AN-Verb Constructions in German in view of Compositionality*

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0 Introduction

As one of the productive word formation mechanisms, German has, like many other Germanic languages, a way of expanding verb vocabulary by adding either particles or prefixes to base verbs. To take a base verb *stehen* (= stand) for example, any number of such verbs can be found: *an*stehen (=line up), *auf*stehen (=stand up), *be*stehen (=pass [an exam]), *ver*stehen (=understand), to name a few. This paper deals mainly with "an + base verbs" (henceforth AN-verbs) in view of compositionality.

AN-particle, which is originally a preposition meaning roughly "x is near y" or "x is directed at y", functions as a verbal seperable prefix. Since Wunderlich (1983) there have been many works concerning with compositional nature of particle-verbs as well as prefix-verbs in German, such as Wunderlich (1987), Kaufmann (1995), Olsen (1995), Stiebels (1996), Lindemann (1998), Witt (1998), Fehlisch (1998). What is common in these researches is that, even though there are a number of idiosyncratic formations, the meaning of particle-verbs still depends crucially on that of the respective preposition. They assert, furthermore, that meaning of particle-verbs and argument structures associated with them are more or less transparent, i.e. compositional in nature. They postulate, following basically Bierwisch (1983), Bierwisch/Lang (1989) and Wunderlich (1997), a level of Semantic Form (SF), at which lexical decomposition takes place. In contrast to LF in Government and Binding Theory, SF is considered to be a level of semantics representing complex predicate-argument structures in which only certain atomic predicates appear.

In the following four main types of AN-verbs from the viewpoint of argument structures will be examined at first. Based on the observation, I will point out some inadequacy of the analysis presented in Stiebels (1996), particularly conerning with the treatment of AN-verbs. Proponents of *Two-Level Semantics*, later called by Wunderlich (1997) *Lexical Decompositon Grammar*, claim that the level of SF be compositional in nature in contrast to Conceptual Structure (CS). On the contrary, I will claim, in connection with the treatment of AN-verbs, that there is much deeper level of common semantic properties associated with those verbs and their constructions which can be captured both in lexical and syntactic terms. At the end of this paper, an integrated analysis for AN-verbs will be proposed in view of compositionality.

1 Overviews of Data

A productive process of word formation with the AN-particle marks various state of affairs in at least four ways:

(a) Y is attached to X.
(b) X attaches Y to Z.
(c) X directs his/her action to Y.
(d) X begins to do Y.

This classification is not, of course, an exhaustive one, but helps grasp main properties of AN-verbs.

1.1 "*y* is attached to *x*" as a STATE

One of the readings in the case of the preposition *an* is that something is atttached to something else. Roughly speaking, a semantic structure associated with it looks like a relation: CONTACT(x, y), whereas the predicate CONTACT is a two-place relation denoting a state. The verb *anhaben* in (1b) shows a state in which Peter has a new shirt that stands in the CONTACT relation to the person referred to by the subject. This holds true for the relation between Peter's body and a shirt, which is clearly not the case in (1a). Likewise, the same kind of difference exists between (2a) and (2b).

(1)   a. Peter   hat ein neues Hemd.
           Peter-NOM has a   new   shirt-ACC
           'Peter has a new shirt.'

       b. Peter   hat ein neues Hemd   *an*.
           Peter-NOM has a   new   shirt-ACC on
           'Peter wears a new shirt.'

(2)   a. Sie können Ihren Mantel ruhig   behalten.
           you can   your coat-ACC by-all-means keep
           'You can keep your coat by all means.'

       b. Sie können Ihren Mantel ruhig   *an*behalten.
           you can   your coat-ACC by-all-means PARTICLE+keep
           'You can keep your coat on by all means.'

It would sound rather odd, however, to express such implication of "body attachment" with the preposition AN, as in (1c) and (2c). So it could be said that the first approach assumes a PP has an implicit NP, namely *am Körper* (= on the body) when an AN-verb denotes a state of CONTACT.

(1)   c. ?Peter   hat ein neues Hemd   *am*   Körper.
           Peter-NOM has a   new   shirt-ACC on-the body-DAT
           'Peter wears a new shirt.'

(2)   c. ?Sie können Ihren Mantel ruhig   *am*   Körper   behalten.
           you can   your coat-ACC by-all-means on-the body-DAT keep
           'You can keep your coat on by all means.'

There are, in fact, other cases where AN is used independently as a one-place predicate.[1] Consider (3a) and (3b).

(3) a. Ohne   etwas   *an*   ging   er ins   Bett.
        without something-ACC on   go-PAST he into-the bed-ACC
        'Without wearing anything he went to bed.'

     b. Schnell den Mantel   *an*!
         quickly the coat-ACC on
         'Put on the coat quickly.'

The prepositional phrase *Ohne etwas an* is ambiguous in a sense that AN exhibits either STATE or ACTION. Thus, the appropriate paraphrase is *ohne etwas anzuhaben* (= without wearing anything) or *ohne etwas anzuziehen* (= without putting on anything). *den Mantel* (=the coat) in (3b), on the other hand, is a moving entity which bears THEME as a thematic role. Since (3b) is an imperative sentence which obviously brings about a change of state, the end state is implied, i.e. the coat is on "the body", an implicit GOAL.

After careful examination, it was found that some stative AN-verbs do have other default implicit NP's headed by AN.

(4) a. Der Kragen   schließt eng (am   Hals)   *an*.
         the collar-NOM fits   tight on-the neck-DAT PARTICLE
         'The collar fits tightly (around the neck).'

     b. Vor   der Theaterkasse stehen viele Leute *an*.
         in-front-of the box-office-DAT stand   many people PARTICLE
         'Many people line up in front of the box-office of the theater.'

Unlike the examples discussed above, (4a) permits a location of contact as a PP which is not equated with *am Körper*. It is, at first sight, strange that (4a) permits such a PP as *am Hals* (= around the neck), since (4a) can perfectly be interpreted without that PP. I assume that the difference between them results from the status of nouns as a default value. Even though *der Kragen* (=the collar) is closely connected with the neck, it can be repeated as a part of the sentential meaning, which is not the case for the body. (4b), on the other hand, indicates that a presumed location is not a human body, but "a line of people". It is conceptually possible to reconstruct such a PP as *an der Reihe* (= on the row), but to add a phrase like this makes (4b) quite unnatural, in the sense that the sentence contains too much redundant information. It should be noted here again that the concept of CONTACT still plays a role in the state of affairs.

As I have discussed so far, the state of "Y is attached to X" is one of the semantic structures associated with AN-verb constructions.

The list of these verbs includes:

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[1] This independent usage of AN is restricted to such cases as: 1) something is attached to the body and 2) something is switched on. The second usage will be discussed later with respect to inchoative reading of AN-verbs.

(A) 1. a state of the body contact, CONTACT(x, BODY):

anbehalten, anhaben, anlassen,

2. a state of the body contact with manner: CONTACT(x, BODY) & MANNER

anliegen, anschließen, ansitzen, (anschmiegen)

(B) a state of the contact, CONTACT (x, y): anhängen, anhaften, anstehen, etc.

This group, albeit small, shows characteristically that its default noun should remain implicit in most of the cases.

1.2 x attaches y to z: Causative ACTION with Directional PP?

The second type of AN-verbs probably provides the clearest case of particle-verbs. Among them are denominal verbs whose meaning can roughly be paraphrased as "attach y to z by using N". The verb *anketten* is, for example, originally derived from *Kette* (= chain), which is verbalized as *ketten*, or as *anketten* if it is combined with the AN-particle. At first glance, *ketten* in (5a) and *anketten* in (5b) look quite the same. Both verbs take an accusative object and a prepositional phrase headed by AN. As far as particle-verbs are concerned, they tend to take a pleonastic PP[2] specifying a goal argument, as in (5b).

(5) a. Anna hat   ihren Hund an einen Laternenpfahl gekettet.
        Anna has-AUX her   dog on a   lamppost-ACC chain-PP

        'Anna has chained her dog to the lamppost.'

     b. Anna hat   ihren Hund an einen Laternenpfahl *an*gekettet.
        Anna has-AUX her   dog on a   lamppost-ACC PARTICLE+chain-PP

        'Anna has chained her dog to the lamppost.'

The verb *anketten* differs from *ketten* in that the former already specifies a certain default GOAL by adding an AN-particle, while the latter is not equipped with such specification. Thus, (5b) is more natural having no pleonastic AN-PP. The difference between (5a) and (5b) becomes clearer, if one compares the cases in (6a) with those in (6b).

(6) a. *Anna hat   ihren Hund an einem Laternenpfahl gekettet.
        Anna has-AUX her   dog on a   lampost-DAT chain-PP

        'Anna has chained her dog at a lamppost.'

     b. Anna hat   ihren Hund an einem Laternenpfahl *an*gekettet.
        Anna has-AUX her   dog on a   lamppost-DAT PARTICLE+chain-PP

        'Anna has chained her dog to a lamppost.'

While (6a) with a dative prepositional object is not at all acceptable, (6b) poses no difficulty in its interpretation. The dative-accusative alternation, as in (5b) and (6b),

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[2]The term "pleonastic directional" is widespread in the literature dealing with particle-verbs in German. It captures common property of particle-verbs in the sense that the particle which stems from a preposition appears intersententially as a head of PP. It is said that the PP specifies the direction denoted by the particle that is attached to the base verb. For details, see Olsen (1996).

can also be observed in such denominal AN-verbs as *an*klammern > Klammer (= clip), *an*knöpfen > Knopf (= button), *an*leinen > Leine (= rope), *an*leimen > Leim (= glue), *an*löten > Lot (= solder), *an*nageln > Nagel (= nail), *an*schauben > Schraube (= screw).

What would, then, be the syntactic and semantic status of (5b) and (6b) like? I would like to claim that the difference should be accounted for at semantic level, as it is also reflected in their syntactic structures. The reason for it is twofold.

(i) No matter which case the prepositional object takes, it can be scrambled intersententially with no particular difference in acceptability.

(ii) A dative NP headed by the preposition AN shows a particular character of contiguous location, which bears striking similarity to *befestigen* (=fix).

The difference in case marking can be manifested by forming a corresponding question to each example. Thus, (7a) corresponds to (5b) and (7b) to (6b) respectively.

(7)   a.   Wohin   hat   Anna ihren Hund *an*gekettet?
           where-to has-AUX Anna her   dog   PARTICLE+chain-PP
           'Where has Anna chained her dog to?'
      b.   Wo   hat   Anna ihren Hund *an*gekettet?
           where has-AUX Anna her   dog   PARTICLE+chain-PP
           'Where has Anna has chained up her dog?'

In accordance with a general rule in German, I conclude that (5b) denotes a goal-directed action, whereas (6b) indicates an action performed in a certain place. Note that *an einem Laternenpfahl* (= at the lamppost) in (6b) is LOCATION where the action takes place. One might try to refute this by arguing that, since the dog is moved to the lamppost at the end of the action, the *Laternenphahl* should be GOAL, not LOCATION. But this kind of argumentation is not correct, so far as an event composition is concerned. The above mentioned lamppost is surely extralinguistically GOAL, which is considered to be only pragmatically inferred. The verb itself offers only an action predicate that in turn takes a secondary predicate instantiated either as a directional PP or as a locational PP according to its case marking.

This property is, however, not valid for all AN-verb constructions. Theoretically speaking, two other classes should be present. One with AN-verbs only with [PP NP[acc]], the other only with [PP NP[dat]]. [3] The result of my small survey[4] shows that there is actually such a distinction, as illustrated in (C) and (D).

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[3] *andrehen* (= screw on/in) is the same kind of verbs without having such a AN-PP and is, therefore, exceptional.

[4] The number of AN-verbs investigated is 317 and are collected mainly from the following dictionaries. *Duden: Das große Wörterbuch der deutschen Sprache.*, *Duden: Stilwörterbuch.*, *Langenscheidts Großwörterbuch Deutsch als Fremdsprache, Duden Universalwörterbuch.*

(C) AN-verbs with VP⌢NP$_1$⌢[$_{PP}$ NP$_2$[acc]]

anbauen(= build on), andrücken (= press down), anhängen(= hang up), ankoppeln (= couple up), anknüpfen (= tie on), ankuppeln(= couple up), anmalen(= paint on), anreihen(= add to), anschleichen(= creep up to), anzeichnen(= draw on)

(D) AN-verbs with VP⌢NP$_1$⌢[$_{PP}$ NP$_2$[dat]]

anbringen(=fix onto)

This distribution is obviously quite imbalanced. The verb *anbringen* is seldom used in the framework of VP⌢NP$_1$⌢[$_{PP}$ NP$_2$[acc]]. (8) provides some of the typical examples of *anbringen*.

(8) a. Margret hat   eine Lampe   an der/(??)die   Decke *angebracht*.
Margret has-AUX a   lamp-ACC on the-DAT/(??)-ACC ceiling fix-PP
'Margret has fixed a lamp onto the ceiling.'

  b. Barbara hat   die Vorhänge   selbst   *angebracht*.
Barbara has-AUX the curtains-ACC by-herself put_up-PP
'Barbara has put up the curtains by herself.'

It is intuitively apparent in (8a) that the object NP, *eine Lampe* (= a lamp), is very likely to be located near the ceiling before the action takes place. In (8b), even if the AN-PP is absent, one could easily predict something *Vorhänge* (= curtains) should be attached to. Other typical examples for the object NP are *ein Bild* (= a picuture), *eine Gedenktafel* (= commemorative plaque), *Girlanden* (= festoons), *neue Scheibenwischer* (= new windscreen wiper)[5] , all of these nouns, when attached to something else, presuppose such circumstances that the things denoted by object NP's must be moved to the space contiguous to their goal in advance and are ready to be attached. This minimum distance, I would argue, in the case of *anbringen*, is a semantic prerequisite for assigning a dative case to the prepositional object. Consequently, this AN-verb could not assign GOAL to the NP headed by the preposition AN. As I have already mentioned above, there are such verbs as *befestigen* and *festmachen* that require exactly the same case marking as *anbringen*.

(9) a. Sandra hat   einen Anhänger an ihrem/*ihr   Gepäckstück befestigt.
Sandra has-AUX a   tag-ACC   on her-DAT/*-ACC suitcase   fix-PP
'Sandra has put a tag on her suitcase.'

  b. Sandra hat   ein Poster   an der/*die   Wand festgemacht.
Sandra has-AUX a   poster-ACC on the-DAT/*-ACC wall   fix-PP
'Sandra has put a poster on the wall.'

The verbs in (9) indicate that an accusative NP after AN is not acceptable. Here again the notion of minimum distance seems to play a role in determining the case assignment.

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[5]The source is *Duden: Stilwörterbuch der deutschen Sprache.* (1988)

In English this contrast is reflected in the selection of prepositions, as is classified by Levin (1993: 162ff) as *Tape* Verbs. [6]

(10)   Linda taped the picture to/on/onto the wall.

I presume, in this connection, that the preposition *to/onto* in (10) is parallel to AN-verbs with $VP \frown NP_1 \frown [_{PP} NP_2[acc]]$, while the preposition *on* in (10) behaves like AN-verbs with $VP \frown NP_1 \frown [_{PP} NP_2[dat]]$.

In contrast, other AN-verbs require that the NP in AN-PP be accusative. This suggests that the object of the verb is a typical THEME argument that moves toward the goal denoted by the NP in the directional PP. In fact, it is observed that AN-verbs of Type (C) provide typical instances of moving entities, taking a directional PP. The verb *anbauen*, for example, means that someone builds something on, as is examplified in (11a). *Eine Garage* (= a garage) in (11a) is thus a (supposedly) moving entity which travels along the path to the goal, i.e. the house. The distance of the travel is always assumed, even if the object is to be produced through the action. However, the accusative marking of the directional PP will be lost, if one converts (11a) into a stative passive, as in (11b).

(11)   a. Michaela hat   eine Garage an das Haus   *an*gebaut.
           Michaela has-AUX a   garage on the house-ACC build-PP
           'Michaela has built a garage on.'

       b. Eine Garage ist   an dem/*das   Haus *an*gebaut.
           a   garage is-AUX on the-DAT/-*ACC house build_on
           'A garage is built on.'

Since stative passives never denote ACTION, but STATE of the proposition, the NP in question is marked as dative. This is obviously evidence for the syntactic status of the NP in prepositional phrases. AN-verbs in such cases seem to lose control NP in the PP in question.

1.3 *x* directs his/her action to *y*: An instance of ACT-ON predicates

The third type of AN-verbs is looked upon as a kind of transitivization of their base verbs. *anlachen*, for example, is derived from *lachen* (= laugh), denotes an action toward someone/something else, while the original base verb only denotes ACTIVITY. This process is quite productive, not only in German, but also in other languages. [7]   Following basically the idea of Pinker (1989), I assume that there is such a two-place predicate as ACT-ON,

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[6]This class of verbs in English also includes *anchor, band, belt, bolt, bracket, buckle, button, cement, chain, clamp, clasp, clip, epoxy, fetter, glue* and so on. The members of this group are largely overlapped with the AN-verbs listed above.

[7]Verbs of Contact and Verbs of Contact by Impact are closely related to the notion of ACT-ON in English as well as in Japanese. cf. Kageyama (1996).

taking ACTIVITY and y to form a transitive relation, [8] whereas PATIENT is assigned to y as a thematic role. AN-particle is served to add this property quite straightforwardly to base verbs. Some of the examples are shown in (12), (13) and (14).

(12) a. Peter lachte.
          Peter laugh-PAST
          'Peter laughed.'

      b. Peter lachte   mich   *an*.
          Peter laugh-PAST me-ACC PARTICLE
          'Peter laughed and his laughter was directed at me.'[9]

(13) a. Die Kinder standen   an   der Unfallstelle   und gafften.
          the children stand-PAST near the place_of_the_accident and gape-PAST
          'The children stood around the place of the accident and gaped.'

      b. Die Kinder gafften   den großen Mann   *an*.
          the children gape-PAST the tall   man-ACC PARTICLE
          'The children gaped at the tall man.'

(14) a. Walter hustete   heftig.
          Walter cough-PAST hard
          'Walter coughed hard.'

      b. Huste   mich   bitte   nicht *an*!
          cough-IMPERATIVE me-ACC please not   PARTICLE
          'Please don't cough over me.'

What distinguishes this type from the "attachment" discussed in 1.2 is the absence of pleonastic PP's. This situation can be illustrated in (15).

(15) a. Erika lächelte   mich   an.
          Erika smile-PAST me-ACC PARTICLE
          'Erika smiled at me.'

      b. *Erika lächelte   an mich.
          Erika   smile-PAST at me-ACC
          'Erika smiled at me. ' (intended meaning)

      c. *Erika lächelte   an mich   an.
          Erika   smile-PAST at me-ACC PARTICLE
          'Erika smiled at me.' (intended meaning)

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[8]The notion of ACT-ON is also used in Kageyama (1996), Kegeyama/Yumoto (1997). Stiebels' (1996) DIRECTED_TOWARD and Wunderlich's (1997) FORCE+ are also predicates for representing similar phenomena.

[9]*anlachen* cannot be translated into the English phrase *laugh at*, since *laugh at* contains more information than ACT-ON, namely: "to treat someone as foolish, worthless, or an object of fun" (Longman Dictionary of Conpemporary English). This negative connotation is absent in *anlachen*.

(15b) sounds odd, even if the PP *an mich* can mean "directed toward me". In other words, the verb *lächeln* (= smile) does not permit the extension of its argument structure by adding such a directional PP. [10] Then, what is it that makes (15a) possible? Let's examine some of the other verbs in this class at first.

AN-verbs in the sense of ACT-ON: (transitivization of base verbs)

bellen → anbellen (= bark at), blinzeln → anblinzeln (= wink at), brüllen → anbrüllen (= roar at), fauchen → anfauchen (= spit at), gähnen → angähnen (= yawn at), glotzen → anglotzen (= gawp at), grinsen → angrinsen (= grin at), hauchen → anhauchen (= breathe on), niesen → anniesen (= sneeze over), reden → anreden (= address) spucken → anspucken (= spit at), schnauzen → anschnauzen (= shout at), schmunzeln → anschmunzeln (= smile at), schreien → anschreien (= shout at),

All of the base verbs above are simple intransitive[11] , taking animate subjects. We also realize that attachment of the AN-particle to a base verb makes it possible to express directedness of human/animal act.[12] As a result, accusative objects indicates the status of GOAL. The clearest case would be verbs of sound emission/sounds by animals. Sounds, which are never expressed explicitly as a noun, seem to travel to the goal in which some sentient being exists and is prossibly affected. Explanation in terms of thematic roles seems to collapse here, so long as the uniqueness constraint of thematic roles are observed. One of the plausible approaches is to set up a lexical structure in such a way that its corresponding syntactic structure can deal with argument positions properly. Later in section 3 I would like to pursue the analysis.

In addition to the above mentioned transitivization process of AN-verbs, ACT-ON predicates are also relevant in the word formation process from transitive base verbs. (16b) and (17b) are such examples.

(16) a. Tanja sieht einen Dackel.
          Tanja sees a   dachshund-ACC
          'Tanja sees a dachshund.'

      b. Tanja sieht sich   einen Dackel   *an.*
          Tanja sees herself-DAT a   dachshund-ACC PARTICLE
          'Tanja looks at a dachshund.'

(17) a. Bei dem Lärm   konte Eva das Ticken der Uhr   nicht hören.
          with the noise-DAT could Eva the tick-ACC the clock-GEN not   hear

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[10]The preposition *über* can be added, meaning almost the same as *laugh at* with negative connotation. Erika lächelte/lachte über mich. (= Erika laughed at me.)

[11]Some of these verbs do take accusative objects, but in that case they are considered to have a similar status like cognate objects. One of the examples is *viel Wort reden* which simply means "to talk much".

[12]A striking similarity between such AN-verbs and their corresponding English expressions is the use of the preposition *at* in English. *at* appears to have property of adding directedness, as is also observed in Conative Construction.

'Because of the noise Eva couldn't hear the tick of the clock.'

   b. Eva konnte sich   seine Ausrede   nicht mehr länger *an*hören.

       Eva could   herself-DAT his   excuse-ACC not   more longer PARTICLE+hear

       'Eva' couldn't listen to his excuse any longer.'

Even though the base verbs are transitive, they are members of perceptual verbs, i.e. the proposition doesn't express ACTION, but STATE. Verbs of perception, particularly *sehen* and *hören* cannot be passivized in a usual way. Those verbs share the property of duration with verbs of ACTIVITY. Furthermore, property of "undirectedness" can also be attributed to both types of verbs. Thus, verbs of perception also fall into the domain in which the predicate ACT-ON operates. With the help of AN-particles, (16b) and (17b) describe a directed action, and as a consequence they receive intentional reading. Since perception is a matter of personal experience, dative reflexives often occur to signal one's judgement of advantage/disadvantage.

1.4 *x* begins to do *y*: Inchoative reading

In some cases inchoative reading can be established if an AN-particle is attached to base verbs. Its syntactic frame differs from that of "attachment with a directional PP". Verbs of this sort are derived either from transitive or intransitive bases.

(18)   a. Tina stimmte   ihre Geige   /*ein schönes Lied.

          Tina tune-PAST her violin-ACC /*a   beautiful song.

          'Tina tuned her violin/*a beautiful song.'

       b. Tina stimmte *ihre Geige   /ein schönes Lied *an*.

          Tina tune-PAST *her violin-ACC /a   beautiful song PARTICLE.

          'Tina began playing/(singing) *her violin/a beautiful song.'

(19)   a. Tina hat   ihr Moped   getreten.

          Tina has-AUX her moped-ACC kick-PP

          'Tina has kicked her moped.'

       b. Tina hat   ihr Moped   *an*getreten.

          Tina has-AUX her moped-ACC PARTICLE+kick-PP

          'Tina has started her moped.'

The pair in (18) shows that the verb meaning has slightly been modified if an AN-particle is attached to the base verb, thereby the features of strict subcategorization have also changed. The accusative NP in (18a) is an instrument to play, while that in (18b) can be regarded as an effected object (, broadly speaking, a product) of Tina's action, i.e. either *singen* (= sing) or *spielen* (= play an instrument). (18b) expresses a beginning of Tina's playing/singing of a beautiful song. On the other hand, there seems to be no change of strict subcategorization in the pair of (19). *ihr Moped* (= her moped) in (19b) undergoes an inner change, which means that the engine of her moped has started. The action of *treten* (= kick) remains the same. Such transitive verb phrases are: *einen Film andrehen* (=

begin to take/show a film), *den Motor ankurbeln*(= start the engine using a crank), *eine Turbine durch Dampf antreiben*(= drive a turbine by steam), *den Wagen anschieben*(= start the engine by pushing the car), etc.

The other type of this class consists of verbs of motion and some unaccusative verbs. Verbs of motions, if combined with AN-particle, [13] often denote the beginning of motion, as in (20b). Note that (20b) becomes semantically ill-formed without the AN-particle at the end of the sentence. That is because the phrase *mit einem kräftigen Ruck* (= with a strong jerk) indicates a punctual movement, with no duration. The base verb *fahren* only denotes ACTIVITY in (20a) and thus incompatible with such a phrase. *angehen*(= start moving), *anlaufen*(= start running), *anrollen*(= start rolling), *anziehen*(= start going) are similar verbs of this sort.

(20)   a. Der Zug fuhr langsam.
             the train go-PAST slowly
             'The train moved slowly.'

          b. Der Zug fuhr mit einem kräftigen Ruck *an*.
             the train go-PAST with a strong jerk-DAT PARTICLE
             'The train started moving with a stron jerk.'

(21)   a. Der Apfel hat/ist gefault.
             the apple has/is-AUX rot-PP
             'The apple has rotted.'

          b. Der Apfel ist schon angefault.
             the apple is-AUX already PARTICLE+rot-PP
             'The apple began already rotting.'

anfaulen in (21) is one of intransitive AN-verbs, signifying a beginning of process. The process denoted by such verbs is typically recognized as a change of state with no effects of human acts. Since the subject is restricted by the verb and the auxiliary is *sein* (= be), the verb can be regarded as an unaccusative verb. This class of verbs, which is fairly restricted, consists of such verbs as *anrosten* (= begin to rust), *antrocknen* (=begin to dry) , *anschimmeln* (= begin to go mouldy) , etc.

It should be noted here that this inchoative reading is closely related with another meaning: "partial completion". Under certain conditions,[14] AN-verbs with inchoative reading can be interpreted as such that the process is only partially completed. A typical instance is (21b), which can mean as well: "The apple got a bit rotten."

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[13]Manner-of-motion verbs are, in fact, frequently used in such a construction as: Peter kommt *angelaufen*. Such AN-verbs are not capable of fixing the implicit goal argument alone and they need to be accompanied by the verb *kommen* (= come), so that they can specify the goal as a *speaker*. For details, see Stiebels (1996: 90) and Okamoto (1999).

[14]For details of this conditions, see Okamoto (1999).

2 SF representations of AN-verbs in Stiebels (1996)

In the framework of *Two Level Semantics*, Stiebels (1996) analyzes a series of particle-verbs and prefix-verbs in German. Following Wunderlich (1983), she claims that particle-verb constructions are derived from their base verbs with prepositional phrases. The argument positions of such PP's are said to be occupied by an implicit object, as I have also discussed earlier. Traditional views on particle-verbs are often based on the assumption that even if the particle is seperated from the base, it is part of one particular verb. The crucial point is that (22a) and (23a) are actually very similar to (22b) and (23b) respectively, and if we are able to assume an empty argument position after the preposition, we can systematically derive the meaning of a particle-verb.

(22)   a.   Sie klebt das Bild   *an.*
               she stick the picture-ACC PARTICLE
               'She sticks up the picture. '

          b.   Sie klebt das Bild   *an* die Wand.
               she stick the picture-ACC on the wall-ACC
               'She sticks up the picture on the wall.'

(23)   a.   Er setzt den Hut   *auf.*
               he put the hat-ACC PARTICLE
               'He puts on the hat.'

          b.   Er setzt den Hut   *auf* den Kopf.
               he put the hat-ACC on the head-ACC
               'He puts the hat on the head. ' (literally)

This observation, even if it isn't quite new, offers a new perspective on particle-verbs. Since semantics of prepositions are under development in such works as Wunderlich (1991), Wunderlich/Herweg (1991), Maienborn (1996), we have systematic ways of combining meaning of prepositons with that of verbs. This also leads to the analysis of particle-verbs and prefix-verbs in this framework.

As Taylor (1995: 268) rightly points out that "the approach, ..., is firmly grounded in a modular conception of human cognition ... with linguistic semantic knowledge being essentially autonomous of conceptual knowledge", the Semantic Form (SF) must be abstract enough to capture maximum generality and economy of linguistic (semantic) explanation.

Most of the proponents of *Two Level Semantics* are convinced that linguistic expressions can be decomposed semantically as SF's, on which functional application and composition are the only operations permitted to be applied. Furthermore, λ operators in SF's make it possible to abstract complicated predicate-argument structures, so that variables in the SF's can be linked to any syntactic positions. Conceptual Structures (CS's) are principally context-dependent and thus not compositional, since they belong to knowledge of the external world. As a result, the SF representation is kept minimal, while CS's bear much

more burden. [15]

Stiebels (1996: 303) claims that AN-verbs can be divided into six types and shows SF representations for four of them. (a) is the most fundamental one, denoting spatial relation between two entities. Roughly speaking, u, which is located outside (= EXT) of v, gets in contact with v.

(a) an_1: λu BECOME(LOC(u, EXT[v]) & CONTACT(u, v))

(b) an_2: λu BECOME(LOC(u, EXT[Spr]))

(c) an_3: $\lambda v \lambda u \lambda s$(BECOME(POSS$_P$(u, v))(s)

(d) an_4: ? (Resultatives denoting "being switched on")

(e) an_5: $\lambda u \lambda s$ DIRECTED_TOWARD(s, u)

(f) an_6: ? (Partial marking)

This representation of (a) is, however, only partly reflected in (b) and (c). Admitting the fact that (d) is independently motivated as a case of resultatives,[16] we can easily see that (d) and (f) have nothing to share with (a). Besides, the reading of (c) is not crucial in explaining basic property of AN-verbs, since the problem of datives can be solved by appealing to more general mechanisms.[17] In the next section I will argue that the readings of (a) and (c) play a central role in determining AN-verb constructions.

3 Compositionality of Lexical and Syntactic Structures

Consider first (24) and (25). (24a) is a typical instance of ACTIVITY and (24b) shows an extended argument structure with an AN-particle added to the base verb. As pointed out in 1.3, this extension can be accounted for by introducing an ACT-ON predicate. (25a) denotes a terminative action, i.e. ACHIEVEMENT in terms of Vendler's classification. As a result of the action, "The fly was swatted." In comparison to (25b), this resulted state is not implied, even if the action has been done.

(24) a. Maria lachte.
    Maria laugh-PAST
    'Maria laughed.'

  b. Maria lachte   mich   an.
    Maria laugh-PAST me-ACC PARTICLE
    'Maria laughed toward me.' (literally translated)

---

[15]Lindemann (1998) investigates, for example, particle-verbs with *ein*, showing that non-compositional word formations take place "largely" in CS's. Since compositionality itself is here not a criteria distinguishing SF from CS any more, the need to separate two distinct levels is not clear. As for details of interaction between SF and CS, see Bierwisch/Schreuder (1992).

[16]This is also a special case of AN-verbs. As mentioned in 1.1, the AN-particle behaves like one-place predicate in such verbs as *anmachen, anlassen* and *antun*. The AN-particle can be topicalized by itself as in: "An hat sie das Licht gemacht. " cf. Stiebels (1996: 160)

[17]cf. Wegener (1985), Ogawa (1998)

(25) a. Peter schlug   eine Fliege mit   der Klatsche.
          Peter hit-PAST a   fly-ACC with the fly-swatter-DAT
          'Peter swatted a fly with the fly-swatter.'
      b. Peter schlug   mit   der Klatsche   nach   einer Fliege.
          Peter hit-PAST with the fly-swatter-DAT toward a   fly-DAT
          'Peter swatted at a fly with the fly-swatter.'

From this observation, it is obvious that there is a systematic relation between ACTIVITY and ACT-ON on one hand, and between ACT-ON and ACHIEVEMENT on the other. In other words, ACT-ON falls somewhere between ACTIVITY and ACHIEVEMENT in the case of CONTACT-verbs. This leads to a straightforward formulation of lexical structures as follows.

(a) ACTIVITY: DO(x)
(b) ACT-ON: ACT-ON(DO(x), y)
(c) ACHIEVEMENT: ACT-ON(DO(x), y) & BECOME(CONTACT(y, z))

(26b) and (27b) are representations of (26a) and (27a) respectively.

(26) a. Der Hund bellte   den Briefträger   an.
          the dog   bark-PAST the postman-ACC PARTICLE
          'The dog barked at the postman.'
      b. ACT-ON(bellen'(x), y)

(27) a. Anna hat   ihren Hund an einen Pflock   *an*gekettet.
          Anna has-AUX her   dog   on a   peg-ACC PARTICLE+chain-PP
          'Anna has chained her dog to a peg.'
      b. ACT-ON(ketten'(x), y) & BECOME(CONTACT(y, z))

(27b) illustrates that the semantic structure is devided into two parts, one for ACT-ON predicate and the other BECOME (change of state) predicate. I share the basic insight proposed by Kaufmann (1995) that the second conjunct specifies inferences about the first conjunct. [18] By adopting this constraint, we can offer a natural explanation of the resulted state. ACT-ON(bellen'(x), y) says that x (=AGENT) does an action (=*bellen*) and the action is directed to y (=PATIENT). On the other hand, ACT-ON(ketten'(x, y)) in (27) denotes an action (=*ketten*) and infers a change of state, which can be represented as BECOME(CONTACT(y, z)), where y is THEME and z GOAL. As I have noted in 1.3, however, one might insist that even in (26a) there be an implicit THEME, namely "sounds produced by the dog" which would travel to the implied goal "the postman". If we hold this speculation to be true, (26a) could be represented in the same way as (27b). It would then be interpreted in terms of thematic roles, as in (26c).

---

[18] This constraint is called *Connexion* and valid for interpreting Semantic Form.

(26) c. ACT-ON(bellen'(x), y) & BECOME(CONTACT(y, z))

$$\uparrow \ \uparrow \qquad\qquad \uparrow \ \uparrow$$
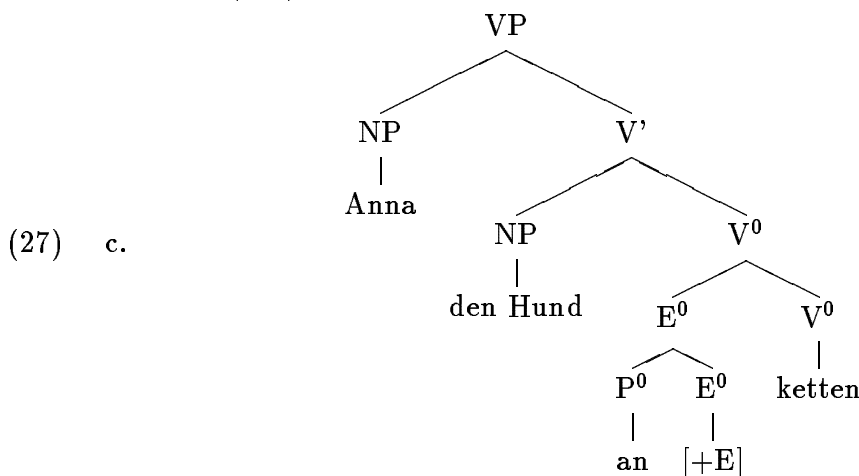
AGENT PATIENT   THEME GOAL
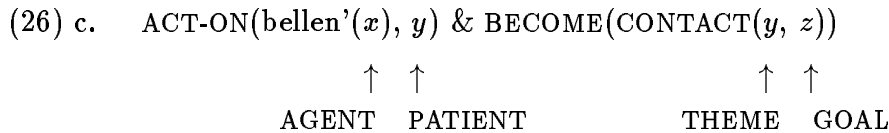
One important difference between (26a) and (27a) is that (27a) does not necessarily imply a certain change of state. It might be the case that the relation BECOME(CONTACT(y, z)) would not be realized even after the action.[19] I would, thus, like to maintain that the 'change of state' secondary predicate be not present in the proposition described by an ACT-ON predicate alone.

The next question is how these structures should be represented syntactically. I adopt the basic insight of Snyder (1995) and its expanded model in Yoshida (1998), even though the Neo-Davidsonian approach is not adopted here.

Snyder (1995) proposes that English, unlike Romance languages, permits the phonologically null aspectual morpheme. Because of the presence of this 'null telic morpheme' (Φ_{telic})[20] English allows resultative constructions, as well as certain kind of particle and dative movements. German is also typically considered to be among such languages, as it also boasts of the existence of such phenomena.

Folloing Yoshida's (1998) proposal, we assume that there is a functional category E^0 which selects PP as a complement. Thus, (27a) without its pleonastic PP has the partial structure given in (27c).
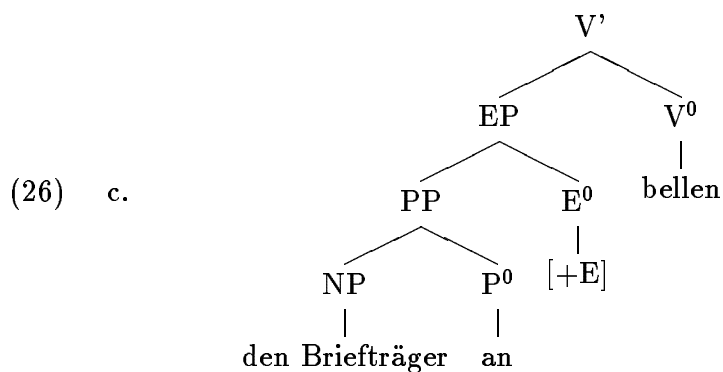
(27) c.

```
                    VP
                   /  \
                 NP    V'
                 |    /  \
               Anna  NP    V0
                     |    /  \
                den Hund E0   V0
                        / \    |
                      P0  E0  ketten
                      |    |
                      an [+E]
```

Yoshida (1998) asserts that, according to the head parameter, German particles in particle-verb constructions appear in the structure [$_{V^0}$ P^0 (E^0) (V^0)]], which stands in stark contrast to [$_{V^0}$ (V^0) (E^0) P^0]] in English. On the other hand, the underlying structure of (26a) is represented in (26c) as an instance of argument extension. It is because of the character of this EP, Yoshida (1998) claims, that German particles show a variety of appearence. They appear as an argument of a verb, as an adjuct and as a kind of aspect

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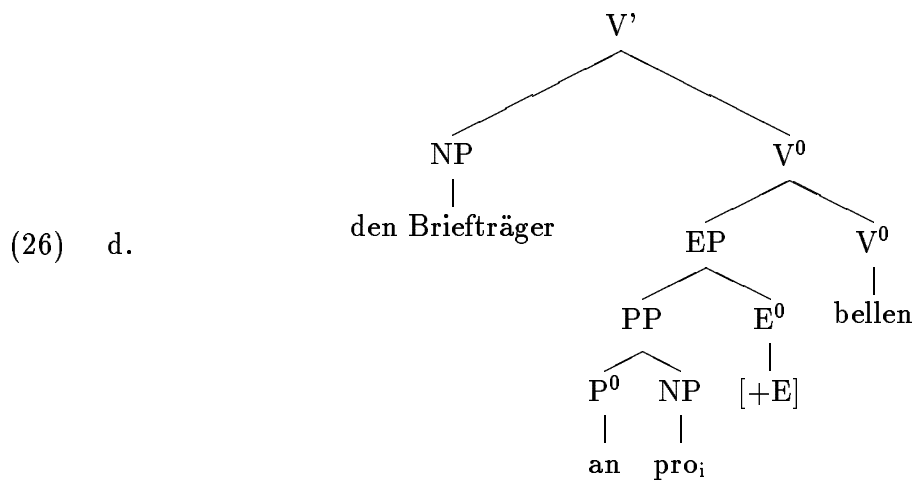[19]Suppose there is a glass window between the dog and the postman in the situation described by (27a). The expression would be true, even if the postman didn't hear the dog's barking.
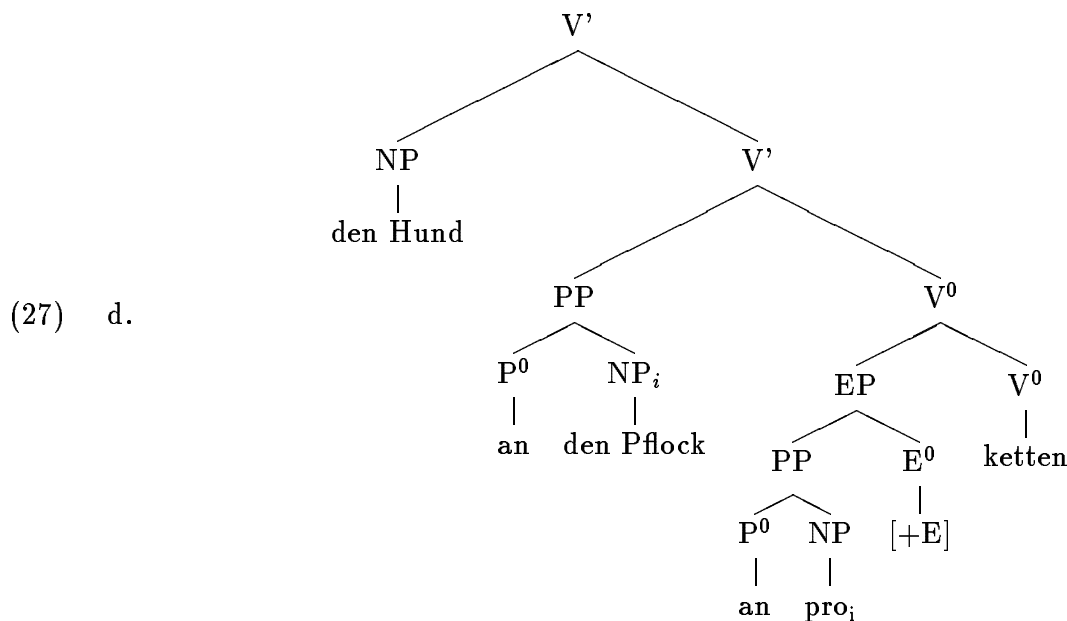
[20]The function of this morpheme is to take an event and a predicate of events, and to require that the predicate be true of the 'natural endpoint' of the events. For details, see Synder (1995: 459)

marker. Thus, he maintains that particle-verb constructions in German can be regarded as a kind of word formation at syntactic level.

(26)   c.

```
                         V'
                        /  \
                      EP    V⁰
                     /  \    |
                   PP    E⁰  bellen
                  /  \    |
                NP    P⁰  [+E]
                 |     |
         den Briefträger  an
```

Remember that AN-verbs almost always make reference to an implicit NP, if they are not accompanied with pleonastic PP's. Typical examples we have seen are "human body", "part of the human body" and "a goal associated with object NP's". Such implicit NP's could be provided only in a context or discourse. To account for this fact, I propose to make use of the notion of "pro" ([− anaphoric, + pronominal]). Look at (26d) and (27d).

(26)   d.

```
                       V'
                      /  \
                    NP    V⁰
                     |    /  \
            den Briefträger EP  V⁰
                          /  \   |
                        PP    E⁰ bellen
                       /  \    |
                     P⁰   NP  [+E]
                      |    |
                     an   pro_i
```

(27) d.

$$
\begin{array}{l}
\text{V'} \\
\quad \text{NP} \\
\qquad | \\
\qquad \text{den Hund} \\
\quad \text{V'} \\
\qquad \text{PP} \\
\qquad\quad \text{P}^0 \quad \text{NP}_i \\
\qquad\qquad | \qquad | \\
\qquad\qquad \text{an} \quad \text{den Pflock} \\
\qquad \text{V}^0 \\
\qquad\quad \text{EP} \\
\qquad\qquad \text{PP} \\
\qquad\qquad\quad \text{P}^0 \quad \text{NP} \\
\qquad\qquad\qquad | \qquad | \\
\qquad\qquad\qquad \text{an} \quad \text{pro}_i \\
\qquad\qquad \text{E}^0 \\
\qquad\qquad\quad | \\
\qquad\qquad\quad [+\text{E}] \\
\qquad\quad \text{V}^0 \\
\qquad\qquad | \\
\qquad\qquad \text{ketten}
\end{array}
$$

By assuming the parallel structures above, we have a natural way of explaining the following points:

1) if a pleonastic PP in (27) does not appear, pro_i, which is existentially bound, will pick up an appropriate value from the context/discourse.

2) if there is an NP in a pleonastic PP coindexed with pro, the NP will be interpreted, according to the [+E] feature, i.e. [+ telic], as GOAL.

3) if a pleonastic PP is present, as in (26d), THEME will be assigned to the object NP. Otherwise, PATIENT . The sentence is then interpreted as having only ACT-ON predicate.

The third point deserves a further explanation. (26d) is, in fact, a partial structure of (27d), that is, if the pleonastic PP *an den Pflock* in (26d) is missing, the syntactic structure cannot by itself be disambiguated. 3) refers to one of (configurational) syntactic restrictions on interpreting sentences. I take it for granted that verbs offer thematic grids which have to be linked to certain NP's. But this is not all the mechanisms we have. When it comes to interface between syntax and semantics, there seem to be many interactions of various kind.

A question still remains as to a dative-accusative alternation in the pair (5b) and (6b). Recall that there are a number of AN-verbs that select only accusative NP's headed by AN. As the data in 1.2 show, the dative selection has been seldom found. As far as the case assignment in PP's are concerned, such prepositions as *an, auf, hinter, in, neben, über, unter, vor, zwischen* are known as governing either dative or accusative case. It should be noted that dative case is exclusively used to mark LOCATION. [21] From this observation, I conclude that the NP denoting LOCATION appears in the adjunct PP, which is compatible with [+ telic]. Such a prepositional phrase then cannot be regarded as pleonastic in a

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[21] Among the prepositions listed here, only AN-verbs permit an NP in dative case in the pleonastic PP.

strict sense, since it is not marked with GOAL. This compatibility is motivated and licensed by a semantic restriction mentioned in 1.2, "restriction of minimum distance".

4 Concluding remark

The main issue raised in this paper concerns itself with treatment of German AN-verbs in terms of compositionality. Adding AN-particle to the base verb results a systematic change both in syntactic and semantic structures. I have demonstrated that the ACT-ON is relevant in two basic types of AN-verbs, namely that of "attachment" and that of directed actions. The inchoative reading of AN-verbs was not fully analyzed in the present framework. It might be assumed that the mechanism of such a reading stems from a conceptual meaning postulate which maps BECOME(CONTACT(y, z)) to BEGIN(y, DO(z)) in some way. This goes far beyond the scope of this paper. [22] What I have shown here is partly motivated from the idea that interactions between semantic as well as syntactic structures can be well accommodated so as to capture generality of linguistic analysis.

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[22] Particle-verbs with *auf-* can also be explained in terms of CONTACT. They also exhibit inchoative meaning of similar kind. The phenomena are often recognized as metaphorical extension of movement to a time-scale.

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