Adverbial Modifiers in Adjectival Passives

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Abstract

The combination of adjectival passives with adverbial modifiers poses a problem for current adjectival conversion analyzes of the adjectival passive. An influential proposal by Kratzer (1994, 2000) has been to explain the appearance of adverbial modifiers by assuming adjectival conversion not only at the lexical but also at the phrasal VP level. The present article develops an alternative account for the semantics of adjectival passives and their combination with adverbial modifiers and contrasts it with the verbal passive case. It takes adjectival passives in German to be a grammatical means for generating contextually shaped states of the subject referent that result from an (possibly complex) event type provided by the verb plus additional predicative material. The structural condition that allows adverbial modifiers to take part in the formation of the event type predicate is that they attach structurally low (V-adjuncts). The pragmatic condition is that they provide an informative restriction to the resulting state type. The article provides evidence from different domains of the grammar—prosody, syntax and semantics—that point to the particular structural status of adverbial modifiers in adjectival passives (V-adjuncts) as opposed to verbal passives (VP-adjuncts). These findings are corroborated by two psycholinguistic experiments that test the different syntactic and semantic status of adverbial modifiers in adjectival and verbal passives. On this basis, the article develops a compositional semantics for adjectival passives and their adverbial modifiers. In more general terms, the study provides an interesting test case for exploring the semantics of the verbal cluster in German.

1 THE ADVERBIAL MODIFICATION PUZZLE OF ADJECTIVAL PASSIVES

Adjectival passives are traditionally conceived of as a hybrid category with both verbal and adjectival properties. In recent years, there has been growing unanimity that they result from the adjectival conversion of (some projection of) the verbal participle (e.g. Levin & Rappaport 1986; Kratzer 1994, 2000; Rapp 1996, 1997; Schlücker 2005; Maienborn 2007a, 2009, 2011; Gehrke 2011, 2012; Gese 2011, 2012a,b; Gese *et al.* 2011). On this view, a sentence such as German

(1) is built of the copula *sein* ('to be') in combination with an adjectivized verbal participle.[1]

(1) Das Kind ist gekämmt.
     The child is combed

A major puzzle for these adjectival analyzes is that adjectival passives combine with typical verbal, event-related modifiers such as manner adverbials, agent–phrases, instrumentals, or locatives as in the a–sentences in (2)–(5). This is not readily expected under an adjectival analysis because adjectives regularly do not accept adverbial modifiers of this sort. This is illustrated by the b-sentences in (2)–(5). These involve simple adjectives and are ruled out as ungrammatical.

(2) a. Das Haar war ziemlich schlampig gekämmt.
                                         (Kratzer 1994: 9, ch. 2)
         The hair was rather sloppily combed
         'The hair was combed rather sloppily.'

    b. * Das Haar war ziemlich schlampig fettig.
         The hair was rather sloppily greasy
         'The hair was greasy rather sloppily.'

(3) a. Die Zeichnung ist von einem Kind angefertigt.
                                         (Rapp 1996: 254)
         The drawing is by a child done
         'The drawing is done by a child.'

    b. * Die Zeichnung ist von einem Kind schön.
         The drawing is by a child pretty
         'The drawing is pretty by a child.'

(4) a. Der Brief war mit einem Bleistift geschrieben.
                                         (Rapp 1996: 254)
         The letter was with a pencil written
         'The letter was written in pencil.'

    b. * Der Brief war mit einem Bleistift schön.
         The letter was with a pencil pretty
         'The letter was pretty in pencil.'

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[1] Our argumentation will be based on a discussion of adjectival passives in German. German is particularly suited to such an investigation because verbal and adjectival passives are expressed by different linguistic forms; see section 2.1. Thus, unlike the situation in English, there is no risk of confounding verbal and adjectival passives in German.

(5) a.   Die Birnen waren in Rotwein gedünstet.
                                  (Maienborn 2007a: 97)
          The pears   were   in red wine stewed
          'The pears were stewed in red wine.'

     b. * Die Birnen waren in Rotwein   weich.
          The pears   were in red wine soft
          'The pears were soft in red wine.'

This is the core observation of what we want to call the **adverbial
modification puzzle**: (how) can the combination with event–related
adverbials be reconciled with the adjectival nature of adjectival passives?
It is reasonable to assume that the presence of the adverbial modifiers in
the a-sentences in (2)–(5) relates to the verbal origin of the adjectivized
participle. That is, the base verb's event argument is apparently still
available for composition. An influential proposal to account for this
observation has been put forward by Kratzer (1994, 2000). Kratzer as-
sumes that adjectivization of the verbal participle may take place not
only at the lexical level but also at the phrasal level. In the latter case
adjectivization applies to a whole VP including any verbal modifiers that
happen to appear inside the VP.

Kratzer's **phrasal adjectivization hypothesis** seems to provide an
elegant explanation for the admissibility of adverbial modifiers in com-
bination with adjectival passives. Yet, a closer inspection of the relevant
data reveals further intricacies of the adverbial modification puzzle that
require a more differentiated solution.

First, as it stands, Kratzer's phrasal adjectivization hypothesis over-
generates because it predicts that adjectival passives should allow just any
adverbial modifier that also combines with, say, verbal passives. But this
is not the case. As has been noted by, for example, Vaagland (1983),
Litvinov & Nedjalkov (1988), Rapp (1996) and Maienborn (2007a),
adverbial modification of adjectival passives is subject to certain con-
straints that are not present in the case of verbal passives. Thus, while the
a-sentences in (2)–(5) are all fine, the variants in (6) are odd.[2] (The
verbal passive versions of (6) with the passive auxiliary *werden*
('become') would all be well formed, of course.)

(6) a. * Der Brief ist langsam geschrieben.   (Rapp 1996: 257)
          The letter is   slowly   written
          'The letter is written slowly.'

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[2] According to Vaagland (1983), Litvinov & Nedjalkov (1988) and Rapp (1996) the sentences in
(6) are not only 'odd' but ungrammatical (as indicated by the asterisk). In section 3.2, we will argue
instead that these sentences are grammatically licensed but ruled out for pragmatic reasons.

   b. * Die Tür ist von ihm geöffnet.   (Vaagland 1983: 194)
       The door is by him opened
       'The door is opened by him.'

   c. * Ihre Haare sind mit einem goldenen Kamm gekämmt.
                                   (Rapp 1996: 257)
       Her hairs are with a   gold   comb combed
       'Her hair is combed with a gold comb.'

   d. * Sie ist im   Nachbarwald   umgebracht.
                      (Litvinov & Nedjalkov 1988: 139)
       She is in.the neighboring forest killed
       'She is killed in the neighboring forest.'

Second, data such as (7) reveal that adjectival passives typically involve additional inferences which are not present with their verbal passive counterparts. The verbal passive sentence (7b) only expresses that the speaker's car underwent a TÜV examination.[3] We do not know whether the car actually passed the TÜV inspection or not. This is different in the adjectival passive case. Sentence (7a) strongly implies that the inspection had a positive outcome. That is, we understand (7a) as conveying the information that the car has the TÜV certificate and is roadworthy.

(7) a. Mein Auto ist vom   TÜV geprüft
       My   car   is by.the TÜV examined
       'My car is examined by the TÜV.'

   b. Mein Auto ist vom   TÜV geprüft   worden.
       My   car   has by.the TÜV examined become
       'My car has been examined by the TÜV.'

Additional inferences of this sort—we will argue—are a characteristic feature of adjectival passives, which sets them apart from verbal passives and which calls for an adequate semantic explanation.

    This leads us, third, to call into question a core assumption involved in Kratzer's phrasal adjectivization hypothesis. On Kratzer's account, adverbial modifiers that appear with adjectival passives are just regular VP-modifiers. That is, the structural integration site of an adverbial modifier in the adjectival passive case (7a) is assumed to be identical to the verbal passive case (7b). We will argue instead that there is a crucial syntactic difference between the a- and b-sentences in the way

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[3] The German TÜV (Technischer Überwachungsverein) is a technical inspection association that is in charge of the periodical technical inspection of vehicles.

the respective adverbials are structurally integrated. To mention here just one piece of evidence for such a structural difference, note that (7a) and (7b) differ with respect to their prosodic properties. Under wide focus the participle and the adverbial are realized as two separate prosodic units in the verbal passive case, and the primary sentence accent is carried by the participle (see (9b)). By contrast, in the adjectival passive case, adverbial and participle form a single prosodic unit, and the primary sentence accent falls on the adverbial (see (8a)). The opposite distributions (8b) and (9a) are only compatible with narrow or contrastive focus; see Maienborn (2007a, 2011) and section 3.4. (Primary sentence accent is marked with bold face.)

(8) a. Mein Auto ist vom **TÜV** geprüft   wide focus
         My   car   is by.the TÜV   examined
         'My car is examined by the TÜV.'

     b. Mein Auto ist vom   TÜV   **geprüft**. contrastive focus only

(9) a. Mein Auto wird   vom **TÜV** geprüft.   narrow focus
         My   car   becomes by.the TÜV   examined
         'My car is examined by the TÜV.'

     b. Mein Auto wird   vom   TÜV **geprüft**.   wide focus

The structural difference has implications for the contribution of the adverbial to the compositional semantics of the sentence.

   From these introductory remarks it becomes clear that we still lack a satisfactory solution to the adverbial modification puzzle of adjectival passives. In the remainder of this article we want to provide such a solution. We will explore Kratzer's phrasal adjectivization hypothesis further and develop an alternative explanation. Specifically, the present article aims at answering the following questions:

QU-1: What explains the partial admissibility of adverbial modifiers with adjectival passives? (Why are the sentences (2a)–(5a) well-formed, but the ones in (6) odd?)

QU-2: How are adjectival passives and their adverbial modifiers interpreted as compared to verbal passives? (What is the semantic difference between the a- and the b-sentences in (7)? What is the source for the additional inferences in (7a)?)

QU-3: What are the structural grounds for this semantic difference and its prosodic reflexes (8)–(9), and how does the compositional machinery work?

The remainder of this article is organized as follows. Section 2 first briefly reviews the core assumptions of current adjectival analyzes of adjectival passives and discusses Kratzer's proposal in more detail. Furthermore, we summarize the alternative proposal by Maienborn (2007a, 2009, 2011). Section 3 is devoted to adverbial modification in adjectival passives. We present different kinds of evidence that adverbial modifiers in adjectival passives—unlike their verbal passive counterparts—must attach at a low position, close to the verb (V-adjuncts). Our formal analysis takes up the proposal of Landman & Morzycki (2003) and Anderson & Morzycki (2012) to treat manner adverbials as event kind modifiers. We will argue that this solution does not only apply to manner adverbials but can be generalized to account for other kinds of event-related modifiers with low attachment sites. Adverbial modifiers in adjectival passives will therefore be analyzed as structurally low integrated phrases that provide an additional event type predicate. Their verbal passive counterparts are analyzed as VP-adjuncts and they modify event tokens. Section 4 presents the results of two psycholinguistic experiments, an acceptability rating study and a priming study, which were designed to test our structural hypotheses. Finally, in section 5 we conclude and draw the implications of our solution to the adverbial modification puzzle.

2 EMPIRICAL AND THEORETICAL BACKGROUND

2.1 On the adjectival nature of adjectival passives

The so-called 'adjectival' or 'stative passive' (*Zustandspassiv*) in German has traditionally been conceived of as a second passive form besides the 'verbal' or 'eventive passive' (*Vorgangspassiv*); see (10a) v. (10b).[4,5] This perspective is taken by virtually all grammars of German, for example, Zifonun *et al.* (1997), Helbig & Buscha (2001) and Duden (2005).

(10) a. Das Kind ist gekämmt.   adjectival passive
       The child is combed
       'The child is combed.'

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[4] Note that—unlike in English—stative and eventive readings are unambiguously expressed by different forms in German. Throughout this article, the reader should keep in mind that the combination of an adjectivized participle with the copula *sein* ('to be') only has a stative reading. Yet, *sein* also shows up as perfect tense auxiliary together with verbal participles of unaccusative verbs. See Gese *et al.* (2011) for a discussion of the adjectival and verbal variants of unaccusative participles.

[5] A note on the English translations of the German data: In the following, we will generally omit additional colloquial English translations if they would differ from the word-by-word glosses only in word order. Note that the colloquial English translations reintroduce the stative/eventive ambiguity which is absent in the German originals; compare (10a) and (10b).

b. Das Kind wird   gekämmt.   verbal passive
   The child becomes combed
   'The child is combed.'

Authors like Rapp (1996, 1997), Kratzer (2000) and Maienborn (2007a) have criticized this view, arguing that the 'adjectival passive' construction is not a passive verbal form but rather an instance of adjectival conversion. According to this view, what is traditionally dubbed 'adjectival' or 'stative passive' actually turns out to be a copula sentence with an adjectivized verbal participle. Based on Lieber's (1980) observation of a total form identity of verbal and adjectival participles, Kratzer (1994, 2000) proposes to derive adjectival participles from their verbal counterparts via an adjectival ø-affix; see the structure in (11).

(11) Das Kind ist   gekämmt.
    The child is   combed
        COP [$_{AP}$ [$_A$ [$_{VPART}$ gekämmt] ø]]

From a semantic perspective, this analysis is particularly attractive, because it allows us to derive the semantics of adjectival passives compositionally by applying the semantic content of the adjectival ø-affix to the verbal participle. We will therefore take (11) as the structural basis for our semantic analysis of adjectival passives.[6]

   It should be stressed that the adjectival passive formation is a very productive process, at least in German. Adjectival passives coexist with simple adjectives as in (12); forms such as *geöffnet sein* ('to be opened'), *geleert sein* ('to be emptied'), or *gesäubert sein* ('to be cleaned') are not blocked by the respective simple adjective but are completely regular.

(12) a. Die Schublade ist geöffnet / offen.
      The drawer   is opened / open

   b. Die Schublade ist geleert   / leer.
      The drawer   is emptied / empty

   c. Die Schublade ist gesäubert / sauber.
      The drawer   is cleaned / clean

Sentence (13) provides further illustration for the robust productivity of adjectival passive formation in German. The interpretation of (13) is that a certain crisis is an artifact that was brought about by the actions

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   [6] Stolterfoht *et al.* (2010) provide further psycholinguistic evidence for the structural analysis given in (11). In a self-paced reading study we found that participles in adjectival passives require more processing effort than those in verbal passives. These results support the assumption that adjectival passives rely on an additional conversion process of the verbal participle.

of some protagonists (rather than being the result of a natural development).

(13) Die Krise ist gemacht.
  The crisis is made

That is, with the exception of a very small set of verbs for which the adjectival passive formation is categorically ruled out (e.g. weather verbs, true reflexives and certain statives like *kosten* ('to cost')), almost any verb may form an adjectival passive in German; see Maienborn (2007a) for details and Gese *et al.* (2011) for a thorough discussion of the special case of unaccusatives.

The structure assumed in (11) readily accounts for the adjectival properties of adjectival passives. After the adjectival conversion has taken place, the result is expected to show the behavior of more or less ordinary adjectives with respect to, for example, adjectival negation, adjectival gradation, adjectival word formation or coordination. In the following we will run through a representative sample of adjective diagnostics and illustrate the behavior of adjectival passives with respect to these tests for adjectivehood.[7]

Adjectival negation: Unlike its English cognate, the German negative affix *un-* only combines with adjectives (and a few nouns), but not with verbs (e.g. Lenz 1994; Fleischer & Barz 1995). The combination of a participle with *un-* as in (14) thus clearly indicates that adjectival conversion of the participle must have taken place.

(14) Das Kind ist ungekämmt.
  The child is uncombed

Adjectival gradation: Adjectival passives may also display comparative or superlative morphology, which again is a clear indicator that the participle must have turned into an adjective; see (15). Even though adjectivized participles are semantically not particularly well-suited for adjectival gradation (and pattern with other ungradable adjectives in this respect), the mere existence of regularly formed comparative or superlative forms in (15) suffices to establish the adjectival status of the participles involved.[8]

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[7] See Rapp (1996) and Maienborn (2007a) for a more comprehensive discussion of the adjective diagnostics for adjectival passives. Note incidentally that the attributive use of a participle is not really a reliable diagnostic for adjectivehood, at least in German. Although attributive use traditionally counts as a hallmark for adjectives, attributive participles still have typical verbal properties and are less restricted than adjectival passives; see Wunderlich (1997), Rapp (2001).

[8] See Gese & Hohaus (2012a,b) for a semantic account of the gradation of adjectival passives.

(15) a. Heute sind die Parks gepflegter   als   früher.
      Today are the parks groomed-COMP than in the past
      'Today the parks are more groomed than in the past.'

    b. . . . Autor, der viel   berühmter   und vor allem weitaus
      . . . author who much famous-COMP and above all far more
      gelesener war als   Goethe
      read-COMP was than Goethe
      'author who was much more famous and above all far more
      frequently read than Goethe'
                        (*Die Zeit*, 29.07.1999; see Maienborn 2007a: 93)

    c. Der Malariaimpfstoff wird   speziell für Kleinkinder [...]
      The malaria.vaccine becomes specially for small.children
      entwickelt, da   diese am gefährdetsten sind.
      developed   because these endangered.SUP   are
      'We are currently developing a special Malaria vaccine for
      younger children as they are the most prone to infection.'
                              (www.vfa.de, press release 025/2009;
                                       see Gese & Hohaus 2012b: 152)

Coordination with genuine adjectives: Coordination is a suitable
diagnostic for establishing categorial identity. Only elements of the same
type can be conjoined (e.g. Lang 1984). If we find adjectival passives on
a par with genuine adjectives within coordinated copula structures this is
once again strong evidence for the adjectival nature of the participles;
see the examples in (16).[9]

(16) a. Die Schuhe waren sauber und poliert.
      The shoes   were   clean and polished

    b. Noch ist die Umgebung grün und landwirtschaftlich
      Still   is the surrounding green and agriculturally
      intensiv   genutzt.
      intensively used
      'Now the surroundings are still green and in intensive agri-
      cultural use.'
                        (*COSMAS* A97/JUN.10094; see Gese 2012b: 16)

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[9] The examples stem from newspaper articles listed in the COSMAS II corpus of the IDS
Mannheim (http://www.ids-mannheim.de/cosmas2).

c. Wenn wir es schaffen, ein Land   zu werden,
   If   we it manage   a   nation to become
   das frei ist und geachtet und geliebt,...
   that free is and respected and loved
   'If we manage to become a nation that is free and well-respected and loved'
            (*COSMAS* WKD/JW2.03579; see Gese 2012b: 16)

Adjectival word formation: The participles in adjectival passives take part in a typical adjectival word formation process. They build adjectival compounds with nouns as non-heads as in (17).

(17) a. Der Orangensaft ist handgepresst.
      The orange juice is hand-squeezed

    b. Alle Mitglieder des   Berliner Senats sind stasi–überprüft.
                         (Maienborn 2011: 320)
      All   members of the Berlin Senate are stasi-checked

This word formation pattern is highly productive in German. Besides more or less lexicalized forms, such compounds are also readily built 'on the spot'; see the occasional compounds *schnee-entschuldigt* ('snow-excused'), *schwedentrainiert* ('Sweden-trained') or *Schmidt-erprobt* ('Schmidt-experienced') in (18). For instance, the intended interpretation of *schwedentrainiert* in (18b) is that the subject referent is used to drinking alcohol in such high quantities as needed on an Oktoberfest visit.

(18) a. Du   bist schnee-entschuldigt.
               (Radio moderator on SWR3; 08.04.2012)
      You are snow-excused
      Roughly: 'You are excused because of the snow.'

    b. Ich hatte Sorge wie der Japaner das Oktoberfest finden würde,
      aber es stellte sich heraus,
      dass er schwedentrainiert war.
      that he Sweden-trained   was
      'I was worried about what the Japanese guy would think about the Oktoberfest, but it turned out that he was Sweden-trained.'
            (overheard on 11/2007; see Maienborn 2009: 42)

    c. Was er damit   außer seinem bekannten
      What he with-that besides his   known
      "Humor"-Opportunismus noch ausdrücken wollte,
      "humor"-opportunism   still express   wanted,

erschließt sich mir   nicht. Aber vielleicht sind andere
unlockes itself to-me not. But   maybe   are others
ja   klüger   und Schmidt-erprobter.
PRT cleverer and Schmidt-experienced-COMP
'What he wanted to express with that, apart from his well-
known ''humor''-opportunism, I cannot fathom. But perhaps
others are cleverer and more Schmidt-experienced.'
<div align="right">(der Freitag, 17.9.2010; see Gese 2012b: 17)</div>

Note that there is no analogous word formation pattern for verbs. The
compounds in (17) and (18) have no finite verbal counterparts; see
Maienborn & Geldermann (2013) for a corpus study on these adjectival
compounds and a semantic comparison of the compounds with their
adverbial modification counterparts.

   The results of all diagnostics that we have summarized here consist-
ently point toward the adjectival nature of the participle in adjectival
passives. This receives a straightforward account by the adjectival ø-affix
in (11). At the same time the above results highlight the necessity of
finding a way to reconcile the admissibility of adverbial modifiers in
adjectival passives with their observed adjectival nature.

2.2   Kratzer's approach to adjectival passives

The starting point of Kratzer's (2000) formal semantic account is the
observation that adjectival passives have two readings, a 'target state
reading' as indicated by the continuation in (19a) and a 'resultant state
reading' illustrated in (19b).[10]

(19)   Der Reifen ist aufgepumpt...
        The tire   is   pumped-up

   a. ...und nicht platt.   target state reading
       ...and not   flat.

   b. ...wir können jetzt weiterfahren.   resultant state reading
       ...we may   drive on now.

Roughly speaking, the target state reading of sentence (19) means that
the tire belongs to the class of pumped-up objects, rather than being, for
example, flat, while the resultant state reading of (19) expresses that
the tire is in the post state of a pumping event. Kratzer (2000) proposes
to account for the two readings of adjectival passives by assuming two
ø-affixes. These so-called 'stativizers' apply to the verbal participle

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[10] These readings were first noted in Brandt (1982: 31).

(whose semantics is identical to that of the verbal stem) and convert it into an adjective. The semantics of Kratzer's target state and resultant state affixes are given in (20).

(20) a. Target state ø-affix: $\lambda R \ \lambda s \ \exists e \ [R(s)(e)]$ (Kratzer 2000: 7)
     b. Resultant state ø-affix: $\lambda P \ \lambda t \ \exists e \ [P(e) \ \& \ \tau(e) \leq t]$
                                                            (Kratzer 2000: 10)

The examples in (21) and (22) illustrate the result of applying these affixes to a verbal form.[11]

(21) a. Der Reifen ist aufgepumpt. (target state reading)
                                                                (Kratzer 2000: 7)
          The tire   is pumped–up
     b. Stem: $\lambda x \ \lambda s \ \lambda e \ [\text{PUMP} \ (e) \ \& \ \text{EVENT} \ (e) \ \& \ \text{INFLATED} \ (x)(s)$
                         $\& \ \text{CAUSE} \ (s)(e)]$
     c. Stativizer: $\lambda R \ \lambda s \ \exists e \ [R(s)(e)]$
     d. Output: $\lambda x \ \lambda s \ \exists e \ [\text{PUMP} \ (e) \ \& \ \text{EVENT} \ (e) \ \& \ \text{INFLATED} \ (x)(s)$
                         $\& \ \text{CAUSE} \ (s)(e)]$

(22) a. Das Theorem ist bewiesen. (resultant state reading)
                                                                 (Kratzer 2000: 10)
          The theorem is proven
     b. Stem: $\lambda x \ \lambda e \ [\text{PROVE} \ (x)(e)]$
     c. Stativizer: $\lambda P \ \lambda t \ \exists e \ [P(e) \ \& \ \tau(e) \leq t]$
     d. Output: $\lambda x \ \lambda t \ \exists e \ [\text{PROVE} \ (x)(e) \ \& \ \tau(e) \leq t]$

Kratzer's target state affix in (20a) is designed to apply only to a sub-group of change-of-state verbs, specifically to those verbs that specify a characteristic (and in principle reversible) target state. Kratzer takes this state argument to be compositionally accessible via the verb's argument structure; see the lexical entry for the verb *aufpumpen* ('to pump up') in (21b). According to this analysis the target state reading of an adjectival passive expresses a lexically specified target state that is caused by the verb's event; see (21d).

    Applying the resultant state affix in (20b) yields the semantic representation of the resultant state reading in (22d), according to which an adjectival passive expresses a resultant state (given over times *t*) that starts

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[11] Kratzer assumes that Function Composition is freely available for combining the denotations of X^0 categories (Kratzer 2000: 7). This guarantees that a verbal stem that combines with an adjectival ø-affix will inherit its internal arguments to the resulting output. This is the case for the internal argument x in (21b–d) and (22b–d). As an alternative, we could augment Kratzer's stativizers with an argument vector $\bar{x}$ for a stem's additional arguments; see (i) and (ii).

    (i)   Target state ø-affix: $\lambda R \ \lambda \bar{x} \lambda s \ \exists e \ [R(\bar{x})(s)(e)]$
    (ii)   Resultant state ø-affix: $\lambda P \ \lambda \bar{x} \lambda t \ \exists e \ [P(\bar{x})(e) \ \& \ \tau(e) \leq t]$

with the culmination of the verb's event and holds forever after; see Parsons (1990: 234) for this view on resultant states.

These, in a nutshell, are the core aspects of Kratzer's semantic proposal that are relevant for our present purposes. Let us briefly comment on the proposed semantics for adjectival passives, before turning to Kratzer's solution for the adverbial modification puzzle.

Maienborn (2009) indicates three shortcomings of Kratzer's account. First, Kratzer analyzes the adjectival passive ambiguity as a case of lexical homonymy. The two stativizers in (20) have nothing in common (apart from the existential binding of the verb's event argument). This does not seem particularly attractive given the apparent relatedness of the two readings. Second, Kratzer's target state reading is only available for a subgroup of change-of-state verbs. This is in conflict with the characteristic contextual flexibility of adjectival passives.[12] As Maienborn (2009) shows, the target state reading of adjectival passives is much more widely available than Kratzer's lexical account predicts. In fact, with a little contextual help both readings are available for nearly any verb. An argument brought forward by Gese (2012a,b) may strengthen this point. According to Kratzer, activity verbs such as *gießen* ('to water') or *streicheln* ('to pet')—if they build the adjectival passive at all—may only receive a resultant state reading. Kratzer considers resultant state participles to be 'less adjective-like than target state participles [. . .] given that resultant state participles are never gradable, for example, and they never permit the degree modifier *very*' (Kratzer 2000: 14). Yet, as Gese (2012a,b) points out, data such as (23) show that the adjectival passive forms of activity verbs are also gradable (*gestreichelter*) and they can be combined with degree modifiers such as *ausreichend* ('sufficiently').

(23) Anna hat ihre Nachbarspflichten mehr als erfüllt:
     Anna has her neighborly-duties more than fulfilled:
     Die Blumen sind ausreichend gegossen und die Katze
     The plants   are sufficiently watered and the cat
     ist gestreichelter als   ihr lieb ist.
     is petted-COMP than her nice is

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[12] Furthermore, Kratzer's analysis of the target state reading depends on the critical assumption that the relevant verbs have an additional state argument, which is available for composition; see (21b). It is unclear how such an implicit state argument 's' should be compositionally handled in addition to the verb's referential event argument 'e'. Which predicate modifiers relate to s, and which relate to e? How and when does this implicit state argument get bound? As long as these questions are not solved and no independent evidence is adduced that such implicit arguments are compositionally accessible, we remain skeptical of such a proliferation of hidden eventuality arguments in a single lexical entry.

'Anna has more than fulfilled her neighborly duties: The plants have been sufficiently watered and the cat is petted more than it prefers.'

(Gese & Hohaus 2012b: 155)

This indicates that at least one of Kratzer's assumptions is not tenable: that resultant state participles are less adjective-like or that target state participles can only be built of change-of-state verbs with a lexically specified result state. In fact, we reject both claims and take data such as (23) to illustrate the characteristic contextual flexibility of adjectival passives. Given the right context, both readings are available for nearly any verb.

Finally, Kratzer's account reduces the semantic contribution of the adjectival ø-affixes to a merely aspectual shift from the verbal event to some subsequent result state (either resultant or target state). In fact, the contribution of Kratzer's resultant state affix (20b) is virtually identical to a perfect tense semantics. This ignores the subtle but crucial difference between adjectival passives and perfect tense verbal passives; see the discussion of (7) in the introduction. In section 2.3, we will present an alternative semantics for the adjectival passive that tries to resolve these shortcomings.

Let us return to the adverbial modification puzzle. On Kratzer's view this may now be phrased in the following way: if the verb's event argument is existentially bound by the adjectivization affixes in (20), then how could it be targeted by an event-related modifier at a later point in composition? Kratzer's solution consists in assuming that her two stativizers do not only apply at the lexical level (see (23a)), but optionally also at the phrasal level (see (23b)).

(23) a. Lexical adjectivization   b. Phrasal adjectivization
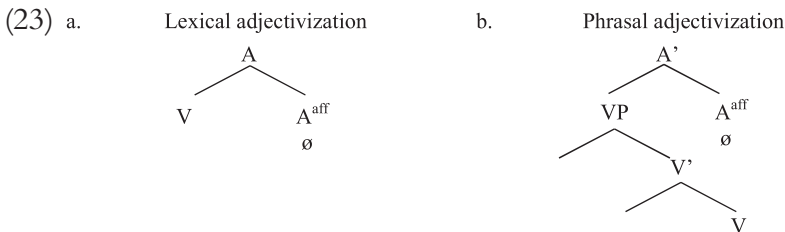
By this move any adverbial modifier that appears inside the VP will automatically take part in the phrasal adjectivization. Kratzer's phrasal adjectivization hypothesis can also explain the incompatibility of *un*-prefixed adjectival passives with adverbial modifiers as illustrated in (24). On the assumption that the prefix *un*- can only attach to a lexical category, the presence of *un*- in a participle always indicates lexical

adjectivization. Hence, adverbial modifiers are blocked; see Kratzer (1994: 11ff., ch. 2).

(24) a. Das Haar war (*hässlich) ungekämmt. (Kratzer 1994: 11, ch. 2)
         The hair was   ugly   uncombed

   b. Die Suppe war (*von Maja) ungewürzt.   (Lenz 1994: 40)
         The soup was   by Maja   unseasoned

   c. Der Brief ist (*mit roter Tinte) ungeschrieben.
                                                    (Rapp 1996: 254)
         The letter was with red ink   unwritten

As we already mentioned in the introduction, Kratzer's account over-generates. It predicts that any kind of adverbial that can appear in, say, a verbal passive sentence should also be licensed in adjectival passives. As the data in (6) show, this is not the case. Rapp (1996: 257) therefore proposed an additional restriction according to which only those adver-bial modifiers are licensed with adjectival passives which, besides char-acterizing the verb's event argument, also hold for the respective result state. Rapp's conjecture may be illustrated with the sentence pair in (25).

(25) a. * Der Brief ist langsam geschrieben.   (Rapp 1996: 257)
           The letter is slowly   written

   b.   Der Brief ist mit roter Tinte geschrieben.
                                                    (Rapp 1996: 257)
           The letter is with red   ink   written

Whereas the manner adverbial *langsam* in (25a) only relates to the process of writing, *mit roter Tinte* in (25b) relates to both: it is the instrument of the writing process and it characterizes the result. This is—so the argument goes—the reason why (25b) is fine, whereas (25a) is odd. Rapp does not spell out the details of implementing this observation. One could possibly think of her conjecture as a kind of pragmatic filter operating on top of Kratzer's phrasal adjectivization operation, yet on closer inspection qualms arise. Let us take, for instance the sentences in (26) and (27). They are both perfectly fine, yet they do not satisfy Rapp's restriction.

(26) Das Manuskript ist von Chomsky zitiert.
     The manuscript is by   Chomsky cited.

(27) Die Mauer ist seltsam   bemalt.
     The wall   is strangely PARTICLE-painted
     'The wall is painted strangely.'

In the case of (26) it is not clear how the agent phrase *von Chomsky* would relate not only to the citing event but also to the result state of the manuscript. What could it mean for a manuscript to be in the result state of being cited? There is no readily observable property that helps identify such a result state. How could we decide whether the adverbial characterizes such a result state? This task is hardly comparable to the decision of whether a letter was written in red ink or not. It seems that we need to say more about the semantics of adjectival passives to establish what the exact licensing conditions of adverbials are in cases such as (26).

The case of (27) is different: the manner adverbial *seltsam* ('strangely') qualifies the resultant painting on the wall. Maybe the colors are awkward, or it shows a rather strange motif. Yet, (27) does not imply that the act of painting itself was performed in a strange manner, that it was done, for example, by the artist holding the brush in his mouth or by painting the wall only by moonlight, etc. This would be the regular event-related reading of the manner adverbial, which is available in the verbal passive variant in (28).[13]

(28) Die Mauer wird   seltsam   bemalt.
  The wall   becomes strangely PARTICLE-painted
  'The wall is strangely painted.'   (verbal passive)

That is, unlike in the verbal passive case (28), the adverbial modifier in (27) does *not* relate to the verb's event argument and hence cannot be accounted for by Kratzer's phrasal adjectivization rule in combination with Rapp's conjecture. Rapp's condition is meant to impose an *additional* constraint on phrasal adjectivization that licenses only those adverbial modifiers that relate to both the verbal event and its result state. This is not the case in (27). This calls for an alternative explanation of the adverbial modification puzzle.

2.3 *Maienborn's approach to adjectival passives*

In the following we will summarize the core assumptions of Maienborn's analysis of adjectival passives. We will limit ourselves to those aspects that are relevant for the adverbial modification puzzle.[14]

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[13] Actually the situation is a bit more complex. The verbal passive sentence (28) has a second reading in which the manner adverbial is interpreted as specifying the resultant object. We will discuss these issues in more detail in section 3. What is crucial for our present purposes is that the regular, compositional interpretation of the manner adverbial in the verbal passive case (28) is one in which it specifies the action expressed by the verb. On Kratzer's phrasal adjectivization hypothesis this reading should also be readily available in the adjectival passive (27), contrary to fact.

[14] The analysis was developed in Maienborn (2007a, 2009, 2011) and further elaborated by Gese (2011, 2012a,b), Gese *et al.* (2011) and Maienborn & Geldermann (2013).

Maienborn's starting point is the observation that adjectival passives are a special case of a copula combining with an adjectival predicate. Her approach takes this structural insight about adjectival passives to be crucial and exploits it for their interpretation by modeling the semantics of adjectival passives on the copula pattern: like any regular copula sentence, adjectival passives express the adscription of a property to the subject referent. Under this perspective, the particular conditions that govern the interpretation of adjectival passives follow from the semantic operation that corresponds to the adjectivization of the verbal participle and its pragmatic specification. Maienborn's central claim is that adjectival passives express a semantically underspecified property that results from the event type expressed by the base verb. That is, while standard copula sentences with adjectival predicates assign a lexically coded property to the subject referent, adjectival passives are a grammatical means to build potentially new, event-based properties, whose exact interpretation is determined by context and world knowledge. Take (29) as an example.

(29) Der Kuchen ist gekauft.
     The cake   is bought

Sentence (29) expresses more than just that the cake is in the result state of having been bought. We automatically derive certain further properties from this, depending on our contextually available world knowledge. A cake that is bought is probably estimated as less valuable and less delicious than a home-made cake, unless we know that our host is a rather poor baker. In that case we could understand (29) as saying that the cake is of the standard quality of a bakery. Thus, adjectival passives serve to categorize the subject referent based on the event type expressed by the verb and additional context and world knowledge.

    What about the target state/resultant state ambiguity of adjectival passives, which we discussed in section 2.2? In contrast to Kratzer's assumption of two separate ø-affixes (see (20)), Maienborn claims that the two readings are different pragmatic renderings of a single, underspecified core meaning. Since the target state/resultant state ambiguity does not play a major role in the adverbial modification puzzle, we would not go deeper into this issue here.[15] It is sufficient to say that there is no lexical ambiguity involved in the adjectival passive formation,

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[15] Very briefly, Maienborn takes the two readings to be related to different contextual backgrounds: On the target state reading the property expressed by the adjectival passive is contrasted with salient alternative properties, for example, the property of a tire being flat in (19). On the resultant state reading, the context provides salient alternative times at which the subject referent does not have the relevant property; see Maienborn (2009), Gese (2012a,b) for details.

and the target state reading does not depend on specific argument structural conditions postulated in the lexicon (see footnote 12). In the following we will use the term **result state** as a cover term for both target and resultant states.

This is, in a nutshell, Maienborn's take on the interpretation of adjectival passives. The adjectivization of the verbal participle is a productive grammatical means for generating contextually shaped, event-based properties for categorizing the subject referent. For our present purposes, we will adopt Maienborn's analysis and formalize it as follows.

We will distinguish **event kinds** (or **event types**, as we will go on calling them) and **event particulars** (or **event tokens**) in the ontology. We share this background assumption with, for example, Landman & Morzycki (2003), Schäfer (2007), Gehrke & McNally (2011) and Anderson & Morzycki (2012), who have made use of this distinction for different types of modifiers. In section 3 we will provide additional support for the assumption of event kinds. For the time being we will assume that the semantic representation for a verb such as *prüfen* ('examine') can be given in a neo-Davidsonian fashion as in (30). (We follow Kratzer (1996) in severing the external argument from the verb base.)

(30) *prüfen*: $\lambda y_\alpha \, \lambda e_k$ [EXAMINE (e_k) & THEME (e_k, y_α)]
    with e_k of type event kind, y_α of type kind or particular[16]

According to (30), Davidsonian eventuality verbs such as *prüfen* have a hidden event kind argument. Gehrke & McNally (2011) have proposed the axiom in (31) for the relationship between event kinds and their realizations: if at a world-time index i there is an event kind e_k and a predicate P applying to e_k and its arguments, then there is at least one event particular e at i that realizes e_k. 'R' stands for the realization relation between a particular and a kind.[17]

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[16] The referent of the internal argument y_α in (30) may be either a kind or a particular. Note that—although there might be a preference for kinds—event types may also involve particular individuals as participants. Typical kind predicates such as *being a bad habit* or *being prohibited* take event type arguments. As (i) and (ii) show, these event type arguments may include particular participants. In (i), for instance, the event type 'kissing Maria in public' is considered a bad habit. In (ii), the event type 'parking at Piccadilly Circus' is prohibited.

(i) Das Küssen von Maria in aller Öffentlichkeit ist eine schlechte Angewohnheit von Max.
     The kiss-INF of Maria in all public   is a   bad   habit   of Max.
(ii) Das Parken auf dem Piccadilly Circus ist verboten.
     The park-INF at the Piccadilly Circus is prohibited.

[17] In order to account for the possibility that event types may have particular participants, as argued in footnote 16, the axiom in (31) should be augmented by (i).

$\forall e_k, x, P, i \, [P(e_k, x) \text{ at } i \rightarrow \exists e \, [R \, (e, e_k) \, \& \, P \, (e, x) \text{ at } i]]$

(31) $\forall e_k, x_k, P, i [P(e_k, x_k)$ at $i \leftrightarrow \exists e, x [R (e, e_k) \& R (x, x_k)$
    $\& P (e, x)$ at $i]]$

<div align="right">(Gehrke & McNally 2011: 193)</div>

Our proposal for the semantics of the adjectival ø–affix is given in (32). According to (32), the adjectival affix expresses that x is a holder of a state of type s_k that is caused by an event type e_k, which in turn is supplied by the verbal predicate.[18,19]

(32) A^{aff}: $\lambda Q \lambda x \lambda s_k \exists e_k \exists x_k [Q(x_k)(e_k) \& \text{CAUSE} (e_k, s_k)$
         $\& \text{HOLDER} (s_k, x_k) \& R (x, x_k)]$

The compositional derivation of a simple adjectival passive sentence is provided in (33).

(33) Das Auto ist geprüft.
    The car   is examined

  a. $\textit{geprüft}_V$: $\lambda y_\alpha \lambda e_k [\text{EXAMINE} (e_k) \& \text{THEME} (e_k, y_\alpha)]$

  b. $\textit{geprüft}_A$: $\lambda Q \lambda x \lambda s_k \exists e_k \exists x_k [Q(x_k)(e_k) \& \text{CAUSE} (e_k, s_k)$
      $\& \text{HOLDER} (s_k, x_k) \& R (x, x_k)]$
             $(\lambda y_\alpha \lambda e_k [\text{EXAMINE} (e_k) \& \text{THEME} (e_k, y_\alpha)])$
    $= \lambda x \lambda s_k \exists e_k \exists x_k [\text{EXAMINE} (e_k) \& \text{THEME} (e_k, x_k)$
      $\& \text{CAUSE} (e_k, s_k) \& \text{HOLDER} (s_k, x_k) \& R (x, x_k)]$

  c. $\textit{sein}_V$: $\lambda P \lambda x \lambda s_k [P(x)(s_k)]$

  d. $\textit{geprüft sei-}$: $\lambda P \lambda x \lambda s_k [P(x)(s_k)] (\lambda x \lambda s_k \exists e_k \exists x_k [\text{EXAMINE} (e_k)$
      $\& \text{THEME} (e_k, x_k) \& \text{CAUSE} (e_k, s_k) \& \text{HOLDER} (s_k, x_k) \& R (x, x_k)])$
    $= \lambda x \lambda s_k \exists e_k \exists x_k [\text{EXAMINE} (e_k) \& \text{THEME} (e_k, x_k)$
      $\& \text{CAUSE} (e_k, s_k) \& \text{HOLDER} (s_k, x_k) \& R (x, x_k)]$

  e. $\textit{das Auto geprüft sei-}$:
    $\lambda x \lambda s_k \exists e_k \exists x_k [\text{EXAMINE} (e_k) \& \text{THEME} (e_k, x_k) \& \text{CAUSE} (e_k, s_k)$
      $\& \text{HOLDER} (s_k, x_k) \& R (x, x_k)] (\text{def-car})$
    $= \lambda s_k \exists e_k \exists x_k [\text{EXAMINE} (e_k) \& \text{THEME} (e_k, x_k) \& \text{CAUSE} (e_k, s_k)$
      $\& \text{HOLDER} (s_k, x_k) \& R (\text{def-car}, x_k)]$

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[18] We assume that the considerations concerning event types and event tokens, as well as the axiom in (31), carry over to state types and state tokens.

[19] The proposal is similar in spirit to Gehrke (2011, 2012), Gese (2011, 2012a,b), who also argue for an event kind approach to adjectival passives. While Gehrke and Gese assume that a type shift (or specification) to event kinds is part of the semantics of the adjectival ø-affix, the present proposal follows Maienborn & Geldermann (2013) in assuming that the adjectival affix *selects* for event kinds. That is, adjectival passives exploit an independently established event kind argument that originates from the lexical entry of the verb; see (30). (Gehrke (2013) ponders the possibility of the verb's event argument being either ambiguous (kind or particular) or of type event kind and favors the latter option.)

    f. *Das Auto ist geprüft:*
       $\exists s_k \ \exists e_k \ \exists x_k$ [EXAMINE (e_k) & THEME (e_k, x_k) & CAUSE (e_k, s_k)
       & HOLDER (s_k, x_k) & R (def-car, x_k)]

Note that the semantic representation (33f) makes no reference to an event token but only refers to an event kind. Evidence for the discourse structural inaccessibility of an event token in adjectival passives is provided by data such as (34).

(34) a. Die Feuergasse ist zugeparkt.
        The fire-lane   is blocked-in.
        ?Das ist gestern   Nacht geschehen.
         That is yesterday night happened.
        'The fire lane is blocked by a car. That happened last night.'

      b. Die Feuergasse ist zugeparkt worden.
        The fire-lane   has blocked–in become.
        Das ist gestern   Nacht geschehen.
        That is yesterday night happened.
        'The fire lane has been blocked by a car. That happened last night.'

The predicate *gestern Nacht geschehen sein* ('to have happened last night') selects for an event token. Yet, the adjectival passive sentence in (34a) does not provide a suitable anchor for the anaphoric proform *das*. As (34b) shows, verbal passives do provide the right kind of anchor argument in this context. Now compare (34) with the event kind predicate *eine schlechte Verhaltensweise sein* ('to be bad manners') in (35).

(35) a. Die Feuergasse ist zugeparkt.
        The fire-lane   is blocked-in.
        Das ist eine schlechte Verhaltensweise.
        That is a   bad   behavior.
        'The fire lane is blocked by a car. That is bad manners.'

      b. Die Feuergasse ist zugeparkt worden.
        The fire-lane   has blocked–in become.
        Das ist eine schlechte Verhaltensweise.
        That is a   bad   behavior.
        'The fire lane has been blocked by a car. That is bad manners.'

In (35a) anaphoric reference to an adjectival passive is possible. Verbal passives do not differ in this respect; see (35b). That is, while adjectival passives only support anaphoric reference to event kinds, verbal passives

may refer back to both event kinds and event tokens. This strengthens our claim that the event kind argument originates from the base verb; see footnote 19.[20]

In (36) the semantic representation of an adjectival passive is contrasted with a simple copula construction.

(36) a. *Das Auto ist neu*:   'The car is new.'
$\exists s_k \; \exists x_k \; [\text{NEW} \; (s_k) \; \& \; \text{HOLDER} \; (s_k, x_k) \; \& \; R \; (\text{def-car}, x_k)]$

 b. *Das Auto ist geprüft*:   'The car is examined.'
$\exists s_k \; \exists e_k \; \exists x_k \; [\text{EXAMINE} \; (e_k) \; \& \; \text{THEME} \; (e_k, x_k) \; \& \; \text{CAUSE} \; (e_k, s_k) \; \& \; \text{HOLDER} \; (s_k, x_k) \; \& \; R \; (\text{def-car}, x_k)]$

The comparison of (36b) with (36a) shows that the semantics of adjectival passives follows the pattern of regular copula constructions. Both representations characterize the subject referent as being the holder of a state of type s_k. But while s_k is sufficiently described by the one-place predicate NEW in (36a), (36b) is less specific in this respect. s_k is only characterized as being the result of a causing event type e_k. The task of narrowing down s_k further is left to the context. This is the reason behind the additional inferences that typically accompany adjectival passives; see the discussion of (7) and (29) above. They serve to find a sufficiently specific, contextually suitable state type.

In short, our formal analysis takes adjectival passives to introduce a state-type argument which results from the verb's event type and whose further specification is open to the context.

3   ADVERBIAL MODIFICATION

How do adverbial modifiers fit into the picture of adjectival passives outlined in the previous section? To figure out their genuine contribution it is crucial to first isolate two classes of expressions that are to be distinguished from the case we are primarily interested in here.

3.1   *Inherited arguments and resultative adverbs*

The first type of expressions that should not be mixed up with our event-related adverbial modifiers is prepositional phrase (**PP) arguments**, which are inherited by the adjectivized participle from its verbal base. As Rapp (1996) has pointed out, PPs such as the one in (37) are to be considered true arguments of the adjectivized participle.

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[20] See Gese (2011, 2012b) for a more thorough discussion on the absence of event tokens with adjectival passives.

Thus, they pattern with the arguments of simple adjectives exemplified by (38).

(37)   weil   er von der Musik beeindruckt ist (Rapp 1996: 247)
        because he by the music impressed   is

(38) a. weil   er auf seinen Vater stolz   ist
        because he of his   father proud is

    b. weil   sie von Schuld frei ist
        because she of   guilt   free is

PPs of the type in (37) thus do not fall under our adverbial modification puzzle. As Rapp (1996) observes, they show the typical behavior of adjectival arguments in two respects: first, they may appear both to the left and to the right of their adjectival head; see (37)/(38) and (39). And, second, they are not necessarily blocked by *un*-affixation; see (40).

(39) a. weil   er beeindruckt von der Musik ist (Rapp 1996: 247)
        because he impressed   of   the music is

    b. weil   er stolz   auf seinen Vater ist
        because he proud of   his   father is

    c. weil   sie frei von Schuld ist
        because she free of   guilt   is

(40) a. weil   er von der Musik unbeeindruckt ist (Rapp 1996: 248)
        because he of   the music unimpressed   is

    b. weil   sie (un)glücklich über die Antwort ist
        because she (un)happy   about the response is

    c. weil   sie mit dem Zeugnis (un)zufrieden ist
        because she with the   report   (dis)content   is

This behavior sets adjectival arguments apart from the case of adverbial modification outlined in section 2: adverbial modifiers may not appear to the right of the participle (since the German VP is head final); see (41) and (42); and they are blocked by *un*-affixation; see the discussion of (24).

(41) a.   Der Brief ist mit roter Tinte geschrieben und
           The letter is with red   ink   written   and
           gut   lesbar.
           well readable

b. * Der Brief ist geschrieben mit roter Tinte und
The letter is written   with red ink   and
gut   lesbar.
well readable

(42) a.   Die Suppe ist von Maja gewürzt und
The soup is by Maja seasoned and
besonders   bekömmlich.
particularly digestible

b. * Die Suppe ist gewürzt von Maja und
The soup is seasoned by Maja and
besonders   bekömmlich.
particularly digestible

Since we are interested in the adverbial modification puzzle of adjectival passives here, we would not discuss adjectival arguments such as (37) any further.

The second class of expressions that are to be systematically distinguished from event-related adverbial modifiers are **resultative adverbs** such as Kratzer's example (2a) repeated below together with further examples. Sentence (27), which we discussed in section 2.2, also belongs to this class.

(43) a. Das Haar war ziemlich schlampig gekämmt.

(Kratzer 1994: 9, ch.2)

The hair was rather   sloppily   combed

b. Die Mauer ist seltsam   bemalt.   = (27)
The wall   is strangely PARTICLE-painted

c. Maja ist elegant   gekleidet.
Maja is elegantly dressed

d. Die Tür ist weit   geöffnet.
The door is widely opened

e. Die Jacke ist dick   gefüttert.
The coat   is   thickly lined

f. Der Saal ist weihnachtlich geschmückt.
The hall is Christmassy   decorated

As we already stated in connection with (27) (repeated here as (43b)), these adverbials do not relate to the base verb's event argument but to an implicit resultant object (see Ehrich & Rapp 2000; Geuder 2000;

Eckardt 2003; Maienborn 2007b). Thus, contrary to first appearance, they are not standard manner adverbials. For instance, what is characterized as being rather sloppy in (43a) (under its predominant reading; see below) is not the act of combing but the resultant hairstyle. Similarly, the adverbials specify the resultant painting in (43b), the combination of clothes in (43c), the door opening in (43d), the lining in (43e), and the decoration in (43f). The adverbials in (43a–c) may in principle also relate to the verb's event argument. That is, they may also marginally have a manner reading apart from their predominant resultant object reading. (43d–f) do not have this option; *dick, weit* and *weihnachtlich* can only specify a resultant object. There is no way of performing some action in a thick or wide manner nor can a hall be decorated by acting in a Christmas-like way.[21]

Note that the resultant object and the manner reading are characterized by different prosodic properties. The resultant object reading of, for example, sentence (43b) involves primary accent on the participle, see (44a). The manner reading requires that the participle and the adverbial form a single prosodic unit with primary accent on the adverbial as in (44b); see also the discussion of (8) in section 1. That is, while (44a) expresses that the wall has some strange paintings on it (see the discussion on (27)), (44b) can marginally be understood as expressing that the wall belongs to the category of things that were painted in a strange manner.[22]

(44) a. Die Mauer ist seltsam   be**malt**.   resultant object reading
         The wall   is strangely painted

     b. Die Mauer ist **selt**sam   bemalt.   manner reading
         The wall   is strangely painted

We will come back to the marginal manner readings and their specific accent conditions below. What is crucial for the moment is that only the manner readings form part of our adverbial modification puzzle. Under the resultant object reading the adverbials do not relate to the verb's compositionally supplied eventuality argument but to some

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[21] Note that, for example, humming Christmas songs or wearing a Santa Claus outfit while decorating the hall would not qualify as acting in a Christmas-like way. Such activities do not affect the manner in which the hall is being decorated but only provide concomitant circumstances. Given the question (i), the answer (ii) can only be understood as referring to the resultant object (the final decoration). There is no manner reading available for (ii).

   (i) Wie hat Otto den Saal geschmückt?   (ii) Weihnachtlich.
        How has Otto the hall decorated   Christmassy

[22] In addition, the accent pattern in (44b) may also indicate a contrastive focus on the adverbial under the resultant object reading.

non-compositionally available resultant object; see Geuder (2000) and Maienborn (2007b) for some discussion of their semantics. What is more, this option is also available for adjectival predicates that have no verbal origin like the adjectives *offen* ('open') and *voll* ('full') in (45a,b) or the particle *zu* ($\approx$ 'shut') in (45c).

(45) a. Die Tür ist weit   offen.
      The door is widely open

    b. Die Kornspeicher sind üppig   voll.
      The grain stores   are   opulently full

    c. Der Koffer ist fest   zu.
      The suitcase is   tightly shut

Thus, an account of the resultant object reading of modifiers in copula sentences—whether they are adjectival passives or standard adjectival predicates—will not need to rely on Kratzer's phrasal adjectivization hypothesis (23b). These modifiers do not relate to an underlying verbal event argument. Rather, the data in (45) suggest that they are adjectival modifiers.

3.2 *Event-related modifiers*

Having identified adjectival arguments such as (37) and adjectival modifiers as in (43) as two classes of expressions that should be kept apart and require independent solutions, we may now turn to those cases that make up the core of our adverbial modification puzzle of adjectival passives, namely, modifiers that do indeed relate to the base verb's eventuality argument. Let us begin with two introductory remarks.

First, as the data provided throughout this article show, the relevant adverbials are standard intersective modifiers. Thus, the underlying combinatorics should be given by a run-of-the-mill compositional operation for modification. Heim & Kratzer (1998) have proposed the composition rule of predicate modification (PM) for this case. Within the present framework we will assume the equivalent MOD template in (46) from Maienborn & Schäfer (2011); see also Morzycki (2013). MOD licenses the conjunction of two first-order predicates P and Q. In our case, P is provided by the adverbial and Q corresponds to the verbal predicate. The target argument x is given by the verb's eventive argument. (Additional internal arguments of the verb are inherited via the argument vector $\overleftarrow{\gamma}$.)

(46) MOD: $\lambda P \, \lambda Q \, \lambda \overleftarrow{\gamma} \, \lambda x \, [Q(\overleftarrow{\gamma})(x) \, \& \, P(x)]$

That is, adverbials integrated via MOD simply add an additional predicate to their target argument. A parsimonious explanation of the adverbial modification puzzle should exploit this simple and independently established mode of combination for intersective modifiers.

Second, we want to point out that the adverbials that occur in adjectival passives comprise the whole spectrum of event-related modifiers including agent phrases, locatives, instrumentals, temporal adverbials, manner adverbials, etc.; see the examples provided throughout the article. Furthermore, neither in our previous observations nor in what follows do we find any indication that agent phrases behave differently from the other adverbials in relevant respects. We therefore conclude that a solution to the adverbial modification puzzle should not be based on any particular assumptions concerning a putative special structural status of agent phrases (either in terms of voice or by assuming that agent phrases are optional arguments of passive verbs). We favor a parsimonious explanation providing a general solution to the whole class of adverbials which only relies on independently established syntactic assumptions.

Having said this, we may ask now what is the possible contribution of an adverbial modifier to the meaning of adjectival passives, which we developed in section 2.3? And what licenses its appearance? We will argue in the following that adverbial modifiers that are licensed in adjectival passives are in fact **event type modifiers**. They do not relate to an event token—this is what standard VP-modifiers do—but attach at a structurally deeper position to the verb's event type argument e_k. By specifying further the verb's event type, these modifiers help identify the state type s_k that results from e_k. We will adduce further evidence for this assumption and lay out the formal details in the next subsections. But let us first turn to our first question **QU-1**. We are now in the position to explain what is behind the partial admissibility of adverbial modifiers in adjectival passives mentioned in the introduction. Consider first the two well-formed examples in (47). They illustrate the behavior of 'good' event-related modifiers in adjectival passives. These yield a complex event type from which a plausible resulting state type may be readily derived.

(47) a. Die Birnen sind in Rotwein   gedünstet.
         The pears   are   in red wine   stewed

     b. Das Manuskript ist in einer Nacht geschrieben.
         The manuscript is   in one   night   written

From (47a) we may derive, for example, that the pears will be quite soft, have a red hue and that they contain alcohol. And the one-night manuscript in (47b) will probably be either categorized as being ingenious or as awfully sloppy. Now, compare these examples with the 'bad' event-related modifiers mentioned in section 1. The relevant sentences (6) are repeated in (48).

(48) a. * Der Brief ist langsam geschrieben. (Rapp 1996: 257)
         The letter is   slowly   written

    b. * Die Tür ist von ihm geöffnet. (Vaagland 1983: 194)
         The door is by   him opened

    c. * Ihre Haare sind mit einem goldenen Kamm gekämmt.
                                              (Rapp 1996: 257)
         Her hairs are with a   gold   comb combed

    d. * Sie ist im   Nachbarwald   umgebracht.
                                    (Litvinov & Nedjalkov 1988: 139)
         She is in.the neighboring forest killed

It is commonly assumed that sentences such as (48) are ungrammatical. (Remember that the grammaticality judgments are not our's; see footnote 2.) Yet, according to the account developed here these sentences are not ill-formed in grammatical terms but odd for pragmatic reasons. Without additional background assumptions the modifiers do not have a plausible impact on the resulting state type, and hence their addition is uninformative. Take (48b) as an example. Under normal circumstances the resulting state of a door being opened is just that the door is open. It does not matter who opened it. Therefore, even if 'opened by x' were accepted as a legitimate event type, the adjectivization would nevertheless be discarded in favor of the simpler event type without the *by*-phrase. Yet, in a context in which, for example, a despotic boss does not allow his employees to close a certain door once he has opened it, it makes a difference whether the door was opened by the boss, or by somebody else. (48b) turns out to be fine in such a context. This also holds for the other cases in (48). A possible context for uttering (48a) could be an experimental setting in which letters which were written slowly are compared with rapidly written letters with respect to legibility. (48c) becomes fine if we assume, for example, that combing one's hair with a gold comb gives it an extraordinary sheen. Finally, (48d) could be uttered by a police officer as an explanation why his unit is not investigating the crime. Since the victim was killed in the neighboring forest, she is outside his jurisdiction.

Thus, what makes the sentences in (48) pragmatically odd is that the modifiers do not contribute to the derivation of a plausible resulting state type when presented out of the blue. Hence, their addition is ruled out as uninformative. That is, to be pragmatically licensed in adjectival passives, adverbial modifiers must meet an **informativity constraint** according to which the resulting state type is a proper subtype of the state type that would be derived without the adverbial.[23]

In sum, our answer to question **QU-1** is that there are no grammatical grounds for the partial admissibility of adverbial modifiers in adjectival passives. In principle, any event-related modifier is a potential candidate, as long as it narrows down the type of state that results from the given event type.

This leads us to question **QU-2** from the introduction concerning the semantic difference between adjectival passives and their verbal passive counterparts with respect to adverbial modification. From what we have said so far the crucial difference is that the adverbial relates to the base verb's event type argument in the adjectival passive case and to an event token in the verbal passive case. Compare (49a) and (49b).

(49) a. Das Manuskript ist von Chomsky zitiert.
    The manuscript is by Chomsky cited.

b. Das Manuskript ist von Chomsky zitiert worden.
    The manuscript has by Chomsky cited become.

In (49a) the adverbial is part of the complex event type 'cited by Chomsky' and must therefore have an impact on the resulting state type. The manuscript in (49a) is presumably categorized as being particularly innovative and readworthy, since being cited by Chomsky is a kind of accolade in generative syntax. In (49b), by contrast, the adverbial adds information about the agent of a past citing event token. We may go on and draw further inferences here too, but we are not forced to do so. This difference becomes even more visible if the proper noun *Chomsky* is replaced with the name of an unknown person as in (50) (# signals pragmatic anomaly).

(50) a. #Das Manuskript ist von Sandberger zitiert.
    The manuscript is by Sandberger cited.

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[23] This informativity constraint could be further spelled out, for example, within the framework of optimality theoretic pragmatics (e.g. Blutner 1998, 2000). For lack of space we leave this for a further occasion. There is no doubt that this constraint has a much broader scope of application, particularly in the domain of modification.

b. Das Manuskript ist von Sandberger zitiert worden.
   The manuscript has by Sandberger cited become.

In (50) there is no world knowledge available that could help us determine what kind of manuscript we are likely to be dealing with. The present perfect variant (50b) is not affected by this lack of knowledge but has a perfectly sensible interpretation; it simply expresses that there was an event of citing the given manuscript in which an individual named Sandberger took part as agent. The adjectival passive variant (50a), by contrast, is pragmatically anomalous under these circumstances. Without additional assumptions, the adverbial does not make a sensible contribution to narrowing down the type of state that could plausibly result from the given event type.

 Our answer to question **QU–2** rests on two assumptions, for which we still need to provide independent justification: (a) We assume that the relevant adverbials exploit different attachment sites and (b) one of them involves event type modification. In the following, we will address these issues.

3.3 *Event type modification*

The proposal that certain types of adverbials should be treated as event-type modifiers has recently been advocated by Landman & Morzycki (2003) and Anderson & Morzycki (2012); see also Morzycki (2013). More specifically, they propose to analyze manner adverbials as predicates of event kinds. One of their crucial observations is that certain anaphoric expressions such as Polish *tak* and German *so* serve as proforms both for manners and for kinds. In their adnominal use, they are anaphoric to kinds, and in their adverbial use they are anaphoric to manners; see (51) and (52).

(51) Polish   (Anderson & Morzycki 2012: 3)
  a. taki   pies
    such–MASC dog
    'such a dog', 'a dog of that kind'

  b. tak się zachowywać
    such REFL behave
    'behave that way'

(52) German: (Anderson & Morzycki 2012: 4ff.)
  a. so einen Hund
    such a dog
    'a dog of that kind'

    b. so   getanzt
          such danced
          'danced like that'

From these and further crosscategorial parallels Morzycki and colleagues conclude that the notoriously enigmatic category of manner can be understood as event kind. This allows us to analyze manner adverbials straightforwardly as event kind predicates.

    The data in (53a,b) (adapted from Anderson & Morzycki 2012) show that manner adverbials are taken up by the event type proform *so*, while standard locative and temporal modifiers do not show this behavior; see (53c,d).

(53) a.   Maria hat laut   getrommelt, und Paul hat
             Maria has loudly drummed   and Paul has
             auch so getrommelt.
             also   so drummed
             'Maria drummed loudly and Paul also drummed that way.'

      b.   Maria hat schnell getrommelt, und Paul hat
             Maria has fast   drummed   and Paul has
             auch so getrommelt.
             also   so drummed
             'Maria drummed fast and Paul also drummed that way.'

      c. * Maria hat im   Wohnzimmer getrommelt, und
             Maria has in.the living-room   drummed   and
             Paul hat auch so getrommelt.
             Paul has also so drummed
             'Maria drummed in the living room and Paul also drummed that way.'

      d. * Maria hat heute Morgen getrommelt, und
             Maria has today morning drummed   and
             Paul hat auch so getrommelt.
             Paul has also so drummed
             'Maria drummed this morning and Paul also drummed that way.'

In the following, we will take up the proposal by Morzycki and colleagues for manner adverbials and explore it for our adverbial modification puzzle. Manner modifiers are known to have a syntactic base position close to the verb, below all arguments of the verb; see, for example, Frey & Pittner (1998), Haider (2000, 2002) and Frey (2003)

for German. For our present purposes, we will assume that they attach to the **verbal cluster**[24] and can hence be analyzed as V–adjuncts. Maienborn (2001, 2003b) has argued that this adjunction site is not reserved for manner adverbials but can also be targeted by locatives, instrumentals, etc. Thus, for instance locatives may be adjoined both at the V–level and at the VP–level. This syntactic difference has implications for their prosodic behavior and their interpretation. As V–adjuncts they form a single prosodic unit with the verb and carry the primary sentence accent under wide focus. Semantically, they contribute to the verb's event type; in (54a), 'on the bike' specifies the way how the thief fled. As VP–adjuncts they are prosodically separate and they modify the event token; see (54b): 'on the market place' specifies the place where the fleeing event took place

(54) a. Der Dieb ist auf dem **Fahr**rad geflohen.   V–adjunct
        The thief has on the   bike   fled
        'The thief fled by bike.'

   b. Der Dieb ist auf dem Marktplatz   ge**floh**en. VP–adjunct
        The thief has on the   market place fled
        'The thief fled on the market square.'

As the examples in (55) illustrate, V–adjuncts pattern with manner adverbials in supporting anaphoric reference with *so*. Thus not only manner adverbials can be anaphorically referred to with *so* but also instrumentals (55a), comitatives (55b), locatives (55c) and temporal adverbials (55d); as long as they are prosodically integrated into the verbal cluster.

(55) a. Maria hat mit **Koch**löffeln   getrommelt, und
        Maria has with wooden-spoons drummed   and
        Paul hat auch so getrommelt.
        Paul has also so drummed
        'Maria drummed with wooden spoons and Paul also drummed that way.'

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[24] Haider (2010: 336) defines the verbal cluster in German as a 'compact constituent of verbal heads and co-predicates' (particles, resultatives and directional PPs) that form a complex predicate, i.e., 'a syntactically complex head structure with – in principle – more than one theta providing head.' According to Haider, the verbal cluster is built by V^0-adjunction; see Haider (2010: ch. 7) for a detailed discussion.

    b. Maria ist mit **Freun**den verreist,   und Paul ist
        Maria is with friends   gone-away and Paul is
        auch so verreist.
        also   so gone-away
        'Maria is travelling with friends and Paul is also travelling that
        way.'

    c. Maria ist auf dem **Fahr**rad geflohen und
        Maria is on the   bike   fled   and
        Paul ist auch so geflohen.
        Paul is also so fled
        'Maria fled by bike and Paul also fled that way.'

    d. Maria hat die Erdbeeren   bei **Voll**mond gepflanzt,
        Maria has the strawberries at   full-moon planted
        und Paul hat die Tomaten auch so gepflanzt.
        and Paul has the tomatoes also so planted
        'Maria planted the strawberries by full moon and Paul also
        planted the tomatoes that way.'

The contrast in (56) demonstrates that prosodic integration is in fact obligatory. In (56a) the locative forms a single prosodic unit with the verb and hence contributes to the formation of the event type. *Auf Hawaii heiraten* ('to get married in Hawaii') is interpreted as a complex event type which involves, for example, a ceremony on the beach, flower garlands, etc., and which may be realized at different times with different protagonists. Anaphoric reference with *so* is possible in this case. In (56b) the locative remains prosodically separate, and hence its semantic contribution consists in providing a location for a particular event of Maria getting married. In this case the locative cannot be taken up by *so*.

(56) a.   Maria hat auf **Hawaii** geheiratet, und Paul hat
           Maria has on Hawaii married   and Paul has
           auch so geheiratet.
           also so married
           'Maria got married in Hawaii and Paul also got married that
           way.'

    b. * Maria hat auf Hawaii ge**hei**ratet, und
        Maria has on Hawaii married   and
        Paul hat auch so geheiratet.
        Paul has also so married

The anaphoric data in (57) strengthen this point. The kind predicate 'being nowadays in vogue' requires an antecedent of type event kind. In (57a), the anaphoric pronoun refers to the event type 'getting married in Hawaii'. In (57b), by contrast, the anaphoric pronoun only refers to the event type 'getting married'.

(57) a. Maria hat auf **Hawaii** geheiratet. Das ist
         Maria has on Hawaii married.   That is
         heutzutage in Mode.
         nowadays   in vogue

     b. Maria hat auf Hawaii ge**hei**ratet. Das ist
         Maria has on Hawaii married   That is
         heutzutage in Mode.
         nowadays   in vogue

Based on this empirical evidence, we propose to generalize the account which Morzycki and colleagues developed for manner adverbials to all modifiers with a base position close to the verb, that is, V–adjuncts. That is, we assume that modifiers that adjoin at the V–level relate to the verb's event type argument e_k, whereas modifiers at the VP–level relate to an event token.[25] The formal details of this proposal will be spelled out in section 3.5.

3.4   *Structural conditions*

Having discussed the notion of event type modification for V–adjuncts, the last jigsaw piece that we need to solve our adverbial modification puzzle concerns the structural conditions of adverbial modifiers in adjectival passives. In the following, we will argue that adjectival passives indeed only license V–adjuncts, which are therefore to be analyzed in terms of event type modification.

On Kratzer's (1994, 2000) proposal, adverbial modifiers of adjectival passives are taken to be standard VP-modifiers. They are expected to behave exactly as in verbal passives; see the discussion in section 2.2. The modifiers in (58a)/(59a) are therefore assumed to be structurally identical to the verbal passive cases in (58b)/(59b).

(58) a. Der Brief war mit Wachs versiegelt.
         The letter was with wax   sealed

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[25] See also Bücking (2009) for an account of locative modifiers in the nominal domain that is similar in spirit. Bücking analyzes modifiers of deverbal –*ung*-nominalizations and argues for a split in the possible target arguments: event concepts v. event instances.

b. Der Brief wurde   mit Wachs versiegelt.
   The letter became with wax   sealed

(59) a. Annas Untermieter war von der Polizei gesucht.
         Anna's tenant   was by   the police sought

   b. Annas Untermieter wurde von der Polizei gesucht.
       Anna's tenant   became by   the police sought

Yet, the superficial identity between the a- and the b-versions is decep-
tive. In the following, we want to argue that the modifiers exploit
different structural attachment sites. While in the verbal passive case
the adverbials are just standard VP-modifiers, the adjectival passive
variants require that the adverbials adjoin at V-level.[26] We have already
pointed out that the adverbials in adjectival passives and verbal passives
differ with respect to their prosodic properties; see the discussion of
(8)/(9). Neutral sentence accent is prosodically marked on the modifier
in the adjectival passive case; see (60a). This accent pattern allows focus
projection from the accent-bearing modifier up to the entire sentence;
see Jacobs (1993, 1999). Primary accent on the participle is only com-
patible with strong contrastive focus on the verb; see (60b). Compare
this with the verbal passive case in (61). Neutral sentence accent is
marked on the participle; see (61b). Main accent on the modifier as
in (61a) is only compatible with contrastive focus on the modifier. That
is, (60a) and (61b) would be natural answers to the wide focus question:
'What did Anna notice?' (60b) and (61a) do not fit into this context. A
suitable question for (60b) would rather be: 'Did Anna suspect that the
letter to Leo was smudged with wax?' and for (61a): 'What did Anna
notice concerning the sealing of the letter to Leo?'

(60) Anna sah sofort, . . .
     Anna noticed immediately

   a.   dass der Brief an Leo [$_{VP}$ mit **Wachs** versiegelt war]
         that the letter to Leo   with wax   sealed   was

   b. ?? dass der Brief an Leo [$_{VP}$ mit Wachs ver**sie**gelt war]
         that the letter to Leo   with wax   sealed   was
         (und nicht ver**schmiert**)
         (and not   smudged)

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[26] In the terminology of Jacobs (1993, 1999) they are 'integrated' into the verbal complex. Jacobs
understands 'integration' as a special relationship between a head and its sister constituent that is
grammatically relevant in several respects (e.g., accent placement, feature projection, movement and
extraction). Semantically, head and integrated constituent form a complex predicate.

(61) Anna sah sofort, . . .
Anna noticed immediately

    a. dass der Brief an Leo [$_{VP}$ mit **Wachs** versiegelt wurde]
       that the letter to Leo   with wax   sealed   became
       (statt mit **Sie**gellack)
       (instead of sealing wax)

    b. dass der Brief an Leo [$_{VP}$ mit Wachs ver**sie**gelt wurde]
       that the letter to Leo   with wax   sealed   became

(62) and (63) show the same pattern for agent phrases.

(62) Anna vermutete, . . .
Anna suspected

    a.   dass ihr Untermieter [$_{VP}$ von der Poli**zei** gesucht war]
       that her tenant   by the police   sought was

    b. ?? dass ihr Untermieter [$_{VP}$ von der Polizei ge**sucht** war]
       that her tenant   by the police   sought was
       (und nicht ver**steckt**)
       (and not   hidden)

(63) Anna vermutete, . . .
Anna suspected

    a. dass ihr Untermieter [$_{VP}$ von der Poli**zei** gesucht wurde]
       that her tenant   by the police   sought became
       (und nicht von der **Mafi**a)
       (and not by the Mafia)

    b. dass ihr Untermieter [$_{VP}$ von der Polizei ge**sucht** wurde]
       that her tenant   by the police   sought became

This prosodic pattern provides the first piece of evidence that adverbials
in adjectival passives are part of the verbal cluster and hence V–adjuncts.
In the following we will provide further syntactic and semantic evidence
for the different structural integration of adverbial modifiers in adjectival
and verbal passives. If adverbials of adjectival passives form part of the
verbal cluster then we expect that they will not easily move from their
position adjacent to the verb. The following data on topicalization con–
firm this prediction.

(64) a.   Oliver ist/wurde von Zsa Zsa Gabor adoptiert.
        Oliver is/became by Zsa Zsa Gabor adopted

b.   Von Zsa Zsa Gabor wurde Oliver adoptiert.
     By   Zsa Zsa Gabor became Oliver adopted

c. ?? Von Zsa Zsa Gabor ist Oliver adoptiert.
     By   Zsa Zsa Gabor is Oliver adopted

(65) a.   Die Erdbeeren   sind/wurden im   Bioladen
     The strawberries are/became in.the organic food store
     gekauft.
     bought

b.   Im   Bioladen   wurden die Erdbeeren gekauft.
     In.the organic food store became the strawberries bought

c. ?? Im   Bioladen   sind die Erdbeeren   gekauft.
     In.the organic food store are   the strawberries bought

(66) a.   Der Weg ist / wurde mit Mosaiksteinen gefliest.
     The path is / became with tesserae   tiled

b.   Mit Mosaiksteinen wurde der Weg gefliest.
     With tesserae   became the path tiled

c. ?? Mit Mosaiksteinen ist der Weg gefliest.
     With tesserae   is the path tiled

In verbal passives, topicalization of an agentive, locative or instrumental adverbial is not subject to any particular, construction-specific constraints (apart from the general information structural conditions on movement into the German Vorfeld, Frey 2004, 2006); see the b-sentences in (64)–(66)). In adjectival passives, by contrast, removing the adverbial from its V-adjacent base position and moving it into the Vorfeld leads to a highly marked grammatical structure. The c-sentences in (64)–(66) are only acceptable with strong contrastive focus.

    A similar observation can be made with respect to scrambling. Elements such as directional PPs as in (67) and resultative predicates as in (68) are part of the verbal cluster and therefore do not scramble; see Frey & Pittner (1998) and Haider (2010).

(67) a.   Angela hat vorher die Gläser auf den Tisch gestellt.
     Angela has before the glasses on the   table put

b. * Angela hat vorher auf den Tisch die Gläser gestellt.
     Angela has before on the table the glasses put

(68) a.   Er hat den Teller leer   gegessen.
            He has the plate   empty eaten.

    b. * Er hat leer   den Teller gegessen.
            He has empty the plate   eaten.

The same observation can be made with respect to modifiers in adjec-
tival passives. They scramble only with difficulty, whereas no such limi-
tation holds for their verbal passive counterparts; see (69) and (70).

(69) Anna hat gesagt,...
     Anna has said

    a.   dass der Weg mit Mosaiksteinen gefliest ist / wird.
            that the path with tesserae   tiled   is / becomes

    b.   dass mit Mosaiksteinen der Weg gefliest wird.
            that with tesserae   the path tiled   becomes

    c. ?? dass mit Mosaiksteinen der Weg gefliest ist.
            that with tesserae   the path tiled   is

(70) Die Sekretärin hat   angedeutet,...
     The secretary has   suggested

    a.   dass der Politiker   durch   Drohanrufe
            that the politician through threatening calls
            verunsichert ist / wird.
            unsettled   is / becomes

    b.   dass durch   Drohanrufe   der   Politiker
            that through threatening   calls the politician
            verunsichert wird.
            unsettled   becomes

    c. ?? dass durch   Drohanrufe der   Politiker
            that through threatening calls the politician
            verunsichert ist.
            unsettled   is

In section 4.1, we present an acceptability rating study that corroborates
the observations concerning scrambling.

    Finally, the data in (71) and (72) show that adverbials in adjectival
passives cannot be separated from the participle by intervening linguis-
tic material such as the sentence adverbs *nicht* ('not') or *wahrscheinlich*
('probably'), whereas in verbal passives this is possible.

(71) a. Die Violine ist   von Experten wahrscheinlich/nicht
      The violin   has by   experts   probably/not
      geprüft   worden.
      examined become

    b. Der Fisch ist   in der Brühe wahrscheinlich/nicht
       The fish   has in the broth probably/not
       gedünstet worden.
       stewed   become

    c. Der Weg ist   mit Mosaiksteinen wahrscheinlich/nicht
       The path   has with tesserae   probably/not
       gefliest worden.
       tiled   become

(72) a. * Die Violine ist von Experten wahrscheinlich/nicht
       The violin   is by   experts   probably/not
       geprüft.
       examined

    b. * Der Fisch ist in der Brühe wahrscheinlich/nicht
        The fish   is in the broth probably/not
        gedünstet.
        stewed

    c. * Der Weg ist mit Mosaiksteinen wahrscheinlich/nicht
        The path   is with tesserae   probably/not
        gefliest.
        tiled

In German, the lowest position for operators like the negation particle or sentence adverbs is the position preceding the verbal cluster (e.g. Frey 2003; Haider 2010). Thus the data in (71) and (72) indicate that the adverbials in adjectival passives are obligatorily part of the verbal cluster, whereas the adverbials in verbal passives may precede negation and sentence adverbs.

Further evidence for the assumption that adverbial modifiers in adjectival passives are part of the verbal cluster comes from secondary predication. It has been observed that depictive secondary predicates, unlike resultatives, cannot be part of the verbal cluster as shown in example (73); see Winkler (1997).

(73) Maria sagt,
    Maria says

a. dass sie das Blech   heiß flachgehämmert hat
    that she the metal-sheet hot flat-hammered   has

b. *dass sie das Blech   flach heißgehämmert hat
    that she the metal-sheet flat hot-hammered   has

A similar observation can be made for depictives in adjectival passives in (74b). The depictive *fangfrisch* ('catch-fresh') cannot be placed between the modifier *in der Brühe* ('in the broth') and the participle *gedünstet* ('stewed') or else it receives an implausible resultative reading (*The fish was fresh after stewing*). In contrast, in a verbal passive as in (74a) the depictive in the same surface position is fully acceptable.

(74) a. Der Fisch ist in der Brühe fangfrisch gedünstet worden.
          The fish   has in the broth catch-fresh stewed   become

     b. *Der Fisch ist in der Brühe fangfrisch   gedünstet.
          The fish   is in the broth catch-fresh stewed

The syntactic and prosodic data presented in this section provide ample evidence that the adverbials in adjectival and verbal passives differ with respect to their syntactic base position. In the adjectival passive case the adverbials have a low attachment site close to the verb. They form part of the verbal cluster. Therefore, we analyze them as V-adjuncts. In the verbal passive case the adverbials attach at a higher position. That is, they are VP-adjuncts.

   Let us conclude this section by pointing out a further semantic implication of the different structural integration sites of adverbial modifiers in adjectival and verbal passives. A semantic reflex of the particular structural position of adverbial modifiers in adjectival passives can be observed with respect to anaphoric reference. Adverbials that are part of the verbal cluster contribute to the formation of a complex verbal predicate. In adding information about the verb's event type they lose their semantic autonomy, that is, they are not fully referentially accessible anymore. Comparing adjectival passives with verbal passives on the one hand and adjectival compounds on the other reveals the intermediate position of the adjectival passive constellation. Take (75) as an example.

(75) a. Mein Auto ist vom   TÜV geprüft   worden.
        My   car has by.the TÜV examined   become
        Er hatte nichts zu beanstanden.
        He had nothing to complain about.

   b. Mein Auto ist vom   TÜV geprüft.
     My   car is by.the TÜV examined
  #Er hatte nichts zu beanstanden.
    He had nothing to complain about.

   c. Mein Auto ist TÜV-geprüft.   *Er hatte nichts
     My   car is TÜV-examined   He had nothing to
     zu beanstanden.
     complain about.

In the verbal passive (75a), the agent phrase *vom TÜV* ('by the TÜV')
refers to a referentially independent expression that may be anaphoric-
ally taken up by a pronoun in the next sentence. In the compound
(75c), the agent is completely incorporated into the predicate and cannot
be anaphorically taken up afterward, see similar observations on anapho-
rical uptake of components of subconstituents in noun–noun com-
pounds in Heim (1982). The adjectival passive case (75b) is between
these two extremes. Anaphoric reference is not completely blocked, as
in (75c), but neither is it completely smooth, as in (75a). Rather,
employing an anaphoric pronoun requires additional effort in recon-
structing the respective discourse referent; see Gehrke (2012, 2013),
Gese (2012b) and Maienborn & Geldermann (2013) for more details.
In section 4.2, we will present the results of a priming experiment that
was designed to test our claim that participle and modifier in adjectival
passives form a semantic unit in terms of a complex event type predicate.

    In sum, the prosodic, syntactic and semantic data presented in this
section provide concurring evidence that the structural integration of
event-related adverbial modifiers in adjectival passives is of a different
type as in verbal passives. This disproves the starting assumption of
Kratzer's phrasal adjectivization hypothesis, which predicts that modi-
fiers in adjectival and verbal passives behave alike. Instead, our results
support the assumption that adverbial modifiers in adjectival passives are
adjoined to the verbal cluster and serve to specify the verb's event type
in this position.

3.5 *A compositional solution to the adverbial modification puzzle*

The above observations make up the first part of our answer to question
QU–3 concerning the structural grounds for the specific integration of
adverbial modifiers in adjectival passives as opposed to verbal passives.
On this basis we may turn now to the second part of **QU–3** and make a
proposal for a compositional semantic derivation.

So far we have argued that eventive verbs have a hidden event type argument e_k. This argument can be further specified by linguistic material within the verbal cluster. By contrast, material that is situated outside the verbal cluster targets an event token. To capture this we assume an operation of **Event type Closure** (**EC**) at the boundary of the verbal cluster; see (76). EC takes a (possibly complex) event type predicate and returns a predicate of event tokens e that realize the given event type.

(76) **Event type Closure (EC):**

$\lambda P \ \lambda x \ \lambda e \ \exists e_k \ \exists x_k \ [P(x_k)(e_k) \ \& \ R(e, e_k) \ \& \ R(x, x_k)]$

After EC has taken place, the verb's event type argument e_k is no longer accessible for composition.

These are the ingredients of our compositional account of the adverbial modification puzzle. In the course of the composition, adverbials may freely adjoin to the verbal projection and provide an additional predicate of the verb's eventive argument via MOD; see (46) in section 3.2. If they are integrated before EC has taken place, they relate to the verb's event type argument e_k. After EC, they relate to the event token e. This holds independently of the kind of sentence structure being built up, that is, whether we are dealing with an active sentence, a verbal passive, an adjectival passive or something else. Yet, the semantics of the adjectival ø-affix that we proposed in section 2.3 only allows for event types as its argument; see (32) and (77d) below. That is, the adjectivization of the verbal participle must take place before EC applies. It then follows that only V-adjuncts are licensed within adjectival passives.

In (77) we develop the derivation of an adverbially modified adjectival passive sentence step by step. (78) provides the derivation of the verbal passive case for comparison. For ease of exposition we skip or simplify aspects of the composition that do not touch on our adverbial modification puzzle, such as the semantics of present tense, verbal passives and of the preposition *von*.

(77) **Adjectival passive**

Das Auto ist vom TÜV geprüft.　　　('The car is examined by the TÜV.')

    a. *geprüft*$_V$:　$\lambda y_\alpha \ \lambda e_k \ [\text{EXAMINE } (e_k) \ \& \ \text{THEME } (e_k, y_\alpha)]$

    b. *vom TÜV*:　$\lambda e_\alpha \ [\text{AGENT } (e_\alpha, \text{TÜV})]$ with e_α of type event kind or event token

    c. *vom TÜV geprüft*$_V$: $\lambda y_\alpha \ \lambda e_k \ [\text{EXAMINE } (e_k) \ \& \ \text{THEME } (e_k, y_\alpha) \ \& \ \text{AGENT } (e_k, \text{TÜV})]$

    d. A$^{\text{aff}}$:　$\lambda Q \ \lambda x \ \lambda s_k \ \exists e_k \ \exists x_k \ [Q(x_k)(e_k) \ \& \ \text{CAUSE } (e_k, s_k) \ \& \ \text{HOLDER } (s_k, x_k) \ \& \ R \ (x, x_k)]$

e. *vom TÜV geprüft$_A$*:
$\lambda Q \ \lambda x \ \lambda s_k \ \exists e_k \ \exists x_k \ [Q(x_k)(e_k) \ \& \ \text{CAUSE} \ (e_k, s_k)$
$\& \ \text{HOLDER} \ (s_k, x_k) \ \& \ R \ (x, x_k)]$
$\quad (\lambda y_\alpha \ \lambda e_k \ [\text{EXAMINE} \ (e_k) \ \& \ \text{THEME} \ (e_k, y_\alpha) \ \& \ \text{AGENT} \ (e_k, \text{TÜV})])$
$= \lambda x \ \lambda s_k \ \exists e_k \ \exists x_k \ [\text{EXAMINE} \ (e_k) \ \& \ \text{THEME} \ (e_k, x_k)$
$\quad \& \ \text{AGENT} \ (e_k, \text{TÜV}) \ \& \ \text{CAUSE} \ (e_k, s_k) \ \& \ \text{HOLDER} \ (s_k, x_k)$
$\quad \& \ R \ (x, x_k)]$

f. *sein$_V$*: $\lambda P \ \lambda x \ \lambda s_k \ [P(x)(s_k)]$

g. *vom TÜV geprüft sei-*:
$\lambda P \ \lambda x \ \lambda s_k \ [P(x)(s_k)] \ (\lambda x \ \lambda s_k \ \exists e_k \ \exists x_k \ [\text{EXAMINE} \ (e_k)$
$\& \ \text{THEME} \ (e_k, x_k) \ \& \ \text{AGENT} \ (e_k, \text{TÜV}) \ \& \ \text{CAUSE} \ (e_k, s_k)$
$\& \ \text{HOLDER} \ (s_k, x_k) \ \& \ R \ (x, x_k)])$
$= \lambda x \ \lambda s_k \ \exists e_k \ \exists x_k \ [\text{EXAMINE} \ (e_k) \ \& \ \text{THEME} \ (e_k, x_k)$
$\quad \& \ \text{AGENT} \ (e_k, \text{TÜV}) \ \& \ \text{CAUSE} \ (e_k, s_k) \ \& \ \text{HOLDER} \ (s_k, x_k)$
$\quad \& \ R \ (x, x_k)]$

h. *das Auto vom TÜV geprüft sei-*:
$\lambda x \ \lambda s_k \ \exists e_k \ \exists x_k \ [\text{EXAMINE} \ (e_k) \ \& \ \text{THEME} \ (e_k, x_k)$
$\& \ \text{AGENT} \ (e_k, \text{TÜV}) \ \& \ \text{CAUSE} \ (e_k, s_k) \ \& \ \text{HOLDER} \ (s_k, x_k)$
$\& \ R \ (x, x_k)] \ (\text{def-car})$
$= \lambda s_k \ \exists e_k \ \exists x_k \ [\text{EXAMINE} \ (e_k) \ \& \ \text{THEME} \ (e_k, x_k) \ \& \ \text{AGENT} \ (e_k, \text{TÜV})$
$\quad \& \ \text{CAUSE} \ (e_k, s_k) \ \& \ \text{HOLDER} \ (s_k, x_k) \ \& \ R \ (\text{def-car}, x_k)]$

i. *Das Auto ist vom TÜV geprüft*:
$\exists s_k \ \exists e_k \ \exists x_k \ [\text{EXAMINE} \ (e_k) \ \& \ \text{THEME} \ (e_k, x_k) \ \& \ \text{AGENT} \ (e_k, \text{TÜV})$
$\& \ \text{CAUSE} \ (e_k, s_k) \ \& \ \text{HOLDER} \ (s_k, x_k) \ \& \ R \ (\text{def-car}, x_k)]$

(78) **Verbal passive**
Das Auto wird vom TÜV geprüft.   ('The car is examined by the TÜV.')

a. *geprüft$_V$*: $\lambda y_\alpha \ \lambda e_k \ [\text{EXAMINE} \ (e_k) \ \& \ \text{THEME} \ (e_k, y_\alpha)]$

b. EC: $\lambda P \ \lambda x \ \lambda e \ \exists e_k \ \exists x_k \ [P(x_k)(e_k) \ \& \ R(e, e_k)$
$\& \ R(x, x_k)]$

c. *geprüft$_{V-EC}$*: $\lambda P \ \lambda x \ \lambda e \ \exists e_k \ \exists x_k \ [P(x_k)(e_k) \ \& \ R(e, e_k) \ \& \ R(x, x_k)]$
$\quad (\lambda y_\alpha \ \lambda e_k \ [\text{EXAMINE} \ (e_k) \ \& \ \text{THEME} \ (e_k, y_\alpha)])$
$\quad = \lambda x \ \lambda e \ \exists e_k \ \exists x_k \ [\text{EXAMINE} \ (e_k) \ \& \ \text{THEME} \ (e_k, x_k)$
$\quad \ R(e, e_k) \ \& \ R(x, x_k)]$

d. *vom TÜV*: $\lambda e_\alpha \ [\text{AGENT} \ (e_\alpha, \text{TÜV})]$

e. *vom TÜV geprüft*$_{V-EC}$:
$\lambda x\ \lambda e\ \exists e_k\ \exists x_k$ [EXAMINE (e_k) & THEME (e_k, x_k) R(e, e_k)
& R(x, x_k) & AGENT $(e, TÜV)$]

f. *werden* (passive): $\lambda P\ \lambda x\ \lambda e\ [P(x)(e)]$

g. *vom TÜV geprüft werd-*:
$\lambda x\ \lambda e\ \exists e_k\ \exists x_k$ [EXAMINE (e_k) & THEME (e_k, x_k) R(e, e_k)
& R(x, x_k) & AGENT $(e, TÜV)$]

h. *das Auto vom TÜV geprüft werd-*:
$\lambda e\ \exists e_k\ \exists x_k$ [EXAMINE (e_k) & THEME (e_k, x_k) R(e, e_k)
& R(def-car, x_k) & AGENT $(e, TÜV)$]

i. *Das Auto wird vom TÜV geprüft*:
$\exists e\ \exists e_k\ \exists x_k$ [EXAMINE (e_k) & THEME (e_k, x_k) R(e, e_k)
& R(def-car, x_k) & AGENT $(e, TÜV)$]

The representations in (77i) and (78i) account for the semantic differences between adverbially modified adjectival and verbal passives that we have observed throughout this article. In the adjectival passive case (77i), the adverbial predicates over the event type argument e_k. The subject referent is the holder of a state type s_k, which results from e_k but is otherwise unspecified. This calls for additional pragmatic inferences. In the verbal passive case (78i), the adverbial predicates over an event token e that realizes the event type e_k.

Let us return to Kratzer's phrasal adjectivization hypothesis for adjectival passives. On the account developed here there is no need for such an additional postulate. The selectional requirements of the adjectival ø-affix (see (77d)) make sure that only event type predicates can be adjectivized, no matter whether they are syntactically simple or complex. Thus, the crucial criterion for licensing adverbial modifiers in adjectival passives is not that of belonging to some syntactic projection level of the base verb, as postulated by Kratzer's phrasal adjectivization hypothesis. Rather, the crucial condition is that the adjectivization operation applies to an argument of a particular semantic type, namely an event kind. That is, the composition is solely type driven. We consider this a particular strength of our proposal.[27]

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[27] Kratzer's (1994) observation that adverbial modifiers are blocked in the case of *un*-prefixed adjectival passives (see (24)) can be accounted for by assuming that the negation affix *un-* accepts morphologically complex heads (here: A^{aff} + verbal participle) but not syntactically complex heads (here: V-adjunction of PP); see Ackema & Neeleman (2001, 2002).

This concludes our answer to question **QU-3**. Our solution to the adverbial modification puzzle consists in the interplay of several independently legitimated components:

(a) attachment of adverbial modifiers to the verbal cluster (V-adjuncts)
(b) analysis of V-adjuncts as event type predicates
(c) EC operating at the upper boundary of the verbal cluster

These components are not custom-designed to fit the demands of adjectival passives but have an independent existence. The only assumption that is specific to adjectival passives concerns is:

(d) semantics for the adjectival ø-affix

On the basis of (a)–(d), all particular properties of event-related modifiers in adjectival passives regarding their syntactic status, distribution and interpretation follow solely from the selectional restrictions of the adjectival affix that demands an event type predicate.

4 EXPERIMENTAL EVIDENCE

On the perspective developed in the preceding sections event-related modifiers in verbal and adjectival passives differ with respect to their structural attachment sites. The adverbials in adjectival passives occupy a structurally deeper position inside the verbal cluster (V-adjuncts), whereas standard adverbials in verbal passives have a higher structural position above the verbal cluster (VP-adjuncts). In the following, we will provide experimental evidence for this assumption.

4.1 *Experiment 1: acceptability rating study 'scrambling'*

In our first study, we investigated how the acceptability of adjectival and verbal passives with event-related modifiers is affected by scrambling the modifier out of the VP. The experiment tested the hypothesis that the structural integration of the modifier within the verbal cluster leads to a drop in acceptability for scrambled structures compared to scrambling in verbal passives. As already shown in section 3.4, V-adjuncts like directional PPs and resultative predicates differ from VP adjuncts in that they do not scramble; see Frey & Pittner (1998) and Haider (2010). Our assumption is that modifiers in adjectival passives are V-adjuncts, which hardly scramble out of the verbal complex, in contrast to modifiers in verbal passives, which are analyzed as VP-adjuncts and are more flexible with regard to noncanonical positions. One might argue that differences

in adjunct scrambling for adjectival and verbal passives might also follow from modifier-independent syntactic differences, for example, DP movement or feature suppression in verbal passives (e.g. Travis 1984; Kallulli 2006). But it is not clear how these independent differences (e.g. higher syntactic complexity of verbal passives compared to adjectival ones) might influence scrambling. We will come back to this alternative explanation in the control study for Experiment 2.

The study compared adjectival passives with verbal passives in scrambled and non-scrambled word order using a 2 (adjectival v. verbal passive) × 2 (canonical v. scrambled word order) design. The following hypothesis was formulated:

(H1) Event-related modifiers in adjectival passives are part of the verbal cluster and can scarcely scramble out of this domain: scrambled modifiers in adjectival passives are less acceptable than those in the corresponding verbal passives (interaction of word order and sentence type).

Experimental results for the processing of word order variations in German showed that scrambling of verbal complements leads to severe processing difficulties in terms of degraded acceptability ratings, longer reading times and enhanced Event Related Potential (ERP) components (e.g. Bader *et al.* 2000; Schlesewsky *et al.* 2003; Stolterfoht 2005). This finding together with the assumption that not only verbal complements, but also adverbial adjuncts have syntactic base positions (e.g. Frey 2003) and are less acceptable in noncanonical positions, led us to a further hypothesis:

(H2) Scrambled modifiers are less acceptable than modifiers in their canonical position both in adjectival and in verbal passives (main effect of word order).

Materials: Experimental materials consisted of 24 sentences in four conditions (ADJPASS_CANONIC, VERBPASS_CANONIC, ADJPASS_SCRAMBL, VERBPASS_SCRAMBL) as in (79); all experimental items used in Experiment 1 are available online (Supplementary Material).

(79) (VERBPASS_CANONIC)
Anna hat gesagt, dass der Weg mit Mosaiksteinen
Anna has said   that the path with tesserae
gefliest wird.
tiled   becomes

(VERBPASS_SCRAMBL)
Anna hat gesagt, dass mit Mosaiksteinen der Weg

Anna has said   that with tesserae   the   path
gefliest wird.
tiled   becomes

(ADJPASS_CANONIC)
Anna hat gesagt, dass der Weg mit   Mosaiksteinen gefliest ist.
Anna has said   that the path with tesserae   tiled   is

(ADJPASS_SCRAMBL)
Anna hat gesagt, dass mit   Mosaiksteinen der Weg gefliest ist.
Anna has said   that with tesserae   the path tiled   is

To control for effects of frequency of occurrence of specific noun–participle combinations the embedded adjectival and verbal passive sentences were checked for co-occurrences using the database of the *Deutsches Wortschatz*-Portal (http://wortschatz.uni-leipzig.de). Only nouns that did not occur in the list of significant co-occurrences with the participle were chosen as modifier- or subject-NPs. In addition, we conducted a norming study to identify a set of adjectival and verbal passives containing an event-related modifier in canonical word order that are judged equally acceptable. As the norming study was designed to provide the materials not only for Experiment 1 but for a series of different experiments, it tested the acceptability of adjectival and verbal passives in matrix clauses. We expected the acceptability of the embedded sentences in Experiment 1 to correspond to the acceptability of the non-embedded sentences. Forty undergraduate students from Tübingen University, all native speakers of German, were paid for their participation in the study. They rated 48 experimental sentences with event-related modifiers plus 48 filler sentences covering a range of grammatical and ungrammatical structures on a 5-point-scale, with 5 = good/natural, 1 = bad. Experimental materials contained a variety of event-related modifiers and manipulated the type of sentence (adjectival passive v. verbal passive) within items; half of them with a singular indefinite article and the other half using a bare plural. Two presentation lists were created and randomized in parallel twice. Each participant saw only one version (adjectival passive or verbal passive) of each of the sentences but an equal number of sentences of both types. The results of the norming study showed a highly significant difference between the two conditions, with verbal passives receiving higher acceptability ratings than adjectival passives. This result is hardly surprising since event-related modification is far more frequent and less constrained in verbal passives than in adjectival ones. Furthermore, and independently from specific modification constraints, adjectival

Sentence type	
ADJPASS	VERBPASS
4.52 (0.38)	4.55 (0.41)

Table 1 Mean acceptability ratings and standard deviations for the 24 items chosen from the norming study (5 = good, 1 = bad)

Word order	Sentence type	
	ADJPASS	VERBPASS
CANONIC	4.59 (0.57)	4.48 (0.56)
SCRAMBL	3.02 (0.96)	3.39 (0.86)

Table 2 Mean acceptability ratings and standard deviations (5 = good/natural, 1 = bad)

passives are generally less frequent than verbal ones and this might affect their acceptability; see Stolterfoht *et al.* (2010) for corpus-based frequency analyzes of verbal and adjectival passives. To eliminate this overall difference, we chose 24 items with similar ratings. Twelve items with *mit*-PP ('with') were chosen, as well as 12 *durch*-PP-items ('through/by'). The resulting set of items did not differ significantly in acceptability across the two conditions ($F1(1,39) < 1$; $F2(1,23) = 1.96$, $P2 = 0.175$), see the mean acceptability ratings in Table 1.

Methods: For Experiment 1, the 24 adjectival and verbal passive sentences chosen from the norming study were embedded in matrix clauses yielding sentences like those in (79) above. To get a homogenous set of matrix clauses they all contained a *verbum dicendi* such as *sagen* ('to say'), *erzählen* ('to tell'), *behaupten* ('to claim') in perfect tense. In conditions ADJPASS_SCRAMBL and VERBPASS_SCRAMBL, the modifier was scrambled out of the VP. The 24×4 experimental items were combined with 104 filler sentences covering a wide range of grammatical and ungrammatical structures. Four presentation lists were created in which the experimental items were randomly mixed with the filler items. Conditions were counterbalanced across the four presentation lists such that each participant saw only one version of each experimental sentence. Forty-eight undergraduate students from Tübingen University participated for course credits. All were native speakers of German.

Data analysis and results: The acceptability ratings were submitted to two separate repeated measures ANOVAs, one with an error term that was based on participant variability (F1) and one with an error term

that was based on item variability (F2). The mean acceptability ratings are presented in Table 2.

The results confirmed hypothesis (H2): besides the main effect of sentence type (AᴅᴊPᴀss < VᴇʀʙPᴀss: $F1(1,47) = 4.360$, $P1 \leq 0.05$; $F2(1,23) = 5.323$, $P2 \leq 0.05$) which is driven by the very low ratings of AᴅᴊPᴀss_Sᴄʀᴀᴍʙʟ, we found the predicted main effect of word order with significantly lower ratings for scrambled modifiers than for modifiers in their canonical position (ᴄᴀɴᴏɴɪᴄ > sᴄʀᴀᴍʙʟ: $F1(1,47) = 135.961$, $P1 \leq 0.001$; $F2(1,23) = 115.542$, $P2 \leq 0.001$).

More importantly, our results also provide evidence for hypothesis (H1): we found a significant interaction between the two factors ($F1(1,47) = 8.403$, $P1 \leq 0.05$; $F2(1,23) = 10.486$, $P2 \leq 0.005$): the more focused tests revealed lower acceptability ratings for scrambled adjectival passive sentences than for scrambled verbal passive ones ($F1(1,49) = 8.451$, $P1 \leq 0.05$; $F2 (1,23) = 28.200$, $P2 \leq 0.001$). As predicted, no difference was found for canonical word order ($F1(1,47) = 2.372$, $P1 = 0.13$; $F2(1,23) = 1.000$, $P2 = 0.33$). The acceptability ratings for adjectival and verbal passives in canonical word order thus corresponded to the ratings gained by the norming study, that is, the embedding in matrix clauses had no effect on the acceptability of the sentences.

To sum up, the results revealed no significant rating differences for sentences with adjectival and verbal passives in the canonical order. As predicted, the ratings for the noncanonical order were lower for both sentence types. But the important finding for our question is the difference between the two sentence types: a scrambled modifier is significantly less acceptable with an adjectival passive than with a verbal passive. These results empirically corroborate our claim that adverbial modifiers are more reluctant to leave their base positions in the adjectival passive case, because they are part of the verbal cluster (i.e. V-adjuncts), whereas they adjoin at VP-level, and hence may scramble, in verbal passives.

4.2 *Experiment 2: reaction time study 'semantic priming'*

To find further evidence for the particular structural status of modifiers in adjectival passives, we conducted a second experiment using a priming task. Priming is a very prominent experimental tool for investigating effects of syntactic and semantic structure, in particular effects of similarity or relatedness. It allows us to examine whether the processing of one word is primed, that is, facilitated, by a previous, structurally or semantically related word. In reaction time studies with a word-

recognition task, priming refers to speeding up the response to one stimulus by a preceding stimulus (cf. Ratcliff & McKoon 1978). For semantically related words, for example *cat* and *dog*, this facilitating effect has been known for over a century (cf. Gulan & Valerjev 2010) but it has also been demonstrated for larger semantic units such as propositions (Ratcliff & McKoon 1978). For verbal structures, the priming technique proved to be sensitive to event–related semantic relations, for example, the relation between an event and its participants (agent, theme, instrument; see Ferretti *et al.* 2001). Finally, a body of experiments shows that components of a compound prime each other (e.g. Marslen-Wilson *et al.* 1994; Zwitserlood 1994). This makes priming a promising experimental tool for our present purpose: if adverbial modifiers, by virtue of their structurally deep integration within the verbal cluster, are part of a complex event type predicate we may expect a priming effect between components of the event type along the line of the results of event–related priming and similarly to priming in compounds. We therefore conducted a priming experiment, which included a probe-recognition task. Probe-recognition tasks usually present a target word after presentation of a sentence. The participants' task is to decide for each presented target word whether it occurred in the sentence they just read. We adapted this technique for our purposes presenting a sentence plus a prime word before presenting the target word.[28] The underlying idea of the experiment was that recognizing an expression that is part of the verbal cluster should be facilitated by the previous presentation of the verbal head. More specifically, we expected that the recognition of event–related modifiers in adjectival passives should be primed by the participle. By contrast, in verbal passives there should be no additional priming effect that is due to a special structural and semantic status of the modifier.[29] We therefore expected participants to be faster to recognize a modifier noun presented after a participle if the sentence previously read was an adjectival passive as compared to the verbal passive case. Furthermore, no differences between adjectival and verbal passives were expected with respect to the subject noun, since the subject is not part of

[28] The design is inspired by Ratcliff & McKoon (1978). Ratcliff & McKoon's priming experiments employed a probe-recognition task to provide evidence for the faster recognition of a target word following a (semantically non-related) prime word that occurred within the same propositional unit in a text previously presented.

[29] A body of research shows priming effects between an event and its participant independent of verbal clustering, see, for example, Ferretti *et al.* (2001). Thus, in principle a priming effect between the participle and the modifier is expected both in verbal and adjectival passives. Yet this general event-related priming effect should not lead to differences between adjectival and verbal passives. On the contrary, one would rather expect that the priming effect is stronger in the more eventive verbal passive case.

the verbal cluster either in the adjectival passive or in the verbal passive case. That is, we had the following hypotheses:

(H1) The recognition times for a modifier noun preceded by a participle should be faster if the sentence previously read was an adjectival passive than if it was a verbal passive.

(H2) The effect should be absent in the control condition with subject noun targets.

Materials: The experiment tested adjectival and verbal passive sentences with event-related modifiers as in (80).

(80) (ADJPASS) Der   Weg ist mit   Mosaiksteinen gefliest.
       The   path is with tesserae   tiled

     (VERBPASS) Der   Weg wird   mit Mosaiksteinen gefliest.
       The   path   becomes with tesserae   tiled

The experimental sentences were the 24×2 adjectival and verbal passive sentences from the norming study; see the Supplementary Material (available online) for the complete set of materials. The first target word for the experimental items was the participle in all conditions. The second target word was either the modifier noun or, in the control condition, the subject noun of the experimental sentence. Both target words were written in small caps and the second target word was in nominative case, see the sample probes in (81).

(81) (MOD) GEFLIEST ('tiled') [yes/no] MOSAIKSTEINE ('tesserae') [yes/no]

     (SUBJ) GEFLIEST ('tiled') [yes/no] WEG ('path') [yes/no]

All filler sentences were verbal or adjectival passives. In 50% of the filler trials, the target words presented in the word-recognition task did not occur in the corresponding filler sentence (in 25% the first target word did occur in the corresponding sentence but the second target word did not, and in the remaining 25% the second target word did occur but the first did not). To ensure that participants read the sentences carefully and do not only scan modifier and subject nouns, the filler targets consisted of nouns, verbs and prepositions.

　　Methods: Four presentation lists were constructed in which the 24 experimental items were randomly mixed with 48 filler items. The four lists were counterbalanced across items and conditions: each list included only one version of each experimental sentence (ADJPASS/ VERBPASS) and each experimental target word (SUBJ/MOD).
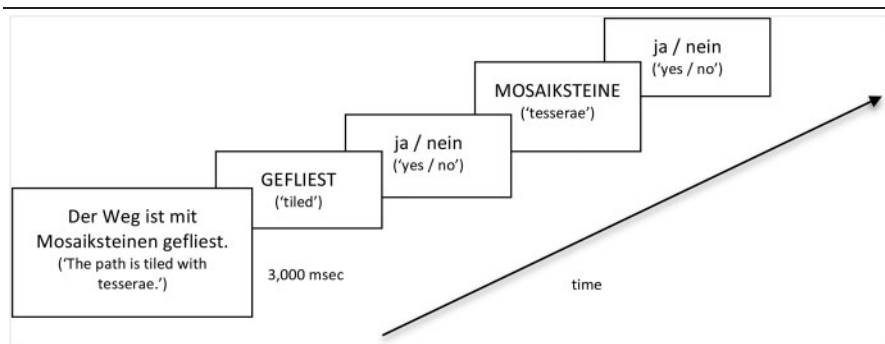
Figure 1   Sample trial of Experiment 2 (in condition ADJPASS_MOD).

Sixty undergraduate students from Tübingen University were paid for participating in the experiment. The experiment was run on a PC using E-Prime Software (Psychology Software Tools, Inc.). On each trial, the participants first read an adjectival or verbal passive sentence (fixed duration of presentation: 3000 ms). Then, they had to decide for two consecutively presented target words whether or not they occurred in the previously read sentence, see Figure 1 illustrating a sample trial in condition (ADJPASS_MOD). To answer the probe-recognition question, participants chose 'yes' or 'no' by pressing one of two keys.

Data analysis and results: We analyzed participants' response times for both target words. Responses accounting to 95.63% in the word-recognition task were correct. Only these correct answers were included in the analysis. To eliminate outliers for the analysis, we employed a two-step procedure: we first excluded response times that were shorter than 300 ms or longer than 1500 ms. We also excluded response times more than 2.5 SD (standard deviation) from the mean per participant and condition. This led to 0.5% data loss for the first probe and 2.5% for the second one. The remaining response times were submitted to two separate ANOVAs, one with an error term that was based on participant variability (F1) and one with an error term that was based on item variability (F2). We did not find any significant differences between adjectival and verbal passives on the first probe, that is, the participle: $(F1(1,59) = 1.258, \quad P1 = 0.26; \quad F2(1,23) = 2.664, \quad P2 = 0.12)$. The ANOVAs we conducted for the second probe, that is, the subject/modifier noun, were 2 (ADJPASS/VERBPASS) × 2 (MOD/SUBJ) ANOVAs with repeated measurement on the two factors in both the participant and the item analysis. The mean response times are displayed in Table 3.

Target type	Sentence type	
	AdjPass	VerbPass
Mod	631.15 (128.27)	663.07 (149.39)
Subj	649.00 (124.22)	641.72 (118.41)

Table 3 Mean response times and standard deviations in milliseconds for the word-recognition task (second target word)

The results confirmed our hypotheses: although no significant main effects were found, the interaction between the two factors (sentence type × target type) was significant (F1(1,59) = 4.452, $P1 < 0.05$; F2(1,23) = 4.740, $P2 < 0.05$). As predicted by (H1), we found significantly faster response times for modifier noun targets in condition AdjPass than in VerbPass (F1(1,59) = 7.960, $P1 < 0.01$; F2(1,23) = 10.274, $P2 < 0.005$). In the control condition with subject noun targets (Subj), as predicted by (H2), no differences were found between adjectival passives and verbal passives (all Fs < 1).

To sum up, our results revealed no significant differences in the control condition with the subject as the second probe, as predicted by (H2). More importantly, we found a significant difference between adjectival and verbal passives for modifier nouns presented as second probes. As predicted by (H1) the modifier noun of an adjectival passive sentence was recognized faster than the modifier noun of a verbal passive sentence if presented immediately after the participle. Previous reaction time studies with a probe-recognition task showed similar effects, for example, within propositional units or within event-based semantic relations. These effects were, by default, interpreted as priming effects between semantically related units. Similarly, the effects of Experiment 2 can be interpreted as pointing to a special semantic status of event-related modifiers in adjectival passives: in adjectival passives, adverbial modifiers form part of the verbal cluster. Together with the verbal predicate they build a complex event type predicate. This is why the participle (which denotes a superordinate event type) semantically primes the recognition of the modifier (which provides a further restriction that leads to a subordinate, complex event type).

A possible objection to this interpretation could be that the study did not ensure that the obtained effect was caused by the previous presentation of the participle, that is, by priming. As already discussed for scrambling in section 4.1, it might also be the case that in adjectival passives modifier nouns are recognized faster *per se*, independently of priming, or that they are recognized slower in verbal passives, possibly

due to a higher syntactic complexity of verbal passives. To exclude these alternative explanations we conducted a control experiment.

Control study ('semantic priming 2'): In the control study we intended to demonstrate that the effects in modifier noun recognition observed in Experiment 2 were true priming effects, that is, effects that crucially depended on the previous presentation of the participle. To do this we changed the order of presentation of the two probes: we presented the modifier noun as the first probe word without previous presentation of the participle. Thus, priming of the modifier noun by the participle was excluded and the advantage for modifier nouns presented after adjectival passives should therefore disappear. We formulated the following hypothesis:

(H3) If the results of Experiment 2 reflect priming between components of a complex event type (participle+modifier), we expect no significant priming differences for the modifier and the subject nouns between adjectival and verbal passives.

Materials and methods: The control study used the same adjectival and verbal passive sentences with event-related modifiers as well as the same probe words as Experiment 2. The only difference compared to Experiment 2 was that we changed the order of presentation of the two target words: in the experimental items, the modifier or subject noun was presented immediately after the end of the presentation of the experimental sentence, the participle was then presented as the second target word. The rest of the design was identical to Experiment 2.

As in Experiment 2, 60 participants, all native speakers of German and students at Tübingen University, participated in the study and received the same remuneration as the participants in Experiment 2. None of the participants of the control study had participated in Experiment 2.

Data analysis and results: In the control study 97.08% of the responses to the word–recognition task were correct. For these correct answers, we analyzed participants' response times, employing the same techniques and the same procedures and cutoffs for outlier elimination as in Experiment 2. This led to 2.3% data loss for the first probe and 1.3% data loss for the second one. The results for the first probe, the modifier or subject noun are displayed in Table 4.

There was a main effect of target type (Mod < Subj: $F1(1,59) = 5.133$, $P1 < 0.05$; $F2(1,23) = 2.180$, $P2 = 0.15$) which cannot be interpreted since different lexical items were compared (modifier noun v. subject noun). However, the analysis revealed no significant main effects

Target type	Sentence type	
	ADJPASS	VERBPASS
MOD	702.07 (139.89)	712.75 (146.41)
SUBJ	682.32 (151.63)	680.50 (129.38)

Table 4 Mean response times and standard deviations for the word recognition task (first probe word)

of sentence type, and, most importantly, no interaction between the two factors (all Fs < 1). As predicted by (H3), there were no significant differences between adjectival and verbal passives, either (all Fs < 1). For the second probe, that is, the participle, the results revealed no significant differences in the response times in the MOD conditions between adjectival and verbal passives (all Fs < 1) but we did find a difference in the SUBJ condition: the participle was recognized faster in the ADJPASS_SUBJ condition than in the VERBPASS_SUBJ condition. This difference (F1(1,59) = 5.289, P1 < 0.05; F2(1,23) = 1.114, P2 > 0.3) as well as the interaction of the two factors (ADJPASS/VERBPASS × MOD/SUBJ: F1(1,59) = 4.180, P1 < 0.05; F2(1,23) = 1.073, P2 > 0.3) were significant only in the F1 analysis but not in the F2 analysis. Even though this is an interesting result, which would be worth investigating further,[30] it does not concern the status of event-related modifiers in adjectival passives. What is of interest for our question are the results for the first probe, that is, the modifier or subject noun. These results confirm our hypothesis (H3) from above and empirically corroborate the claim that the results of Experiment 2 were indeed due to semantic priming between members of the verbal cluster.

All in all, the results of Experiment 2 combined with those of the control study confirm our hypothesis of the different structural integration of adverbials in adjectival and verbal passives: both experiments tested whether or not adverbial modifiers in adjectival passives do indeed form part of the verbal cluster and contribute to the formation of a complex event type predicate. Whereas Experiment 2 revealed a priming effect between the participle and the modifier in adjectival passives, the control study showed that the effect disappears if the modifier is presented without previous presentation of the participle. This

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[30] Possible explanations for this result might involve the different status of the subject noun in a verbal structure in which it reflects the theme argument v. in a copula-adjective sentence in which it denotes the holder of a property. For space limitations we would not discuss these possibilities here any further.

result strengthens the assumption that the participle did in fact prime the event type modifier in Experiment 2.

To conclude, the results of both experiments provided evidence for the hypothesis that modifiers in adjectival passives are syntactically integrated into the verbal cluster and contribute to the formation of a complex event type predicate. Experiment 1 showed that the acceptability of a scrambled modifier PP in adjectival passives is significantly reduced compared to scrambling in verbal passives. This result supports the assumption that modifiers in adjectival passives are V–adjuncts, which are syntactically part of the verbal cluster. The semantic priming Experiment 2 (plus the control study) points to the special semantic status of modifiers in adjectival passives, which we interpret as the formation of a complex event type predicate.

5   CONCLUSION

The aim of the present article was to provide a solution to the adverbial modification puzzle of adjectival passives that neatly accounts for the grammatical and pragmatic observations, is spelled out in a compositional semantic framework, and receives additional support from experimental evidence. More specifically, we aimed to explain the partial admissibility of event-related modifiers in adjectival passives (**QU–1**), account for the characteristic semantics of adjectival passives as opposed to verbal passives (**QU–2**), and make a proposal for a compositional derivation (**QU–3**). Our solution to the adverbial modification puzzle takes adjectival passives to be a grammatical means for generating contextually shaped states of the subject referent that result from a (possibly complex) verbal event type provided by the verbal cluster. The structural condition that allows adverbial modifiers to take part in the formation of the event type predicate is that they attach to the verbal cluster as V–adjuncts. The pragmatic condition is that they provide an informative restriction in terms of narrowing down the type of state that results from the given event type.

Our solution combines three independently motivated components, which are not custom-designed for adjectival passives but have an independent existence: (i) There is a low adjunction site for adverbial modifiers as part of the verbal cluster (V–adjunction). (ii) V–adjuncts provide additional predicates for the verb's event type argument. (iii) At the upper boundary of the verbal cluster, an operation of Event type Closure (EC) binds the verb's event type argument and introduces an event token. The only part that is specific to adjectival passives is given

by the lexical semantics of the adjectival ø–affix, which selects for event types and introduces a resulting state type argument. In this sense our proposal is particularly parsimonious and the compositional machinery is exclusively type driven. This allows us to dispense with specific lexical measures (concerning the argument structure of the base verbs) and with additional postulates such as Kratzer's distinction of lexical and phrasal adjectivizations.

In the course of our discussion, adverbial modifiers in adjectival passives turned out to be an interesting test case for developing a compositional semantics for the verbal cluster in German. We proposed an operation of EC as the compositional semantic equivalent to the upper boundary of the verbal complex. Before EC applies, the semantic composition builds up a potentially complex event type predicate. Afterward, that is, outside the verbal complex, the event type argument is replaced by an event token, which realizes the given event type. The implications of such an operation of event type closure and its potential scope reach far beyond our current subject matter and invite further investigation.

SUPPLEMENTARY DATA

Supplementary data are available at *Journal of Semantics* online.

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REFERENCES

Ackema, P. & A. Neeleman. (2001), 'Competition between syntax and morphology'. In J. Grimshaw, G. Legendre & S. Vikner (eds.), *Optimality-Theoretic Syntax*. The MIT Press. Cambridge, MA. 29–60.

Ackema, P. & A. Neeleman. (2002), 'Morphological selection and representational modularity'. In G. Booij & J. van Marle (eds.), *Yearbook of Morphology 2001* Kluwer. Dordrecht. 1–51.

Alexiadou, Artemis & Elena Anagnostopoulou. (2008), 'Structuring participles'. In *Proceedings of West Coast Conference on Formal Linguistics*, 26. 33–41.

Anagnostopoulou, Elena. (2003), 'Participles and voice'. In A. Alexiadou, M. Rathert & A.v. Stechow (eds.), *Perfect Explorations*. Mouton de Gruyter. Berlin. 1–36.

Anderson, Curt & Marcin Morzycki. (2012), 'Degrees as kinds'. MS, Michigan State University.

Bader, Markus, Micheal Meng & Josef Bayer. (2000), 'Syntaktische Funktions-Ambiguitäten im Deutschen'. *Zeitschrift für Sprachwissenschaft* **19**:34–102.

Blutner, Reinhard. (1998), 'Lexical Pragmatics'. *Journal of Semantics* **15**:115–62.

Blutner, Reinhard. (2000), 'Some aspects of optimality in natural language interpretation'. *Journal of Semantics* **17**:189–216.

Brandt, Margareta. (1982), 'Das Zustandspassiv aus kontrastiver Sicht'. *Deutsch als Fremdsprache* **19**:28–34.

Bücking, Sebastian. (2009), 'German nominal compounds as underspecified names for kinds'. In S. Olsen (ed.), *New Impulses in Word-Formation (Linguistische Berichte Sonderheft 17)*. Buske. Hamburg. 253–81.

Bücking, Sebastian. (2012), '*Müdigkeit* und *Müde-Sein*: Zur Semantik adjektivbasierter Zustandsnominalisierungen'. *Linguistische Berichte* **232**:361–97.

Duden-Redaktion (ed.) (2005), *Der Duden in zwölf Bänden. Bd. 4. Duden—Die Grammatik. 7., völlig neu erarb. und erw. Aufl* Dudenverlag. Mannheim.

Eckardt, Regine. (2003), 'Manner adverbs and information structure: evidence from the adverbial modification of verbs of creation'. In E. Lang, C. Maienborn & C. Fabricius-Hansen (eds.), *Modifying Adjuncts*. Mouton de Gruyter. Berlin. 261–306.

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

Ferretti, T. R., K. McRae & A. Hatherell. (2001), 'Integrating verbs, situation schemas, and thematic role concepts'. *Journal of Memory and Language* **44**:516–47.

Fleischer, Wolfgang & Irmhild Barz. (1995), *Wortbildung der deutschen Gegenwartssprache*. Niemeyer. Tübingen.

Frey, Werner. (2003), 'Syntactic conditions on adjunct classes'. In E. Lang, C. Maienborn & C. Fabricius-Hansen (eds.), *Modifying Adjuncts*. Mouton de Gruyter. Berlin. 163–210.

Frey, Werner. (2004), 'The grammar-pragmatics interface and the German prefield'. *Sprache und Pragmatik (Lund)* **52**:1–39.

Frey, Werner. (2006), 'Contrast and movement to the German prefield'. In V. Molnár & S. Winkler (eds.), *The Architecture of Focus*. Mouton de Gruyter. Berlin. 235–64.

Frey, Werner & Pittner Karin. (1998), 'Zur Positionierung der Adverbiale im deutschen Mittelfeld'. *Linguistische Berichte* **176:**489–534.

Gehrke, Berit. (2011), 'Stative passives and event kinds'. In I. Reich, E. Horch & D. Pauly (eds.), *Sinn und Bedeutung 15: Proceedings of the 2010 Annual Conference of the Gesellschaft für Semantik.* Universaar—Saarland University Press. Saarbrücken. 241–57.

Gehrke, Berit. (2012), 'Passive states'. In V. Demonte & L. McNally (eds.), *Telicity, Change, and State: A Cross-Categorial View of Event Structure.* Oxford University Press. Oxford. 185–211.

Gehrke, Berit. (2013), 'Different Ways to be Passive' MS. Universitat Pompeu Fabra, Barcelona.

Gehrke, Berit & Louise McNally. (2011), 'Frequency adjectives and assertions about event types'. In E. Cormany, S. Ito & D. Lutz (eds.), *Proceedings of SALT XIX.* Ohio State University. 180–97.

Gese, Helga. (2011), 'Events in adjectival passives'. In I. Reich, E. Horch & D. Pauly (eds.), *Sinn und Bedeutung 15: Proceedings of the 2010 Annual Conference of the Gesellschaft für Semantik.* Universaar—Saarland University Press. Saarbrücken. 259–73.

Gese, Helga. (2012a), 'Pragmatic enrichment in adjectival passives: the case of the post state reading'. In F. Liedtke & C. Schulze (eds.), *Beyond the Words. Content, Context and Inference.* Mouton de Gruyter. Berlin. 229–50.

Gese, Helga. (2012b), *Empirische Studien zum Zustandspassiv: Bedeutungsstrukturen und ihre Verarbeitung* Ph.D. thesis, Tübingen University.

Gese, Helga & Vera Hohaus. (2012a), '*Der Stadtring ist befahrener als die Autobahn.* Bemerkungen zur Gradierbarkeit beim Zustandspassiv'. In B. Rothstein (ed.), *Nicht-flektierende Wortarten.*

Mouton de Gruyter. Berlin, NY. 275–99.

Gese, Helga & Vera Hohaus. (2012b), 'Building gradable adjectival passives'. In A. Chernilovskaya, A. Aguilar & R. Nouwen (eds.), *Proceedings of Sinn und Bedeutung 16. MIT Working Papers in Linguistics (MITWPL).* 253–64.

Gese, Helga, Claudia Maienborn & Britta Stolterfoht. (2011), 'Adjectival conversion of unaccusatives in German'. *Journal of Germanic Linguistics* **23:** 101–40.

Geuder, Wilhelm. (2000), *Oriented Adverbs. Issues in the Lexical Semantics of Event Adverbs* Ph.D. thesis, Tübingen University.

Gulan, Tanja & Pavle Valerjev. (2010), 'Sematic and related types of priming as a context in word recognition process'. *Review of Psychology* **17:**53–8.

Haider, Hubert. (2000), 'Adverb placement—convergence of structure and licensing'. *Theoretical Linguistics* **26:** 95–134.

Haider, Hubert. (2002), 'Adverbials at the syntax-semantics interface'. In H. Kamp & U. Reyle (eds.), *How We Say WHEN It Happens.* Tübingen. Niemeyer. 53–70.

Heim, Irene & Angelika Kratzer. (1998), *Semantics in Generative Grammar.* Oxford. Blackwell.

Helbig, Gerhard & Joachim Buscha. (2001), *Deutsche Grammatik. Ein Handbuch für den Ausländerunterricht* Langenscheidt. Berlin, München.

Jacobs, Joachim. (1993), 'Integration'. In M. Reis (ed.), *Wortstellung und Informationsstruktur* Niemeyer. Tübingen. 63–116.

Jacobs, Joachim. (1999), 'Informational autonomy'. In P. Bosch & R. van der Sandt (eds.), *Focus: Linguistic, Cognitive, and Computational Perspectives.* Cambridge University Press. Cambridge. 56–81.

Kallulli, Dalina. (2006), 'A unified analysis of passives, anticausatives and reflexives'. In O. Bonami & P. Cabredo Hofherr (eds.), *Empirical Issues in Formal Syntax and Semantics*, vol. 6. 201–25.

Kratzer, Angelika. (1994), *The Event Argument and the Semantics of Voice* Unpublished MS, University of Massachusetts, Amherst.

Kratzer, Angelika. (1996), 'Severing the external argument from its verb'. In J. Rooryck & L. Zaring (eds.), *Phrase Structure and the Lexicon* Kluwer. Dordrecht. 109–37.

Kratzer, Angelika. (2000), 'Building statives'. In L. Conathan et al. (eds.), *Proceedings of the 26th Annual Meeting of the Berkeley Linguistics Society*. University of California. Berkeley. 385–99.

Landman, Meredith & Marcin Morzycki. (2003), 'Event-kinds and manner modification'. In N.M. Antrim et al. (eds.), *Proceedings of the Western Conference in Linguistics (WECOL 14) 2002*. California State University. Fresno. 136–47.

Lang, Ewald. (1984), *The Semantics of Coordination*. Benjamins. Amsterdam.

Lenz, Barbara. (1994), 'Probleme der Kategorisierung deutscher Partizipien'. *Zeitschrift für Sprachwissenschaft* **12**: 39–76.

Levin, Beth & Malka Rappaport. (1986), 'The formation of adjectival passives'. *Linguistic Inquiry* **17**: 623–61.

Lieber, Rochelle. (1980), *On the Organization of the Lexicon*. The MIT Press. Cambridge, Mass.

Litvinov, Viktor P. & Vladimir P. Nedjalkov. (1988), *Resultativkonstruktionen im Deutschen*. Tübingen. Narr.

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

Maienborn, Claudia. (2003a), *Die logische Form von Kopula-Sätzen*. Akademie-Verlag. Berlin.

Maienborn, Claudia. (2003b), 'Event-internal modifiers: semantic under-specification and conceptual interpretation'. In E. Lang, C. Maienborn & C. Fabricius-Hansen (eds.), *Modifying Adjuncts*. Mouton de Gruyter. Berlin. 475–509.

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

Maienborn, Claudia. (2007a), 'Das Zustandspassiv: Grammatische Einordnung—Bildungsbeschränkungen—Interpretationsspielraum'. *Zeitschrift für germanistische Linguistik* **35**: 83–115.

Maienborn, Claudia. (2007b), 'On Davidsonian and Kimian states'. In I. Comorovski & K. von Heusinger (eds.), *Existence: Semantics and Syntax*. Kluwer. Dordrecht. 107–30.

Maienborn, Claudia. (2009), 'Building event-based *ad hoc* properties: on the interpretation of adjectival passives'. In A. Riester & T. Solstad (eds.), *Proceedings of Sinn und Bedeutung 13*. 35–49. University of Stuttgart. Stuttgart.

Maienborn, Claudia. (2011), 'Strukturausbau am Rande der Wörter: Adverbiale Modifikatoren beim Zustandspassiv'. In S. Engelberg, A. Holler & K. Proost (eds.), *Sprachliches Wissen zwischen Lexikon und Grammatik. Institut für Deutsche Sprache, Jahrbuch 2010* de Gruyter. Berlin, NY. 317–43.

Maienborn, Claudia & Sascha Geldermann. (2013), '*Expertengeprüft* und *vom Experten geprüft*: Zur Semantik von Nomen-Partizip II-Komposita und ihren präpositionalen Partnern'. In H. Härtl (ed.), *Interfaces of Morphology. A Festschrift for Susan Olsen*. Akademie-Verlag. Berlin. 127–60.

Marslen-Wilson, William, Lorraine Komisarjevsky Tyler, Rachelle Waksler & Lianne Older. (1994), 'Morphology and meaning in the English mental lexicon'. *Psychological Review* **101**: 3–33.

Morzycki, Marcin. (2013), *Modification* MS. Cambridge.

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

Rapp, Irene. (1996), 'Zustand? Passiv?—Überlegungen zum sogenannten "Zustandspassiv"'. *Zeitschrift für Sprachwissenschaft* **15**: 231–65.

Rapp, Irene. (1997), *Partizipien und semantische Struktur. Zu passivischen Konstruktionen mit dem 3. Status* Stauffenburg. Tübingen.

Rapp, Irene. (2001), 'The attributive past participle: structure and temporal interpretation'. In C. Féry & W. Sternefeld (eds.), *Audiatur Vox Sapientiae. A Festschrift for Arnim von Stechow*. Akademie-Verlag. Berlin. 392–409.

Ratcliff, Roger & Gail McKoon. (1978), 'Priming in item recognition: evidence for the propositional structure of sentences'. *Journal of Verbal Learning and Verbal Behavior* **17**:403–17.

Schäfer, Roland. (2007), 'On frequency adjectives'. In E. Puig Waldmüller (ed.), *Proceedings of Sinn und Bedeutung 11* Universitat Pompeu Fabra Barcelona. 555–67.

Schlesewsky, Matthias, Ina Bornkessel & Stefan Frisch. (2003), 'The neurophysiological basis of word order variations in German'. *Brain and Language* **86**:116–28.

Schlücker, Barbara. (2005), 'Event-related modifiers in German adjectival passives'. In E. Maier, C. Bary & J. Huitink (eds.), *Proceedings of Sinn und Bedeutung 9* NCS [http://www.ru.nl/ncs/sub9%5D. Nijmegen. 417–30.

Stolterfoht, Britta. (2005), *Processing Word Order Variations and Ellipses: The Interplay of Syntax and Information Structure during Sentence Comprehension* MPI. Leipzig.

Stolterfoht, Britta, Helga Gese & Claudia Maienborn. (2010), 'Word category conversion causes processing costs: evidence from adjectival passives'. *Psychonomic Bulletin & Review* **17**: 651–56.

Travis, Lisa. (1984), *Parameters and Effects of Word Order Variation* Ph.D. thesis, MIT. Cambridge.

Vaagland, Erling M. (1983), 'Zur Agensangabe im *sein*-Passiv'. In J.O. Askedal, C. Christensen, A. Findreng & O. Leirbukt (eds.), *Festschrift für Laurits Saltveit* Universitetsforlaget. Oslo, Bergen, Tromsö. 194–200.

Winkler, Susanne. (1997), *Focus and Secondary Predication*. de Gruyter. Berlin, NY.

Wunderlich, Dieter (1997), 'Participle perfect and passive in German. Arbeiten des Sonderforschungsbereichs 282 "Theorie des Lexikons" Nr. 99. Universität Düsseldorf.

Zifonun, Gisela, Ludger Hoffmann, Bruno Strecker (1997), *Grammatik der deutschen Sprache*. de Gruyter. Berlin, NY.

Zwitserlood, Pinie. (1994), 'Processing and representation of Dutch compounds: effects of semantic transparency'. *Language and Cognitive Processes* **9**:341–68.