DECONSTRUCTING THE GERMAN VERB PARTICLE *NACH* AT THE SYNTAX-SEMANTICS INTERFACE[*]

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1. INTRODUCTION

In this paper, we address the issue that the German verb particle *nach* ('after') in some cases creates an additional argument slot for a dative DP, such as in (1), whereas in other cases, such as in (2), it does not.

(1)   Der Hund lief *(dem Hasen)   nach.
        the dog   ran   the.DAT hare [nach]
        'The dog ran after the hare.'

(2)   Die Banane reifte (*dem Pfirsich)   nach.
        the banana ripened the.DAT peach [nach]
        'The banana continued ripening (after being picked).'

German particle verbs have been a source of confusion and disagreement in both syntax and semantics. This is shown by the considerable variety of approaches to particle verb constructions (see Dehé et al. 2002 for an overview). The major challenges are the argument structure of particle verbs and the role that particles play in determining them, especially in those cases where the argument structure of a particle verb differs from that of the underlying verb, such as in (1). In the following we just mention a few.

A lexical approach, such as advocated, for example, by Stiebels and Wunderlich (1994) and Stiebels (1998), would require two distinct lexical entries for *nach*, one that does introduce a dative argument and one that does not, as well as different lexical operations to combine the base verb and the particle.

Zeller (2001), who advocates a syntactic approach to particle verbs, faces the same difficulties. For the particle *nach*, which would be introduced by means of semantic adjunction, he would have to assume that two distinct lexical entries for *nach* are responsible for the difference between (1) and (2).

Ramchand and Svenonius (2002), building on Ramchand's (2002) l-syntax approach, would introduce particles and further arguments triggered by them within a result-state denoting phrase c-commanded by V. Restricting particles to telicity-introducing elements however is a problem for non-telic particles, such as German *nach*. Ramchand and Svenonius

themselves note that there are non-telic particles, e.g. *around* in English, that would require a different semantic decomposition. However, they do not elaborate the semantics of such a particle.

We argue that *nach* has the capability of triggering a presupposition, i.e. an implicit assumption about the proposition uttered that is not only temporally related to the assertion, but also in terms of content. To work out the semantic description of *nach*, we will take a look at the temporal preposition *nach* in section 2 and show its peculiarities. Semantic structures will be displayed by means of Discourse Representation Structures (DRS; cf. Kamp and Reyle 1993, Lechler and Roßdeutscher 2009, Roßdeutscher and Kamp 2010, and others). We will show that *nach* introduces a succession[1] relation between the asserted eventuality and another, presupposed one of the same type. In this context, *nach* can act as a presupposition trigger for a presupposed eventuality if its selection restrictions are not met. Additionally, *nach* copies event or state properties of the eventualities under discussion.

Then, in section 3, we suggest a syntactico-semantic analysis for the verb particle *nach* as following Nicol (2002), which, however, shows characteristics similar to an applicative structure. In our analysis, one entry of *nach*[2] can modify the functional heads w or x in the extended VP shell. Different argument structures of *nach* will be shown to be semantics-driven. In section 3, we will also present five interpretations of *nach* that split into two major classes: event-relating vs. state-relating. Note that we focus on a subset of interpretations of *nach*, namely one which shows a temporal relation between two (existing) eventualities. We do not touch upon other readings such as e.g. a propositional interpretation in *nachdenken* ('to think'). For further interpretations, the analysis proposed needs to be extended.

In section 4, we briefly address the relationship between *nach* and intentionality. In section 5, we will discuss contextual disambiguation of *nach* with respect to the readings suggested in section 3. We conclude in section 6.

2. The temporal preposition *nach*

We first look at some examples of the temporal preposition *nach*. In (3) and (4), we observe differences with respect to the complement DP of the preposition. In (3), the DP contributes an event argument, whereas in (4), it does not.

(3)   DP with an inherent event denotation
      a.   Der Pfarrer predigte nach dem   Gesang.
           the vicar   preached after the.DAT singing
           'The vicar preached after the singing.'
           → preaching event SUCCEEDS singing event
      b.   Der Athlet trank nach dem   Spiel eine   Schorle.
           the athlete drank after the.DAT match a.ACC   spritzer
           'After the match, the athlete drank a spritzer.'
           → drinking event SUCCEEDS match (= playing event)

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[1] In the remainder of this paper, we use the term 'succeed' exclusively in the temporal sense.

[2] Note that we will identify different readings of *nach* and will therefore provide different entries. However, we think that these are syntactically reducible to one entry, i.e. the root √NACH, in a Distributed Morphology type of approach (cf. Halle and Marantz 1993).

(4)   *nach* triggers a presupposition
  a.   Der Junge sprach nach dem   Mädchen.
        the boy   spoke   after the.DAT girl
        'The boy spoke after the girl.'
        → speaking event of the boy SUCCEEDS <u>speaking event</u> of the girl
  b.   Der Wirt   verließ nach dem   Gast die   Kneipe.
        the bartender left   after the.DAT guest the.ACC pub
        'The bartender left the pub after the guest.'
        → leaving event of the bartender SUCCEEDS <u>leaving event</u> of the guest

In (3a), *nach* relates two events, namely the asserted event contributed by the VP headed by the verb *predigen* ('to preach') and the event contributed by the noun *Gesang* ('singing [event]'). The same holds for (3b).

In contrast to (3), the DPs within the *nach*-PP in (4) do not contribute any event description inherently. However, a presupposed event can be identified, i.e. in (4a) the girl spoke and in (4b) the guest left the pub.[3] In (5), we present a DRS that captures the meaning of (4a).

(5) $\left\langle \left\{ \begin{array}{c} \text{speak}(e^0) \\ \text{participates-in}(z,e^0) \end{array} \right\} , \begin{array}{c} e \ x \ z \ e^0 \\ \hline \text{the-boy}(x) \\ \text{speak}(e) \\ \text{participates-in}(x,e) \\ \text{the girl}(z) \\ \text{succeeds}(e,e^0) \end{array} \right\rangle$

The DRS in (5) is to be read as follows[4]: In the universe, there is (i) an event e; (ii) an individual x; (iii) an individual z; and (iv) an event e^0 (triggered by *nach*). It is asserted that (v) the individual x has the property of being the boy; (vi) the event e is a speaking event; (vii) the individual x participates in the event e;[5] (viii) the individual z has the property of being the girl; and (ix) the event e succeeds the event e^0 (presupposition trigger). Further, it is presupposed that (x) the event e^0 is a speaking event; and (xi) the individual z participates in the event e^0.

The preposition *nach* does not relate individuals. However, in these examples, it temporally relates two eventualities[6], i.e. events or states. The relation is interpreted as a succession relation in such a way that the asserted event is temporally after another (presupposed) event. However, *nach* does not select for another VP but for a DP.[7] The example in (3) shows that the DP complementing *nach* may inherently provide an event. But

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[3] In (4), the presuppositions are indicated by underlining.

[4] For simplicity reasons, past tense is not represented here, nor will it be in further examples.

[5] The condition 'participates-in' is supposed to be an underspecified notion for any kind of thematic role, e.g. agent.

[6] Note that *nach* can also relate an eventuality with a point in time, such as *nach 22 Uhr/nach Mitternacht/nach dem 1. Januar* ('after 10pm/after midnight/after January 1st'). However, for the scope of this work, this is not important.

[7] The subordinating conjunction *nachdem* relates two VPs.

this need not be the case, as we see in (4). In these examples, no event can be identified within the DP, which amounts to a violation of a selection restriction. When the complement of *nach* neither denotes an eventuality nor a point in time, a mechanism similar to ellipsis reconstruction[8] sets in. But this will work only when the object can be interpreted as satisfying the selection restrictions of the reconstructed predicate.[9] Asking speakers for a description of the presupposed event triggered by *nach*, certainly everybody would agree that the event properties of the presupposed event are (very) similar to those of the asserted event. We thus assume that *nach* has the ability to assimilate the properties of the presupposed event to the properties of the asserted event. Thus, *nach* triggers a presupposed event that is not only temporally related to the asserted event but also with respect to its properties. In the next section, we will provide DRS construction rules that can cope with that phenomenon.

Evidence that *nach* can relate eventualities comes from German *ung*-nominalizations, which can be sortally ambiguous.[10] The nominalization *Beschreibung* ('description') may either be interpreted as an event, i.e. the event of describing, or as a proposition, i.e. as the content of the description. Similarly, the preposition *nach* can mean 'after' or 'according to', i.e. denote a reference to a proposition. However, only meaning 'according to', *nach* can also surface as a postposition.

(6) a. Der Mann verließ nach der   Beschreibung das   Gebäude.
         the man   left   [nach] the.DAT description   the.ACC building
         first reading: 'After a description was made, the man left the building.'
         second reading: 'According to the description, the man left the building.'
     b. Der Mann verließ der   Beschreibung nach das   Gebäude.
         the man   left   the.DAT description   [nach] the.ACC building
         'According to the description, the man left the building.'

The example in (6a) is ambiguous. Either the preposition *nach* accesses the event reading of the *ung*-nominalization resulting in the temporal interpretation of *nach*, or it accesses the proposition denoted by the noun resulting in the propositional interpretation. As for reasons that we cannot explain so far, postpositional *nach* exclusively selects for the propositional content of a noun. Thus, the event reading cannot be accessed. In the following, we propose an entry for the preposition *nach* triggering a presupposed event.

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[8] The phenomenon discussed here seems to be very much akin to (comparative) ellipsis, e.g. *Maria schwamm schneller als Fritz* ('Maria swam faster than Fritz') as in both cases an event(uality) similar to the asserted one has to be presupposed. The quoted sentence can only be interpreted if it is presupposed that Fritz swam, too. However, the parallelism between nach and ellipsis is out of the scope of this paper.

[9] A phrase such as *nach dem Tisch* ('after the table') is bizarre or fairy tale. And note that the phrase does not get any better when used as follow-up to a sentence such as *Als das Mädchen noch einen Stapel Bücher auf den Tisch legte, brach er zusammen* ('When the girl placed another pile of book on the table, it collapsed.'). So it is a selection restriction we see at work here with a strongly grammaticalized mechanism for the resolution of the presupposition violated.

[10] For details, see Roßdeutscher and Kamp (2010).

(7) $\quad \lambda z.\lambda e. \Big\langle \Big\{ \boxed{ \begin{array}{c} \text{property}(e^0) \\ \text{participates-in}(z,e^0) \end{array} } \Big\} , \boxed{ \begin{array}{c} \text{x } e^0 \\ \hline \text{property}(e) \\ \text{participates-in}(x,e) \\ \text{succeeds}(e,e^0) \\ \cancel{\text{COPY}_{\text{approx}}(\text{property}(e),\text{property}(e^0))} \\ \cancel{\text{COPY}_{\text{approx}}(\text{participates-in}(x,e),\text{participates-in}(z,e^0))} \end{array} } \Big\rangle$

There are two discourse referents denoting individuals: x, which needs to be unified[11] with another discourse referent later in the derivation, e.g. the agent introduced by little v (Voice), and z with respect to which the representation is abstracted over by means of a λ-abstract.[12] The DP that is applied to *nach* has to provide a discourse referent that is of the same type as z which results in the *nach*-PP by means of function application. There are also two events e and e^0 (e^0 is the presupposed event) that are temporally related by the succession relation, which, as we assume, constitutes the very core meaning of *nach*. Here, e is to be identified by merging (or adjoining) the PP to a projection of V providing the asserted event e and its description (here: anticipated by the requirement condition 'property(e)'). Again, function application takes place. The event e^0 is triggered by the type mismatch of what is required semantically by the succession relation and what is provided syntactically by the complementing DP. Furthermore, *nach* imposes the condition 'participates-in(x,e)' which means that sooner or later at least one discourse referent has to participate in the asserted event e.

The COPY$_{\text{approx}}$ operations are to be understood as context-dependent DRS construction rules that approximatively copy the conditions required and thereby fill the presupposition. In this case, the properties of the presupposed event e^0 are assimilated to the properties of the asserted event e, namely the conditions 'property' which will be identified as the manner description of the events and 'participates-in' which will be identified in both events as the agent relation.[13] After the conditions have been applied they are deleted, which is indicated here by striking them out. We suggest these sloppily introduced context dependent DRS construction rules to guarantee the copy effect of *nach*.

Concluding, we can say that *nach* (i) temporally relates two eventualities (here: events); (ii) selects for a DP licensing dative case; (iii) triggers a presupposition containing a preceding event if no event is inherently available from the DP headed by *nach*; and (iv) assimilates the meaning of the presupposed event to the meaning of the asserted event, i.e. it copies event properties.

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[11] Here, the notion of unification means an anticipation of a discourse referent for which a semantic configuration is provided on condition that the discourse referent will be described somewhere in the structure.

[12] We use the lambda calculus for syntactic and semantic composition, as, e.g. used by Roßdeutscher & Kamp 2010.

[13] Note that 'participates-in' does not necessarily end up in both events as the agent relation; e.g. in *jdm. einen Brief nachsenden* ('to forward someone a letter'), the condition 'participates-in(x,e)' ends up as the patient relation of the asserted event e and 'participates-in(z,e^0)' as presumably the agent relation of the presupposed event e^0.

3. The temporal verb particle *NACH*

In this paper, we argue that *nach* can modify functional heads in an extended VP-shell resulting in the verb particle *nach*. Therefore, we adopt the vP hypothesis by Hale and Keyser (1993), Kratzer (1996), and others, where arguments–predominantly the external argument– are not part of the lexical structure of the verb, but are introduced by means of a light verb. The functional projections wP and xP intervene between vP and VP. This analysis is in the spirit of the extended VP-shell analysis for verb particles proposed by Nicol (2002). We assume that the functional head w has the ability to access event properties of the VP whereas x can access stative properties of VP. While we are aware of the fact that our construction is motivated differently, we see the construction as an appropriate syntactic tool for capturing the semantics of *nach*. One major difference between Nicol's and our approach is that the specifier position of w is not a landing site for VP-internal arguments but rather a position where an additional argument slot is base-generated. In our approach, the heads w and x each establish a relation between one eventuality and another one of the same type, i.e. two events or two states. However, only w, which operates on event properties of the underlying VP, has the ability to project a specifier filled by an additional argument and assign dative to this argument. Under this perspective, the head w rather structurally resembles a high applicative. The structures in (8) outline this idea.

(8)   a. $[_{vP} [_{wP} DP_{dat} [VP_e [_w \textit{nach}]]] v]$
      b. $[_{vP} [_{xP} VP_s [_x \textit{nach}]] v]$

(8a) shows the structure where w relates a VP and an additional dative argument in the specifier of wP. (8b) illustrates the structure where x does not create an additional argument slot external to VP. We further argue that both w and x are functional heads in the V domain. However, their accessibility to the underlying VP is different and with that their argument structure. These considerations lead to our hypothesis in (9).

(9)   If *nach* relates event properties of the underlying VP a dative DP is licensed,
      whereas if it relates state properties a dative DP is not licensed.

In the following, we take a closer look at some particle verbs with *nach* to substantiate our hypothesis.

3.1. *Nach*-verbs that license a dative DP
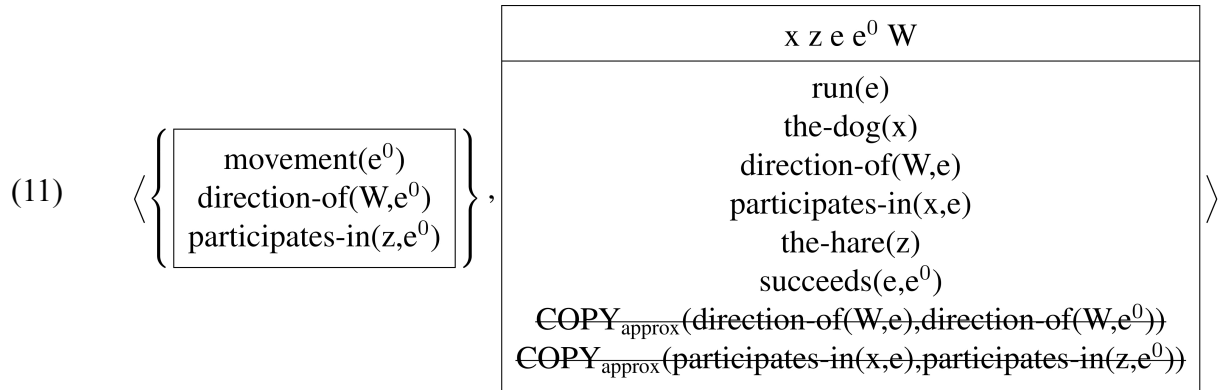
We will first discuss data in which *nach* licenses a dative DP.

3.1.1. Copy direction 'nach'

(10) a.   Der Hund rannte dem   Hasen nach.
            the dog   ran   the.DAT hare [nach]
            'The dog ran after the hare.'
      b.   Das Postamt   sandte dem   Kunden den   Brief nach.
            the post-office sent   the.DAT client the.ACC letter [nach]

'The post office forwarded the letter to the client.'

The DRS in (11) describes the sentence in (10a).

(11) $\left\langle \left\{ \boxed{\begin{array}{c} \text{movement}(e^0) \\ \text{direction-of}(W,e^0) \\ \text{participates-in}(z,e^0) \end{array}} \right\}, \boxed{\begin{array}{c} x\ z\ e\ e^0\ W \\ \hline \text{run}(e) \\ \text{the-dog}(x) \\ \text{direction-of}(W,e) \\ \text{participates-in}(x,e) \\ \text{the-hare}(z) \\ \text{succeeds}(e,e^0) \\ \text{COPY}_{\text{approx}}(\text{direction-of}(W,e),\text{direction-of}(W,e^0)) \\ \text{COPY}_{\text{approx}}(\text{participates-in}(x,e),\text{participates-in}(z,e^0)) \end{array}} \right\rangle$

We assume that in the context of a predicate expressing movement, with which one can associate a direction, the verb particle *nach* triggers a presupposed moving event the direction of which can be understood as the direction of the asserted event. The individual participating in the presupposed event is expressed by a dative DP; thus we assume that the dative DP is licensed semantically.

The core meaning component of *nach*, as in the earlier preposition examples, is the temporal succession relation, which is expressed by the condition 'succeeds'. It conveys that the asserted event e is located in time after the presupposed event e^0. The verbs in (10) are both predicates to which a direction W can be attributed; cf. the condition 'direction-of(W,e)'. The compatibility of these predicates with a direction specification is attested by the examples in (12) where *zu*-PPs specify directionality.

(12) a. Der Hund rannte zum   Tor.
          the dog   ran   to-the.DAT gate
          'The dog ran to the gate.'
      b. Das Postamt   sandte den   Brief zum   Kunden.
          the post-office sent the.ACC letter to-the.DAT client
          'The post office sent the letter to the client.'

We represent the copy requirement of *nach* with respect to the event description by applying the COPY$_{\text{approx}}$ operation to predicates that hold for the asserted event e.

The condition 'participates-in' in (11) describes a relation between an individual and an event. Here, the condition 'participates-in(x,e)' anticipates the contribution of little v, which in this case, will introduce an agent. Note that the condition 'participates-in' is however underspecified with respect to a thematic role. The event e^0 that this use of *nach* presupposes must be of the same type as the asserted event e. In particular, it must satisfy the predication used in the sentence to characterize e and that entails that e^0 must have a participant corresponding to the mentioned participant of e. For instance, *nach* in (10a) requires an argument corresponding to the subject phrase *der Hund* ('the dog'). This argument is realized with dative case. These constraints—the one concerning the shared direction of e and e^0, as well as the one that they must have corresponding participants—are expressed by means of the

copy operation $COPY_{approx}$. By this means, an additional argument slot for a discourse referent z in the presupposed event e^0 is created. This discourse referent z then will be specified by a dative DP.

The presupposed event e^0 has to be of the type movement, a requirement that we represent by the condition 'movement(e^0)' in the presupposition. Thus, the individual provided by the dative DP must be capable of movement. That the presupposed event has to be a movement event is clearly visible in (13). The only way we can interpret this sentence is by assuming that the referent of the dative DP *dem Schiff* ('the ship') is moving relative to the observer *das Mädchen* ('the girl'). Presumably, the movement requirement results from applying the $COPY_{approx}$ operation to the direction description of e, but this is a matter for further investigation. Note, by the way, that (13) shows that the movement requirement does not originate in applying the $COPY_{approx}$ operation to a movement condition of e, as in this example the girl does not necessarily move.

(13)   Das Mädchen schaute dem   Schiff nach.
       the girl   looked the.DAT ship [nach]
       'The girl watched the ship leave.'

From the examples above, we derive an abstract entry for the directional meaning of the verb particle *nach* in (14).

$$(14) \quad \lambda e.\lambda z. \left\langle \left\{ \boxed{\begin{array}{c} \text{movement}(e^0) \\ \text{direction-of}(W,e^0) \\ \text{participates-in}(z,e^0) \end{array}} \right\}, \boxed{\begin{array}{c} e^0 \text{ W x} \\ \hline \text{direction-of}(W,e) \\ \text{participates-in}(x,e) \\ \text{succeeds}(e,e^0) \\ \sout{COPY_{approx}(\text{direction-of}(W,e),\text{direction-of}(W,e^0))} \\ \sout{COPY_{approx}(\text{participates-in}(x,e),\text{participates-in}(z,e^0))} \end{array}} \right\rangle$$

Challenging patterns

As mentioned earlier, we assume that the copy operation triggered by *nach* is only interpretable in the context of movement. However, movement is not necessarily absolute. In (15), the city does not move in relation to the earth, but it moves relative to the departing traveler. It is movement performed by the observer that satisfies the event presupposition of *nach*.

(15)   Der im   Zug sitzende Reisende blickte der   Stadt lange nach.
       the in-the.DAT train sitting   traveler   looked the.DAT city long [nach]
       'The traveler sitting in the train looked at the city for a long time.'

A special case is where the dative DP specifies a direction not by performing a movement with that direction but by indicating one in some other way, e.g. as a signpost does. See (16).

(16)   Der Wanderer marschierte dem   Wegweiser nach.

the hiker marched the.DAT signpost [nach]
'The hiker followed the signpost.'

In this case, a presupposed event specifying the direction seems to be unnecessary. The inherent direction specification of the dative DP may even delete the presupposed event e^0.

However, as discussed above, the interpretation of *nach* seems only plausible in the context of movement, either presupposed by *nach* as e.g. in (10), or contributed by the asserted event description, e.g. a marching event as in (16). That at least one of the two individuals must move is shown by (17), which cannot be understood in the way of the English paraphrase given underneath.[14]

(17) # Der an der Kreuzung stehende Wanderer blickte dem Wegweiser nach.
   the at the crossroad standing hiker looked the.DAT signpost [nach]
   intended: 'The hiker standing at the crossroad looked in the direction indicated by
    the signpost.'

In (17), where the asserted event is not an instance of movement and the presupposition seems to be deleted, the interpretation of *nach* copying the direction specification fails.

Note that the dative DP can hardly be omitted in the copy direction reading. In (18), the discourse referent z, which needs a description by the dative DP, can, in a pinch, be locally reconstructed from the agent description of the first clause, the Pied Piper. However, we consider this construction to be marginal.

(18) ? Der Rattenfänger ging voran und alle rannten nach.
   the Pied-Piper went ahead and everybody ran [nach]
   'The Pied Piper went ahead and everybody followed (him.)'

3.1.2. Copy manner 'nach'

Another copy operation that can be triggered by *nach* concerns the manner of the asserted event. See the examples in (19). Here, too, we encounter, as in the case of copy direction *nach*, an additional dative DP.

(19) a. Der Schüler tanzte der Lehrerin den Tango nach.
    the student danced the.DAT teacher the.ACC tango [nach]
    'The student copied the dancing of the tango from the teacher.'
  b. Der Minister sprach dem Präsidenten den Eid nach.
    the minister spoke the.DAT president the.ACC oath [nach]
    'The minister repeated the speaking of the oath after the president.'

In (19), copy of the manner of the event is triggered, resulting in a copy of the (abstract) entity. (20) represents the sentence in (19a).

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[14] The only possible interpretation of (17) is that the signpost itself moves, e.g. if it is blown away by a hurricane.

$$(20) \quad \left\langle \left\{ \boxed{\begin{array}{c} \text{dance}(e^0) \\ \text{participates-in}(z,e^0) \\ \text{theme-of}(y,e^0) \end{array}} \right\}, \boxed{\begin{array}{c} e\ e^0\ x\ y\ z \\ \hline \text{dance}(e) \\ \text{the-student}(x) \\ \text{participates-in}(x,e) \\ \text{the-tango}(y) \\ \text{theme-of}(y,e) \\ \text{the-teacher}(z) \\ \text{succeeds}(e,e^0) \\ \cancel{\text{COPY}_{\text{approx}}(\text{dance}(e),\text{dance}(e^0))} \\ \cancel{\text{COPY}_{\text{approx}}(\text{participates-in}(x,e),\text{participates-in}(z,e^0))} \end{array}} \right\rangle$$

Again, we encounter the core meaning of *nach*, i.e. the succession relation, triggering the presupposed event e^0. The COPY$_{\text{approx}}$ operation assimilates the properties of the presupposed event e^0 to the properties of the asserted event e from the underlying VP. In this case, it is the manner description, i.e. 'dance(e)' in (19a) and 'speak(e)' in (19b), and the 'participates-in' conditions that are copied. This is similar to the previous examples, where the direction and the 'participates-in' conditions were copied. However, when manner is copied there need not be copying of direction (and it seems that these are alternatives: *nach* can either require copy of direction or of manner, but it cannot require copy of both). Thus, if no direction is present in the description, *nach* here accesses the manner description of the event e.[15] Note that the inference of a second tango coming into existence results from the fact that the event producing the first tango is copied, not the tango itself. As a result of copying the event, there is another tango realization.

As encountered in the copy direction examples, the condition 'participates-in(z,e^0)' created by applying the COPY$_{\text{approx}}$ operation to the condition 'participates-in(x,e)' provides an additional argument slot for a dative DP.

An abstract entry for the copy manner meaning of *nach* is given in (21).

$$(21) \quad \left\langle \left\{ \boxed{\begin{array}{c} \text{manner}(e^0) \\ \text{participates-in}(z,e^0) \end{array}} \right\}, \boxed{\begin{array}{c} e\ e^0\ x\ z \\ \hline \text{manner}(e) \\ \text{participates-in}(x,e) \\ \text{succeeds}(e,e^0) \\ \cancel{\text{COPY}_{\text{approx}}(\text{manner}(e),\text{manner}(e^0))} \\ \cancel{\text{COPY}_{\text{approx}}(\text{participates-in}(x,e),\text{participates-in}(z,e^0))} \end{array}} \right\rangle$$

3.1.3. Conclusions

If the verb particle *nach* accesses event properties, (i) a presupposed event e^0 is triggered, (ii) the asserted event e succeeds the presupposed event e^0, (iii) event properties of the presupposed event e^0 are assimilated to those of the asserted event e, (iv) an additional argument slot for a dative DP is created by means of applying an copy operation to the

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[15] Note that the particle verb *nachtanzen* is potentially ambiguous: if one interprets *tanzen* ('to dance') as directional, one additionally has the copy direction interpretation. See section 5 for further discussion.

'participate-in' condition required in the V domain. In addition, (v) certain other conditions may have to be met, e.g. movement of the discourse referent provided by the dative DP.

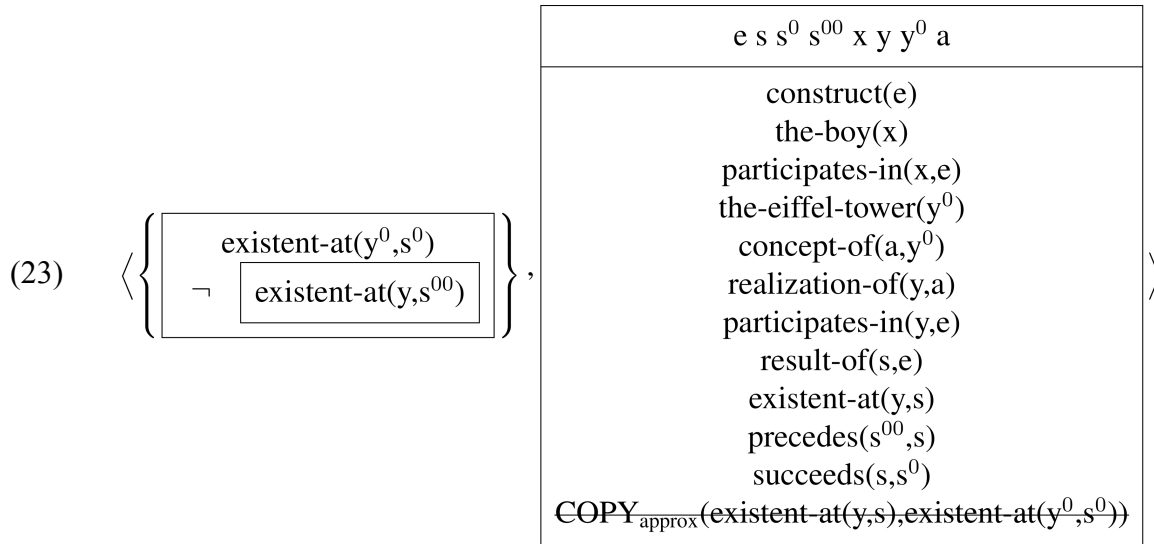## 3.2. *Nach*-verbs that do not license a dative DP

In this section, we will look at particle verbs with *nach* that do not occur with a dative DP.

3.2.1. Copy creation 'nach'

In another group of *nach* verbs, *nach* does not license a dative DP. See the examples in (22).

(22) a.   Der Junge baute den   Eiffelturm   nach.
           the boy   built the.ACC Eiffel-Tower [nach]
           'The boy built a copy of the Eiffel Tower.'
     b.   Der Fälscher machte den   Geldschein nach.
           the forger   made   the.ACC banknote   [nach]
           'The forger made a copy of the banknote.'

The DRS in (23) represents the example in (22a).

$$(23) \quad \left\langle \left\{ \begin{array}{|c|} \hline \text{existent-at}(y^0,s^0) \\ \hline \neg \; \boxed{\text{existent-at}(y,s^{00})} \\ \hline \end{array} \right\}, \begin{array}{|c|} \hline e\; s\; s^0\; s^{00}\; x\; y\; y^0\; a \\ \hline \text{construct}(e) \\ \text{the-boy}(x) \\ \text{participates-in}(x,e) \\ \text{the-eiffel-tower}(y^0) \\ \text{concept-of}(a,y^0) \\ \text{realization-of}(y,a) \\ \text{participates-in}(y,e) \\ \text{result-of}(s,e) \\ \text{existent-at}(y,s) \\ \text{precedes}(s^{00},s) \\ \text{succeeds}(s,s^0) \\ \text{COPY}_{\text{approx}}(\text{existent-at}(y,s),\text{existent-at}(y^0,s^0)) \\ \hline \end{array} \right\rangle$$

The syntactic difference between the examples in (10) and (19) on the one hand and (22) on the other is that in the latter case there is no dative DP.[16] Our claim here is that in (22), *nach* does not relate events, and thus accesses event properties such as a participant relation, but result states that hold for instances of the same concept of an abstract plan and no further argument slot is created by *nach*. As with the examples discussed in the previous

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[16] If one accepts a dative DP in a sentence such as (22a), e.g. *der Junge baute* [DP:dat *Gustave Eiffel*] [DP:acc *den Eiffelturm*] *nach*, we expect this to be an (enforced) access of *nach* to the manner properties of the event description of *bauen* ('to build'). Then, the interpretation is not that he boy copies the Eiffel Tower, but Gustave Eiffel's manner of building the Eiffel Tower. That there will be a second Eiffel Tower can be inferred from the event description that is copied.

section, the core contribution of *nach* is the succession relation, which is expressed by the condition 'succeeds'. However, in these cases, it does not relate events, but result states.

The copy operation assimilates a result state property of a presupposed state s^0 to the result state property of the asserted state s.

But why does *nach* not create an additional argument slot in (22)? An essential assumption here is that the direct objects of clauses whose verbs involve this use of *nach* are conceived as having some kind of abstract representation or construction plan which can be imitated or followed, in a new creation process. The concrete objects are so to speak realizations of its concepts. This is expressed by the conditions 'concept-of(a,y^0)' and 'realization-of(y,a)'.[17] The creation aspect of this use of *nach* is manifest through the creation verbs of (22). Because of the telicity of these verbs the events they can be used to describe have result states consisting in the existence of what has been created. We describe the relation between such a result state s and the existence of the object y by means of the condition 'existent-at(y,s)'.

In this case, i.e. if *nach* attaches to a creation verb, *nach* does not relate events but result states holding for the object created. As both the original and the copied object refer to the same concept, no additional argument slot for a dative DP is licensed here by *nach*.

Evidence for the assumption that it is not the event properties that are copied is given in (24). Objects such as the Alps or a knee joint are naturally not built by someone. Thus, no creation event can be copied in these cases.

(24) a.   Der Modelleisenbahner bastelte die   Alpen nach.
             the model-railroader   made   the.ACC Alps [nach]
             'The model railroader made a copy of the Alps.'
      b.   Der Medizintechniker baute das   Kniegelenk nach.
             the medical-technician built the.ACC knee-joint [nach]
             'The medical technician built a copy of the knee joint.'

On the other hand, result state properties of the object, even if there is only a mental representation of the object, have to be available in the VP that *nach* accesses. See the examples in (25).

(25) a. # Als der Tüftler noch dabei war eine   Zeitmaschine zu entwickeln,
             as the tinkerer still at   was a.ACC time-machine to develop
                 baute der   Assistent sie   schon   nach.
                 built the.NOM assistant it.ACC already [nach]
             intended: 'While the tinkerer was still developing a time machine,
                 the assistant already built it.

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[17] In (23), the real Eiffel Tower in Paris is represented by the discourse referent y^0.

    b.   Als die Lehrerin noch dabei war einen Tango zu tanzen,
         as   the teacher   still   at   was a.ACC tango to dance,
              tanzte der   Schüler ihr   ihn   schon   nach.
              danced the.NOM student her.DAT it.ACC already [nach]
        'While the teacher was dancing the tango,
            the student already copied the teacher's dancing of the tango.'

In (25a), result state properties of the time machine are not yet available–not even a concept of it–because it is still in the process of development; thus (25a) is not interpretable. However, in (25b), which is an instance of a copy manner *nach*, no result state properties need to be available as the student can already copy the teacher's dancing manner of the tango, even if the teacher has not finished the tango yet–and the student might not yet have a mental representation of it.

Further evidence that creation verbs with *nach* require that result state properties be available comes from low applicatives. See (26).

(26) a.   Die Mutter strickte dem   Baby die Mütze   nach.
          the mother knitted the.DAT:poss/?DAT:nach baby the cap.ACC [nach]
          first reading: 'The mother knitted a copy of the cap for the baby.'
          ?second reading: 'The mother copied the baby's knitting of the cap.'[18]
     b. # Die Mutter strickte dem   Baby
          the mother knitted the.DAT:poss/?DAT:nach baby
             der   Oma   die Mütze   nach.
             the.DAT:nach/DAT:poss granny the cap.ACC [nach]
         intended: 'The mother copied the granny's knitting
            resulting in a cap for the baby.'

In (26a), the first reading, i.e. that the mother knitted a copy of the cap for the baby, is strongly preferred, due to the fact that babies normally cannot knit. What we assume the mother to actually do if we encounter a sentence such as (26a), is that she copies result state properties of a previously existing cap by knitting a second cap, which is meant for the baby. Note that there is not necessarily a presupposed knitting event e^0. The first cap need not be created by knitting. The additional dative DP in (26a) is very likely to be interpreted as introduced by a low applicative expressing a possession relation between two individuals; here the baby and the cap. Consequently, *nach* introduces a succession relation between states and it assimilates the properties of the presupposed preceding state to the one asserted.

In (26b), the interpretation fails not only because of two ambiguous datives (one licensed by an applicative and one licensed by *nach*) but also because, according to our hypothesis, *nach* relates event properties which seem to conflict with an underlying low applicative. If culmination and thus result state properties are available within the VP, it

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[18] The second reading, i.e. that the mother copied the baby's knitting manner is not out per se. However, world knowledge tells us that, under normal conditions, babies cannot be their mothers' role models in knitting (caps).

seems likely that result state properties are primarily accessed. We will discuss further examples in this regard in section 5.

In (27), we derive an entry for the copy creation meaning of *nach*. The condition 'RS-property(y,s)' is to be read as 'result state property of individual y at state s'.

$$(27) \quad \lambda s. \left\langle \left\{ \boxed{\text{RS-property}(y^0,s^0)} \right\}, \boxed{\begin{array}{c} s^0 \; y^0 \; y \\ \hline \text{RS-property}(y,s) \\ \text{succeeds}(s,s^0) \\ \cancel{\text{COPY}_{\text{approx}}(\text{RS-property}(y,s),\text{RS-property}(y^0,s^0))} \end{array}} \right\rangle$$

3.2.2. Once-more/restitution 'nach'

Another group of *nach* verbs that, analogously to the verbs in 3.2.1, do not license a dative, are those denoting the restitution of a previous state. See example (28).

(28) a.   Der Schmied   schärfte   das   Messer nach.
           the blacksmith sharpened the.ACC knife   [nach]
           'The blacksmith resharpened the knife.'
    b.   Der Gast salzte die   Suppe nach.
           the guest salted the.ACC soup [nach]
           'The guest added (more) salt.'

The DRS in (29) represents the sentence in (28a).

$$(29) \quad \left\langle \left\{ \boxed{\begin{array}{c} \text{sharp-at}(y,s^0) \\ \neg \; \text{sharp-at}(y,s^{00}) \end{array}} \right\}, \boxed{\begin{array}{c} e \; s^{00} \; s^0 \; s \; x \; y \\ \hline \text{the-blacksmith}(x) \\ \text{participates-in}(x,e) \\ \text{the-knife}(y) \\ \text{sharp-at}(y,s) \\ \text{causes}(e,s) \\ \text{result-of}(s,e) \\ \text{succeeds}(s,s^0) \\ \cancel{\text{COPY}_{\text{approx}}(\text{sharp-at}(y,s),\text{sharp-at}(y,s^0))} \\ \text{succeeds}(s^{00},s^0) \lor \text{succeeds}(s^0,s^{00}) \end{array}} \right\rangle$$

The interpretation of (28) is that the blacksmith, denoted by the discourse referent x, participates in the asserted event e. Note that there is no manner description in this case. All that is said about the event e is that it causes a state s consisting of the knife y being sharp. The state s is the result state of the event e. Further, it can be assumed that there has been a pre-state s^{00} consisting in the knife not being sharp. Here, *nach* cannot access a detailed event description, e.g. one specifying a direction or a manner, because the event is characterized merely as the coming about of the result state s.

Note that there is an ambiguity in (28a) that is worth discussing. On its first reading, the knife was sharp in the beginning, then got blunt, and was finally sharpened again (30a); we call this reading the restitution interpretation. On the second reading, the knife was blunt first, then was sharpened, but not enough (e.g. because the degree of sharpness was not satisfactory), so that it was then sharpened once more (30b); we refer to this reading as the once-more interpretation.

(30) a. b.
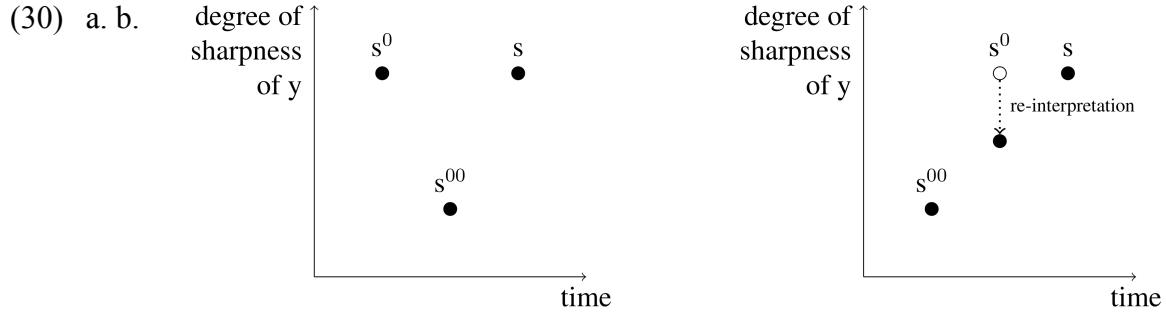
Note that we need to apply a degree analysis to capture the sharpness of the knife in the different states. In both readings, the restitution and the once-more reading, the result state s succeeds the pre-state s^{00} which is triggered by the predicate *schärfen* ('to sharpen'). Before the sharpening event the knife was not sharp (s^{00}), afterwards (s) it was. Additionally, *nach* introduces a second pre-state s^0 for which it must be true that the knife was sharp. Again, the result state s succeeds the second pre-state s^0, which is core contribution of *nach*. However, there is no information about the temporal order of the two pre-states s^0 and s^{00} with respect to each other. Either the pre-state by *schärfen* follows the pre-state by *nach*, i.e. 'succeeds (s^{00},s^0)'; or the other way round, i.e. 'succeeds(s^0,s^{00})'. Note that in the once-more reading, the degree of sharpness of the knife in the pre-state s^0 has to be re-interpreted as 'sharp but not sharp enough' because the sharpening event requires a result state s in which the knife is sharper than directly before. In order that the pre-state s^0 fulfill this requirement, it has to be re-interpreted.

In (28b) the restitution reading is implausible because it is hard to see how the saltiness of the soup could have gone down from a level it has already reached. Thus the pre-state order 'succeeds(s^{00},s^0)' is uninterpretable; except one imagines a procedure that reduces the soup's degree of salinity.

In (31), we provide an abstract entry for the once-more/restitution reading of *nach*. Note that it is almost identical to the one given for the creation reading (cf. 27). However, the two entries differ with respect to the individual for which the result state property (RS-property) holds. In the once-more/restitution reading (cf. 31), it is the same individual, whereas in the creation reading (cf. 27), there are two individuals being instances of the same concept. Another difference is that in the creation reading, the result state property is exclusively the existence property, whereas in the once-more/restitution reading, the property is predicate-specific, i.e. sharpness or saltiness.

(31) $\lambda s. \left\langle \left\{ \boxed{\text{RS-property}(y,s^0)} \right\}, \begin{array}{|c|} \hline s^0 \; y^0 \; y \\ \hline \text{RS-property}(y,s) \\ \text{succeeds}(s,s^0) \\ \sout{\text{COPY}_{\text{approx}}(\text{RS-property}(y,s),\text{RS-property}(y,s^0))} \\ \hline \end{array} \right\rangle$

3.2.3. Continuation 'nach'

In (32), another reading of *nach* is given. Again, in these cases, no dative dependent on *nach* is possible.

(32) a.   Die Banane reifte nach.
            the banana riped [nach]
            'The banana continued ripening (after being picked).'
      b.   Die Glocke klang   nach.
            the bell   sounded [nach]
            'The bell lingered.'

The DRS in (33) represents the example in (32a).

(33) $\left\langle \left\{ \boxed{\text{is-ripening-at}(y,s^0)} \right\}, \boxed{\begin{array}{c} y\ s^0\ s \\ \hline \text{the-banana}(y) \\ \text{is-ripening-at}(y,s) \\ \text{succeeds}(s,s^0) \\ \sout{\text{COPY}_{\text{approx}}(\text{is-ripening-at}(y,s),\text{is-ripening-at}(y,s^0))} \end{array}} \right\rangle$

Again, we claim that *nach* introduces a succession relation between states, in this case progressive states, which can be described by run time properties of the event, provided by the underlying VP.

The particle *nach* again triggers a presupposed pre-state s^0 that shows similar properties as the asserted state s, namely that the banana had been ripening before it was ripening. The assimilation of the progressive state properties of the presupposed state to those of the asserted state is guaranteed by the COPY$_{\text{approx}}$ operation which is applied to the condition 'is-ripening-at(y,s)', which expresses that the individual y (the banana) ripens at the asserted state s. The outcome is a presupposition description such that the same object y was ripening in a state s^0, which precedes s.

In (34), we provide an abstract entry for the continuation *nach*. Note that it is, again, similar to the previous entries for *nach* operating on states. The difference is however that, in this case, *nach* does not access result state properties but progressive state properties which characterize a process that the individual undergoes.

(34) $\lambda s. \left\langle \left\{ \boxed{\text{PS-property}(y,s^0)} \right\}, \boxed{\begin{array}{c} y\ s^0 \\ \hline \text{PS-property}(y,s) \\ \text{succeeds}(s,s^0) \\ \sout{\text{COPY}_{\text{approx}}(\text{PS-property}(y,s),\text{PS-property}(y,s^0))} \end{array}} \right\rangle$

3.2.4. Conclusions

If the verb particle *nach* accesses state properties, (i) a presupposed state s^0 is triggered, (ii) the asserted state s succeeds the presupposed state s^0, (iii) result or progressive state properties of the presupposed state s^0 are assimilated to those of the asserted state s, and (iv) no additional argument slot for a dative DP is created, as the state properties of s and s^0 hold for the same (concept of an) object.

4. RESTRICTIONS ON THE FUNCTIONAL HEAD W

In this section, we want to briefly address the question to what extent the verb particle *nach*, if hosted by w, depends on intentionality (4.1.) and how it relates to high applicatives (4.2.).

4.1. Intentionality

We observe that the construction with a dative is only possible in the context of intentionality, whereas the ones without a dative do not seem to require intentionality. See (35).

(35) a.   Der Einkaufswagen rollte   nach.
            the shopping-cart   rolled [nach]
            'The shopping cart continued rolling.'
      b. # Der Einkaufswagen rollte der   Frau   nach.
            the shopping-cart   rolled the.DAT woman [nach]
            intended: 'The shopping cart rolled in the same direction as the woman went.'
      c.   Der Mann rollte den   Einkaufswagen der   Frau   nach.
            the man   rolled the.ACC shopping-cart   the.DAT woman [nach]
            'The man pushed the shopping cart after the woman.'

The sentence in (35a) has the continuation interpretation of *nach* (cf. section 3.2.3), i.e. that the shopping cart was rolling, then somehow stopped or was forced to stop, but then went on rolling afterwards. This is in line with the assumption that eventualities described with the help of the verb *rollen* ('to roll') can be classified as progressive states, i.e. the cart y is rolling at state s.

As the verb *rollen* is a movement predicate, our assumption so far would predict that it should be alright to add a dative DP, as in (35b), as a way of satisfying the copy direction requirement. However, the sentence in (35b) is not acceptable: one has the intuition that the cart was rolling intentionally after the woman, which is impossible as carts do not have intentions–except for, e.g., a remotely controlled cart or in fiction. Hence, we assume that the functional head w that we claim to host *nach* accessing event properties is related to intentionality. Embedding the sentence in (35b) into a causative construction with an intentionally acting subject as in (35c) renders it acceptable. We thus conclude that w is only interpretable in the context of intentionality (at least in the context of copy direction).[19]

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[19] Note that we do not explain figurative usages of copy direction *nach* in experiencer verbs, such as *nachtrauern* ('to mourn after') where one might want to interpret *nach* as directing the grief towards the one who is no longer present. We only consider movement predicates in this paper.

Now, the question arises whether the functional head x which hosts *nach* accessing state properties is also subject to such intentionality restrictions. As we saw in (35a) this does not seem to be the case for the continuation reading of *nach*. What about copy creation? See (36).

(36) a.   Die Maschine baute den   Mikrochip nach.
            the machine   built the.ACC microchip [nach]
            'The machine built a copy of the microchip.'
     b. # Die Maschine baute dem   Ingenieur den   Microchip nach.[20]
            the machine   built the.DAT engineer   the.ACC microchip [nach]
            intended: 'The machine copied the engineer's manner of building the microchip.'

The sentence in (36a), in which the subject need not have any intention, is perfectly acceptable. The interpretation is that the machine produces other realizations of the concept of the microchip, which is expected according to the hypothesis about *nach* accessing result state properties (cf. section 3.2.1.). With respect to our assumption that *nach*-dative DPs are exclusively licensed by w (which seems to be connected to intentionality) and not by x, it is predicted that adding a dative DP such as in (36b) is not interpretable, which is the case.

Concluding, we have evidence for the assumption that the functional head w licensing a dative DP is related to intentionality, whereas the functional head x, which does not license a dative DP, is not.

4.2. Relation to high applicatives

The functional head w, which we assume to host the verb particle *nach*, seems to be similar or closely related to a high applicative. A high applicative relates an event to an individual via a benefactive relation, i.e. [VP do something] for [DP someone/something] (for a discussion on applicatives, we refer to Pylkkänen 2000, McIntyre 2009, and others). In the same syntactic way, the verb particle *nach*, however indirectly, relates an event to an individual (here: the dative DP). An indication for the similarity of w and a high applicative is given in (37).

(37) a.   Max trug   Anna   den   Koffer.
            Max carried Anna.DAT:ben the.ACC suitcase
            'Max carried the suitcase for Anna.'
     b.   Max trug   Jamila   den   Koffer nach.
            Max carried Jamila.DAT:nach the.ACC suitcase
            'Max carried the suitcase after Jamila.'
     c. ?? Max trug   Anna   Jamila   den   Koffer   nach.
            Max carried Anna.DAT:ben Jamila.DAT:nach the.ACC suitcase [nach]
            intended: 'Max carried the suitcase for Anna after Jamila.'

The dative DP in (37a) is introduced by a high applicative establishing a benefactive relation between the eventuality denoted by the VP and an individual denoted by the dative DP. In (37b), the dative DP is introduced by *nach*, namely that the individual denoted by the

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[20] Note that the dative DP can be interpreted as a beneficiary of the event via an applicative structure, i.e. 'the machine built a copy of the microchip for the engineer'.

DP participates in an event that precedes the asserted event and thereby specifies the direction of the asserted event. The example in (37c) shows two dative DPs: one introduced by a high applicative and one introduced by *nach*. However, this seems uninterpretable in the sense of the English paraphrase given, i.e. that the asserted event follows the direction of a presupposed preceding event in which one dative DP participates, while the asserted event stands in a benefactive relation to the other dative DP. One possible explanation of this might be that w is a realization of a high applicative (or has a somehow related status) so that there would be a clash in (37c) between two high applicatives. But this is not what we want to assume. We do not think that w is related to a traditional high applicative introducing, e.g., a benefactive relation.

 We expect the ungrammaticality of (37c) to be due to the ambiguity in the interpretation of the two dative DPs. Some other constraint seems to disallow these two dative DPs (surfacing adjacently). Some evidence that w and benefactive high applicatives are compatible after all comes from polite imperatives like those in (38).

(38) a. Trag mir doch bitte ihm den Koffer nach!
         carry her.DAT but   please him.DAT the.ACC suitcase [nach]
         'Would you mind carrying the suitcase for me after him?'
     b. Lauf mir doch bitte dem Briefträger nach und frag ihn ob ...!
         run me.DAT but   please the.DAT mailman [nach] and ask him.ACC whether ...
         'Would you mind following the mailman for me and ask him whether ...?'

 In the examples in (38) the dative DPs are not adjacent; the benefactive dative can easily be identified in the semi-idiomatic expression 'verb.IMP + *mir* + *doch* + *bitte*' ('would you mind verb-ing for me') introducing a polite imperative. The dative DP introduced by *nach* however is possible in parallel.

 Additionally, high applicatives do not need to be related to intentionality in the same way as the functional head w. A device, like the one mentioned in (39), does not calculate intentionally. But an applicative introducing a benefactive relation is nevertheless possible.

(39) Der Apparat rechnete ihm die Lösung aus.
     the device calculated him.DAT the.ACC solution out
     'The device calculated the solution for him.'

 In these cases, w and the applicative seem to be independent functional heads. Thus, we claim that w is not related to high applicatives.

5. DISAMBIGUATION OF *NACH* IN THE VERBAL CONTEXT

Finally, we briefly address the question which verbs qualify for which reading of *nach*, or in other words, what properties of the underlying verb trigger which interpretation of *nach* in which context?

 First, we recapitulate the interpretations of *nach* identified in this work. In section 3.1., *nach* accessed event properties of the underlying verbs, which are either a direction or the manner of an event. In section 3.2., *nach* accessed state properties of the underlying VP, either result state properties or progressive state properties. The result state property accessed by *nach* (cf. section 3.2.1.) is either to the effect that an individual exists (creation class) or a

predicate-specific property of an individual holds (once-more/restitution class), e.g. sharpness. The progressive state discussed in section 3.2.3. can be described by an ongoing process at a period in time (continuation class).

To answer the question which interpretation is triggered by *nach*, it is important to inspect the properties of the eventualities present in the VP that *nach* accesses. Here, it is also worth mentioning that we were unable to identify straightforward criteria for the disambiguation process. Many verbs qualify for more than one interpretation of *nach*. We can only provide clues that we assume to be important for this issue. See the data set in (40).

(40) a. Der Schüler tanzte der   Lehrerin nach.
          the student danced the.DAT teacher [nach]
          first reading: 'The student copied the dancing manner of the teacher.'
          second reading: 'The student followed the teacher dancing.'
      b. Der Schüler tanzte der   Lehrerin den   Tango nach.
          the student danced the.DAT teacher   the.ACC tango [nach]
          'The student copied the teacher's manner of dancing the tango.'
      c. Der Schüler tanzte den   Tango nach.
          the student danced the.ACC tango [nach]
          'The student copied the tango dancing.'
      d. # Der Schüler tanzte nach.
          the student danced [nach]

The verb *tanzen* ('to dance'), for example, shows up with a prominent manner specification of the event, i.e. the manner of dancing. However, one might also want to focus on the movement properties of the event described by *tanzen* and thus one can attribute a direction to the event. In general, a verb such as *tanzen*, which can occur with or without a direct object, is at least two-way ambiguous between copy direction and copy manner (cf. 40a). If *tanzen*, however, is used with a direct object in the accusative, the event culminates with respect to the object (cf. Kratzer 2004, Dowty 1991, and others) and a result state becomes available. In this case, culmination seems to be a restrictor that disallows the direction interpretation (cf. 40b).

On the other hand, the verb *tanzen* and *nach* can also co-occur without a dative as in (40c). Here, our hypothesis predicts that result state properties (existence [of the tango]) and not event properties (direction or manner) are copied. As we said before, this property is only available if the direct object, i.e. the accusative, provides culmination. So, in (40c) *nach* has to be interpreted as copy creation accessing result state properties. Hence, (40d), in which neither a dative DP is available, which would qualify for direction or manner, nor an accusative DP, which would qualify for manner or creation, is ungrammatical.

Another criterion for a rough disambiguation of *nach* in the context of the VP seems to be intentionality. As discussed above, the structure with a dative DP is licensed only in the context of intentionality. Thus we can say that if a construction or predicate does not express intention, *nach* would not license a dative DP, as this is exclusively possible in wP requiring intentionality.

6. CONCLUSIONS

Summarizing, we have identified so far[21] five different interpretations of *nach* (sharing one core meaning) all of which build on the semantic contribution of the VP with which *nach* combines. The diagram in (41) gives an overview of the characteristics of the interpretations of *nach*. Note that the high-level bifurcation into event vs. state properties is mirrored syntactically by means of the functional heads w for event properties and x for state properties and that the dative licensing ability of w is a consequence of its semantic operability.

(41)
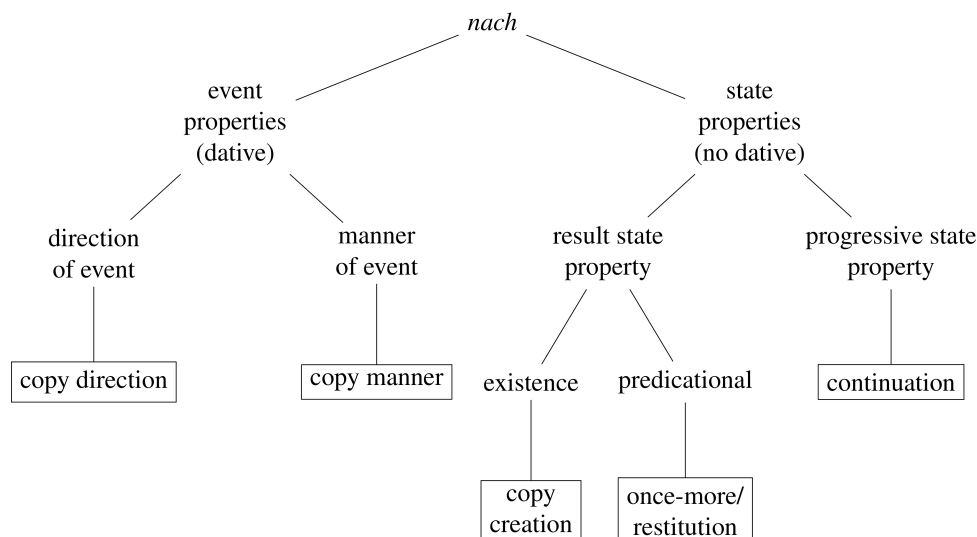
As we have briefly discussed in the previous section, it is important to have reliable criteria for the disambiguation of *nach* with respect to its interpretative unfolding depending on conditions holding for the VP. This, and weighing them up against each other to detect preferred interpretations and seemingly compelled ones is part of future work on this topic.

Additionally, we want to extend this type of analysis to other particles that show some degree of congruence with *nach*, e.g. *vor* ('before') as in *vortanzen* ('to demonstrate a manner of dancing'), to see how specific the interpretations of *nach* presented in this work are.

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[21] Note that we have completely skipped the propositional interpretation of *nach* such as in *nachdenken* ('to think/reflect') or *nachfragen* ('to inquire'), as well as the interpretation of a temporal shift, such as in *nachfeiern* ('to celebrate later'). However, these interpretations and their contextual dependencies are a topic of future work.

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