

DRT-based analysis of the German verb particle *an*

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Abstract

The compositionality of particle verbs is a matter of dispute. The following paper will show that the semantics of German particle verbs is the combination of verb semantics and particle semantics. For this purpose, the verb particle *an* was analyzed and turned out to be highly ambiguous. Still, it can be systematically reconstructed. The different meanings resulting out of this ambiguity were grouped into semantic classes that were then formalized by using the Discourse Representation Theory. The classification of these meanings is based on a detailed case study that thoroughly defines the distinct components and strengthens my above mentioned thesis.

1. Introduction

Can the meaning of a particle verb be predicted from the meaning of the particle and the remaining predicate? The question is a topic of controversy. According to some, there are few or no correlations between the meanings of such verbs and the meanings of their parts. Particle verbs are atomic semantic units, which resist compositional analysis. On the other hand, there are those who hold that compositional accounts of the semantics of particle verbs are possible; their semantics is compositional to a substantive degree, even if overlaid with much idiosyncrasy. The present study is informed by this second view.

Compositional accounts of particle verbs must cope with two general problems. First, there are the idiosyncratic cases. These must be recognized so that they can be set aside. Second, even a cursory exploration of how particles contribute to the meanings of the verbs containing them shows them to be ambiguous. One of the tasks of a compositional theory of particle verb meaning is to identify for each particle what

kind of contribution it can make in combination with different verbs.

My aim in this paper is to prove that particle verbs are compositional and, as a consequence, that particles have their own meaning. The present study focuses on the particle *an*. This verb particle may not have one universal meaning but, as will be shown, different readings that can be grouped in categories. These categories are the semantic classes that deliver precise specifications about which components are necessary to combine with the particle *an*. This method allows predictions about the resulting semantics of the particle verb.

Similar studies have been carried out for *auf* (s. (Lechler and Roßdeutscher 2009)) and *ab* (s. (Kliche 2009)). These three studies share the same theoretical perspective and also make use of the same formal setting – Discourse Representation Theory (s. (Kamp and Reyle 1993)) – for the formalization of their analyses. By using unification, DRT enables to display the interaction of complex constructions instead of only displaying singular semantic structures.

The account I present is based on a detailed set of data. These come in one part from German dictionaries and in another from German text corpora (s. appendix). Data from text corpora have the advantage that they provide natural contexts of usage. In addition, I have also collected data from the Internet, which has been proved to be a good source for discovering different uses of the same verb. Categorization of these data led to eleven different readings for *an*. These readings are discussed in the next section, each with examples of *an*-verbs which manifest that reading. In some cases I present a full sentence to make clear which meaning of the verb is being considered.¹

2. Meanings of the German verb particle *an*

2.1 *Simple directional reading of *an**

I start with the directional reading of *an* in order to understand the following more complex Discourse Representation Structures which are partially based on this directivity. This is a comparatively simple reading, which allows for a simple formalisation within the DRT-based framework I am using. The directional reading is discussed in detail in (Stiebels 1996, pp 162).

However, we will see that the cases that have been dealt with as 'directional' instantiate a number of sub-readings. Some of the sub-readings require more complex formalisations.

In this subsection we focus on what I call the 'simple directional reading'. Examples of verbs with this meaning are *ansehen* (lit.: [an] + see; to look at), *anstreben* (lit.: [an] + strive; to aspire), *anvisieren* (to target), *anschauen* (lit.: [an] + look; to view), *ansteuern* (lit.: [an] + steer; to navigate)...

¹ For a more detailed discussion of these theoretical issues, the reader is directed to Rosdeutscher (this volume).

Figure 1 shows the basic representation of *an* using DRT.

v	\underline{x}	\underline{y}	e
$\text{dir}(v, e)$			
$v = (\underline{x}, \underline{y})$			

Figure 1: DRS of *an* with a simple directional reading

The vector v points from \underline{x} to variable \underline{y} . \underline{x} and \underline{y} are placeholder discourse referents introduced by the subject and object of a sentence. The predicate $\text{dir}(v, e)$ assigns the direction of v to the action e . The following sentences exemplify this particle reading:

- (1) *Der Kapitän steuert das Ufer an.*
 THE CAPTAIN NAVIGATES THE COAST [AN].
 The captain navigates towards the coast.

In (1) the direction of the navigation event is specified by the NP *the coast*. As the verb is interpreted, the coast is in front of the motion.

- (2) *Der Kunsthistoriker schaut das Gemälde ganz genau an.*
 THE ART HISTORIAN VIEWS THE CANVAS VERY CLOSELY [AN].
 In this example the looking event goes in the direction of the canvas.

- (3) *Der Schüler strebt ein Studium an.*
 THE PUPIL STRIVES A STUDY [AN].
 The pupil is striving to a study.

Specification of direction in (3) is not provided by the description of an entity, such as *Ufer* (coast) in (1). However, the striving is understood in some abstract sense, to have a direction. Its direction is from the status of a pupil to the higher social status of a student. As a consequence, the semantics of (3) is non-extensional because of the intensionality of *anstreben*. The pupil may aim for a university education without ever succeeding in getting himself enrolled. The reader should be warned that further analyses in this article might need this intensional interpretation, too. As this problem is not developed properly until now, we have to be content with the extensional solution. Nevertheless, the notion of a directional reading still applies in this case. Though it should be clear that not all verbs are suitable to combine with *an*, it is not that easy to find the exact criteria in this reading. There are, however, shared

properties of the basic event descriptions of (1), (2), (3) on the one hand and, say, (4) on the other. While the former combines with directional prepositional in a natural way, see (6) the latter does not, see (5).

(4) * *der Mann arbeitet eine Gehaltserhöhung an.*

THE MAN WORKS A PAY RAISE [AT].

intended: the man works in order to get a pay raise.

(5) * *der Mann arbeitet zu einer Gehaltserhöhung.*

THE MAN WORKS TO(WARDS) A PAY RAISE.

(6) *der Kunsthistoriker schaut auf/ hinter/ unter das Gemälde/ zu dem Gemälde.*

THE ART HISTORIAN LOOKS AT/ BEHIND/ UNDER THE CANVAS/ TOWARDS THE CANVAS.

The above examples show that the reading of a sentence heavily depends on with which verb the particles combine. For a better understanding of this process it is necessary to precisely formalize the components and their semantic contribution. In order to illustrate this compositional approach, the following section shows how the different predicates are collaborating. For this purpose we will take a closer look at the analyses which come out of sentence (1).

The Discourse Representation Structure (hereafter, DRS) of the coast Figure 2 MERGES with that of the particle Figure 1 which leads to Figure 3 This triggers the assignment of the variable y with the discourse referent y we get from *the coast*.

y
coast(y)

Figure 2: DRS of *das Ufer*

v x y e
$dir(v, e)$
$coast(y)$
$v = (x, y)$

Figure 3: DRS of *an* merged with the DRS of *das Ufer*

x
$navigate(e')$
$Agent(e') = x$

< e' >

Figure 4: DRS of *steuern*

The MERGE of the DRS in Figure 3 and the DRS of the verb (see Fig. 4) leads to a situation in which the placeholder e for an event is assigned with the event e' of the predicate *steuern*. We now have a directed modified event of navigation. Another instance of MERGE with the DRS of the captain leads to the sentence representation Figure 5 with the agent, which is now known as *the captain*, occupying the origin of the direction and *the coast* as the goal.

v x y
$navigate(e')$
$Agent(e') = x$
$dir(v, e')$
$v = (x, y)$
$coast(y)$
$captain(x)$

< e' >

Figure 5: DRS of sentence (1)

The above semantic construction shows that the predicated direction has to come from the particle as verbs like *navigate* or *look* do not have their own inherent

direction. The next chapter takes a similar approach, although with more factors involved.

2.2 *An as an attempt at directed communication*

Stiebels (Stiebels 1996, p. 162) features a group of directive particle verbs with *an* which she calls “Verben des Sprechens” (verbs of speaking). Examples are *ansprechen* (lit.: [an] + speak; to address), *anschreien* (to scream at) or *anfauchen* (to hiss at.)

In order to describe them properly, the simple directive reading which we have assumed so far is not sufficient. We need to mark these verbs as communication attempts, which means that there must be a potential experiencer who is the goal of communication, otherwise the predication would be senseless. There are even more verbs with *an* which do not function as speaking verbs but still need this interpretation: *anlachen* (to laugh at), *angrinsen* (to grin at), *anschweigen* (lit.: [an] + remain silent; remain silent to someone), ...

A closer look at the following examples will clarify this:

(7) *Der kleine Junge grinst den ganzen Tag.*

THE LITTLE BOY GRINS THE WHOLE DAY.

The little boy is grinning the whole day.

(8) *Der kleine Junge grinst seine Mutter an.*

THE LITTLE BOY GRINS HIS MOTHER [AN].

The little boy is grinning at his mother.

(9) **Der kleine Junge grinst den Stuhl an.*

THE LITTLE BOY GRINS THE CHAIR [AN].

The little boy is grinning at the chair.

(10) *Der Freiherr will den Verrat verhindern und fleht ihn an, nicht in den Dienst der Habsburger zu treten.*

THE BARON WANTS THE BETRAYAL PREVENT AND BEGS HIM [AN] NOT IN THE SERVICE THE HABSBURGER TO STEP.

The baron wants the betrayal prevented and begs him not to step into the Habsburger's service.

(11) *Wir reden Leute hier für gewöhnlich mit dem Vornamen an.*

WE TALK PEOPLE HERE FOR USUALLY WITH THE FIRST NAME [AN].

We usually address people with their first name here.

Sentence (7) with the verb *grinsen* is intransitive and lacks any inherent direction. Sentence (8) with the particle verb *angrinsen*, however, needs a direct object to provide a target for the directional meaning component contributed by *an*. As we can see in example (9), there are constraints on what qualifies for direct object. The denotation of the direct object must be able to perceive the event described by the verb, so material objects will generally be excluded.

These observations lead to the next DRS for *an* as indicating a communication attempt.

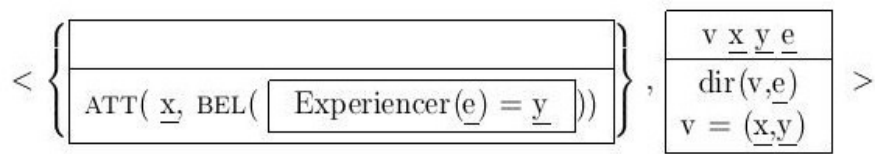


Figure 6: DRS of *an* as a directed communication attempt

The selectional restrictions that the reading of *an* which is represented in Figure 6 impose on the direct object of the verb in (7) to (11) is treated as a presupposition. In Figure 6 the presupposition is the only member of the presupposition set left-adjoined to the non-presuppositional DRS on the right. Why the experiencer that is to fill the experiencer slot \underline{y} of the presupposition in Figure 6 is realised as direct object of the verb and not in some other way (e.g. by some kind of presuppositional phrase) is an issue of the syntax-semantics-interface which I do not address in this paper. When the contribution of *an* is combined with the other constituents of example (8), the resulting representation is that in Figure 7. Here the sentence content is represented by the DRS on the right, while the presupposition now imposes its selectional restrictions on the discourse referent \underline{y} , which represents the small boy's mother. Since mothers are individuals and individuals are potential experiencers, the other persons (such as the small boy) can believe that they can play the part of experiencers of certain events, therefore the presupposition of Figure 7 is easily accommodated. After accommodation it becomes part of the non-presuppositional DRS.

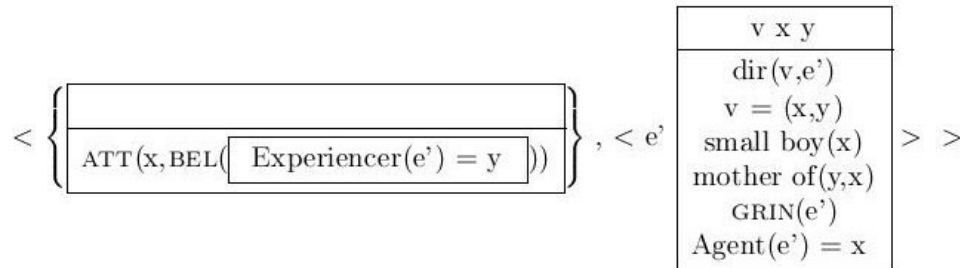


Figure 7: DRS of sentence (8)

2.3 *An implies a change of knowledge*

To describe verbs like *ankündigen* (to announce), *ansagen* (lit.: [an]+ say; to announce) and *anfragen* (lit.: [an] + ask; to inquire), we need something which describes a change of knowledge content in addition to the directive reading and the communication attempt mentioned previously.

The following two sentences illustrate the difference between *sagen* and *ansagen*:

(12) *Peter sagt zufälligerweise die richtige Zahlenkombination.*

PETER SAYS ACCIDENTALLY THE RIGHT NUMBER-COMBINATION.

Peter accidentally says the right number-combination.

(13) *? Peter sagt zufälligerweise die richtige Zahlenkombination an.*

PETER SAYS ACCIDENTALLY THE RIGHT NUMBER-COMBINATION [AN].

? Peter accidentally announces the right number-combination.

(14) *Peter sagt die richtige Zahlenkombination an.*

PETER SAYS THE RIGHT NUMBER-COMBINATION [AN].

Peter announces the right number-combination.

(15) *Der Bundeskanzler kündigte an, dass am 30. Juni mit dem Bau des ersten Probestollens für den Brenner-Basistunnel begonnen werde.*

THE CHANCELLOR MANIFESTED [AN] THAT AT 30TH JUNE WITH THE BUILDING THE FIRST PILOT TUNNEL FOR THE BRENNER BASE TUNNEL STARTED WILL BE.

The chancellor announced that drilling of the first pilot tunnel for the Brenner base tunnel would begin on 30th June.

In example (12), Peter accidentally pronounces the number-combination (e.g. by enumerating numbers randomly). In this case, the direct object of *sagen* (to say) is a certain expression - one that can be described as 'number combination'. There is no propositional content involved. As opposed to *sagen*, *ansagen* has no use of this kind. Semantically its object or complement is always a proposition and when it is combined with the DP like *die richtige Zahlenkombination*, the only possible interpretation is a concealed question (s. (Romero 2007)), so that the sentence as a whole can be paraphrased as (16).

(16) *Er sagt an, was die richtige Zahlenkombination ist.*

HE ANNOUNCES, WHAT THE RIGHT NUMBER-COMBINATION IS.

It is not easy to see how such a speech act could be an accident, which may be one reason why (13) sounds odd. But there is a more compelling reason. Similar to sentences (4) - (8), the *an* in sentences (10) - (12) additionally expresses the agent's believe of an existing experiencer. Therefore, (13) sounds odd as there is a directed communication approach like in (10) - (12) - this time, however, it communicates the knowledge of a propositional content making it sound odd due to the combination with the word *accidentally*. This leads to the reading of the particle *an* described in the following DRS:

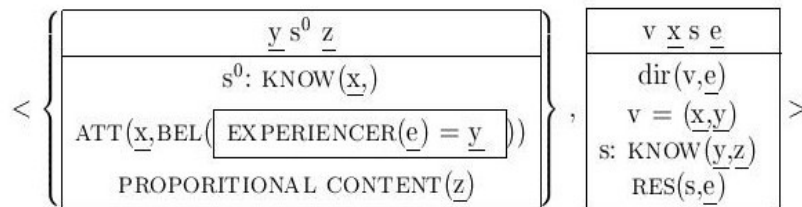


Figure 8: DRS of *an* as a change of knowledge of a propositional content

As in the simple communication attempt, there is an experiencer \underline{y} that is part of the presupposition which marks the direction of the communication. New in this case is the requirement of a propositional content with the placeholder \underline{z} , which has to be known by an entity \underline{x} . In the next step, this entity will be the agent of the event which will assign the variable \underline{e} . Therefore, we get the prestate information that \underline{x} knows \underline{z} . A change of state being the result of the event \underline{e} now assures that the knowledge is transmitted to the experiencer of this communication.

A closer look at the construction of sentence (14) will clarify this.

Figure 9 contains the representation of *an* where the number-combination *z'* assigns the variable *z* of the propositional content predicate. The number-combination additionally denotes the knowledge involved in the states *s0* and *s*.

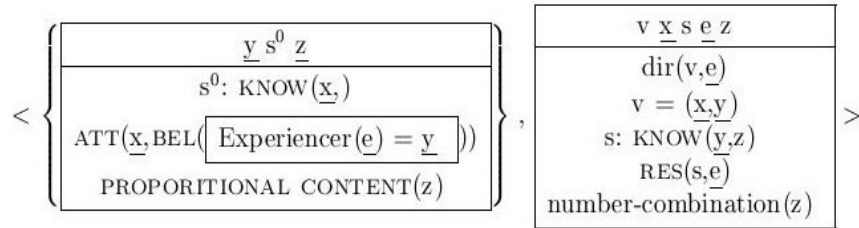


Figure 9: DRS of number-combination together with the DRS of the particle reading

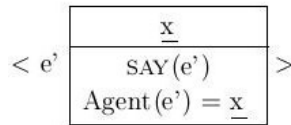


Figure 10: DRS of the verb *sagen*

The DRS Figure 11 resulting from the merge of the *sagen* DRS and the representation in Figure 9 denotes the event as a saying event (*SAY(e')*) with a variable *x* as the agent. Also, this variable will be instantiated by Peter. The event *e'* will also trigger the change of state (*RES(s, e')*).

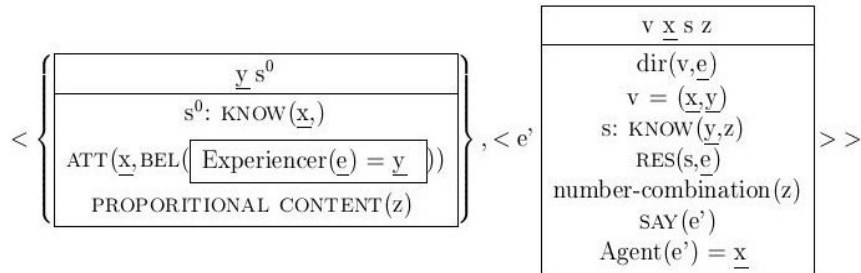


Figure 11: DRS of *die Zahlenkombination ansagen*

To summarize, the meaning encoded in the DRS in Figure 11 tells us that there is an agent of a saying event, which knows the phone number *z*. A communication attempt only makes sense when there is someone who perceives it. That is why the agent, which will be Peter, holds the belief that there is an entity which has the ability to be an experiencer. In this example, the experiencer has to be accommodated in another step. The event of saying leads to a new state concerning the KNOW predicate with the experiencer *y* as the bearer of the knowledge of the number-combination. This does not mean that the agent has lost his knowledge. This matter, however, falls outside of the scope of the present discussion.

2.4 *An as a directional reading with a deictic component*

The directive *an* may also occur in combination with movement verbs, as we see in *anfahren* (lit.: [an] + drive; arrive by driving) or *anschwimmen* (lit.: [an] + swim; arrive by swimming). Stiebels mentioned this possibility in (Stiebels 1996, p.163), although she only alludes to a transitive use of these particle verbs which may be interpreted with the simple directive reading. However, the intransitive occurrence of this combination of particle and movement verb is more interesting due to the fact that we can find a deictic component there similar to the one in *kommen* (to come); see (Roßdeutscher 2009).

More common and better comprehensible verbs in this category are *anmarschieren* (to advance), *ankommen* (lit.: [an] + come; to arrive), *anreisen* (lit.: [an] + travel; arrive by traveling) and *anreiten* (lit.: [an] + ride; to arrive by riding). To describe this class of verbs we need an attitude bearer who believes that something approaches him. The following sentences will exemplify this.

- (17) *Die Truppen marschieren mit der gesamten Besatzung an.*
THE TROOPS MARCH WITH THE ENTIRE CONTINGENT [AN].
The troops advance with their entire contingent.

We have an understanding that marching generally requires a particular direction, although there is no real or abstract entity mentioned with regard to the destination of the march. This for instance is not the case in (18).

- (18) *Die Truppen marschierten mit der gesamten Besatzung.*
THE TROOPS MARCHED WITH THE ENTIRE CONTINGENT.

The reason why we still understand the sentence as implying a direction is as follows: The motion is interpreted as movement towards some observer. We interpret the motion like we interpret the verb *kommen* or *come*. Just as *kommen anmarschieren* in (17) is justified if there is an observer who believes that he is located in front of the troop's movement.

- (19) *Die Nationalelf aus Kamerun reist Donnerstagabend an.*
THE NATIONAL TEAM FROM KAMERUN TRAVELS TUESDAY EVENING [AN].
The national team from Kamerun arrives on Tuesday evening.

Here the deictic element is justified because the arrival of the team is of public interest. Hence, some individuals with an attitude towards the motion at the goal can be easily assumed.

- (20) *Der Mann fuhr mit seinem Auto gegen einen Baum. Die Feuerwehr rollte mit schwerem Gerät an.*
THE MAN DROVE WITH HIS CAR AGAINST A TREE. THE FIRE SERVICE ROLLS WITH HEAVY MACHINERY [AN].
The man drove with his car against a tree. The fire service advanced with heavy machinery.

Here curious onlookers are to be expected on the scene of the accident as well, waiting for the fire-service to come.

- (21) *Bevor David und seine schwangere Frau Judy fliehen können, rückt das Militär an.*
BEFORE DAVID AND HIS PREGNANT WIFE JUDY ESCAPE CAN MOVE OVER THE MILITARY [AN].
Before David and his pregnant wife Judy can escape, the military marches up.

The perspectives taken here is probably from that of the protagonists, David and Judy, who are forced to face the motion of the troops towards them. (It might be that some narrator takes the point of view of the protagonists.) The DRS for the deictic directional reading is represented below in Figure 12:

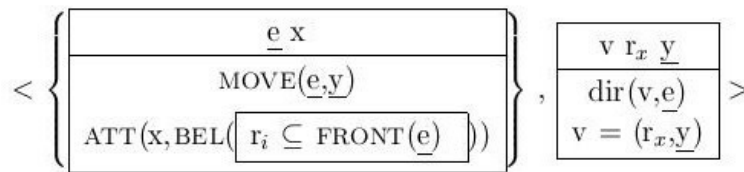


Figure 12: DRS of *an* as a deictic direction

The predicate $\text{MOVE}(\underline{e}, \underline{y})$ in the presupposition has the function to assure that the event, with \underline{e} as a variable, is a movement of a yet unknown subject \underline{y} . For example, in sentence (17) \underline{y} will be assigned by the troops and \underline{e} will be a marching event. Furthermore, we have an entity x bearing the role of the required observer with the attitude of believing to be in front of the movement event ($\text{ATT}(x, \text{BEL}(\underline{r}_i \subseteq \text{FRONT}(\underline{e})))$) mentioned above. $\underline{r}_i \subseteq \text{FRONT}(\underline{e})$ means that the location of r is ahead of the marching movement so that the marching goes towards r_i . The indexical entity r_i stands for the region the observer believes that he is located in the region marked by the indexical entity. This region is part of the front region of \underline{e} . The mechanism is the same as in the simple directional reading, differing in the aim of the vector v , which in this case is a spatial deictic reference point. It denotes the region of the attitude bearer x .

2.5 *An with a partitive reading*

The particle *an* may force a reading to the effect that the action or process described by the verb isn't accomplished in the way it would if *an* was missing. The action or process on an affected entity or other object is accomplished not with the whole entity but only on a certain part of that thing. However, it is not specified on which part this accomplishment takes place. A further condition presumes the object to be intact in the state immediately before the event. In most cases there is a transitive use of the particle verbs.

Verbs with this reading are for example *anfressen* (lit.: [an] + eat; to fret/eat partially), *anfeilen* (lit.: [an] + file; file something partially) or *anschneiden* (lit.: [an] + cut; to broach/to touch on sth.).

Example sentences for *an* with the partitive reading are:

- (22) *Der Wurm frisst den Apfel an.*
 THE WORM EATS THE APPLE [AN].
 The worm eats the apple.

If *an* is left out in (22), the worm eats the whole apple; if it is there, the worm only eats a bit of it.

- (23) *Das Zeitalter der Ökoenergie bricht an.*
 THE AGE THE ECOLOGICAL ENERGY BREAK [AN].
 The age of the ecological energy broaches.

Here the meaning of *an* concerns something temporal: the age only commences and is far from over. Crucially, we have not been in any period of the mentioned age in the pre-state. Similar things can be said about (24). The topic is not elaborated, just some facts are mentioned.

- (24) *Er schneidet das Thema in Anspielung auf das berühmte Werk Shakespeares an.*
 HE CUTS THE SUBJECT IN REFERENCE OF THE FAMOUS OPUS SHAKESPEARE'S [AN].
 He touches on the subject in reference to Shakespeare's famous opus.

- (25) *Das Kind leckt die ganze Zeit an seinem Eis.*
 THE CHILD LICKS THE WHOLE TIME AT HIS ICE CREAM.
 The child is constantly licking his ice cream.

- (26) *Das Kind leckt die ganze Zeit das Eis an.*
 THE CHILD LICKS THE WHOLE TIME THE ICE CREAM [AN].
 The child is perpetually taking a lick off his ice cream.

By using example (25), with *an* as a preposition, Stiebels demonstrates that in this case an interpretation which can be understood as a continuous action is obtained. On the contrary, she uses sentence (26) where *an* is a particle, to show that only the iterative interpretation of the licking event is possible (Stiebels 1996, p. 78). However her hypothesis of this particle reading contains the assumption that the action of the base verb is incomplete. Due to the iterative interpretation, though, I decided to choose an alternative representation which interprets the intent of *an* as a completed action on a partition, with the event culminating on a part of the object. Consequently, this leads to the following DRS:

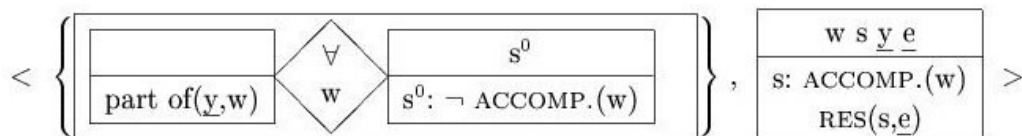


Figure 13: DRS for the partitive reading of *an*

The presupposition contains the requirement for all possible partitions of \underline{y} to be intact in a prestate. The universal quantifier over the partitions w has the function to assure that all partitions are attained by the state in the nucleus. This state consists of the predicate $\text{neg}\neg\text{ACCOMPLISHED}(w)$, which means that the action originating out of the verb is not accomplished on the partition w . Hence it says that the verb has not affected any part w of \underline{y} in the prestate s^0 . The entity w is featured as a part of the entity that later assigns the variable \underline{y} . The post state s , resulting from the event which will be introduced by the verb, predicates that the action of the verb is now done on a part w .

The following reconstruction of the representation of example (22) will help us get a better understanding of this particle meaning.

In addition to the representation of the apple, particle representation Figure 13 leads to the DRS where the variable \underline{y} is assigned by the apple Figure 14. Now we have the meaning that there is no part w of the apple y where a still unknown action is accomplished. The next step involves a MERGE of this DRS with the representation of the verb fig. 15.

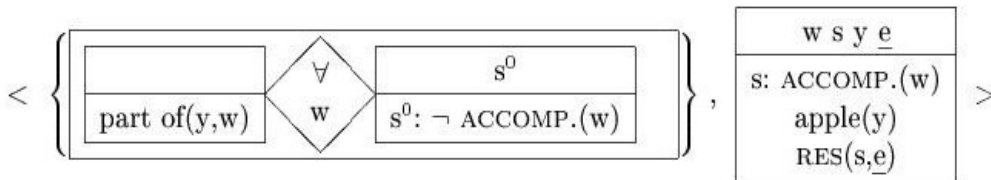


Figure 14: DRS of the representation for *an* in combination with the DRS for *Apfel*

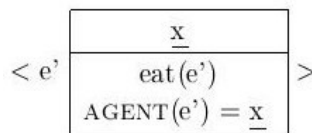


Figure 15: DRS for *fressen*

The resulting DRS Figure 16 predicates that every part of the apple is in a prestate not affected by the action of the verb, which, strictly speaking, means that the apple has not been pitted and is therefore intact. The event denoted by the verb furthermore indicates a change of state with the result that the eating action is accomplished on the apple partition w .

Subsequently, the agent variable x will be characterized by the worm. The worm has completed pitting on a part of the apple, therefore the apple is *angefressen* (pitted), which is expressed in Figure 16.

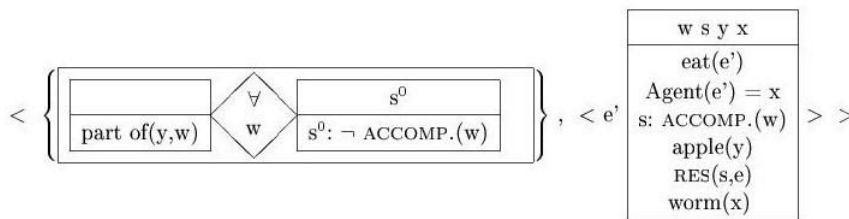


Figure 16: DRS for sentence (22)

2.6 Dative object triggering a certain belief

We now come to the less common *an*-verbs, where the function of *an* is more difficult to determine due to an increased complexity. *An* occurs in combination with a sentence structure which contains an indirect object. This dative object has a certain property which is a trigger for a perceptual action by the subject. The consequence of this perception is that the subject gains a certain belief which means that it is an experience.

So far I have discovered, for example, *anmerken* (lit.: [an] + notice; to perceive), *ansehen* (lit.: [an] + see; to perceive sth. by seeing), *anhören* (lit.: [an] + hear; to perceive sth. by hearing) and *anschmecken* ([an] + taste; to perceive sth. by tasting) with this particle meaning.

(27) *Die Mutter merkt ihrem Sohn die Krankheit an, (wegen seiner Blässe.)*

THE MOTHER NOTICES HER SON THE ILLNESS [AN], (BECAUSE OF HIS PALENESS.)

The mother notices that her son is ill (because of his paleness).

(28) *Der Pizza schmeckt man den Steinofen an.*

THE PIZZA TASTES ONE THE BRICK OVEN [AN].

One can taste that the pizza came out of a brick oven.

(29) *Man sah ihr an, wie glücklich sie ist, draußen im Schnee mit den Hunden spielen zu können.*

ONE SAW HER [AN] HOW HAPPY SHE IS OUTSIDE IN THE SNOW WITH THE DOGS PLAY TO CAN.

One could see how happy she is to be able to play outside in the snow with the dogs.

In example (27), the son must have at least one visible, audible or otherwise observable symptom of illness which can be perceived by his mother. This symptom is the required property which acts as a trigger for performing this perceiving event. This perceiving event now results in a state in which the mother adopts the believe that her son must be ill.

If we negate sentence (27) to check whether the property characterizing the son as ill still 'projects', we get sentence (30) with the proposition that the negation only concerns the recognizing event of the mother but not the illness state of the son. As a consequence the illness contributes a fact to the sentence that is presupposed.

(30) *Die Mutter merkt ihrem Sohn die Krankheit nicht an.*

THE MOTHER NOTICES HER SON THE ILLNESS NOT [AN].

The mother does not notice that her son is ill.

The DRS for the particle *an* which accounts for this finding can be represented with the following schematic.

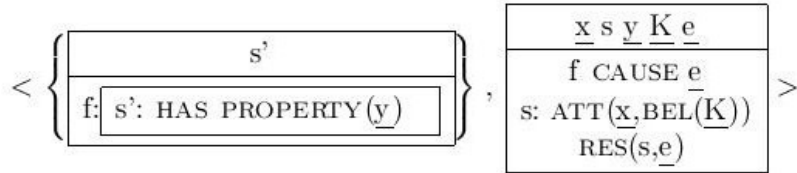


Figure 17: DRS for *an* with dative object as belief trigger

To get a better grasp of this we turn directly to the representation of sentence (27):

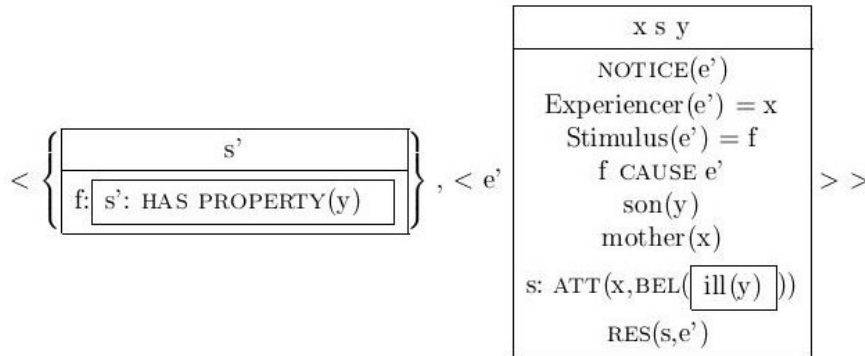


Figure (18): DRS for sentence (27)

In order to represent the contribution of *an* correctly, we need a presupposition which contains a fact *f* ascribing a property to the entity *y* (the son). This property is not specified because its sort does not arise from the sentence. Accordingly, this fact causes an event of noticing *e'*, which on the other hand results in a state where the mother *x* has the attitude to believe that the son is ill. The verb *merken* (noticing) obtains a stimulus in its semantic representation; this function is also fulfilled by the fact *f*.

Taking a closer look on the prepositional *an*, we find a similar usage there which justifies our assumption about this meaning of the particle *an*:

- (31) *Der Wärter erkennt seinen Kollegen am Schritt.*
 THE GUARD RECOGNIZES HIS COLLEAGUE [AN] HIS STRIDE.
 The guard recognizes his colleague by his stride.

Note: German *am* is an abbreviated form of *an dem*.

In this sentence the gait functions as an object in prepositional dative case; The argument *der Schritt* (stride) is subcategorized by the preposition *an*. Like in the particle variant, this dative has to have a special characteristic that enables the guard to recognize the way in which he is going by perceiving it. As in sentence (27), the property of the dative, in this case the stride, is the trigger of the recognizing event.

2.7 *An marks cumulation*

An can express an incremental growing process of a heap with an additional constraint concerning the localization. This reading occurs in verbs like *ansammeln* (lit.: [an] + collect; to assemble), *anhäufen* (lit.: [an] + heap; to accumulate), *anschwellen* (lit.: [an] + swell; to swell up), *ansparen* (lit.: [an] + save; to accrue), ... Whereas German *sammeln* means to collect something without limiting it to a certain location (see sentence (32)), *ansammeln* means to heap something at precisely one spot (see sentence (33)).

If we take a look at the verb *sparen* we do not find a cumulative reading like in *sammeln*. *Sparen* only means not to spend something. On the the other hand, *ansparen* means to accumulate something that leads to the assumption that this meaning arises from the particle. Sentence (34) and sentence (35) visualize this difference.

(32) *Der Präsident des Kunstverbands sammelt Gegenstände aus aller Welt, die er in fünf verschiedenen Museen ausstellt.*

THE PRESIDENT OF THE ART COMPOUND COLLECTS OBJECTS FROM ALL WORLD, WHICH HE IN FIVE DIFFERENT MUSEUMS DISPLAYS.

The president of the art compound collects objects from all over the world, which he displays in five different museums.

In this case with the non particle verb *sammeln*, the objects can be collected on different locations.

(33) *Eine große Menge an Kondenswasser sammelt sich am Fenster an.*

A HUGE AMOUNT OF CONDENSATION WATER COLLECTS ITSELF AT THE WINDOW [AN].

A huge amount of condensation water aggregates on the window.

With the particle verb *ansammeln* we have a restriction that the things which will be

collected have to be at one location. The amount of water gathered cannot be spread around on different places.

- (34) *Er spart sein Geld für schlechte Zeiten.*
 HE SAVES HIS MONEY FOR BAD TIMES.
 He saves his money for bad times.

The sentence only tells us that the man does not spend his money. However, nothing is said about the growth of the money he has. The money might be the only sum available to him for the rest of his life.

- (35) *Maria sparte ihr bescheidenes Taschengeld so lange an, dass daraus eine beachtliche Summe entstand.*
 MARIA SAVED HER LOWLY POCKET MONEY SO LONG [AN] THAT OUT OF IT A CONSIDERABLE SUM ROSE.
 Maria saved her lowly pocket money for such a long time that it rose to a considerable sum.

Here, due to the particle *an*, we infer accumulation. The amount of the money grows while Maria is saving it.

- (36) *Der Müll häuft sich in der Garage an.*
 THE GARBAGE HEAPS ITSELF IN THE GARAGE [AN].
 The garbage heaps up in the garage.

My proposal of a semantic representation for this interpretation of the particle looks as follows:

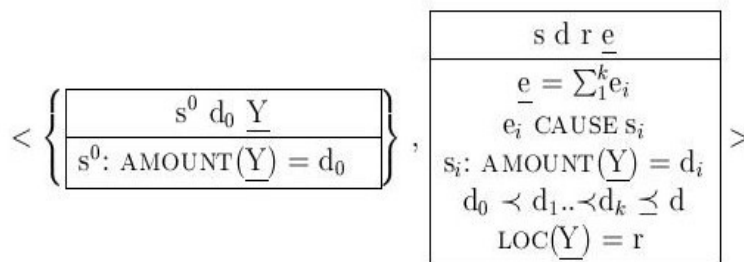


Figure 19: DRS for *an* marking a cumulation

In order to describe a growth we first need to define the amount \underline{Y} which is to be represented as increasing. We do so by identifying it with a digit d . The presupposition represents that during the prestate, the amount of direct object \underline{Y} is d_0 .

Constructing the assertion is a bit more complicated: It is necessary to divide the verb event e in lots of fragments e_i because each of these fragments triggers a new state s_i (e_i CAUSE s_i) with a snowballing amount (s_i : AMOUNT(\underline{Y})= d_i). In doing so, through event e_1 we get the state with an amount of size d_1 , through summarized events $e_1 + e_2$ a state with an amount size d_2 , and so forth. In this way we gain the required implementation of the incremental growth.

The above mentioned localization constraint is realized with the predicate LOC which declares that \underline{Y} has to be at some region r .

The DRS for sentence (36) will help us make this conception more clear.

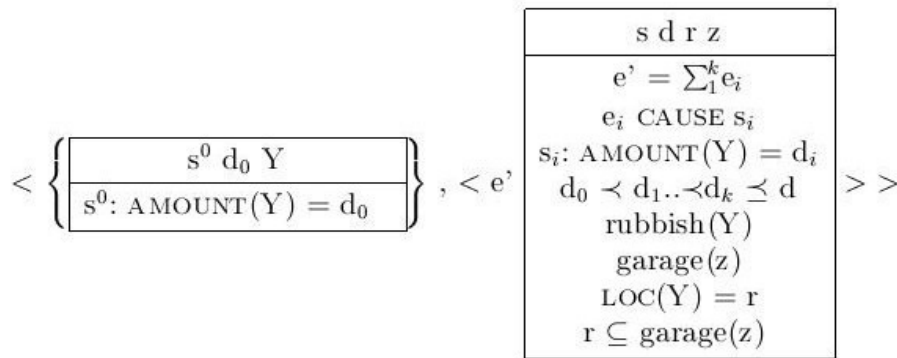


Figure 20: DRS of sentence (36)

In this example, the amount we are talking about is a certain pile of rubbish assigned with the entity Y . The rubbish has the dimension d in the prestate s_0 . The heap event e' is divided into plenty of fragments e_i , which all cause a corresponding state s_i . In these states the amount of rubbish grows incrementally with each part of the heap event. The location where this cumulation takes place is a place r which has to be somewhere in the garage ($r \subseteq \text{garage}(z)$).

2.8 *An implies a temporal exceeding of an expected duration*

This section discusses only three particle verbs. Nevertheless, these three form a very interesting group, because *an* is interpreted as initiating an expectation concerning

the duration of an event. Furthermore, the particle contributes an implication: the expected duration of the event is exceeding. The verbs we are talking about are: *anhalten* (lit.: [an] + hold; to hold up), *andauern* (lit.: [an] + last; to continue) and *anwähren* (lit.: [an] + last; to continue). If we take a look at the verb *halten*, we have a situation which simply describes an absence of a change of state. The verbs *dauern* and *währen* behave similarly. Therefore, we have reason to assume that this criterium qualifies the verbs to belong to this category. Hence, *an* assigns the course of time of the event without a change of state with an expected duration, the real length of the period outruns the expected length. We only find verbs with intransitive use in this reading. The subjects are usually abstract eventualities, like fascination, trend, cold or tiredness.

(37) *Die Seeblockade dauert weiter an.*

THE SEA BLOCKADE LASTS FURTHER [AN].
The sea blockade continues.

(38) *Auch nach drei Tassen Kaffee hält seine Müdigkeit an.*

AS WELL AFTER THREE CUPS COFFEE HOLDS HIS TIREDNESS [AN.]
Even after three cups of coffee his tiredness remains.

(39) *Der Regen hält an.*

THE RAIN HOLDS [AN].
The rain continues

(40) *Es regnet weiter.*

IT RAINS FURTHER.
It continues to rain.

Sentence (40) with the adverb *weiter* expresses a similar meaning of sentence (39) due to the lengthening of the raining event. However there are no obvious expectations. Therefore we can add *noch* (still) to sentence (40) and we obtain:

(41) *Es regnet noch weiter.*

IT RAINS STILL REMAIN.
It is still raining, the raining goes on.

With *noch*, we can overtly describe an unexpected extension of a situation. In case of example (41), this would concern the expected end of the raining event. However, because of *weiter*, we maintain the unexpected issue that the raining event proceeds and does not stop. The possibility to paraphrase the particle sentence (39) with a sentence (41) containing the adverb *noch* with an anticipation function is an evidence

supporting the claim that the particle *an* presupposes such an expectation as well. This leads to a DRS which looks as follows:

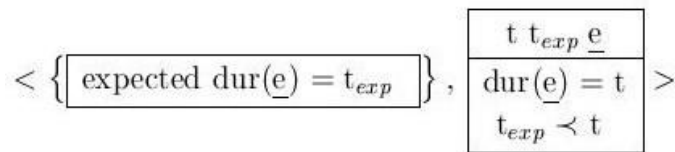


Figure 21: DRS of *an* as a temporal exceeding of an expected duration

The presupposition contains the expected duration t_{exp} of the event which will assign the event variable \underline{e} . The real duration, however, is defined by t , which is longer than the expected one. The combination with the verb *halten* leads to a VP representation which is shown in figure 22.

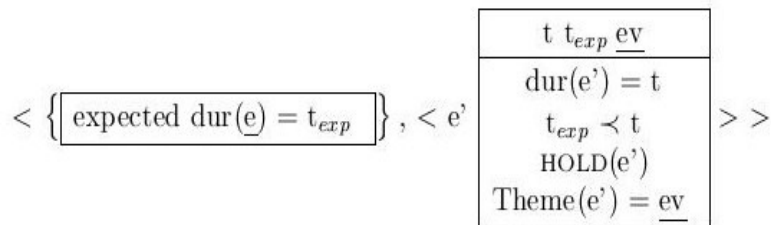


Figure 22: DRS of *anhalten*

Now the event referent e' of *halten* is unified with the variable \underline{e} . This leads to the interpretation that the duration in question is the holding duration. The theme of the holding event must be an eventuality. The expected duration of holding is shorter than the actual duration.

Another argument for this particle reading is a meaning of the English *on* which McIntyre elaborately discussed in the article (McIntyre 2004). He mentions an aspectual usage of *on* in examples like (42), which he paraphrases with (43).

(42) *Read on.*

(43) *I read, and this reading went on.*

He describes a durative effect on the event, which seems to be similar to the one we pointed out in this section.

3. Conclusion

This paper discusses the possibility of particles having a distinct semantic meaning. This was achieved by a case study detecting the different readings and precisely formalizing them with the Discourse Representation Theory.

While it proves that particles indeed have a distinct semantic meaning, it also shows that the semantics of the particle verb is the combination of the semantics of the verb and the semantics of the particle. This case study also displays how versatile the meanings of one verb particle in combination with different verbs can be. Nevertheless, there are similarities which made the above discussed categorization possible. This shows that compositional approach can be given with great precision its formal substance. My experience with categorizing the variant contributions, however, taught me to be cautious to assume that these classification are definite. The opposite may be true: every new particle verb that we discovered could trigger a semantic change in existing categories or could even lead to new ones. But the converse may also happen: With a closer look, coherence between categories may surface which is not so obvious at first.

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