzer (1995) takes a different direction by locating the relevant difference at the level of the argument structure of the corresponding predicates. Crucially, SLPs have an extra event argument in 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 (24).

- (24) a. *tired*: $\lambda x \lambda e [\text{TIRED}(e, x)]$
 b. *blond*: $\lambda x [\text{BLOND}(x)]$

This argument-structural difference may now be exploited for selectional restrictions, for instance. Perception verbs, for example, require an event denoting complement; see the discussion of (11)–(12) in Section 2.2.2. This

prerequisite is only fulfilled by SLPs, which explains the SLP/ILP difference observed in (21). Moreover, the ban of ILPs from depictive constructions (see (22) vs. (23)) can be traced back to the need of the secondary predicate to provide a state argument that temporally includes the main predicate's event referent. For a syntactic explanation of the observed subject effects within Kratzer's framework, see Diesing (1992).

Kratzer's account also offers a straightforward solution for the different behaviour of SLPs and ILPs with respect to locative modification; cf. (20). 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 (25)–(26). While combining a SLP with a locative modifier yields a semantic representation like (25b), any attempt to add a locative to an ILP must necessarily fail; cf. (26b).

- (25) a. Maria was tired in the car.
 b. $\exists e[\text{TIRED}(e, \text{maria}) \ \& \ \text{IN}(e, \text{the car})]$
- (26) a. */??Maria was blond in the car.
 b. $[\text{BLOND}(\text{maria}) \ \& \ \text{IN}(???, \text{the car})]$

Thus, in 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 (19a), whereas the ILP case (19b) 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 (1998b). The observed behaviour with respect to 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 regard the SLP/ILP contrast in (25)–(26) as a grammatical effect. That is, sentences like (26a) do not receive a compositional semantic representation; they are grammatically ill-formed. Kratzer and Chierchia furthermore share the general intuition that SLPs (and only these) can be located in space. This is what the difference in (25a) vs. (26a) 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.

2.3.3 *Criticism 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 as being structurally triggered rather than being lexically codified. One strand of research apprehends the difference between SLPs and ILPs in information-structural terms. Roughly speaking, ILPs relate to categorial judgements, whereas SLPs may build either categorial orthetic judgements; cf., e.g., Ladusaw (1994), McNally (1998*b*), and Jäger (2001). Taking a distinct perspective, Husband (2012) proposes accounting for the relevant differences on the basis of the quantized/homogeneous properties of the objects of transitive SLPs and ILPs. These properties are inherited to the predicates (and then in turn to their subjects, giving rise to the observed subject effects). Under this view, ILPs are true homogeneous state predicates, whereas SLPs express quantized state predicates. Furthermore, in a recent study Roy (2013) advocates a three-way distinction between maximal, non-dense, and dense predicates based on two criteria: (i) maximality, which relates to whether or not the predicate has spatiotemporal subpart properties, and (ii) density, which relates to whether the subparts are all identical (mass) or not (atomic).⁶ This three-way distinction is represented structurally by different configurations of functional heads in the extended projection of non-verbal predicates.

On the other hand there is growing scepticism concerning the empirical adequacy of the stage-level/individual-level hypothesis. Authors such as Higginbotham and Ramchand (1997), Fernald (2000), and Jäger (2001) argue

⁶ In Roy's system, dense predicates correspond to SLPs, and non-dense and maximal predicates together make up ILPs.

that the phenomena subsumed under this label are actually quite distinct and upon closer scrutiny do not yield such a uniform contrast 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. (16a). The majority of SLPs, such as *tired* or *hungry* in (27), behave more like ILPs, i.e., they only yield a generic reading.

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

In view of the sentence pair in (28) Higginbotham and Ramchand (1997: 66) suspect that some notion of *speaker proximity* might also be of relevance for the availability of existential readings.

(28) 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 (29) taken from Carlson (1977a: 72).

(29) 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).

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

(31) 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 have been 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 underlying conceptual opposition might be wrong after all. The studies of Glasbey (1997), Maienborn (2003a, 2004, 2005a), and Magri (2009) point in this direction. They all argue against treating stage-level/individual-level effects as grammatical in nature and provide alternative, pragmatic analyses of 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 2.2.2 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 calls for a closer inspection of the ontological properties of states.

2.4 Davidsonian vs. Kimian states

2.4.1 *How do state expressions fare with respect to Davidsonian event diagnostics?*

As mentioned in Section 2.2.3 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 with respect to state expressions is rather sobering:⁷

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)

⁷ Parsons (2000) puts forth his so-called *time travel argument* to make a strong case for a Neo-Davidsonian analysis of state expressions, but see the refutation in Maienborn (2007b).

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 2.2.2; cf. (10). Maienborn (2003a, 2005c) examines the behaviour of state expressions with respect to these and further event diagnostics and shows that there is a fundamental split within the class of non-dynamic expressions:⁸ 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*, *cost*, and *resemble* do not meet any of them. Moreover, it turns out that copular constructions uniformly behave like stative verbs, regardless of whether the predicate denotes a temporary property (SLP) or a more or less permanent property (ILP).

The behaviour of state verbs and statives with respect to perception reports is illustrated in (32). While state verbs can serve as infinitival complements of perception verbs (32a–c), statives, including copula constructions, are prohibited in these contexts (32d–f).⁹

- (32) *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 (33a–c) show, state verbs combine with locative modifiers, whereas statives do not; see (33d–g).

- (33) *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 beside the carrots.
 - g. *Bardo knew the answer over there.

⁸ See also the overview in Maienborn (2011a).

⁹ The argumentation in Maienborn (2003a, 2005c) is based on data from German. For ease of presentation I will use English examples in the following.

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 (34). 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.

- (34) *Locative frame adverbials:*
- a. By candlelight, Carolin resembled her brother.
 - b. Maria was drunk in the car.
 - c. In Italy, Maradona was married.

Locative frame adverbials often yield temporal or conditional interpretations (e.g., 'When he was in Italy, Maradona was married.' for (34c)) 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.

Second, we are now in a position to more precisely explain what is going on in sentence pairs like (20), repeated here as (35), which are often taken to demonstrate the different behaviour of SLPs and ILPs with respect to location in space; cf. the discussion in Section 2.3.

- (35) 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. The standard interpretation for (35a) is: for the time when Maria was in the car, it was the case that she was tired/hungry/nervous. That is, the locative modifier does not locate some state in space but — by locating the subject referent in space — it serves to single out a certain time span to which the speaker's claim is restricted. While such a temporal restriction is informative, and thus fine in combination with a temporary predicate, it does not make sense for permanent predicates as in (35b), and is therefore pragmatically odd; cf. Maienborn (2004) for a full-fledged optimality-theoretic explanation of this pragmatic *temporariness effect*.

Third, sentences (33d)–(33e) 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 (33d) 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.¹⁰ 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 (33d) should have the interpretation: there was a state of the dress being wet, and this state is located on the clothesline. (33d) 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 (36) shows.

- (36) *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.

The sentences in (37) show the need for reified states in a Davidsonian sense. Each state verb introduces its own state argument, which may then be targeted by a manner adverbial. This is why the simultaneous application of opposite manner predicates does not lead to a contradiction in (37).

¹⁰ A VP-modifier analysis for the locative in (33d) requires a syntactic structure along the lines of (i), while a secondary predicate analysis for (33d) roughly follows (ii).

(i) [IP The dress was_i [VP [VP t_i [AP wet]]] [PP on the clothesline]]]

(ii) [IP The dress_j was_i [VP [AP wet_j] [VP t_i [PP on the clothesline]]]]]

In German, the two syntactic analyses are distinguished via word order. While the secondary predicate variant (iv) is fine, the locative modifier variant (iii) is ungrammatical (unless the PP is interpreted as a sentential frame modifier; see the discussion on (35)).

(iii) **Das Kleid war auf der Wäscheleine nass.*
The dress was on the clothes line wet

(iv) [*Das Kleid*]_j war nass_j auf der Wäscheleine.
The dress was wet on the clothes line

- (37) a. Jane stood steadily on the ladder, and at the same time she held the box unsteadily.
b. The artist hung calmly on the high wire, while waiting anxiously for his replacement.

Statives do not combine with manner adverbials; see (36d–g). Katz (2003) dubbed this the *Stative Adverb Gap*. There has been some discussion on apparent counterexamples to this Stative Adverb Gap such as (38).

- (38) a. Lisa firmly believed that James was innocent.
b. John was a Catholic with great passion in his youth.

While, for example, Jäger (2001), Mittwoch (2005), Dölling (2005), and Rothstein (2005) conclude that such cases provide convincing evidence for assuming a Davidsonian argument for statives as well, Katz (2000, 2003) and Maienborn (2003*a*, 2005*c,b*, 2007*b*) argue that these either involve degree modification as in (38a)¹¹ or are instances of *event coercion*, i.e., a sentence such as (38b) is, strictly speaking, ungrammatical but can be ‘rescued’ by inferring some event argument to which the manner adverbial may then apply regularly, e.g., Pustejovsky (1995), Asher (2011), and Dölling (2014). For instance, what John is passionate about in (38b) 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 (38b’), then the pragmatic rescue fails and the sentence becomes odd.

- (38) b’. ??John was a relative of Grit with great passion in his youth.

According to this view, understanding sentences such as (38b) requires a non-compositional reinterpretation of the stative expression that is triggered by the *lack* of a regular Davidsonian event argument. 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.

¹¹ Under the perspective developed in Section 2.5, which introduces the ontological category of tropes for concrete property manifestations, such degree modifiers could be analysed as targeting a hidden trope argument; see Moltmann (2009).

2.4.2 Weakening the definition of eventualities

What conclusions should we draw from the above linguistic observations concerning the ontological category of states? There are basically two lines of argumentation that have been pursued in the literature. Authors like Dölling (2005), Higginbotham (2005), Ramchand (2005), and Rothstein (2005) take the observed linguistic differences to 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 that eventualities have an inherent spatial dimension. Hence, Ramchand (2005: 372) proposes the following alternative to the definition offered in (8):

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

Dölling (1999, 2005) tries to account for the peculiar behaviour of stative expressions by distinguishing two subtypes of states. While *sit*, *stand*, *sleep*, *wait*, etc. belong to the subtype of states that can be located in space, statives build a subtype that has no location in space. Both kinds of states are to be subsumed under the ontological category of eventualities, according to Dölling.¹² According to this view, the referents of stative expressions would be just a special sort of eventuality — eventualities that, according to the diagnostics of Section 2.2.2, can be neither perceived nor located in space and cannot vary in the way that they are realized.

Such a move creates two major problems. First, what would be the smallest common denominator for events, processes, and ‘well-behaved’ states, on the one hand, and the referents of stative expressions, on the other? If we were to adopt such a liberal perspective, the only thing we could say about eventualities would be that they have a temporal dimension and some further content; cf. Ramchand’s proposal in (39). That is, the referents of stative expressions would set the tone for the whole category of eventualities. As we will see in the following sections, the referents of stative expressions have fundamentally different ontological properties. Subsuming them under a broader conception of eventualities would force us to give up the Davidsonian core assumption of conceiving of eventualities as spatiotemporal particulars. Furthermore, and second, postulating two kinds of states as subtypes of the category of eventualities, depending on whether they can be located in space or not, is

¹² The proposals of Dowty (1979) and Bach (1986) point in the same direction. According to Dowty (1979: 180ff.), *sit*, *stand*, *lie*, etc. belong to the subtype of ‘interval statives’ (see the table in Dowty 1979: 184). Bach (1986: 6) distinguishes ‘dynamic states’ described by, for example, *sit*, *stand*, and *lie* from ‘static states’ described by statives.

completely ad hoc. Remember that the subdivision of eventualities into events, processes, and states was based on temporal/aspectual criteria in the tradition of Vendler (1967). Why should non-dynamic, homogeneous eventualities (i.e., states) divide into spatial and non-spatial subtypes? And why should the non-spatial instances moreover exclude manner variance? This does not follow from their ontological properties, and would have to be stipulated.

In sum, trying to adapt the ontological category of Davidsonian eventualities in such a way that the referents of stative expressions can be subsumed inevitably requires us to renounce all of the benefits of the Davidsonian approach. An alternative to weakening the definition of the ontological category of eventualities is therefore to supplement Davidsonian eventualities with a further, extra-Davidsonian category of states in order to account adequately for both eventive and stative expressions.

2.4.3 *Kimian states*

Maienborn (2003a, 2005b,c, 2007b) takes the behaviour with respect to the classic event diagnostics summarized in Section 2.4.1 as a sufficiently strong linguistic indication of an underlying ontological difference between two kinds of states. Under this perspective, only state verbs (i.e., *sit, stand, lie, wait, gleam, sleep*, etc.) denote true Davidsonian eventualities, i.e., *Davidsonian states* (or *D-states* for short), whereas statives (i.e., copular *be* and *know, weigh, cost, own, resemble*, etc.) resist a Davidsonian analysis but refer instead to what Maienborn calls *Kimian states* (or *K-states*). Kimian states are based on Kim's (1969, 1976) notion of temporally bound property exemplifications.¹³ They may be located in time and they allow anaphoric reference. Yet, in lacking an inherent spatial dimension and having no constitutive participant structure (apart from the holder of a state), they are ontologically 'poorer,' more abstract entities than Davidsonian eventualities. Kimian states are characterized as follows:

- (40) ***Kimian states:***
K-states are abstract objects for the exemplification of a property *P* at a holder *x* and a time *t*.

From this definition, we may start to derive some characteristic properties. First of all, since K-states fail to be spatiotemporal particulars, they are not accessible to direct perception, nor do they have a location in space or a unique manner of realization (41a). Yet, having a temporal dimension, they can be located in time

¹³ While Kim understood his proposal as an *alternative* to Davidson's approach, Maienborn introduces K-states as a *supplement* to Davidsonian eventualities.

(41b). Furthermore, being abstract objects, K-states are reified. More specifically, according to Asher (1993, 2000) abstract objects (like facts and propositions) are introduced for efficient natural language processing and other cognitive operations but do not exist independently of them. Roughly speaking, abstract objects exist only because we talk and think about them (41c). And, finally, they share with other abstract objects fundamental logical properties (see below). In particular, the domain of K-states is closed under complementation (41d).

(41) ***Ontological properties of Kimian states:***

- a. K-states are not accessible to direct perception, have no location in space, and no unique manner of realization.
- b. K-states can be located in time.
- c. K-states are reified entities of thought and discourse.
- d. K-states are closed under complementation.

From these ontological properties we may derive the following linguistic diagnostics:

(42) ***Linguistic diagnostics for Kimian states:***

- a. K-state expressions cannot serve as infinitival complements of perception verbs and do not combine with locative modifiers, manner adverbials and further participant expressions.
- b. K-state expressions combine with temporal modifiers.
- c. K-state expressions are accessible for anaphoric reference.
- d. The result of negating a K-state expression is again a K-state expression.

Let us have a closer look at these ontological properties and see how stative verbs and copula sentences fare with respect to the respective linguistic diagnostics. (42a) marks the difference with respect to Davidsonian eventualities and accounts for the previously observed behaviour of statives with respect to the eventuality diagnostics; see (32)–(36). Moreover, due to their constitutive temporal dimension, K-state expressions combine with temporal modifiers. This is illustrated in (43).

(43) ***Temporal modifiers:***

- a. Jane was tired yesterday / twice / for days.
- b. Jane owned a beach house in her youth / for years.
- c. Jane always / never / again / last year knew Kate's address.

As for (41c) and (42c), if K-states are reified abstract objects, we should be able to provide linguistic evidence that requires reification and find, for example, suitable anaphoric expressions targeting K-states. In the following, I will provide such evidence from German.

First, the German anaphoric pronoun *dabei* (literally ‘there-at’) refers back to an eventive or stative antecedent and adds some accompanying circumstance. Sentence (44), for example, indicates that the Davidsonian state of Carolin waiting for the bus is accompanied by her reading a book.

- (44) *Carolin wartete auf den Bus und las dabei ein Buch.*
 Carolin waited for the bus and read there-at a book

As the sentences in (45) show, *dabei* is not reserved for Davidsonian eventualities but may also be used for Kimian states.

- (45) a. *Es war kalt und dabei regnerisch.*
 It was cold and there-at rainy
 b. *Bardo war krank und lief dabei ohne Schal herum.*
 Bardo was ill and walked there-at without scarf about
 c. *Die Zwei ist eine Primzahl und dabei gerade.*
 The two is a prime number and there-at even

Sentence (45b), for example, is thus interpreted as indicating that the Kimian state of Bardo being ill is accompanied by (possibly iterated) events of Bardo walking about without a scarf.¹⁴ Anaphoric data such as (45) provide evidence that Kimian states — although being ontologically ‘poorer’ than Davidsonian eventualities — cannot be reduced to mere temporal objects. Maienborn (2007b) shows, based on Parsons’ (2000) time travel argument, that *dabei* does not express mere overlap between two time intervals but relates to the ‘substance’ of its antecedent.¹⁵ That is, *dabei* calls for a reification of the denotatum of statives, consistent with the assumption of Kimian states.

¹⁴ Notice that the antecedent of *dabei* may also be introduced by a copular individual-level predicate like ‘being a prime number,’ as in (45c).

¹⁵ In short, the Parsons-style time travel argument goes as follows. Let us assume that at a particular time *t* it is true that Socrates is outside the city walls and ‘there-at’ hungry. Sometime later, he stumbles into a time warp and travels back in time. After he emerges from the time warp (as the very same Socrates), he returns to the city and has an opulent breakfast, such that at time *t* he is now at the market place and ‘there-at’ full. Although these two propositions are true at the very same time, we are not allowed to conclude that it is also true that Socrates is at the market place and ‘there-at’ hungry at *t*, or that he is outside the city walls and ‘there-at’ full at *t*. In order to block such invalid inferences, we

A second argument for the reification of Kimian states is provided by the data in (46) and (47), based on the German connective *indem* ('by'; literally 'in-that'). As Bücking (2014) argues, *indem* relates two event predicates in such a way that the matrix predicate provides a more abstract conceptualization which elaborates on the embedded eventuality. To give an example, the first conjunct of (46a) expresses that there is a lowering of the blood pressure that is conceived of as a help for the patient. What is crucial for our purposes is that acceptable matrix predicates include eventualities and — somewhat marginally — also Kimian states (see Bücking 2014: 14). Verbs such as *to help*, *to damage*, *to console*, *to depress* have both an eventive and a stative reading. In combination with inanimate subjects, as in (46), they express Kimian states; see Rothmayr (2009) for a thorough discussion of different subclasses of stative verbs and their behaviour with respect to the Davidsonian eventuality diagnostics.

- (46) a. *Die Therapie half dem Patienten, indem sie den Blutdruck senkte, und zugleich schadete sie ihm, indem sie die Nieren belastete.*
 The therapy helped the patient, by it the blood pressure lowered and at-the-same-time damaged it him, by it the kidneys affected
 'The therapy helped the patient by lowering his blood pressure, and at the same time it did him damage by affecting his kidneys.'
- b. *Das Foto tröstete Paul, indem es Marias Lachen zeigte und zugleich deprimierte es ihn, indem es ihn an ihre Trennung erinnerte.*
 The photo consoled Paul by it Maria's smile showed and at-the-same-time depressed it him by it him of their separation reminded
 'The photo consoled Paul by showing him Maria's smile, and at the same time it depressed him by reminding him of their separation.'

The *indem*-expressions in (46) require reified K-states as anchor arguments. Moreover, the assumption that K-states have ontological content beyond a mere temporal dimension gets further empirical support from (46), since the conjunction of simultaneous but opposite K-states does not lead to a contradiction. That is, in (46a), for example, the K-state of the therapy helping the patient is co-temporal yet different from the K-state of the therapy damaging the patient. See the parallel argumentation for the reification of D-states in (37). Example (47) provides an analogous case with copular K-states as targets for

need to assume that *dabei* ('there-at') relates to a hidden state argument. Hence, Socrates is simultaneously in two different states.

indem.¹⁶ Here the K-states of the protagonist being a gentleman and him being a creep hold simultaneously but are different.

- (47) *Er war ein Gentleman, indem er ihr in der Öffentlichkeit den Hof machte, und zugleich war er ein Mistkerl, indem er sie zu Hause herumkommandierte.*
 He was a gentleman by he her in the public the court made and at-the-same-time was he a creep by he her at home bossed-around
 ‘He was a gentleman for courting her in the public, and at the same time he was a creep for bossing her around at home.’

These observations concerning *dabei* and *indem* justify the assumption that K-states are reified abstract entities on their own.

Finally, as for (41d) and (42d), a crucial benefit of isolating Kimian states from Davidsonian eventualities concerns closure conditions, which relate to fundamental logical properties of an ontological domain. A domain of entities of type *T* is closed under complementation if the following holds: if δ denotes an entity of type *T*, then its negation $\neg\delta$ also denotes an entity of type *T*; see, for example, Asher (2000: 129). According to the received view, there is a split within the category of eventualities with respect to closure conditions. States but not events are closed under complementation; see, for example, Herweg (1991) and Asher (1993, 2000). The distinction between K-states and D-states calls for a more careful inspection of the relevant data. In fact, it turns out that only K-states are closed under complementation. They pattern with other abstract objects in this respect; see Asher’s remarks on the closure conditions of facts. As (48) indicates, *Jane was in the studio* and its negation, *Jane wasn’t in the studio*, both refer to K-states. As such they can be combined, for example, with temporal modifiers, as the following data from German show; see also Maienborn (2005c) and Bücking (2012).¹⁷

- (48) **K-states:**
- a. *Jane war im Studio, und zwar eine Stunde lang.*
 Jane was in.the studio, ‘in fact’ for one hour
 - b. *Jane war nicht im Studio, und zwar eine Stunde lang.*
 Jane was not in.the studio, ‘in fact’ for one hour

¹⁶ Thanks to Sebastian Bücking for providing me with example (47).

¹⁷ German *und zwar* ‘in fact’ is a means of attaching VP-modifiers sentence-finally. This reduces the risk of confusing sentence negation with constituent negation.

D-states, on the other hand, pattern with events and processes. Example (49) illustrates the behaviour of events. The result of negating *The train arrived* no longer expresses an event. Thus, the addition of, for example, a locative modifier or a manner adverbial is excluded. The same is true for processes; see (50). And, as (51) illustrates, D-states show exactly the same behaviour. Once we negate a D-state verb, locative modifiers or manner adverbials are no longer acceptable.¹⁸

(49) **Events:**

- a. *Der Zug ist angekommen, und zwar auf Gleis drei /*
The train did arrive, 'in fact' on platform three /
pünktlich.
on time
- b. **Der Zug ist nicht angekommen, und zwar auf Gleis drei /*
The train did not arrive, 'in fact' on platform three /
pünktlich.
on time

(50) **Processes:**

- a. *Jane spielte Klavier, und zwar laut / im Salon / mit Kate.*
Jane played piano, 'in fact' loudly / in.the salon / with Kate
- b. **Jane spielte nicht Klavier, und zwar laut / im Salon / mit*
Jane did not play piano, 'in fact' loudly / in.the salon / with
Kate.
Kate

(51) **D-states:**

- a. *Jane wartete auf den Bus, und zwar dort / unruhig / mit Kate.*
Jane waited for the bus, 'in fact' there / restlessly / with Kate
- b. **Jane wartete nicht auf den Bus, und zwar dort / unruhig / mit*
Jane did not wait for the bus, 'in fact' there / restlessly / with
Kate.
Kate

Once D-states and K-states are disentangled, the category of eventualities turns out to behave more uniformly than generally assumed. There is no internal split within the ontological domain of eventualities. Both eventualities and K-states behave uniformly in this respect: Eventualities, being particulars, are not closed under complementation. K-states, being abstract entities, are closed under

¹⁸ The ability to combine with temporal modifiers does not discriminate K-states from D-states and therefore is not a reliable diagnostic for D-states.

complementation. Hence, we can add (9d) to the set of ontological properties of Davidsonian eventualities:

- (9) d. Eventualities are not closed under complementation.

In sum, there appear to be two kinds of states which verbal predicates (including copular *be*) can refer to. They share the property of being static temporal entities with additional ontological content which legitimates their reification. Beyond these parallels, they differ sharply in several ontological respects, as evidenced by a series of linguistic diagnostics. In Maienborn's account, only one of them — Davidsonian states — is to be subsumed under the Davidsonian category of eventualities, whereas Kimian states build a more abstract ontological category on their own.

Acknowledging the ontological independence of K-states helps simplify our understanding of Davidsonian eventualities, for instance with respect to closure conditions. Furthermore, the assumption of K-states as an ontological category on their own has proven to be fruitful for semantic research on a diversity of topics such as, for example, eventive/stative ambiguities (Engelberg 2005, Rothmayr 2009), adjectival passives (e.g., Maienborn 2009, Maienborn *et al.* 2015), deadjectival nominalizations (Bücking 2012), deverbal nominalizations (Fábregas and Marín 2012), stative locative alternations (Bücking and Buscher 2014), and causal modification (Herdtfelder and Maienborn 2015, Maienborn and Herdtfelder 2015).

2.5 States and tropes

2.5.1 *On the notion of 'tropes'*

In a series of recent papers, Moltmann takes up Maienborn's notion of K-states and proposes to contrast them with another ontological category widely discussed in philosophy. This is the category of tropes. Tropes are 'concrete manifestations of a property in an individual' (Moltmann 2009: 51). Unlike properties, which are conceived as universals, tropes are particulars which involve the constitutive role of a *bearer*. That is, tropes are particular property manifestations that depend on an individual (= their bearer). Take as an example a red apple. While the apple's being red is an abstract state, which — among other things — cannot be perceived and is not causally efficacious, the redness

of the apple is concrete: this redness involves a specific shade of red that is exhibited by the apple, it can be perceived, and it can enter causal relations.¹⁹

Moltmann (2013) assumes that tropes act as implicit arguments of adjectives and can be referred to by adjective nominalizations such as German *Schönheit* ('beauty'), *Zufriedenheit* ('contentment'), *Offenheit* ('openness'), or English *redness*, *happiness*, *paleness*. These hidden trope arguments are targeted by modifiers such as the ones in (52). As Moltmann (2013: 300) points out 'these modifiers represent precisely the kinds of properties that tropes are supposed to have, such as properties of causal effect, of perception, and of particular manifestation.'²⁰

- (52) a. Mary is visibly / profoundly happy. Moltmann (2013: 301)
b. Mary is extremely / frighteningly / shockingly pale.

Moltmann provides abundant linguistic evidence for the need for both ontological categories, tropes and K-states. In her terms, 'tropes are concrete entities that overall instantiate the relevant property in one way or another; states, by contrast, are entities constituted just by the holding of the property (of some object)' (Moltmann 2007: 370). Thus, following Moltmann, we can define the ontological category of tropes as in (53) and may start spelling out their ontological properties as in (54). From these properties follow the linguistic trope diagnostics in (55).

- (53) **Tropes:**
Tropes are particular manifestations of a property in an individual.
- (54) **Ontological properties of tropes:**
a. Tropes are perceptible.
b. Tropes may potentially be located in space and time.
c. Tropes are causally efficacious.
- (55) **Linguistic diagnostics for tropes:**

¹⁹ The redness of an apple even may be attributed a particular spatial location, i.e. those parts of the apple's peel that are red. Note, however, that having a location in space is not a constitutive feature of tropes; see Moltmann (2013). Take, e.g. Mary's tiredness. While it is possible to perceive Mary's tiredness, there is no particular space, e.g., her face or her eyes, that we would identify as the location of her tiredness. Thus, being particulars, tropes can be perceived, but only a subset of them has a specific spatiotemporal location. This is accounted for in (54b) with the formula 'Tropes may potentially be located in space and time'.

²⁰ See Moltmann (2009) for an analysis of degree adverbials as trope predicates.

- a. Trope expressions can serve as nominal complements of perception verbs.
- b. Trope expressions may potentially combine with locative and temporal modifiers.
- c. Trope expressions can serve as arguments of causal relations.

Let us have a closer look at the ontological properties of tropes and their linguistic diagnostics. Adjectival nominalizations may serve as an illustration. Bücking (2012) shows that the German morphological nominalization pattern *-heit/-keit* yields tropes, whereas nominalized infinitival copular expressions such as (*das*) *Müde-Sein* (lit. '(the) tired-be.INF') refer to K-states.²¹ Their different behaviour with respect to perception verbs is illustrated in (56).

- (56) a. *Nina sah Pauls Müdigkeit / Zufriedenheit / Schönheit.*
 Nina saw Paul's tiredness / contentment / beauty
 Bücking (2012: 374)
- b. *Nina sah Pauls *Müde-Sein / *Zufrieden-Sein / *Schön-Sein.*
 Nina saw Paul's tired-be.INF / content-be.INF / beautiful-be.INF

The examples in (57) and (58) show that at least some tropes (see footnote 19) have a spatial extension that may be targeted by spatial expressions. Specifically, trope referents may show up as subject arguments of a locative predicate as in (57a), or they may be modified by a locative attribute as in (58a). K-states, by contrast, have no such spatial orientation; see (57b) and (58b). See Bücking (2012) for a detailed discussion of these and further linguistic diagnostics for trope vs. K-state nominalizations and their ontological underpinnings.

- (57) a. *Nervosität lag in der Luft.*
 Nervousness lay in the air
 Bücking (2012: 373)
- b. **Nervös-Sein lag in der Luft.*
 Nervous-be.INF lay in the air
- (58) a. *Die Nervosität im Auto übertrug sich letztlich auch auf den Fahrer.*
 The nervousness in.the car transferred REFL in the end also to the driver

²¹ Bücking (2012) does not actually talk about tropes but analyses *-heit/-keit*-nominalizations as concrete manifestations of abstract K-states, which he reconstructs based on the notion of supervenience. However, the core observations and basic insights of his analysis carry over straightforwardly to the trope view laid out here.

- b. **Das Nervös-Sein im Auto übertrug sich letztlich auch auf den Fahrer.*
The nervous-be.INF in.the car transferred REFL in the end also
to the driver

Bücking (2012: 373)

Finally, the examples in (59) and (60) may serve as an illustration that tropes, but not K-states, are causally efficacious; see Herdtfelder and Maienborn (2015), Maienborn and Herdtfelder (2015).²² In (59a), for instance, it is the police action's concrete manifestation of hardness/severity that perplexes the protagonists. The K-state of the police action being tough, in contrast, has no causal force; cf. (59b).

- (59) a. *Wir waren perplex von der Härte des Polizeieinsatzes.*
We were puzzled from the hardness of.the police-action
Braunschweiger Zeitung, 31 December 2005
b. **Wir waren perplex vom Hart-Sein des Polizeieinsatzes.*
We were puzzled from.the hard-be.INF of.the police-action
- (60) a. *Die Betten waren nass von der Luftfeuchtigkeit.*
The beds were wet from the air-humidity
b. **Die Betten waren nass vom Feucht-Sein der Luft.*
The beds were wet from.the humid-be.INF of.the air

At this point, two remarks concerning the relation between tropes and eventualities should be added. First, of course it is not only tropes that are causally efficacious but first and foremost eventualities. Thus, we should add (9e) to our set of ontological properties of Davidsonian eventualities.

- (9) e. Eventualities are causally efficacious.

One might ask what makes eventualities and tropes capable of being causally efficacious. A plausible explanation could be that they both are spatiotemporal particulars. This allows them to enter direct causal relations as cause or effect; see, for instance, Wolff (2003) for the notion of direct causation. This assumption is supported by Herdtfelder and Maienborn (2015), Maienborn and Herdtfelder (2015). Based on a corpus study on German causal *von*-PPs ('from'), they discuss the event and trope variants of causal modification and

²² See also Moltmann's (2013) example (52b) above. In *Mary is shockingly pale* it is her paleness that causes the shock.

argue that both variants have specific requirements on spatiotemporal contiguity between the cause and its effect.

The second remark concerns the apparent similarities between eventualities and tropes that came to light in the course of the discussion. While our focus was on how both of them differ sharply from the more abstract category of K-states, it also became clear that eventualities and tropes share fundamental ontological properties. In particular, both are characterized as spatiotemporal particulars. (Although the previous discussion already revealed that eventualities and tropes differ in the way they are spatially grounded: having a spatiotemporal location is constitutive for the former but accidental for the latter, see footnote 19). This raises the question of whether we should treat them as different ontological categories or rather collapse them into one category. We will come back to this issue in the next section. For the moment we may conclude that the specific behaviour of adjectival nominalizations with respect to a series of linguistic diagnostics legitimates the assumption of an additional ontological category of tropes representing particular property manifestations. Thus, the discussion reviewed here leads to an ontological inventory of static entities that includes D-states, K-states, and tropes.

2.5.2 *Are D-states dispensable?*

In her 2013 overview of tropes and states, Moltmann raises the question of whether — once we adopt the notion of tropes — the category of Davidsonian states ('concrete states' in Moltmann's terms) might be dispensable after all; see Moltmann (2013: 302). Moltmann does not discuss this option further but only refers to some remarks by Rothmayr (2009) that point in a similar direction; see Moltmann (2013: 310f.). I will therefore take up this question here and provide further evidence that Davidsonian states have an ontological existence on their own and cannot be reduced to tropes, K-states, or events, or any combination thereof. This will also shed some light on the more substantial ontological differences between the category of eventualities (including D-states) and the category of tropes.

First, the reader is referred to the contrasting behaviour of D-state and K-state expressions with respect to the classic Davidsonian diagnostics presented in Section 2.4.1. In particular, data such as (37), repeated here as (61), as well as (36b) refute Rothmayr's (2009: 148ff.) thesis that verbs of position don't combine with manner adverbials. For instance, the way Jane was standing on the ladder is qualified as being of a steady manner in (61a), while at the same time her holding a box is characterized in the opposite way. An analogous case is provided in (61b).

- (61) a. Jane stood steadily on the ladder, and at the same time she held the box unsteadily.
 b. The artist hung calmly on the high wire, while waiting anxiously for his replacement.

A second objection of Rothmayr (2009: 150f.) concerns the location in space of verbs of position. Rothmayr is right in pointing out that a locative adverbial such as *on the chair* in (62) does not serve as a locative modifier but is a locative argument of the verb. Accordingly, locative arguments of verbs of position do not locate the whole eventuality but locate the subject referent. Nevertheless, her conclusion that verbs of position don't show up with locative modifiers and therefore don't meet this Davidsonian eventuality criterion is premature. The data in (63) show that, once the argument requirement of the verb of position is satisfied, locative modification is available.

- (62) *Jane saß auf dem Sofa.*
 Jane sat on the sofa
- (63) a. *Maria backte in der Küche einen Kuchen und Jane lag im Garten gemütlich in der Hängematte.*
 Maria baked in the kitchen a cake and Jane lay in the garden cosily in the hammock
 b. *Vor dem Schaufenster stand ein Mann auf einem Bein.*
 In-front-of the shop-window stood a man on one leg
 c. *In aller Öffentlichkeit saß Jane neben Heinz.*
 In all public sat Jane beside Heinz

In (63a), the locative argument *in der Hängematte* ('in the hammock') locates the subject referent Jane, but the second adverbial *im Garten* ('in the garden') serves the same function as *in der Küche* ('in the kitchen') in the first conjunct and locates the whole situation of Jane lying cosily in the hammock. In (63b), the verb's argument position is satisfied by *auf einem Bein* ('on one leg'), and *vor dem Schaufenster* ('in front of the shop window') takes the function of a locative modifier. Finally, in (63c), it is most obvious that the locative *in aller Öffentlichkeit* ('in public') not only locates the subject referent Jane, but the whole situation of Jane sitting beside Heinz takes place in public. In all these cases, there is — for different reasons — no way to combine the two locative PPs into a single complex PP that could be interpreted as a locative argument of the verb. Therefore, only one of the two PPs can take the verb's argument position and the other PP serves as a modifier that locates the overall eventuality in space.

From these remarks and the observations in Section 2.4.1 it is safe to conclude that D-state verbs in fact meet all criteria for Davidsonian eventuality

expressions. Furthermore, it should be stressed that D-state verbs cannot be conflated with process verbs either. D-states are — like K-states — static entities, whereas processes and events are dynamic. More specifically, D-state verbs such as *sit*, *stand*, *lie*, *sleep*, *gleam*, and *wait* differ from process verbs such as *laugh*, *breathe*, and *flicker* in their subinterval properties. While processes involve a lower bound on the size of subintervals that are of the same type, states have no such lower bound. That is, states also hold at atomic times (see, e.g., Dowty 1979, Krifka 1989). If for a certain time interval *I* it is, for example, true that Eva is standing at the window, waiting, or the like, this is also true for every subinterval of *I*.

A suitable linguistic test that distinguishes process (and event) expressions from D- and K-state expressions is anaphoric reference by German *geschehen* ('to happen'). While this proform can be used to refer to processes, as shown in (64), it cannot take up either D-state verbs (65) or statives (66) as antecedents. See Fábregas and Marín (2013) for further D-state diagnostics.

- | | | | |
|------|--|---|--|
| (64) | <ul style="list-style-type: none"> a. <i>Eva spielte Klavier.</i>
Eva played piano b. <i>Die Wäsche flatterte im Wind.</i>
The clothes flapped in.the wind c. <i>Die Kerze flackerte.</i>
The candle flickered | } | <i>Das geschah während ...</i>
This happened while ... |
| (65) | <ul style="list-style-type: none"> a. <i>Eva stand am Fenster.</i>
Eva stood at.the window b. <i>Jane schlief.</i>
Jane slept c. <i>Die Schuhe glänzten.</i>
The shoes gleamed d. <i>Jane wartete auf den Bus.</i>
Jane waited for the bus | } | <i>*Das geschah während ...</i>
This happened while ... |
| (66) | <ul style="list-style-type: none"> a. <i>Jane besaß ein Strandhaus.</i>
Jane owned a beach house b. <i>Jane kannte die Adresse.</i>
Jane knew the address c. <i>Jane ähnelte ihrem Vater.</i>
Jane resembled her father d. <i>Jane hasste Mozart-Arien</i>
Jane hated Mozart arias | } | <i>*Das geschah während ...</i>
This happened while ... |

The conclusion is that D-states are true Davidsonian eventualities that are to be distinguished from K-states but pattern with K-states in being static entities. Hence they cannot be conflated with processes. What about tropes? Can the

introduction of tropes into the ontological universe make D-states dispensable? D-states and tropes are both conceived of as spatiotemporal particulars. This raises the question of in what respects they actually differ.

The following data will show that D-states and tropes differ in at least two respects. These concern the notion of participation, which characterizes Davidsonian eventualities, including D-states, but not tropes, and temporal differences between D-states and tropes.

Note that according to the definition of eventualities in (8) participation is a core property of eventualities. They are regarded as spatiotemporal particulars with functionally integrated participants. Participants are assigned specific functional roles within an eventuality. This makes them take part in and even — in a sense — be part of an eventuality. Beyond the obligatory roles, which are typically specified by the verb's arguments, the inventory of participants may even be extended by adding, for instance, instrumentals, comitatives, and so on. This is also the case for D-state verbs. In particular they allow additional comitatives as in (67). As (67b) shows, adding such participant information is even possible in the case of inanimate subject referents.

- (67) a. *Jane wartete / saß / schlief mit Maria auf dem Sofa.*
 Jane waited / sat / slept with Maria on the sofa
 b. *Das Buch stand ohne seinen Einband im Regal.*
 The book stood without its cover in the shelf

Tropes, on the other hand, do not have participants. The relationship between a trope and its bearer is rigid. Tropes do not exist independently of their bearers; cf. Moltmann (2009: 92). There is no space for different forms of functional integration in terms of different thematic roles nor does it make sense to add comitatives or the like. This explains the contrast in (68). While the D-state nominalizations in (68a) accept comitatives, the trope nominalizations in (68b) rule them out.

- (68) a. *Das Warten / Schlafen / Auf-dem-Kopf-Stehen mit / ohne*
 The wait.INF / sleep.INF / on-the-head-stand.INF with / without
Maria war schön.
 Maria was nice
 b. **Die Müdigkeit / der Hunger / die Lustigkeit mit / ohne Maria*
 The tiredness / the hunger / the merriness with / without Maria
war schön.
 was nice

Furthermore, D-states also allow more peripheral participants that accompany what is going on from outside; see (69a). Once more, there is no place for such peripheral participants in the case of tropes; see (69b).

- (69) a. *Maria begleitete Pauls Warten / Schlafen /*
 Maria accompanied Paul's wait.INF / sleep.INF /
Am-Fenster-Stehen ohne etwas zu sagen.
 at-the-window-stand.INF without something to say
- b. **Maria begleitete Pauls Müdigkeit / Hunger / Ratlosigkeit*
 Maria accompanied Paul's tiredness / hunger / perplexity
ohne etwas zu sagen.
 without something to say

In (70), the behaviour of D-state expressions (70a) is contrasted with that of tropes (70b) and K-state expressions (70c). Only D-states tolerate an expansion in terms of accompanying peripheral participants.

- (70) a. *Das Publikum begleitete das Leuchten des Vollmonds mit*
 The audience accompanied the shine.INF of.the full-moon with
Staunen.
 amazement
- b. **Das Publikum begleitete die Helligkeit des Vollmonds mit*
 The audience accompanied the brightness of.the full-moon with
Staunen.
 amazement
- c. **Das Publikum begleitete das Hell-Sein des Vollmonds*
 The audience accompanied the bright-be.INF of.the full-moon
mit Staunen.
 with amazement

The above observations indicate that the notion of participation is indeed essential for Davidsonian eventualities and characterizes D-states as opposed to tropes (and K-states). Let us formulate this provisionally as (9f).

- (9) f. Eventualities involve participation.

Finally, D-states and tropes also appear to differ in temporal terms. The minimal pairs in (71) and (72) indicate that D-states but not tropes may be prolonged. A boring talk, for instance, may prolong the waiting for the coffee break (72a), yet it cannot prolong tiredness (72b).

- (71) a. *Paul verlängerte das Glänzen der Schuhe mit einer speziellen Politur.*
 Paul prolonged the gleam.INF of.the shoes with a special polish
- b. **Paul verlängerte den Glanz der Schuhe mit einer speziellen Politur.*
 Paul prolonged the glossiness of.the shoes with a special polish
- (72) a. *Der langweilige Vortrag verlängerte das Warten auf die Kaffeepause.*
 The boring talk prolonged the wait.INF for the coffee break
- b. **Der langweilige Vortrag verlängerte die Müdigkeit.*
 The boring talk prolonged the tiredness

What could be the reason behind this behaviour? One might speculate that D-states, like all Davidsonian eventualities, are more intimately linked to the temporal dimension due to their temporal/aspectual constitution. That is, the temporal dimension is constitutive for Davidsonian eventualities. The temporal dimension of tropes, on the contrary, — that is their duration — appears accidental; see also Moltmann (2009: 60f.). The same holds true for the spatial dimension of tropes; see the remarks in Section 2.5.1. Both aspects, the notion of participation for Davidsonian eventualities as well as the more indirect temporal and spatial dimensions of tropes, deserve further investigation. This lies outside the scope of the present overview. However, the preceding remarks on (67)–(72) should suffice to show that D-states (as representatives of eventualities) and tropes differ in crucial respects from each other and these respects concern fundamental ontological properties. This makes it implausible to suppose that D-states could be replaced by tropes. Rather, it seems safe to conclude that D-states and tropes both exist on their own.

2.5.3 On the lexical semantics of D-state, K-state, and trope expressions

As a kind of conclusion and summary of the discussion on states and tropes, this section presents a proposal on how the ontological assumptions expounded above can be implemented within lexical semantics. The following lexical entries may serve as an illustration for the relevant argument-structural properties of eventive and stative expressions.

If we adopt a Neo-Davidsonian account of eventuality expressions in terms of thematic roles (see (13c)) for D-state verbs, the lexical entry for *to sleep* could

be given as in (73a), with e_s as a variable ranging over static eventualities, that is Davidsonian states. The sentence *Mary slept in the hammock* is thus represented as in (73b) (neglecting tense and the internal semantics of DPs); see, for example, Maienborn and Schäfer (2011) for a discussion of the compositional integration of the locative modifier.

- (73) a. *to sleep*: $\lambda x \lambda e_s [\text{SLEEP}(e_s) \ \& \ \text{PATIENT}(e_s, x)]$ with e_s of type D-state
 b. *Mary slept in the hammock*:
 $\exists e_s [\text{SLEEP}(e_s) \ \& \ \text{PATIENT}(e_s, \text{mary}) \ \& \ \text{LOC}(e_s, \text{IN}(\text{the hammock}))]$

The respective entry for a positional verb such as *to lie* is provided in (74a). This verb specifies a characteristic mode of position LIE and opens up a slot for the location of the subject referent x to be filled by the verb's locative argument P ; see the final representation in (74b).

- (74) a. *to lie*: $\lambda P \lambda x \lambda e_s [\text{LIE}(e_s) \ \& \ \text{PATIENT}(e_s, x) \ \& \ P(x)]$ with e_s of type D-state
 b. *Mary lay in the hammock*:
 $\exists e_s [\text{LIE}(e_s) \ \& \ \text{PATIENT}(e_s, \text{mary}) \ \& \ \text{LOC}(\text{mary}, \text{IN}(\text{the hammock}))]$

Thus, while a locative VP-modifier locates the overall Davidsonian eventuality as in (73b), a locative argument locates the respective argument assigned according to the internal lexical semantic structure of the verb, for instance, the subject referent in (74b).

Let us turn next to the semantics of an adjectival copula sentence. For the present purposes (75a) may serve as an illustration for the lexical entry of an adjective such as *red*. In (75a) the variable r ranges over tropes and B stands for the bearerhood relation relating a trope to its bearer; see Moltmann (2013: 302f.). The representation in (75b) provides the lexical entry for the copula *to be*. According to (75b), the semantics of the copula consists of introducing a referential argument s of type K-state that is characterized by applying a trope predicate P to an individual x . The relevant steps of a compositional derivation for a simple copula sentence are shown in (75c–e). Thus, the sentence expresses that there is a K-state s that is constituted by the apple bearing a concrete manifestation of redness r .

- (75) a. *red*: $\lambda x \lambda r [B(x, r) \ \& \ \text{RED}(r)]$ with r of type trope
 b. *to be*: $\lambda P \lambda x \lambda s \exists r [s : P(x)(r)]$ with s of type K-state, r of type trope
 c. *be red*: $\lambda P \lambda x \lambda s \exists r [s : P(x)(r)] (\lambda x \lambda r [B(x, r) \ \& \ \text{RED}(r)])$
 $\equiv \lambda x \lambda s \exists r [s : B(x, r) \ \& \ \text{RED}(r)]$
 d. *the apple be red*: $\lambda x \lambda s \exists r [s : B(x, r) \ \& \ \text{RED}(r)] (\text{the apple})$

- $\equiv \lambda s \exists r [s : B(\text{the apple}, r) \ \& \ \text{RED}(r)]$
- e. *The apple is red:* $\exists s \exists r [s : B(\text{the apple}, r) \ \& \ \text{RED}(r)]$

Finally, (76) and (77) provide two illustrations for K-state verbs. The verb *to cost* in (76) involves the functional concept of having a price. Accordingly, the sentence in (76d) expresses that there is a K-state s that consists of the apple having the price of \$1.

- (76) a. *to cost:* $\lambda y \lambda x \lambda s [s : \text{PRICE}(x) = y]$ with s of type K-state
 b. *cost \$1:* $\lambda y \lambda x \lambda s [s : \text{PRICE}(x) = y](\$1)$
 $\equiv \lambda x \lambda s [s : \text{PRICE}(x) = \$1]$
 c. *the apple cost- \$1:* $\lambda x \lambda s [s : \text{PRICE}(x) = \$1](\text{the apple})$
 $\equiv \lambda s [s : \text{PRICE}(\text{the apple}) = \$1]$
 d. *The apple costs \$1:* $\exists s [s : \text{PRICE}(\text{the apple}) = \$1]$

In the case of the verb *to resemble* in (77) it seems plausible to include a trope argument r for the similarity that the subject referent x bears with respect to the referent of the internal argument y .²³ This internal trope argument may be targeted, for example, by degree modifiers; see the discussion on the presumable exceptions to Katz's Stative Adverb Gap in Section 2.4.1. Thus, the sentence in (77d) expresses that there is a K-state s that is constituted by Jane bearing a concrete manifestation of similarity r with respect to Madonna.

- (77) a. *to resemble:* $\lambda y \lambda x \lambda s \exists r [s : B(x, r) \ \& \ \text{SIMILARITY}(r, y)]$
 b. *resemble Madonna:*
 $\lambda y \lambda x \lambda s \exists r [s : B(x, r) \ \& \ \text{SIMILARITY}(r, y)](\text{madonna})$
 $\equiv \lambda x \lambda s \exists r [s : B(x, r) \ \& \ \text{SIMILARITY}(r, \text{madonna})]$
 c. *Jane resemble- Madonna:*
 $\lambda x \lambda s \exists r [s : B(x, r) \ \& \ \text{SIMILARITY}(r, \text{madonna})](\text{jane})$
 $\equiv \lambda s \exists r [s : B(\text{jane}, r) \ \& \ \text{SIMILARITY}(r, \text{madonna})]$
 d. *Jane resembles Madonna:*
 $\exists s \exists r [s : B(\text{jane}, r) \ \& \ \text{SIMILARITY}(r, \text{madonna})]$

This sketch of some typical lexical entries and their compositional behaviour is, of course, simplified in several respects. Yet, the brief remarks should suffice to provide an idea of how the ontological assumptions developed above can be implemented and exploited for a compositional semantics. In particular, the illustrations make transparent the parallel make-up of copular constructions and stative verbs as the two variants of K-state expressions. And they show that the

²³ Note that in the case of the respective German verb *ähneln* ('to resemble') the relation to the adjective *ähnlich* ('similar') is morphologically transparent.

difference between D-state, K-state, and trope expressions basically consists in a contrast in the ontological type of their referential arguments. This ontological contrast can be exploited in the course of building up the compositional meaning. That is, while, for instance, eventuality arguments are suitable targets for locative modifiers, manner adverbials, and the like, K-state arguments don't meet their selectional restrictions. This suffices to explain the observed linguistic behaviour.

2.6 Conclusion

Hidden event arguments, as introduced by Davidson (1967), have proven to be of significant 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. The present article reviewed current assumptions concerning the ontological properties of events and states and evaluated different approaches towards a narrow or broad understanding of Davidsonian eventualities. A closer look into a variety of stative expressions revealed substantial differences with respect to a series of linguistic diagnostics that point towards deeper ontological differences. Acknowledging these differences led to a differentiation of the cover notion of states into three separate ontological categories. D-states meet all classic criteria for Davidsonian eventualities and thus build a true subtype of eventualities, on a par with events. K-states are more abstract temporal entities referred to by stative verbs and the copula *be*. They share with D-states only the temporal dimension. And, finally, tropes represent particular manifestations of properties in an individual. They share with D-states their nature as individuals in the world. The statements in (78)–(80) summarize the relevant ontological distinctions that were developed throughout this chapter:

- (78) **Davidsonian eventualities (events, processes, D-states):**
Eventualities are particular spatiotemporal entities with functionally integrated participants.
- a. Eventualities are perceptible.
 - b. Eventualities can be located in space and time.
 - c. Eventualities have a unique manner of realization.
 - d. Eventualities are not closed under complementation.
 - e. Eventualities are causally efficacious.
 - f. Eventualities involve participation.
- (79) **Kimian states:**

K-states are abstract objects for the exemplification of a property P at a holder x and a time t .

- a. K-states are not accessible to direct perception, have no location in space, and no unique manner of realization.
- b. K-states can be located in time.
- c. K-states are reified entities of thought and discourse.
- d. K-states are closed under complementation.
- e. K-states are not causally efficacious.
- f. K-states do not involve participation.

(80) **Tropes:**

Tropes are particular manifestations of a property in an individual.

- a. Tropes are perceptible.
- b. Tropes may potentially be located in space and time.
- c. Tropes are causally efficacious.
- d. Tropes do not involve participation.

Once the categories of D-states, K-states and tropes are disentangled and receive their proper place in the ontological universe, this move not only allows us to account for and explain the observed linguistic behaviour, but it also helps simplify our understanding of Davidsonian eventualities, with respect to, for example, closure properties. And, finally, it draws attention to the notion of participation as an essential, yet still understudied, property of eventualities. Future research on this issue promises progress in the task of providing identity criteria for the still not fully understood category of eventualities.