The argument structure of adjectival participles revisited

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1. Introduction

One central question that has preoccupied the literature on adjectival passive participles has been to delineate and account for their properties in comparison to verbal passive participles, on the one hand, and the similarities and differences between adjectival passives and adjectives on the other (see, e.g., Wasow 1977, Levin and Rappaport 1986, Lazckó 2001, Emonds 2006). Kratzer's (2000) contribution substantiates the division of adjectival participles into two semantic subclasses in German, based on whether or not they can be modified by *immer noch* 'still'. **Target state participles**, which are compatible with *immer noch*, are argued to describe reversible, transitory states and to be derived from categoryless stems that have both an event and a target state argument (1a). **Resultant state participles** (borrowing a term from Parsons 1990), in turn, cannot combine with *immer noch*; Kratzer argues that these participles are derived from verbs and introduce states that hold forever after the event that brings them about (1b), formalized by employing a perfectivity operator.

(1)   a. Die Geißlein sind (immer noch) versteckt.   TARGET STATE
          the goats   are   still   hidden
          'The goats are still hidden.'
      b. Das Theorem ist   (*immer noch) bewiesen.   RESULTANT STATE
          the theorem is   still   proven
          intended: 'The theorem is still proven.'

She furthermore argues that both types of participles lack Voice, i.e. that the external argument is completely absent. Apparent evidence for this claim comes from the lack of control into purpose clauses (2a) (see also Baker et al. 1989) and the lack of the so-called disjoint reference effect (3a) in adjectival participles, i.e. the availability of a reflexive reading, as opposed to verbal participles (2b, 3b) (see also Kratzer 1994).[1]

(2)   a. *Der Reifen war   aufgepumpt, um   die Fahrt   fortzusetzen.
          the tire   was   inflated   in order the   journey to continue
          intended: 'The tire was inflated in order to continue the journey.'
      b. Der Reifen wurde aufgepumpt, um   die Fahrt   fortzusetzen.
          the tire   became inflated   in order the   journey to continue
          'The tire was (being) inflated in order to continue the journey.'

(3)   a. Das Kind war   schlampig gekämmt.
          the child was slopp(il)y combed

'The child was combed in a sloppy manner.'
(i) Someone (else) (has) combed the child.   DISJOINT INTERPRETATION
(ii) The child (has) combed him/herself.   REFLEXIVE INTERPRETATION
   b. Das   Kind wurde   schlampig gekämmt.
      the   child became   slopp(il)y combed
      'The child was (being) combed in a sloppy manner.'
(i) = Someone (else) (has) combed the child.   DISJOINT INTERPRETATION
(ii) NOT: The child (has) combed him/herself.   REFLEXIVE INTERPRETATION

Alexiadou & Anagnostopoulou (2008), building on Anagnostopoulou (2003), argue that this semantic difference between the two types of adjectival (or stativized; cf. fn. 1) participles is a direct reflection of a structural difference, In particular, they propose that Greek stative participles in -*tos*, which lack event implication, are root-derived (4a). The term 'stative' here is adopted from Embick (2004) who proposes a structural distinction between root-derived **stative** participles and verb-derived **resultative** ones.[2] Furthermore, (English, German and Greek -*menos*) target state participles are argued to be directly derived from vPs (4b), whereas only Greek resultant state (-*menos*) participles can involve a Voice layer on top (4c); a similar argument in favor of the presence of Voice in participles has been made for Hebrew participles derived from the causative template (Doron to appear).[3]

(4)   a. [Asp [Root]]   (English, German, Greek -*tos* stative participles)
      b. [Asp [vP [Root]]]   (English, German, Greek -*menos* TS participles)
      c. [Asp [VoiceP [vP [Root]]]]   (Greek -*menos* RS participles, Hebrew causative template)

Embick (2004) presented the following argument for the absence of a v layer in purely stative participles (i.e. not necessarily target state participles). Like the adjective in (5a), the participle in (5b) expresses a situation in which the door never participated in a change-of-state event.

(5)   a. This door was built open/*opened.
      b. This door was built closed.

Based on data like these and others, Embick concludes that participles that can appear in the complement of verbs like *build* involve a root-derivation.

Recently, this picture has been challenged in various ways. Anagnostopoulou & Samioti (to appear) argue that in Greek even stative -*tos* participles could involve a verbal layer (vP). They also argue that certain -*tos* participles expressing possibility/ability can even contain VoiceP (based on Samioti to appear). Furthermore, McIntyre (2013) and Bruening (to appear) show that English adjectival participles can license *by*-phrases and conclude from this that

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they must, therefore, involve a Voice layer just as verbal participles.

In this paper, we propose that adjectival passives can involve more verbal functional structure than assumed even in German and English. In Section 2, we provide morphological evidence that some adjectival target state participles must involve a verbal eventive layer, and that some, in addition, involve Voice, which provides further evidence that, at least in some cases, verbal and adjectival passives can be structurally quite similar.[4] In Section 3 we provide further evidence for the presence of Voice from the availability of event-related modifiers with adjectival participles, such as *by*-phrases; we also discuss that there are some restrictions on these in English and German, but not in Greek. In Section 4, we propose a structural account according to which adjectival participles can be of different size and involve the adjectivization of a root, a verbalized root (involving an additional vP layer; as proposed by Anagnostopoulou 2003, Embick 2004), as well as a the adjectivization of a VoiceP (located above vP; as proposed by McIntyre 2013, Bruening to appear) (in analogy to what Anagnostopoulou 2003 proposed for Greek). We suggest that the restricted availability of event-related modifiers in English and German can be explained semantically despite the presence of Voice; in particular, we follow Gehrke (2011, and subsequent work) in assuming that the event involved in adjectival passives remains in the kind domain so that event modification is restricted to kind modification. In Section 5, we follow Alexiadou et al. (to appear) and propose that differences between Greek and German/English adjectival passives in the availability of such modifiers follow naturally if we assume that Greek adjectival participles can involve an additional Perfect operator (building on Kratzer 2000), which is responsible for the event getting instantiated. We hypothesize that the Greek resultant state participle is ambiguous between an adjectival passive and the perfect of an eventive passive, as in this language this participle formation makes use of the same building blocks as a verbal passive. Finally, Section 6 concludes. A general conclusion that we will draw is that unlike often (explicitly or implicitly) assumed, Embick's division of the class of adjectival participles is not the same as Kratzer's division; rather, Embick's resultatives subsume Kratzer's phrasal target states as well as her resultant states.

2. Morphological evidence for verbal structure

In this section we provide morphological evidence for postulating additional verbal functional structure in adjectival participles. The existence of verbalizing morphology inside some participles suggests that these participles contain an eventive v layer, whereas transitivizing morphology points to the existence of a Voice layer inside such participles.

2.1 Target state participles can involve overt verbalizing heads.

Alexiadou & Anagnostopoulou (2008) proposed that target state participles, which include the implication of an event, necessarily include a vP layer across languages. However, they did not present any detailed evidence from morphology in favor of this view as far as English and German are concerned. In this section, we make a stronger case that target state participles contain such a layer in German and English.

In English and German, many verbs are derived from some non-verbal source (category-neutral Roots in our terminology) by the addition of verbalizing affixes. In this paper, we take a Distributed Morphology (DM) approach and take verbalizing affixes to be the spell-out of a v-head, assuming that their presence is clearly related to the verbal/eventive nature of the verbs (see in particular Embick 2004). Harley (2011), for example, argues for

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[4] Our claim is not that ALL adjectival participles involve a verbal eventive layer; sometimes, adjectival participles lack any eventive verbal layers, as suggested by (5) for which we assume the structure in (4a).

English that affixes like *-ify, -ate* and *-ize* are specific verbalizing morphology. In (6) we see that participial morphology can attach to these verbalizers to form a verbal or an adjectival participle. This suggests that the verbalizing head is still present in the participle, and that the participle morphology does not attach directly to the root.

(6) Root: √COLON   √MOBIL   √DICT   √HTML   √SATIS
     Root + v: colon-ize   mobil-ize   dict-ate   html-ify   satis-fy
     participle: colon-iz-*ed* mobil-iz-*ed* dict-at-*ed* html-ifi-*ed* satis-fi-*ed*

The logic of this argumentation predicts that adjectival participles of the form in (6) involving verbalizing suffixes should not be compatible with Embick's context in (5), as they are not derived from roots but involve an eventive layer. While at first sight this prediction seems to be borne out (7a), we have not been able to find English minimal pairs (adjective vs. participle), which could support this point, i.e. where not only the participle is ungrammatical but the adjective is conceptually acceptable as the complement of *built*; cf. (7a, b) vs. (5a, b).

(7) a. *The rail-trail was built electrified.
     b. *The rail-trail was built electric.

In German, we face the same problem with this particular example; we find both sentences in (8) unacceptable.

(8) a. *Die Straßenbeleuchtung wurde   elektrisch   gebaut.
        The road lighting   became electric   built
        intended: 'The road lighting was built electric.'
     b. *Die Straßenbeleuchtung wurde   elektrifiziert   gebaut.
        The road lighting   became electrified   built
        intended: 'The road lighting was built electrified.'

However, with another example, which displays the same kind of contrast, in this case one between the adjective *stabil* 'stable' and the participle *stabilisiert* 'stabilized', our prediction seems to be testable; in our judgements (9a) with an adjective is an acceptable continuation of the given context while (9b) with the adjectival participle involving a verbalizer is strongly degraded:

(9) Es   gab ein Haus, das   war so instabil, dass es zusammengebrochen   ist.
     it   gave a house that was so unstable that it collapsed   is
     'There was a house, that was so unstable that it collapsed.'
     a. Das nächste Haus   haben   sie   dann aber stabil   errichtet/gebaut.
        the next   house   have   they then but stable   constructed/built
        'However, the next house they built more stable.'
     b. *Das nächste Haus   haben   sie   dann aber stabilisiert errichtet/gebaut.
        the next   house   have   they then but stabilized constructed/built
        intended: 'However, the next house they built more stabilized.'

To clarify this issue we resorted to other verbs that should behave like *build* in not allowing resultative participles as their complements, for example *konzipieren* 'to design'. Our judgments, then, suggest the following contrast:

(10) a. Die Straßenbeleuchtung wurde   von Anfang   an   elektrisch   konzipiert.

the road lighting became from beginning on electric designed
'From the start, the road lighting had been designed electric.'

    b. ??Die Straßenbeleuchtung wurde von Anfang an elektrifiziert konzipiert.
the road lighting became from beginning on electrified designed
intended: 'From the start, the road lighting had been designed electrified.'

A Google search for German supports this contrast at least by trend, as illustrated in (11).[5]

(11)   *"elektrisch gebaut"* ('built electric')   about 100 hits
        "elektrifiziert gebaut" ('built electrified')   8 hits
        "elektrisch konzipiert" ('designed electric')   16 hits
        "elektrizifiert konzipiert" ('designed electrified')   0 hits (1 irrelevant hit)

Embick (2004) mentions a further suffix *-en*, which could be added to the three suffixes discussed above (*-ate*, *-ify*, *-ize*) as another verbalizing morpheme. Embick (2004: 357 ex. (7)) provides an example with an *-en* participle paired with a proper adjective, which shows that the contrast we are after, is also found in English:

(12) a. This new ruler was built long.
      b. *This new ruler was built lengthened.

Finally, an anonymous reviewer pointed out the following contrast:

(13) a. The house was built solid.
      b. *The house was build solidified.

Hence, the prediction seems to be borne out: These participles have an event implication due to the presence of verbalizing morphology inside of them and they are not derived directly from the root. Thus, they behave on a par with Embick's resultative participles.[6]

At this point we note that Embick's resultative participles cannot be identified with Kratzer's resultant state participles (see fn. 3). In particular, a number of participles involving overt v-layers (and thus behaving like Embick's resultative participles) instead pattern with Kratzer's target state participles in being compatible with *still* (14).

(14) a.   The boss is still satis**fi**ed.
      b.   The patient is still hospita**liz**ed.

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[5] An anonymous reviewer pointed out that strings like those in (11), e.g. *elektrisch gebaut* 'built electric', can also be read not as involving an adjective as a secondary predicate (e.g. *electric*) but as involving an adverb (e.g. *electrically*), given that German does not morphologically distinguish between adjectives (in predicative position) and adverbs. We checked our Google search data again; it turned out that this misleading interpretation is basically never relevant.

[6] The same reviewer pointed out a possible counterexample, in which an adjectival participle with apparent verbalizing morphology is allowed as complement of the verb *to build*, which (s)he came across on a Google search:

(i)   a. The house is built long and narrow.
       b. The terrace is built elongated.

The point raised concerning *lengthened* vs. *elongated* (i.e. the former seems to be blocked by *long*, the latter not) is interesting. We suspect that *elongate*, which seems to involve the prefix *e-*, might not be derived in present day English but involve a root *elongate*. More concretely, we suggest that it is a Latinate root derived from the participle *elongatus*.

      c.   The city is still electri**fi**ed.
      d.   The country is still colon**ize**d.

(15) shows that the same holds for German.

(15) a.   Der Patient ist immer noch hospital**isier**t.
            The patient is still   hospitalized
            'The patient is still hospitalized.'
      b.   Die Armee ist immer noch mobil**isier**t.
            the army   is still   mobilized
            'the army is still mobilized.'
      c.   Das Wassergeschäft ist immer noch privat**isier**t.
            The water-business is still   privatized
            'The water-business is still privatized.'
      d.   Das Land   ist immer noch kolonial**isier**t.
            The country is still   colonized
            'The country is still colonized.'

This suggests that at least some participles that behave like target state participles are not derived from the root but contain an additional verbalizing layer, contra Kratzer (2000) (see also Alexiadou & Anagnostopoulou 2008, and Anagnostopoulou's 2003 discussion of phrasal target state participles).

     In the following section, we will show that some participles that behave like Kratzer's target state participles involve transitivizing morphology, which suggests that they contain an additional Voice layer on top of v, as argued for by Doron (to appear), based on similar facts from Hebrew.

2.2 Target state participles can involve transitivizing morphology

German has a few verbs that mark the causative alternation with a stem alternation (cp. English *rise* vs. *raise*, *lie* vs. *lay*).[7] With the German counterpart of *sink*, for example, the transitive and the passive form are weakly inflected and use the fixed stem vowel *e* (16a, b), while the anticausative form is strongly inflected and uses the Ablaut stem vowels *i* and *u* (as well as *a* in the past) (16c, d).

(16) a. Hans vers**e**nkt / *vers**i**nkt   das Schiff.   (causative active)
         John sinks $_{TRANS}$ / sinks $_{INTRANS}$ the ship
      b. Das Schiff wurde (von der Marine) vers**e**nkt   / *vers**u**nken.   (causative passive)
         the ship was   (by the marine) sunken $_{TRANS}$ / sunken $_{INTRANS}$
      c. Das Schiff vers**i**nkt   / *vers**e**nkt.   (anticausative)
         the ship   sinks $_{INTRANS}$/ sinks $_{TRANS}$

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[7] Other verbs with this property are given in (i-iv). Scandinavian languages, e.g. Icelandic (Maling & Zaenen 1990, Sigurðsson 1989) or Norwegian (Peter Svenonius p.c.) have a bigger number of relevant verbs.
(i)   a.   Er hat den Baum gefällt.   b.   Der Baum ist gefallen.
          he has the tree   felled $_{TRANS}$ the tree   is fallen $_{INTRANS}$
(ii) a.   Er hat das Bild   an die Wand gehängt. b.   Das Bild   ist/hat an der Wand gehangen.
          He has the picture on the wall   hung $_{TRANS}$ the picture is/has on the wall hung $_{INTRANS}$
(iii) a.   Er hat das Kind erschreckt.   b.   Das Kind ist erschrocken.
          he has the child frightened $_{TRANS}$ the child is frightened $_{INTRANS}$
(iv) a.   Er hat das Kind aufgeweckt.   b.   Das Kind ist aufgewacht.
          he has the child waked $_{TRANS}$ the child is awoken $_{INTRANS}$

d. Das Schiff ist vers**u**nken / *vers**e**nkt. (anticausative; perfect tense)
  the ship is sunken$_{INTRANS}$/ sunken$_{TRANS}$

Within a DM perspective, such morphological shifts must be related to the presence vs. absence of higher verbal structure, i.e. verbal structure on top of the first verbalizer/eventivizer v. In principle, two types of verbal heads present in causatives but not in anticausatives could be relevant for this morphological shift, either a further eventive v-head or a Voice head introducing an external argument (cf. Embick 2010).[8] However, a number of authors have argued (mainly on the basis of adverbs interacting semantically with events) that causatives do not differ from anticausatives in event complexity, i.e. there is no empirical motivation that causatives involve more eventive verbal layers than anticausatives (e.g. von Stechow 1996, Pylkkänen 2008) (see Martin & Schäfer to appear for further references and discussion). Therefore, we follow Kratzer (2005), Alexiadou et al. (2006, to appear) and Schäfer (2012), and take both causatives and anticausatives to be bi-eventive (in the sense that they involve two eventualities, one verbal event v and a Result State), so that the former differ from the latter only in the presence of a Voice layer (Kratzer 1996) introducing an external argument, as illustrated in (17).

(17) a.   [Voice [v [STATE]]]   (causative)
  b.   [v [STATE]]   (anticausative)

Under this conception, the presence vs. absence of the Voice layer triggers the stem alternation in (16). Specifically, we analyze *ver-sinken/ver-senken* as follows: the prefix *ver-* introduces the result state, *sink* modifies v, and *senk* is the Spell Out of *sink* in the context of Voice (active or passive).

 Turning back to adjectival passives, we crucially observe that not only the anticausative version of German *sink* can form an adjectival participle (18a), but also the causative form can (18b).

(18) a. Das Schiff **ist** schon   lange vers**u**nken.
    the ship   is already long sunken$_{INTRANS}$
  b. Das Schiff **ist** schon   lange vers**e**nkt.
    the ship   is already long sunken$_{TRANS}$

This suggests that Voice can be present in adjectival passives, contra traditional assumptions about the general absence of Voice in adjectival participles in German. The verbal input to such participles is thus even bigger than what Embick suggested for resultative participles.

 This leads us to the second piece of evidence that Kratzer's distinction between target state and resultant state participles does not match Embick's distinction. In particular, we observe that the above adjectival participle which, in our analysis, must involve Voice, behaves like target state participles. While *das Schiff versenken* does not really form a target state participle, as the *still*-modification test is only possible if the state is in principle reversible

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[8] That is, anticausatives would involve one eventive layer (v-BECOME) while causatives would involve an additional verbal layer on top (v-CAUSE) as well as a Voice Projection as in (i).
(i) a.   [Voice [v-CAUSE [v-BECOME [STATE]]]]   (causative)
  b.   [v-BECOME [STATE]]   (anticausative)
Under such a decomposition one could argue that adjectival participles of causatives do not involve Voice but v-CAUSE which triggers the stem alternation. However, as mentioned in the main text, there are no empirical arguments for an additional verbal layer in causatives.

(19a), examples with reversible states, such as (19b), readily allow for *still*-modification with both, their anticausative but also their causative, transitive basis.

(19) a. ??Das Schiff ist immer noch versenkt.
           the ship   is   still   sunken$_{TRANS}$
      b. Die Münze ist immer noch im   Aquarium versenkt   / versunken.
           the coin   is still   in.the aquarium sunken$_{TRANS}$ / sunken$_{INTRANS}$

In sum, the analysis of morphological effects within the framework of DM suggests that target state participles can contain verbal structure and are not equivalent to Embick's stative participles (which are necessarily derived from the root). Morphologically, we can identify two verbal layers, an eventive verbalizer (little v) and a transitivizer (Voice). We have also suggested that the presence of verbalizing morphology has semantic effects: at least the predictions are clear; they should always trigger an event implication and purely stative/adjectival readings/contexts should be out.

In the following section, we will explore the question whether the presence of transitivizing morphology implies the presence of an external argument.

3. Is the external argument present in the structure of adjectival participles?

In the previous section, we have seen that the verbs undergoing the causative alternation with a specific form of morphological marking on the stem form two adjectival participles directly related to this morphological marking. Commonly, with minimal pairs related to these verbs, other than those based on adjectival participles, this morphology reflects semantic (in-)transitivity (cf. (16a-d)), which in turn is determined syntactically by the presence/absence of active or passive Voice. In (20), we see that this transitive/intransitive opposition is also found with adjectival participles, at least at an intuitive level, since there is a clear difference in interpretation. In particular, the necessarily adjectival passive based on the causative *versenkt* implies an external argument (20a), while (verbal or adjectival) participles based on anticausative *versunken* lack such an implication (20b).

(20) a. Hurra, das Schiff ist {endlich / seit 14 Uhr}   versenkt.
           hooray, the ship   is finally   since 14 o'clock sunken$_{TRANS}$
           => job-is-done reading (cf. Kratzer 2000)
      b. Hurra, das Schiff ist {endlich / seit 14 Uhr}   versunken.
           hooray, the ship   is   finally   since 14 o'clock sunken$_{INTRANS}$
           => no obvious job-is-done reading though compatible with such a scenario

Negation of a causative event with these participles points into the same direction, since it is possible with the adjectival participle based on the anticausative (21a) but unacceptable with the adjectival passive based on the causative version (21b).

(21) a. Die Münze ist schon lange versunken,   aber keiner hat sie je   versenkt.
           the coin   is already long sunken$_{INTRANS}$, but no-one has it ever sink$_{TRANS}$
      b. Die Münze ist schon lange versenkt,   *aber keiner hat sie je   versenkt.
           the coin   is already long sunken$_{TRANS}$,   but no-one has it ever sink$_{TRANS}$

However, we also know that the adjectival participle of a transitive verb like *kill* implies an external argument at some level. For example, the sentence in (22) is not compatible with a situation where the president simply died from old age.

(22) Der Präsident ist getötet.
      the president is killed
      'The president it killed.'

The implication of an external argument here is not morphologically conditioned, though, since transitivizing morphology is absent in such examples and one could assume that the notion of an external argument arises only due to conceptual knowledge about killing events (e.g. Alexiadou et al. 2006). This, in turn, opens up the possibility that the implication of an external argument in adjectival passives in general might be conceptually and not structurally conditioned (see also the discussion in Bhatt & Pancheva 2006).

    However, we find such a move problematic. In particular there are several tests that are intended to diagnose the presence of an implicit external argument at a syntactic level, most prominently control into purpose clauses and the disjoint reference effect (see (2) and (3)), but also the presence of *by*-phrases. As we have noted above, the traditional view is that these tests give different results in verbal and in adjectival passives (Baker et al. 1989, Kratzer 1994, 2000, among others), suggesting that the latter lack Voice. Greek has been noted to be an exception for many of these tests (Kordoni 2002, Anagnostopoulou 2003, Alexiadou & Anagnostopoulou 2008, Anagnostopoulou & Samioti to appear). The received view for German is that adjectival passives contrast with verbal passives in their highly restricted availability of *by*-phrases and event-related adverbial modification. For English, it is commonly assumed that *by*-phrases are unavailable altogether, and if counter-examples to this assumption are found, they are commonly explained away (see, e.g., Levin & Rappaport 1986). This standard view translates into a theoretical picture, according to which Greek adjectival passives have Voice, whereas English and German adjectival passives lack Voice. In the following, we will show that these standard assumptions about English and German adjectival participles cannot be maintained.

3.1 *By*-phrases and event-related modification in adjectival passives

The standard claim for English is that adjectival passives are incompatible with *by*-phrases, and to our knowledge there is little discussion on other event-related modifiers in English adjectival passives. The generality of this claim has been challenged recently, also for other languages, for which it has been shown that event-related modifiers are available (yet more restricted in the languages in A. as opposed to B.):

    A.   German (e.g., Rapp 1996, Maienborn 2007a, Gehrke 2011)
           English (McIntyre 2013, Bruening to appear)
           Spanish (Gehrke & Sánchez-Marco this volume)
           Hebrew (Meltzer-Asscher 2011)
    B.   Greek (e.g., Anagnostopoulou 2003, Alexiadou & Anagnostopoulou 2008)
           Hebrew (Doron to appear, for the causative template)

We will first turn to *by*-phrases. Greek (23a) but not German (23b,c) or English (23d) participles allow for all kinds of *by*-phrases.

(23) a. To   psari itan tiganis**meno** **apo** tin Maria.   (Anagnostopoulou 2003)
       the   fish was fried   by   the   Mary
       'The fish was fried by Mary.'

    b. Der   Fisch **war** (***von** Maria)   gebraten.   (Anagnostopoulou 2003)
       the   fish   was   by   Mary   fried
       intended: 'The fish was fried by Mary.'

    c. Der Mülleimer   **ist** (***von** meiner Nichte) geleert.   (Rapp 1996: 246)
       the rubbish bin is   by   my   niece   emptied
       intended: 'The rubbish bin is by my niece emptied.'

    d. The door **seemed** {broken/opened/painted} (***by** Mary).   (McIntyre 2013)

Some *by*-phrases, however, are acceptable also in German (and sometimes they get better in a particular context, see Rapp 1997, Maienborn 2007a, among others), as illustrated in (24).

(24)   Die Zeichnung ist von einem Kind angefertigt.
       the drawing   is by a   child produced
       'The drawing is produced by a child.'   (Rapp 1997: 192)

Rapp (1997) suggests that only those *by*-phrases are possible that are characteristic for the result state, but she does not spell out what exactly this means, neither in semantic nor in syntactic terms. Meltzer-Asscher (2011) maintains that adjectival passives only make available a state (as all adjectives do) and that the event and an external argument are completely absent; she proposes that event-related modifiers modify the state directly and result in the reconstruction of an event related to the state by a meaning postulate (Meltzer-Asscher). One could wonder, then, whether the restrictions on event-related modification follow from general restrictions on state modification, as described in Maienborn (2007b). However, Gehrke (2013) points out that the restrictions on event-related modification do not match the restrictions on state modification, and that an account that assumes an event (i.e. verbal structure) inside deverbal adjectives is to be preferred. Anagnostopoulou (2003), in turn, makes a structural distinction between high agent-oriented (Voice-related) and low result-oriented manner adverbs and argues that German adjectival passives only allow for the latter. In principle, then we could extend this account to *by*-phrases and make a distinction between Voice-related *by*-phrases that are disallowed with adjectival passives and low result-related ones that are allowed.

       However, there are several reasons not to follow this route. For one thing, many *by*-phrases that are acceptable with German adjectival passives, such as the one in (24), are clearly event- rather than state-related and name an agent of the underlying event. Furthermore, changing the determiner of the complement of the *by*-phrase in (24) renders this example ungrammatical, as shown in (24').

(24') *Die Zeichnung ist von dem Kind angefertigt.
      the drawing   is by the   child produced

Arguing that the *by*-phrase in (24') is agent-related and in need of licensing by Voice whereas the one in (24) is result-related seems rather stipulative. Gehrke (2013, to appear) shows instead that the generalization for event-related *by*-phrases in combination with German adjectival passives is that these are acceptable with nominal complements that can receive some kind of generic interpretation (mostly indefinite or bare nominals), but unacceptable with complements that refer to a particular referent in the discourse (mostly definite NPs, including personal pronouns and proper names).[9] She proposes that the restrictions on event-

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[9] In addition, there are state-related *by*-phrases that appear with adjectival participles derived from stative predicates, e.g. *von der Musik beeindruckt* 'impressed by the music'. Such *by*-phrases do not display the restrictions outlined above for event-related *by*-phrases, and also differ from the latter in terms of prosody,

related modification with adjectival passives follow from the idea that the underlying event does not get instantiated but remains in the kind domain. Event-related modification, then, is only possible if it can modify an event kind, hence the preference for *by*-phrases with a generic flavour. We will discuss this idea in more detail in Section 4.

McIntyre (2013) and Bruening (to appear) show that *by*-phrases can appear with adjectival passives in English as well and provide examples like the ones in (25).

(25) a. The dictator **remained** unsupported/underestimated **by** the warlords.
  b. Former investigator says he **remains** disturbed **by** what he saw at baby murder scene.
  c. No longer does Tim Thomas **appear** trained **by** Tim Hortons.
  d. There are others who I would call saints more than theologians since they **seem** taught **by** God more than by men.
  e. Once one monkey discovered a new food-washing method, very soon the whole tribe used the method, **un**taught **by** the original simian.
  f. Steve Jobs' birthday doesn't go **un**noticed **by** spammers.

A similar picture arises when we look at instruments, i.e. prepositional phrases headed by *with*. Greek participles allow for all kinds of instruments (26a), whereas this is not the case in German (26b).

(26) a. Ta malia tis basilisas   ine   htenis**men**a   **me** xrisi xtena.   (Anagnostopoulou 2003)
    The hair the queen.GEN are   combed   with golden comb
    'The hair of the queen is combed with a golden comb.'
  b. Ihre Haare **sind** (*__mit__   einem goldnen Kamm) gekämmt.   (Rapp 1996: 257)
    her hair   are   with a   golden comb   combed
  c. Der Mülleimer   **ist** (*__mit__ der Heugabel) geleert.   (Rapp 1996: 246)
    the rubbish bin is   with the hayfork   emptied

However, as in the case of *by*-phrases, some instruments are acceptable also in German adjectival participles (with similar semantic restrictions as discussed in the context of *by*-phrases), as illustrated in (27).

(27) Der Brief **war mit** roter Tinte/**mit** einem Bleistift geschrieben.   (Rapp 1997:192)
   the letter was with red ink/ with a   pencil   written

A similar picture emerges for English; we cite data from McIntyre (2013) and Bruening (to appear) in (28).[10]

(28) a. The radioactive nucleotides are so small that they **remain unseen,** even **with** the most powerful microscope.
  b. Our Lord makes the DNA, the tiniest information bank of the world which **is unseen**

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availability of word order variation, and other points (see Rapp 1997, Schlücker 2005, Gehrke 2013 for discussion of the German data) (see also McIntyre 2013, who labels such participles in English *situation-in-progress* participles). In the remainder of this paper, we will primarily be concerned with event-related *by*-phrases.

[10] An anonymous reviewer pointed out that the examples in (28) are only acceptable with *even*. We agree that this is true for **negated** adjectival participles, which must introduce instruments with *even*, whereas *un*-negated ones do not need *even* (see Alexiadou et al. to appear for further discussion). This effect, however, is orthogonal to our point made in this section. As one can see in (27) the German data do not need 'even' as they do not involve a negated participle. The English data in (28), in turn, involve negated participles to ensure that we are dealing with an adjectival participle.

even **with** the naked eye, …

   c. … the very earliest stages of an arteriosclerotic plaque, which **remains undiscovered** even **with** the most up to date clinical diagnostics.

Finally, only Greek freely allows all kinds of event-related adverbials (29), whereas there are severe restrictions in German (30).

(29) a. To   thisavrofilakio itan   **prosektika** anig**men**o.   (Anagnostopoulou 2003)
       the   safe   was cautiously   opened
       'The safe was cautiously opened.'
   b. To pc itan diortho**men**o **prin tris meres**.
       the pc was repaired   three days ago
       'The pc was repaired three days ago.'
   c. To pedi itan htenis**men**o **sto   banio**.
       the child was combed   in the bathroom
       'The child was combed in the bathroom.'

(30) a. Der Mülleimer **ist *langsam** / ***genüsslich** geleert.   (Rapp 1996:246)
       the waste-bin is   slowly /   enjoyably emptied
   b. *Der Computer **ist vor   drei Tagen repariert**.   (von Stechow 1998)
       the   computer is before three days repaired
       intended: 'The computer is repaired three days ago.'
   c. *Das Kind **war im   Badezimmer** gekämmt.   (Gehrke 2012)
       the   child was in.the bathroom   combed
       intended: 'The child was combed in the bathroom.'

Again, some such adverbs are acceptable, as illustrated for German in (31).

(31) Die Haare **waren schlampig** gekämmt / geschnitten.   (Kratzer 2000)
    the hairs   were   slopp(il)y combed / cut
    'The hair was sloppily combed / cut.'

To our knowledge, the literature on English does not really discuss data like these, but the following examples suggest that English behaves like German in this respect.[11]

(32) a. *The waste-bin is emptied slowly / with pleasure.
   b. *The computer is repaired three days ago.
   c. *The child is combed in the bathroom.
   d. Her hair is sloppily combed / cut.

In sum, event-related *by*-phrases, instruments and adverbs can be found in both verbal and adjectival passives. While in English and German these are more restricted in adjectival participles than in verbal passive participles, Greek adjectival participles allow such modifiers quite unrestrictedly. These facts led Anagnostopoulou (2003) to argue that some Greek adjectival participles (resultant state participles ending in *-menos*) involve a Voice projection, whereas German adjectival passives never do. However, positing that German adjectival passives generally lack Voice is immediately called into question by the Voice-related morphology we discussed in Section 2. Hence, we will not pursue this kind of approach.

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[11] The starred examples are out only under the adjectival passive reading, not under the verbal passive reading.

Instead, in Section 4, we will combine the semantic perspective provided by Gehrke (2011, and subsequent work), according to which restrictions on event-related modification follow from general restrictions on event kind modification, with the syntactic perspective presented for English in McIntyre (2013) and Bruening (to appear) that Voice is present also in adjectival passives.

In the following, we will show that the alleged absence of control into purpose clauses as well as the absence of a disjoint reference effect, both of which have been taken as syntactic key arguments for the absence of an external argument in adjectival passives, do not hold true in all cases of adjectival passives and further call into question the alleged absence of an external arguments from adjectival passives.

3.2 Control and disjoint reference effects in adjectival passives

As mentioned in the introduction, the possibility of control into purpose clauses has been taken as a central piece of evidence in favour of a syntactically present (or syntactically active) external argument in verbal passives. The received view holds that Greek but not German/English adjectival passive constructions allow control into purpose clauses, as illustrated by the contrast between (33a), on the one hand, and (33b) and (33c) on the other. This has led to the general assumption that external arguments are present in Greek adjectival passives but absent from German and English ones.

(33) a. Aftos o   pinakas ine zografis**men**os apo   mia
         This the painting is painted   by   a
         omadha aktiviston   gia na sokarun tus anthropus. (Anagnostopoulou 2003)
         group activists-GEN for to shock-pl the people
         'This painting is painted by a group of activists in order to shock the people.'
    b. Das Kind **ist** schlampig gekämmt, (*um die Großmutter zu schockieren). (An. 2003)
         the child is slopp(il)y combed   in-order the grandmother to shock
         intended: 'The child is sloppily combed in order to shock the grandmother.'
    c. The idea seemed widely publicised (??in order to discredit him). (McIntyre 2013)

However, it can be shown that at least in some cases both English and German participles allow Control into purpose clauses. McIntyre (2013) provides the following examples from English (the choice of *remain* is to ensure that we are dealing with adjectival participles).

(34) a. The … bags **remained** closed in order to keep the modified atmosphere intact.
    b. Use of the name Blohm + Voss **remained** prohibited, in order to … spare the
         world the shock that ships were being built there again.
    c. The investigation launched by the prosecution **remained** limited in order to
         protect the police.

We also found plenty of Control examples for German on Google, such as the ones in (35); recall that the choice of the copula *be* ensures that we are dealing with adjectival participles.

(35) a. Nachdem die Manschette aufgepumpt **ist**, um   den Blutstrom   in der Arterie
         after   the cuff   up-pumped is in-order the blood-stream in the artery
         zu blockieren, beginnt die Entlastung der   Manschette.
         to block   begins the release   the.GEN cuff
         'After the cuff is pumped up in order to block the blood stream, begins the release of
         the cuff.'

b. Wichtig   ist, dass die Fronttube bei viel Wind gut   aufgepumpt **ist**,
important it   that the front tube at much wind well up-pumped is
um   die Form optimal   zu halten.
in-order the form optimally to keep
'It is important that, in the case of strong wind, the front tube is pumped up well in order to keep the form optimal.'

c. Alle anderen Bereiche **sind** versteckt, um   den Mitgliedern maximale Sicherheit
all   other   areas   are hidden   in-order the members   maximal security
vor   neugierigen Blicken von außerhalb zu garantieren.
from curious   looks   from exterior to guarantee
'All other areas are hidden in order to guarantee all members maximal security.'

d. Die Partition **ist** versteckt, um   ein versehentliches Löschen der   Dateien
the partition is hidden   in-order an unintended   erasing the.GEN data
zu verhindern.
to prevent
'The partition is hidden in order to avoid that it gets deleted by mistake.'

However, the relevance of control data as a diagnostics for an implicit external argument is often rejected. In this context, William's (1985) example in (36) is typically cited, where a purpose clause can show up with a genuine adjective, which clearly lacks an external argument on any account.

(36)   Grass is green in order to promote photosynthesis.

While we agree that purpose clauses can occur in the absence of a structurally represented implicit argument, this is possible only in a very restricted contextual setting. Since this restriction does not hold for adjectival participles, we think that, nevertheless, the data in (34)-(35) are indicative for the presence of an implicit external argument in adjectival participles. In particular, it is well known that examples like (36) work in 'director-contexts', in which a powerful controller (a director, God, nature, or the like) is the subject of the purpose clause, as in (37a,b).[12] To our knowledge, adjectives cannot license purpose clauses outside of such contexts; otherwise we would find examples like (37c,d) good.

(37)   a. The cat chosen is very big in order $PRO_{director}$ to make it visible to the audience.
b. $Peter_i$ was fast in order $PRO_{i/director}$ to impress the audience.
c. My_j cat is big #in order $PRO_{j/k}$ to impress my_j mother.
d. I_j bought a new car. It is very big #in order PRO_j to impress my girl-friend.

In the above Control examples with adjectival passives, in contrast, we want to maintain that it is indeed the understood subject of the event associated with the adjectival passive, which controls PRO, not some contextually given director. Consider the contrast in (38), which shows that purpose clauses (whose subject is not controlled by God / a director) are possible (albeit slightly degraded) only with adjectival passives (38b), but not with adjectives (38a).

(38)   a. Die Heizung **ist** ganz **warm**,   *um   einen gemütlichen Abend zu haben.
the heating   is   very warm   in-order a   nice   evening to have
intended: 'The heating is very warm in order to have a nice evening.'

---

[12] We find the same with unaccusatives:
(i) The actor died/fell to shock the audience.

      b. Die Heizung **ist** (auf) ganz **warm gestellt**, ?um einen gemütlichen Abend zu haben.
         the heating is   on   very warm put   in-order a   nice   evening to have
         'The heating is put on very warm in order to have a nice evening.'

We conclude from data like these that purpose clauses are not entirely impossible with adjectival passives. While these data might not convince everyone that there must be an implicit argument in adjectival passives, it is at least compatible with this idea. However, we also see that purpose clauses are much more restricted with adjectival than with verbal passives, and we will come back to this point in Sections 4 and 5.

    Let us then turn to the disjoint reference effect. One main argument for the proposal that verbal and adjectival passives differ in the presence/absence of Voice is the apparent lack of the 'disjoint reference effect', i.e. the availability of a reflexive reading in the latter, which was illustrated in (3) (Kratzer 1994, Rapp 1996). A further example is the following, from Roßdeutscher & Kamp (2010).

(39) a. Die Gäste sind angemeldet.   (adjectival passive)
         the guests are   registered
         (i)   Someone else registered the guests.   DISJOINT INTERPRETATION
         (ii)   The guests registered themselves.   REFLEXIVE INTERPRETATION
      b. Die Gäste wurden angemeldet.   (verbal passive)
         The guests were   registered
         (i)   Someone else registered the guests.   DISJOINT INTERPRETATION
         (ii)   *The guests registered themselves.   REFLEXIVE INTERPRETATION

However, as also noted by McIntyre (2013) and Bruening (to appear), this does, by far, not hold for all adjectival participles. The effect is typically illustrated with two verbs, 'comb', as in (3), and, for German additionally with *anmelden* 'register' in (39). Crucially, however, these two verbs are naturally reflexive, i.e. although these verbs have a transitive, disjoint construal (someone combs someone else), these verbs tend to be used reflexively (cf. Kemmer (1993) who subsumes, for example, body dress verbs like *dress* and grooming verbs like *comb* or *wash* among the class of naturally reflexive verbs).

    Under the assumption that adjectival participles allow a reflexive interpretation because they lack a Voice projection whose implicit external argument would trigger a disjoint reference effect with the internal argument, we would predict this effect to occur with all kinds of transitive verbs. However, this is not what we find, as can be seen with e.g. *töten* 'kill' in (40); in fact the adjectival participles of the majority of transitive verbs do reject a reflexive interpretation.

(40) Der Einbrecher **war** getötet.
      the burglar   was killed
      'The burglar was killed.'
      (i)   Someone killed the burglar.
      (ii)   *The burglar committed suicide.

As we can see in this example, the disjoint reference effect occurs also in the adjectival passive. Of course, one could propose that conceptual knowledge about killing events (they are naturally disjoint, not naturally reflexive) makes a reflexive interpretation in the absence of reflexive morphology deviant; but then disjoint reference effects become vacuous as a test. (41) from McIntyre (2013) makes the same point for English; the examples show that even a

context explicitly supporting a reflexive interpretation cannot make a reflexive interpretation available, suggesting that the disjoint reference effect is syntactically hard wired.[13]

(41) a. #John criticised himself, but to me he **seemed** unfairly criticised.
      b. #Some people trust themselves while others underrate themselves and think they won't succeed. Mary **seems** very underrated and not very trusted.
      c. #He had self-hate problems and **remained** very hated until he sought help.

Hence, disjoint reference effects suggest the presence of an implicit argument in adjectival passives rather than its absence. Why some adjectival passives lack the disjoint reference effect, then, is a separate issue: either there is a covert way to express reflexivity with these particular verbs or these verbs can in fact lack Voice.

   In sum, unlike commonly assumed, adjectival passives do give positive results for the standard tests that have been taken to diagnose the presence of Voice. However, quantitatively, adjectival passives in English and German behave still very different from verbal passives. They pass these tests only sometimes, and we assume that the particular restrictions we find with adjectival passives follow from the fact that we are not dealing with an event particular with actual event participants, but with an event kind, which only allows event kind modification. In the following section, we will spell out the proposal of the different kinds of data sets we have discussed in Sections 2 and 3.

4. The proposal

We saw in Section 2 that Embick's (2004) stative participles, i.e. participles derived directly from the root, such as those in (42), cannot be equated with Kratzer's (2000) target state participles, diagnosed by the compatibility with *immer noch* 'still'. In particular, we have seen that some participles containing verbalizing morphology and thus behaving like Embick's resultative participles, are compatible with *immer noch* and thus behave like Kratzer's target state participles. Under the assumption that verbalizing morphology are instances of v, we conclude from this that such participles can contain vPs, as in (43) (see Alexiadou & Anagnostopoulou 2008).[14]

(42)   ASP
           3
        ASP   √ OPEN

(43)   ASP
        3
        ASP   vP
                 3

---

[13] The symbol # indicates that only irrelevant disjoint interpretations are possible, e.g. that others criticized John in (41a).

[14] In the remainder of this section, we implicitly follow Embick's (2004) line of reasoning to distinguish between structurally different kinds of adjectival participles, based on the observations we made in previous sections, but we will not make more explicit our assumptions about the precise nature of Kratzer's (2000) distinction (see Gehrke 2012 and Irmer & Mueller-Reichau 2012 for some criticism of Kratzer's *still*-test, Rapp 1997, Maienborn 2007a, and Gehrke to appear for different alternative pragmatic takes on the distinction between target state and resultant state participles, and Alexiadou et al. to appear for a precise syntactic implementation of Kratzer's distinction). We will, however, get back to Kratzer's (2000) proposal for resultant state participles when we discuss the Greek data in Section 5.

v   √OPEN

If Gese et al. (2011) and McIntyre (2013) are correct (but see Gehrke to appear), and adjectival passives of unaccusatives exist, the latter could also be the structure of adjectival participles of unaccusatives. (Furthermore, it could perhaps be the structure of the naturally reflexive predicates, which do not display the disjoint reference effect, as alluded to in the discussion of examples (39)-(41).)

Let us then turn to the question whether or not adjectival participles can contain a Voice projection. We saw that the standard tests diagnosing external arguments sometimes suggest the presence of an implicit external argument in adjectival passives. The disjoint reference effect suggests its presence almost all the time; verbal morphology is almost always compatible with an external argument being present and sometimes also strongly suggests this. In the following, we discuss different theoretical options that are compatible with these facts.

The first approach is to follow the standard assumption that Voice is always absent in adjectival passives. We think that we identified a number of arguments against this standard account. To start with, it always had the problem to explain why transitive verbs should be able to leave out Voice in the adjectival passive but not in the verbal passive or in the active. In the absence of any explanation of this, this account weakens the overall theory of argument structure. Furthermore, we have seen that transitivizing morphology sometimes explicitly suggests that adjectival participles contain a Voice projection.[15] In addition, we have seen that event-related modifiers in general, including *by*-phrases, are sometimes possible with adjectival participles in German and English. If these participles lack Voice, we would need a theory when and how an alternative mechanism can introduce *by*-phrases. Note in this context however that the *by*-phrases that are acceptable with adjectival participles are a proper subset of the *by*-phrases found in verbal participles, and this fact follows straightforwardly from an account which assumes Voice to be present, whereas the Voice-less account would have to come up with an additional explanation for it. Finally, the fact that the majority of adjectival participles displays the disjoint reference effect suggests that this account is simply wrong.

A second approach would be to assume an ambiguity, in that some adjectival participles involve Voice, whereas others do not. However, transitivizing morphology and disjoint reference effects suggest that this cannot be right, either. In particular, we find transitivizing morphology even if other tests seem to give a negative result (e.g. if the *by*-phrase is out). Hence, we would need a theory to predict when Voice is present and when not (see the first point above).

Finally, a third option (similar to McIntyre 2013 and Bruening to appear) is to assume that Voice is present in adjectival participles derived from transitive verbs. The task of this approach, then, is to explain the restrictions we find with adjectival passives as opposed to verbal passives (i.e. the limited availability of *by*-phrases and event-related modifiers, the limited possibility of Control into purpose clauses, and the absence at times of the disjoint
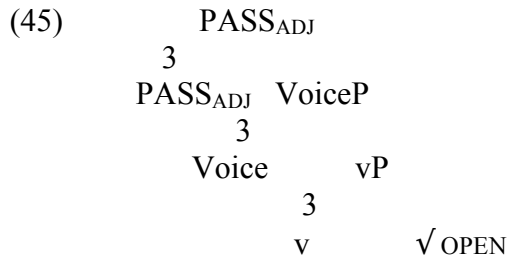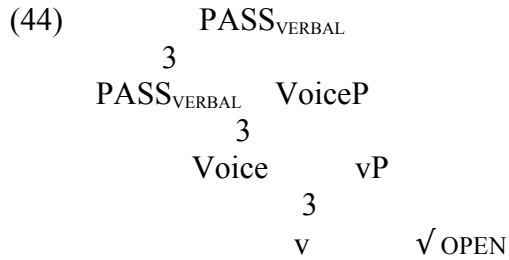
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[15] It should be noted that generic middles can also contain transitivizing morphology (cf. (i)), although they seem to lack an implicit external argument. Schäfer (2008) argues that the reflexive morphology in German middles acts as an expletive external argument in the specifier of an expletive Voice projection; it is the presence of this expletive Voice projection, which triggers transitivizing morphology in middles.
(i) Das Schiff versenkt   sich   leicht.
     the ship   sinks$_{TRANS}$ REFL easily
     'The ship sinks easily.'
   Another instance where we find transitivizing morphology in the absence of an overt subject are so called 'Fate Accusatives' in Icelandic (e.g. Maling & Zaenen 1990). As argued by Haider (2001) and Schäfer (2008, 2012), these involve a weather pronoun in subject position, i.e. they are in fact syntactically transitive.

reference effect) by other means, for example by postulating a specific Voice head in adjectival participles (which would be along the lines of McIntyre or Bruening) or by proposing a semantic (in particular sortal) difference between the events involved in verbal and in adjectival passives, as proposed in Gehrke (2011, and subsequent work). In particular, we need a theory to predict when Voice can license overt *by*-phrases (etc.) and when not. We think the third hypothesis is the most promising.

Following Bruening (to appear), then, we assume an extra position on top of Voice, PASS, which produces verbal and adjectival passives (as well as nominalizations), as illustrated in (44) and (45) (cf. Anagnostopoulou 2003, Alexiadou & Anagnostopoulou 2008).

(44)   PASS$_{VERBAL}$
          3
     PASS$_{VERBAL}$ VoiceP
                3
          Voice   vP
                  3
                  v   √ OPEN

(45)   PASS$_{ADJ}$
          3
     PASS$_{ADJ}$ VoiceP
                3
          Voice   vP
                  3
                  v   √ OPEN

Following Alexiadou et al. (2012), we assume that these heads introduce a Voice-shifting projection. Both PASS-heads select for VoicePs without specifier (see Bruening to appear for a possible way of implementation). PASS$_{VERBAL}$ does not shift the category and the event properties, and it basically absorbs the external argument. PASS$_{ADJ}$ shifts, in addition, the category and stativizes the event (derived stative).

A question that arises under this account is how to derive the restrictions on *by*-phrases and other modifiers as well as Control that we still find in adjectival passives, which is a problem for Bruening (to appear). We would like to relate this to the stative semantics of adjectival passives, and propose that these restrictions are not (argument) structural or syntactic in nature, but rather semantic. We follow Gehrke (2011, and subsequent work), who proposes that an adjectival passive construction refers to the instantiation of a consequent state kind of an event kind.[16] For example, the semantics she proposes for (46a) is given in (46b) (ignoring the contribution of Tense), where the subscripts $_0$ and $_k$ respectively specify whether the entity in question (including states s and events e) refers to a token or a kind.

(46) a. Die Tür   ist geschlossen.
          the   door is closed
          'The door is closed.'
      b. $\exists s_0, e_k, x_k$ [**close**$(e_k) \wedge$ BECOME$(s_0)(e_k) \wedge$ **closed**(**the door**, s_0) $\wedge$ INITIATOR(x_k, e_k)]

---

[16] Consequent state here is used as a cover term for result states (with accomplishments and achievements) as well as inchoative states (with states; recall fn. 10); hence the term event here should be understood in a broader, Neo-Davidsonian way to also include states. See Gehrke (to appear) for further discussion and also for a motivation to use BECOME in the formula in (46).

In the following, we will shortly spell out the underlying assumptions of this account; for more details the interested reader is referred to the works cited, as well as to Gehrke & Sánchez Marco (this volume).

Gehrke extends the notion of kinds, introduced for the nominal domain by Carlson (1977), to the verbal domain. For the nominal domain, Zamparelli (1995) has argued that nominal predicates start out as predicates of kinds and get instantiated (or realized) to enable reference to an entity token when embedded under Num(ber). In analogy, Gehrke (to appear) proposes that verbal predicates enter the derivation as predicates of event kinds; the event gets instantiated only when such verbal structure is embedded under further functional structure, such as Tense/Aspect, to refer to an event token, i.e. an event that has taken, is taking, or is going to take place in the actual world. Given that in adjectival passives, verbal predicates are not directly embedded under Tense/Aspect but instead under an adjectivising head (AP in her proposal; PASS$_{adj}$ here), it is argued that as a result of this category change, the underlying event associated with the verb does not get instantiated but remains in the kind domain. The consequent (i.e. result or inchoative) state associated with the verbal predicate, in turn, is embedded under Tense/Aspect and thus (can) get instantiated at some later stage, in analogy to states associated with adjectives more generally.

Restrictions on event-related modification, then, are argued to follow from general restrictions on kind modification. For example, given that kinds are not instantiated they lack spatio-temporal location; from this it follows that the event cannot be modified by spatial or temporal modifiers, as evidenced, for instance, by (30b,c). NPs naming participants in the event, in turn, such as those in *by*-phrases or instruments, cannot name actual event participants of an event particular, given that there is no event particular (no event token) to begin with. Gehrke (to appear) proposes that PPs introducing event participants, such as *by*- and *with*-phrases, have to pseudo-incorporate into the participle before adjectivization can take place. This proposal is motivated by the fact that the nominals in such PPs behave like weakly or non-referential nominals and display semantic properties of (pseudo-)incorporated nominals (e.g. Dayal 2011, and references cited therein). In particular, pseudo-incorporated nouns obligatorily take narrow scope with respect to quantificational elements in the clause, do not introduce discourse referents (e.g. they do not support pronominal anaphora), and cannot be modified by (ordinary restrictive token) modifiers. All these properties also hold for the nominals in event-related modifiers of adjectival passives, as shown in (47a-c).

(47) a. Alle Briefe waren mit (einem) Bleistift geschrieben.
　　　all letters were with a pencil written
　　　= 'All letters were written with a pencil.' (possibly more than one pencil)
　　　≠ 'There was a particular pencil that all letters were written with.'
<div align="right">OBLIGATORY NARROW SCOPE</div>

　　b. Die Zeichnung ist/war von [einem Kind]$_i$ angefertigt. *Es$_i$ hatte rote Haare.
　　　the drawing is/was by a child produced it had red hairs
　　　intended: 'The drawing is/was produced by [a child]$_i$. (S)he$_i$ had red hair.'
<div align="right">NO DISCOURSE REFERENT</div>

　　c. *Die Zeichnung ist/war von einem blonden Kind angefertigt.
　　　the drawing is/was by a blond child produced
　　　intended: 'The drawing is/was produced by a blond child.'
<div align="right">NO TOKEN MODIFICATION</div>

　　d. ??Der Brief ist mit diesem Bleistift geschrieben.
　　　the letter is with this pencil written
　　　intended: 'The letter is written with this pencil.'
<div align="right">NO STRONGLY REFERENTIAL NOUN PHRASES</div>

This account is further supported by the higher propensity for weakly or non-referential noun phrases in such PPs, such as indefinite and bare nominals, as opposed to fully referential ones, such as (strong) definite nominals, evidenced by the oddness of, e.g., (47d); recall also (23) (see Gehrke & Sánchez Marco, this volume, for similar data from Spanish).[17]

An additional constraint is suggested by McIntyre (to appear), building on insights from Rapp (1997) and Meltzer-Asscher (2011):

(48) **State Relevance Hypothesis** In adjectival passives in e.g. German, English, Hebrew, event-related satellites are unacceptable unless they contribute to the description of the state expressed by the participle or of the theme during the interval *i* during which this state holds. They are most acceptable if they provide information which can be inferred solely by inspection of the theme during interval *i*.

Note, however, that the State Relevance Hypothesis still maintains that the modifiers in question modify an event and not the state directly (unlike what Meltzer-Asscher proposes).

All in all, then, there is ample motivation for positing semantic constraints on event-related modification of adjectival participles, which are nevertheless still compatible with a Voice layer in the syntactic structure of such participles. Our overall proposal predicts that the examples in which *by*-phrases are acceptable are similar/reproducible across languages. Furthermore, contextual factors that have been shown to improve *by*-phrases (on which see, e.g., Rapp 1997, Maienborn 2007a, Gehrke to appear) should be identical across languages. At least the facts from English and German point into this direction, and Spanish seems to pattern with these languages as well (see Gehrke & Sánchez Marco, this volume). However, this does not explain why Greek seems to be so much more productive, and we will turn to a possible explanation of this fact in the final section of this paper.
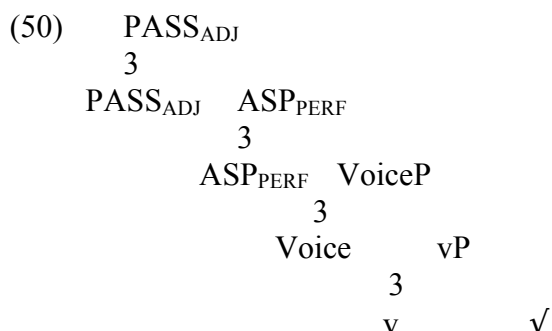
5. Cross-linguistic variation

In this last section, we will address the question of why Greek differs from English and German both as far as the distribution of *by*-phrases is concerned, and the type of modifiers allowed with adjectival participles. An answer to this question is provided in Alexiadou et al. (to appear), and we summarize here their observations and their account.

Alexiadou et al. (to appear) argue that in order to understand similarities and differences in the properties of Voice in different kinds of participles within and across languages, it is important to take a closer look at Kratzer's (2000) account of the target- vs. resultant-state distinction. They propose that the differences between Greek, on the one hand, and German and English, on the other, can be accounted for by appealing to the type vs. token distinction. In Greek, stativization involves (or rather can involve) a Perfect operator leading to the interpretation that the run time of the verbal event took place before the time denoted by the stativized vP or VoiceP, following Kratzer's (2000: 12) proposed semantics for the stativizer deriving resultant state participles, given in (49); the tree we propose for this case is given in (50), in the spirit of Alexiadou et al. (to appear).

(49) $\lambda \mathbf{P} \, \lambda t \, \exists e \, [\mathbf{P}(e) \, \& \, \tau(e) < t]$

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(50)   PASS_{ADJ}
   3
 PASS_{ADJ} ASP_{PERF}
     3
   ASP_{PERF} VoiceP
      3
     Voice vP
       3
       v √

Due to the presence of this aspectual operator, then, the event gets instantiated (it has a run time) and we are dealing with an event token. In German and English, on the other hand, there is no Perfect operator in adjectival participles in general (contra Kratzer 2000), but stativization existentially binds the event variable introduced by v; this leads to an event kind interpretation, as suggested in the previous section.

In contrast, Alexiadou et al. (to appear) pursue an analysis of Greek target state participles, according to which these can only be built when a stativizer attaches immediately above the vP, i.e. these have a structural representation along the lines of (43). To account for the availability of *by*-phrases, instrumental and manner modifiers within target state participles, Alexiadou et al. propose that the stativized vP expressing the target state resulting from the event it relates to can only combine with a Voice head introducing the theta-role of holder, (51), exactly as proposed in Kratzer (1996).

(51)   Voice_{holder}
   3
 Voice_{holder} ASP
     3
   ASP vP
     3
    v √
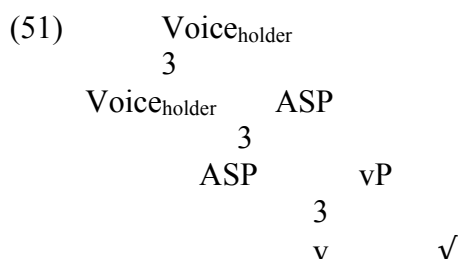
As a result, the implicit external argument is an argument of a stativized/adjectivized verbal construction, and Voice-related material must be directly modifying the target state, since it relates to the holder of that state. For example, Greek is quite liberal with respect to Voice modifiers in resultant state participles, but not in target state participles. Consider (52), from Alexiadou et al. (to appear). The presence of *still* enforces a target state participle, and *by*-phrases and instruments are licit only when the referents of the *by*-phrase or instrument are present in the state as in (52b,c):

(52) a. Ta lastixa ine (*akoma) fuskomena apo tin Maria.
   The tires are (still)   inflated by the Mary
   'The tires are still inflated by Mary.'
  b. To stadio ine akomi perikiklomeno apo tin astinomia.
   The stadium is still surrounded   by the police
   'The stadium is still surrounded by the police.'
  c. O skilos ine akomi demenos me skini.
   The dog is still tied   with leash
   'The dog is still tied with a leash.'

Even though nominals introduced by *by* or *with* as in (52b,c) are commonly participants in an event (initiators or instruments) and such PPs should thus be modifying the event directly and not the state (as we argued in the previous sections for German and English), at the same time they also participate in and exist during the state. Hence, they exist during the interval associated with the state, which is in accordance with McIntyre's (to appear) State Relevance Hypothesis given in (48). This also makes sense intuitively: During the state in question, the police are located around the stadium (52b), and the leash is around the dog (52c). We leave open whether this account can or should be extended to other languages.[18]

The final question that arises then is to which extent Greek resultant state participles are different from the Perfect of eventive passives built on the basis of HAVE + uninflected passive participle, as both constructions contain Voice. Alexiadou & Anagnostopoulou (2008) argue that the BE + uninflected participle in -*menos* construction has the semantics of the Perfect of Result, cf. Veloudis (1990), and Kordoni (2002). If there is indeed a difference between the two, this would have to relate to the fact that an experiential reading is possible only for the HAVE + uninflected participle construal, and not for the BE + -*menos* participle construal.

(51) a. To vivlio ehi diavasti.
       the book has read-NAct
       'The book has been read.'
    b. To vivlio ine diavasmeno.
       the book is   read-neut
       'The book is read/has been read.'

In order to test the difference between the two constructions, we need to examine their behaviour in contexts that trigger an experiential reading only, i.e. the result state can be denied. In Greek such contexts are found in the presence of e.g. the adverbial *mehri tora* 'until now', which is an adverb that triggers an experiential perfect reading (cf. Giannakidou 2003). In such a context (52a) is fine, while (52b) sounds odd.

(52) a. To thema ehi diavasti   74 fores.
        the issue has read-NACT 74 times
        'The issue has been read 74 times.'
     b. #To thema ine diavasmeno 55 fores.
        the issue is   read-neut   55 times
        'The issue is read 55 times.'

This would seem to suggest that while the HAVE + passive participle construction is ambiguous between a perfect of result and an experiential reading, the BE+ -*menos* participle construction allows only the resultative interpretation. Crucially, however, the difference between the two would relate to the type of ASP operator included, and would not be due to the presence vs. absence of Voice (von Stechow 2002). This operator, unlike PASS does not

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[18] Alexiadou et al. (to appear) extend this analysis to other languages, whereas Gehrke (2013), following Rapp (1996), argues that a structure like that in (51), in which the modifiers target the state directly (**after** adjectivization), is only available for participles derived from **stative** verbs (or roots), whereas those that are derived from **eventive** verbs (roots) combine with event-related modifiers **before** adjectivization (and involve pseudo-incorporation, as outlined in section 4; Gehrke to appear).

absorb an external argument. Further research is necessary in order to determine further differences between the two constructions. We will leave this topic for future research.[19]

6. Conclusion

In this paper, we provided empirical evidence for the claim that adjectival participles in German, English can contain verbal layers, in particular v (as already proposed by Embick 2004), but also, contra the common assumption, Voice (as recently argued by McIntyre and Bruening to appear). In this respect, German and English participles do not radically differ from their Greek counterparts. We provided further support for the view that adjectival participles can come in different sizes, whether they are derived from roots (Embick's stative participles), verbalized roots containing v (Embick's resultative participles), or those containing a further Voice layer, which then constitutes a third type of adjectival participle, as already proposed in Anagnostopoulou (2003) and Alexiadou & Anagnostopoulou (2008) for Greek.

However, there are differences between English and German, on the one hand, and Greek, on the other, which had already been noted in the literature: the availability of event-related modification, such as manner adverbs, *by*- and *with*-phrases, with adjectival participles in English and German is much more restricted than in Greek. We proposed, following Alexiadou et al. (to appear), that this difference does not force an account in terms of the absence vs. presence of Voice, but instead resorted to a semantic explanation. In particular, we suggested, following Gehrke (2011, and subsequent work) that due to the fact that adjectival participles are not embedded under further functional verbal structures like Aspect and Tense, but adjectivized instead, the event associated with this participle remains in the kind domain and does not get instantiated. From this it follows that event-related modification is restricted to kind modification. For Greek, in turn, we suggested that adjectival participles (can) contain an additional Perfect operator, which leads to the event associated with the participle embedded under Aspect to get instantiated. Finally, we showed that such adjectival passive constructions in Greek still differ from perfect constructions.

One point that arose from the empirical generalization was that Embick's (2004) distinction between stative and resultative participles, analyzed in terms of the absence vs. presence of v, cannot be equated with Kratzer's (2000) distinction between target state and resultant state participles, as diagnosed by the (in)compatibility with *still*. In particular, we found adjectival participles containing verbalizing morphology (i.e. Embick's resultative participles) that were still compatible with *still* (which is supposed to show that we are dealing with a target state participle). Whether or not Kratzer's distinction should be reflected in a structural distinction, as suggested by Alexiadou et al. (to appear), also from a cross-linguistic perspective, and not just for Greek, remains to be investigated.

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[19] We note briefly, however, that participial constructions have been re-analyzed many times in the history of Greek. For instance, the string BE + participle in -*menos* was the only way to form the perfect for many centuries in the history of Greek, dating from 4th century BC to nearly 19th century AD (cf. Alexiadou to appear for discussion). Although historically, the BE + participle started off as a resultative construction, it grammaticalized into a perfect around the 5th century BC. The Modern Greek perfect emerged during the Medieval Greek period out of an earlier 'have' future/conditional tense (basically *have* + aorist infinitive). This form grammaticalized as a perfect towards the 19th century.

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