Analyzing German verb-particle constructions with *auf* within a DRT framework

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Inhaltsverzeichnis

1 Introduction 4

2 *auf* is alignment with the vertical axis 6
   2.1 *auf* as referring to virtual paths 15
   2.2 *auf* as expressing a change of position 16
   2.3 *auf* as describing growth along VERT 18
   2.4 Metaphorical extensions 22

3 *auf* is SUPPORT 27

4 *auf* is perception 33

5 *auf* is OPEN 44

6 *auf* marks planning 47

7 *auf* is German *alle* 51

8 *auf* marks iteration 54

9 *auf* in combination with deadjectival verbs 57

10 Overview over different meanings of *auf* 60
   10.1 Upward movement (of a material object) 60
   10.2 Getting hold of something + raising it 60
   10.3 Virtual path 60
   10.4 Growth 61
   10.5 Upward movement of bottom? 61
   10.6 Stopping of downward movement 61
   10.7 Vertical position 61
      10.7.1 Not in bed 61
   10.8 Metaphorical uses 62
      10.8.1 Awake, lively, healthy, grown-up, ready for action 62
      10.8.2 Strong negative emotions, agitation 62
      10.8.3 Uprising against people in higher positions 62
      10.8.4 Enhancement 62
      10.8.5 Improvement 63
      10.8.6 Improve one’s external appearance (in an extreme or exaggerated way) 63
11 *auf* marks a spatial support relation or similar relations 63

11.1 SUPPORTS ................................. 63

11.2 Denominal verbs ............................. 64

11.3 Contact ....................................... 64

11.4 Metaphorical: constraint .................... 64

12 Planning 65

13 alle 65

14 Iteration 65

15 Deadjectival verbs 65
1 Introduction

The focus of the present study are German verb-particle constructions with *auf*. All previous studies in lexical semantics which have dealt with such constructions have classified them into different groups according to their meaning. Yet there has been significant disagreement regarding what those groups are and what criteria should underlie the classification. In this paper we will present an analysis of verb-particle constructions with *auf* within a Discourse Representation Theory (DRT) framework. Our analysis is therefore driven by the theoretical assumptions underlying this theory. As DRT is a compositional theory of meaning, one major hypothesis guiding our analysis is the idea that the meaning of verb-particle constructions is in many cases composed of the meaning of their parts. In this we agree with many recent authors (e.g. McIntyre:2002) who hold that idiosyncratic, non-compositional verb-particle constructions are less common than often assumed in earlier treatments of such constructions. Thus in the first detailed analysis of *auf* [Kempcke1966] classifies verb-particle constructions with *auf* according to the meaning of the entire construction, rather than according to the contribution *auf* makes to this meaning. As Witt (1998) points out, early studies of verb-particle constructions were driven in their analysis by the existence of so-called semantic niches of verb-particle constructions. The members of such niches contain the same particle and have a similar meaning although the meanings of the base verbs are often very different and seemingly unrelated to the meaning of the verb-particle combination. We will discuss below how our approach deals with this phenomenon.

All more recent analyses of verb-particle constructions with *auf* which share the compositionality hypothesis are either part of a comprehensive treatment of different word formation patterns in German or figure within a discussion of semantic issues concerning verb particle constructions in general.

Of course, the compositionality hypothesis is not the only important theoretical assumption underlying our analysis. What compositional patterns are found for constructions with *auf* partly depends on what kinds of compositional patterns are possible within the semantic framework used. It will therefore be interesting to see to what extent our analysis differs from that of others due to the fact that we conduct our analysis within DRT, rather than

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1 E.g. Motsch2004
2 E.g. Stiebels:1996, McIntyre:2002. In both cases the relevant data are not discussed in much depth and a complete analysis of particle verbs with *auf* is not strived for. In contrast, our study aims at what lessons can be learnt from exploring one particle exhaustively.
than in one of those semantic frameworks used by others.

Before presenting our analysis, let us comment briefly on the methodology we used in classifying occurrences of *auf*. In Duden many particle verbs are treated as polysemous, so many verbs are put in several groups. We usually started out with accepted interpretations or word explanations in Duden. But our classification and interpretation of individual verb-particle constructions repeatedly changed until the form presented here reached. It turned out that it was often not possible to classify particle verb out of context; thus, although we mainly speak about verb-particle combinations in this paper, what we have in mind is this construction used in a wider context. As a consequence we present almost always entire sentences.

As for Stiebel’s methods she also starts with classifying occurrences found in the Duden, but doesn’t question the interpretations found there and focuses on verb-particle constructions, rather than entire contexts.

"In der Beurteilung der von mir gewählten Beispielsätze ist zu berücksichtigen, dass manche nur als Spontanäußerungen in einer konkreten Situation, also als unmittelbare Kommentare, zu verstehen sind und wahrscheinlich auch nur als solche akzeptiert werden können." Stiebels:1996: p263

This means that she treats interpretations of verb-particle constructions which only occur in certain contexts as exceptions from the ‘actual’ meaning of the construction; our analysis differs from this in that such cases are not treated as exceptions and in that the focus of attention in judging whether or not an interpretation is possible is shifted from the properties of the base verb to that of the entire context a verb occurs in. Very often context does matter. Yet some combinations are so obvious or so frequent that they can be made sense of even out of context.

We also considered neologisms (i.e. constructions not in Duden or other dictionaries), mainly found over google, especially to test hypotheses about what compositional patterns are possible.

A note on diachronic explanation versus the actual meaning of *auf* when used by present speakers of German is at order. There is always the danger to group according to how different senses evolved, rather than according to what senses particle has in current language use, which is what counts here. Obviously the meaning of *auf* changes continuously and is not the same for all regions and all speakers (we will come back to that later when discussing various senses). Also often the differences among senses are more subtle than can be expressed in our formalism; so we can only give approximation, capture most important meaning aspects; yet we are convinced that trying to
capture meaning of words, and thus also of particles such as *auf*, within a logical formalism such as that provided by DRT is an important enterprise.

In some contexts several interpretations of *auf* may be possible: the question of when we have an ambiguity that needs to be resolved (definitely in the case of contradictory analyses) and when we can leave the resulting DRS underspecified with regard to what interpretation of *auf* is present. How to present the meaning in the underspecification framework in DRT is a matter we must leave for a later occasion.

We will neither go into discussion of the syntactic status of *auf* ³. We just speak of particles, leave open whether in some cases, i.e. for certain senses of *auf*, more appropriate to speak of preposition or adverb; will not consider either syntax-semantic interface.

## 2  *auf* is alignment with the vertical axis

All analyses of verb-particle constructions with *auf* mention as one sense of *auf* an upward movement. Indeed this is the original meaning of the particle, or rather its Old High German predecessor, the adverb *uf*. Nowadays this compositional pattern is not as productive any longer and *auf* is often replaced by *hoch*. Nevertheless this sense of *auf* is still very frequent and can be clearly identified in many contexts. The following sentences show some examples:

1. _Zuerst stieg er auf, um Haken in die Wand zu schlagen und anschließend ein Seil zu spannen, an dem sich sein behinderter Freund hochziehen konnte._
   ‘First he climbed [stieg up] to hammer hooks into the wall and subsequently attached a rope, on which his disabled friend could pull himself up.’

2. _Vom Aschenbecher, der auf dem Piano steht, steigt Tabakqualm auf._
   ‘Tabacco smoke is rising [steigt [...] auf] from an ash tray, which is standing on the piano.’

Although there is agreement in the literature that *auf* can express that something moves upwards (“aufwärts”, “nach oben”, “empor”), authors do

³The treatment of particle verbs in [Zeller:2001] is not satisfactory facing the differences of meaning which we will present.

⁴Grimm

⁵This example is taken from the Huge German Corpus (HGC). Yet most other examples are taken from the internet, so unless stated otherwise this can be assumed to be the case.

⁶HGC
not agree about what exactly such an upward movement consists in. Stiebels, who does not discuss this sense of *auf* in much detail, seems to think that it involves an object’s taking off from the ground.**7** Her analysis of *auf* seems to provide correct interpretations of (1) and (2). However, the following sentences show that *auf* can also describe the movement of objects that stay on the ground.

(3) *Es lohnt sich auch, vom Govc-Hof aus auf der Schotterstraße bis zum Bauernhof der Familie Prodnik-Vrsnik (Robanov kot Nr. 37) aufzusteigen und zuzusehen, wie drinnen in der schwarzen Küche Würste und Speck geräuchert werden [...]*.  
‘It is also worth climbing [steigen] from the Govc Farm on the gravel road up [auf] to the farm of the family Prodnik-Vrsnik (Robanov kot Nr. 37) and to watch how sausages and bacon are smoked inside the black kitchen [...]’

(4) *Wer es gerne etwas ruhiger hat, kann auch zu Fuß zur Britanniahütte aufsteigen und am nächsten Tag über den Hohlaubgrat zum Gipfel aufsteigen.*  
‘Those who like it a bit quieter can also walk [steigen] up [auf] to the Britannia Hut and on the following day climb to the summit via the Hohlaub ridge.’

Stiebels probably arrived at the assumption that movements described by *auf* involve an object taking off from the ground because she considers *auf* to describe movements as pointing in the opposite direction of gravity. Yet the movements described in (3) and (4) clearly deviate from the vertical axis, and a slight deviation is also likely to be the case in the situations described by (1) and (2). It seems that the paths of movements referred to by *auf* display a variety of different shapes. Given that, it may seem sensible to give up the attempt to specify the form of these paths in the semantic representation of *auf* and to instead just describe the resulting position of the moving object in relation to its starting position or some other point of reference. This is in fact Eichinger’s (2000) approach. He states that *auf* describes a movement into a space which is regarded as “absolute up” from the perspective of a normally oriented human being.**8** This is in accordance with

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**7** “*Da tanzen* eine Bewegung mit regelmäßigen Kontakt zu einer Oberfläche bezeichnet, ist *auf* mit der Bedeutung “empor”, also der vollständigen Loslösung von der Fläche unzulässig.” ([Stiebels:1996](#), p. 267)  
**8** HGC  
**9** “Bewegung in einen von der Normalorientierung des Menschen als absolutes Oben betrachteten Raum”, p. 238
his general characterisation of \textit{auf} as expressing the reaching of a functionally appropriate, positive state “funktional sinnvoller, im Sinne des Geschehens positiver Zustand”, ibid.. However, it seems that not all movements described by \textit{auf} have such a definite goal or final point. Often they are not even completed. A good illustration of this point is \cite{2}. The foregoing also speaks against the view that \textit{auf} requires the moving object to be at a higher position after the movement than it was before. This requirement is introduced by Lindner (1983) in her analysis of the English particle \textit{up}.

10 She considers the projection of the path of a movement on the vertical axis and claims that \textit{up} can be used to describe a movement if the distance between the point on the vertical axis corresponding to the starting point of the movement and a reference point, such as the ground, is smaller than that between the point corresponding to the final point of the moved object and the reference point. This analysis allows her to subsume different kinds of paths described by \textit{up} under one abstract schema, and could easily be applied to the German \textit{auf}, too. Yet, as we have seen, in the case of \textit{auf} there is not always a clear end position which could be compared to the starting point of the movement. Another problem with such an account is that it falsely categorizes cases with significant deviations in the opposite direction as describable by \textit{auf}. Thus an object which first moves 10 meters in the direction of gravity and then 10 meters and 1 centimetre in the opposite direction would hardly be described as having moved \textit{auf}, even though its final position is higher than its initial position. Of course, slight deviations in the direction of gravity are allowed by \textit{auf} and it may be possible to set up complex rules about how much deviation is allowed or even to just rely on an intuitive grasp of speakers of how much deviation is allowed. However, this puts into question the correctness of an analysis whose fundamental parameter is the position of the moving object. Therefore it seems more adequate to conclude that \textit{auf} refers to the general direction of a movement, rather than the initial and final positions of the moving objects. It seems that in language in general the concept of direction is more fundamental than that of height, which as we have seen involves the concept of the vertical axis, and thus of a direction. That an object is at a higher position as a result of a completed upwards movement has to be inferred on the basis of suitable axioms. Although \textit{auf} refers to the direction of a movement, we have to give up the idea that it describes the

\footnote{pp. 112ff. Although the German \textit{auf} and the English \textit{up} can obviously not be taken as identical in meaning, having evolved from the same origin there are still many similarities in meaning between them, especially regarding the original sense of an upward movement. Therefore Lindner’s analysis can be considered as relevant in this context. It is also interesting for our purposes because it is guided by the hypothesis that most verb-particle constructions with \textit{up} are compositional or, in her terms, “analysable” in meaning.}
precise shape of a path. It rather introduces the direction of a motion with respect to a certain conceptualisation of space. Our assumption throughout this paper is that many natural language predicates only encode spatial relations with respect to a coordinate system which we call “primary perceptual space” (PPS). In PPS a vector in the opposite direction of gravity (VERT), and the horizontal plane (HOR) orthogonal to it are fixed, whereas the two axes on the horizontal plane depend on the context. If we say that a path is in alignment with VERT with respect to PPS, then this means that given the three options PPS offers, the movement is most accurately described by being parallel to VERT.

We will not attempt here to give a precise account of when a movement is regarded as parallel to or in alignment with VERT. In most cases assigning a movement to one of the axes of PPS and choosing a corresponding natural language predicate does not seem to be a problem for the speakers of a language. Moreover, what we are interested in here is how languages encode spatial relations. According to the principle mentioned in footnote 11 linguistic descriptions make one of the three dimensions explicit. As a consequence we can represent motion descriptions as descriptions of rectilinear motion, at least for descriptions making use of auf.

In accordance with the foregoing we can represent Rauch aufsteigen in (2) in the following way:

\begin{equation}
\text{auf} \sim \begin{array}{c}
\text{ALIGN}(w, \text{VERT})
\end{array}
\end{equation}

\begin{equation}
e y \quad e: \text{MOVE}(y) \quad \Rightarrow \quad \begin{array}{c}
\text{lr} \\
\text{w(e,lr)} \\
\text{lr}' \\
\text{w(e,lr')} \\
\Rightarrow \\
\text{lr'} = \text{lr}
\end{array}
\end{equation}

\footnote{Kamp/Rossdeutscher:ms-ts capture this assumption in what they call the ”principle of the Primacy of Orthogonality in Spatial Conceptualisation”: ”Spatial orientations are perceived as much as possible in such a way that all relevant directions are parallel to one of the axes of PPS.” (p. 7)}

\footnote{In the framework Kamp/Rossdeutscher:ms-ts every motion event e: MOVE(y) of a theme y has a path w (read w as German ”Weg”), see AXIOM 6}

According to (5) a path w is a unique one-dimensional linear region \(lr\) of a motion e. With rectilinear motion the path w is a straight line. If we speak of a path w being in alignment with VERT, the corresponding motion is rectilinear. (In the following we will skip the reference of w to its corresponding motion event e. w is always the path of the motion event in context.)
Auf provides a presupposition-like constraint of the existence of some path w (see w) in the semantics of the verbal construction. In case of (2) justification is unification with the path w' contributed by the verb steigen which describes upward motion.

Note that in some cases auf can denote a motion along the vertical functional orientation of an object, rather than along VERT. This is the case in the following examples.

(9) Hören Sie nach drei bis fünf Minuten keinen Rülpsen, können Sie Ihr Kleines wieder hinlegen. Dann war entweder nicht viel Luft im Magen oder sie kommt später hoch: Sie kann auch im Liegen aufsteigen.
‘If you don’t hear a belch after three to five minutes, you can lay your little one down again. In that case there was either not much air in the stomach or it will come [kommt] up [auf] later: It can also rise [aufsteigen] when lying.’

(10) Falls Sie unter saurem Aufstoßen leiden, verschlimmert sich dieser Zustand auf Grund der Schwerkraft meist im Liegen.
‘If you suffer from acid regurgitation [Aufstoßen], this state usually worsens when you are lying because of the effect of gravity.’

In (11) we demonstrate how composition takes place.  

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13 We represent es stößt jemandem auf (= ‘There is regurgitation felt by someone.’) as an relation between an stoßen-event and a person y. The verb stoßen in this context contributes a motion event e'. The direction along the functional vertical of some person y (which can be thought of as represented by the person’s spine) is contributed by the particle.
It may be that these two senses of *auf* are identical and what differs is just the conceptualization of space within that context, i.e. what the vertical axis stands for. In both cases w stands for a path.

In the examples discussed so far interpretation of the verbal complex with *auf* the particle’s semantic constraints were 'justified' following principles known from 'presupposition justification'. The binding constraints in the DRS representing *auf* are fulfilled by the contribution of the verb the particle combines with. Composition can be modelled in these cases within a unification based theory of composition. Unification is possible if the context contains or can accommodate a motion that can plausibly be described as going upwards or along a functional vertical.

If such a motion is not already present in the context, justification of the semantic constraints of *auf* is also possible if the context is appropriate for accommodating an upward motion. This is what happens in the following cases.

(12) *Da wurden Bodenbrüter wie Goldammer und Baumpieper von freilaufenden Hunden aufgeschreckt.*

‘Ground breeders such as yellowhammer and tree pipit were scared [*geschreckt*] up [*auf*] by loose dogs.’

(13) *Das Herz krampft sich einem zusammen, wenn Kletterer in einer Steilwand hängen und die wenigen brütenden Falken aufjagen.*

‘One’s heart clenches when climbers hang in a steep face and chase [*jagen*] up [*auf*] / rouse? the few breeding falcons.’

(14) *Orangebäckchen leben in erster Linie von Samen der zahlreichen Süßgräser, die sie in den Savannen und Steppen reichlich finden, vom Boden aufpicken oder direkt vom Halm aus den Rispen picken.*

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14 References.
15 HGC
‘Orange cheeked waxbills live primarily on seeds of the numerous varieties of sweet grass which they find abundantly in the savannahs and velds, and pick [pick] up [auf] from the ground or directly from the culm out of the panicles.’

(15) Mit der Hälfte der Hühnerbrühe ablösen, dabei mit dem Kochlöffel den Bodensatz aufrühren.
‘Add half of the chicken stock while stirring [rühren] up [auf] the sediments with a cooking spoon.’

(16) Nachmittags fing wieder ein verrückter Wind zu wehen an, der wirbelte Sand auf und hob sogar Steine hoch.
‘In the afternoon a crazy wind started to blow again, which swirled [wirbelte] up [auf] sand and even lifted stones.’

That the birds in (12) and (13) move (physically) is only expressed through auf, there is nothing else in the context which describes the birds as moving. In particular, it is not the case that the verbs in these sentences introduce motion. schrecken describes a psychological state, whereas jagen refers to an activity. Unification is, however, possible because it is plausible that the events described by these verbs cause birds to move upwards. Composition in (12) is as follows:

\[
(17) \quad \text{auf } \sim \quad \text{ALIGN}(w, \text{VERT})
\]

\[
H. \text{ Bodenb. schrecken } \sim \\
H,B,e' \text{ s} \quad \text{Hunde}(H) \text{ Bodenbrüter}(B) \\
e' \text{ CAUSE } s \quad \text{AGENT}(e') = H \\
s: \text{ SCHRECK}(B)
\]

(i) accommodation of e’ and justification of auf =>

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\[\text{HGC}^{16}\]

\[\text{We assume here that schrecken does not refer to the activity of the dogs, but to the psychological state caused in the birds through this activity. Compare with einen Schreck(en) bekommen (engl. get a fright).}\]
In (14) *auf* is most plausibly interpreted as referring to an upward movement that is part of a complex event which also involves an event of picking seeds that may be partly cotemporal with the upward movement of the seeds. Typically verbs such as *aufgreifen* (*greifen* = to grasp, seize), *aufsammeln* (*sammeln* = to collect), or *aufnehmen* (*nehmen* = to take), are intentional 'routines' where an event of getting hold of something is a preparatory action of raising it. The raising event is accommodated in order to justify *auf*. *Samen aufpicken* in (14) yields a presentation of the following form:

\[(18)\]

\[
\begin{align*}
\text{Vogel(y) Samen(sm)} \\
e':\text{picken(v,sm)} \\
e'':\text{MOVE(v,sm)} \\
\text{\textcolor{red}{\mathbin{\&}} e''} \\
\text{ALIGN(w,VERT)}
\end{align*}
\]

The relation \(\text{\textcolor{red}{\mathbin{\&}}}\) indicates the close relation of the two aspects of the 'routine' event. \(\text{\textcolor{red}{\mathbin{\&}}}\):\text{MOVE(y,sm)}\) represents "transport" of sm by v.

With *rühren* and *wirbeln* in (15) and (16) we seem to face a difficulty: Do *rühren* and *wirbeln* not describe motions on their own? And are these not motions within the horizontal? If so, how could *auf* combine with event descriptions of this type? The answer we prepose here is that *rühren* and *wirbeln* need not necessarily describe a change of location. The sand might swirl without moving to another location. The verbs rather express a change of configuration. Therefore the event of stirring must be interpreted as causing the theme to move upwards, where the activity of swirling is going on while the theme moves upwards. Similarly, in (16) the wind causes the dirt to change configuration (which is described by *wirbeln*) and move upwards at the same time.
The foregoing examples show that the meaning of *auf* can combine with the meaning of verbs in a variety of ways. This might be taken to indicate that the simple mechanism of unification is not powerful enough to determine the meaning of such verb-particle complexes. It might thus seem necessary to store their meaning in the lexicon, rather than compute it online. We do not want to deny here that the meaning of certain constructions with *auf* is somehow stored. However, we will argue that in most cases the contribution of *auf* within a particular context can be determined by regular interpretation mechanisms. At the same time we will show that the meaning of *auf* presented above is applicable in a variety of cases and that we do not need to postulate a large number of different senses in order to account for different kinds of contexts. The basis of our argument is the observation that from the perspective of the interpretation mechanisms *auf* in this sense is not significantly different from other directional adverbials. In particular, it does not differ much from other adverbials which denote an upward movement, such as *nach oben*, *in die Höhe* oder *aufwärts*. For most VPs which are modified by directional adverbials there are general correspondences between certain syntactical and semantic structures. Thus, if a directional adverbial modifies an intransitive VP, then the theme introduced by the subject is claimed to move in the specified direction. In contrast, if such an adverbial modifies a transitive VP, then the subject introduces an agent (or causer) that causes the theme introduced by the direct object to move in the specified direction. What both cases have in common is that what moves is always a theme. In the case of intransitive constructions, the subject of VPs which express motion always introduces a theme and accordingly the perfect is formed with *sein*. All these observations apply to *auf* in the sense of describing an upward movement.

\[18\] Remember that *uf*, whose meaning was very similar to the meaning of *auf* discussed in this section, clearly was an adverb. *auf* has probably only come to be considered as a particle because other meanings evolved which could not be analysed as adverbs. Nonetheless the interpretation mechanism for this sense of *auf* has not changed significantly, so it seems justified to still regard it as an adverb.
2.1 *auf* as referring to virtual paths

So far we have only considered cases where *auf* refers to motion of a material object along a path. Yet there are some verbs which neither introduce motion nor support accommodation of MOVE, yet can combine with *auf* in the sense of (6). The most plausible explanation for why this is possible is that they introduce a virtual path, which satisfies the requirement of a path to be aligned with VERT in (6).

(20) *Das gewölbte Mittelschiff hat mit 26 m Höhe und 11 m Breite (Gesamtinnenlänge = 76 m) einen intimeren Charakter als andere vergleichbare Kirchen, die im Innenraum wesentlich höher aufstrebren.*

‘The vaulted central nave has with a height of 26 metres and a width of 11 metres (total interior length = 76 metres) a more intimate character than other comparable churches, which rise [*aufstrebren*, literally: strive up] significantly higher in the interior.’

(21) *Von einer Seite aus betrachtet zeigen sich die Felsen wie Nadeln, die in den Himmel aufragen, von der anderen Seite kann man die Form einer Hand erkennen.*

‘Looked at from one side the rocks appear like needles looming [*aufragen*] into the sky, from the other side the shape of a hand is discernable.’

(22) *Was sehen wir, wenn wir nachts zum Himmel aufblicken: Nur die unendlichen Weiten des Weltraums, oder ist es doch mehr?*  

‘What do we see when we look [*blicken*] up [*auf*] into the sky at night: Only the infinite vastnesses of space, or is it more after all?’

In (20) and (21) the virtual path is identical with the vertical functional axis of the building and rocks respectively. *blicken* in (22) and other verbs which describe events of visual perception introduce the observer axis, i.e. the axis leading from the observer to the perceived object, as a virtual path. That these events are conceptualized as motion is indicated by the directional adverbials with which the particle and verb combine. It may be possible to conceive of historical explanations for why such static events are conceptualized as motion. However, these are not relevant for our purposes. In the current context it is sufficient to know that such verbs do introduce virtual paths.

Note that in many cases where verbs of visual perception are combined with *auf* in the current sense the analysis just proposed is not the most plausible one. Consider the following example.
This sentence clearly describes a change in the focus of attention. Yet the result of this change is not that the observer axis is in alignment with VERT. Thus, if (6) is to apply here, w must be justified by something other than the observer axis. It is unlikely that this role is played by the observer axis or the eyes (or head) of the perceiving person because they undergo a change of position, rather than a change of location. Therefore it is most plausible to assume that auf describes the path of the focus of attention. In our examples this moves from the book up to the window. This interpretation also involves a virtual path or movement because there is no actual material object which changes its location. Note that this interpretation is also possible for (22).

The case of visual perceptual verbs confirms our claim that auf, or directional adverbials in general, do not refer to the agent of an event. At first sight it might seem surprising that this class of verbs remain agentive when combined with directional adverbials, even if real motion is present. Yet what moves here is not the entity denoted by the subject, but an internal participant of the event of perception, namely the focus of attention.

### 2.2 auf as expressing a change of position

Although the examples in the previous section already differed significantly from paradigmatic uses of (6), which involve the upward movement of a material object, it was still possible to interpret them by means of (6). Yet this is not possible for the following sentence because the movement involved here is a change of position, rather than a change of location.

(24) Alleine aufstehen oder sich auch nur im Bett aufsetzen geht nicht mehr.
‘Getting [stehen] up [auf] on one’s own or even just sitting [setzen] up [auf] in bed is not possible any more.’

Here auf expresses that the functional vertical axis of an object (rather than its movement) is in alignment with the vertical vector of PPS. Therefore a further representation for auf is required:

\[
\text{auf} \sim \forall \text{ALIGN}(\text{vert}_{fun}(y), \text{VERT})
\]

The semantic construction of sich aufsetzen goes accordingly as follows:  

---

19 Verbs of positions e.g. sitzen (to sit) are eventualities, rather than states. For instance they combine with the progressive.
(26) *sich setzen* $\leadsto$ \begin{align*}
\begin{array}{c|c}
\text{ev}^0 & \text{sitzen}(x) \\
\text{ev}' & \text{sitzen}(x)
\end{array}
\end{align*}

justification of *auf*:

(i) accommodate *ALIGN(vert\_fun(x), VERT)*

(ii) unify \(x\) with \(y\).

\[
\text{sich aufsetzen} \quad \leadsto \\
\begin{array}{c|c}
\text{ev}^0 & \text{sitzen}(x) \\
\text{ev}' & \text{sitzen}(x)
\end{array}
\]

(ii) \(y\) can be unified with \(x\)

The functional vertical of a person \(x\), \(\text{vert}\_\text{fun}(x)\), can be thought of as the person’s spine.

This sense of *auf* seems also present in the description of a person as being out of bed, which involves his being in an upright position (as opposed to a horizontal position when lying in bed).

(27) *Ich war schon früh auf und hatte mir eine Zeitung zur Frühstückslektüre besorgt.*

‘I was up [auf] early and had got a newspaper for my breakfast reading.’

A further instance of (25), not speaking of a person, but of a hill, seems present in the following example.

(28) *1894 ließ Lilienthal in Berlin-Lichterfelde auf seine Kosten einen 15 m hohen Hügel aufschütten, der sehr bald als “Fliegeberg” in aller Munde war.*

‘In 1894 Lilienthal had a 15 m high hill, which was soon known as “Fliegeberg” everywhere, heaped [schütten, literal: pour] up [auf] at his own expense.’
Here *auf* can be interpreted as stating that the vertical functional axis of the hill which comes into existence through an activity of pouring is in alignment with VERT. However, another interpretation is possible, too. Thus *auf* can be understood as indicating that the hill grows along VERT. As this sense of *auf* can also be found in other contexts and it is not immediately obvious what exactly *auf* contributes to the discourse in such cases, we will examine this issue in more detail in the next section.

### 2.3  *auf* as describing growth along VERT

(29) *Rauchen verboten heißt es ausgerechnet an den Wänden jener Aufenthaltsräume, in denen die Cannabis-Pflanzen jetzt zwischen Schießscharten zum künstlichen Licht aufschießen.*

‘No smoking is written just on the walls of those common rooms where the cannabis plants now rise [aufschießen] toward the artificial light.’

It is obvious that in this example *auf* identifies the vertical as the main dimension of growth of an object. Yet it is not clear what sense of *auf* is relevant in this context and what justifies its use. Different analyses seem possible. *auf* may be used in the original sense of (6) and refer to the motion of the top of the growing object, in this case the top leaves of the plants. That *auf* only refers to a motion of part of the theme can be observed in other contexts, too. Yet, in most cases of such growth there is no top part that stays the same throughout the process of growth. Thus in our example it is probably rather the case that new leaves are added at the top. Therefore this interpretation can at most be a simplified conceptualization of what happens when objects grow along the vertical dimension. A further possible analysis is to simply assume that growth is conceptualized as motion and thus introduces a virtual path without postulating the movement of a particular part of a growing object. In this case *auf* can easily be justified through unification with the virtual path.

Another possibility is to boil down growth to an increase in the length of the growing dimension(s), in this case $d_{vert}$. Although growth is in this case not subsumed under motion, we can present the contribution of *auf* in a form that can be interpreted in model theory without a loss of conceptual

---

20 Note that the ambiguity between the theme standing for the material at the centre of an activity and the object which results through the activity is a general phenomenon and thus does not need to be mentioned in the lexical entry of *auf*. Compare, for instance, the distinction between “Teig kneten” and “Figuren kneten.”

21 Another possibility is to interpret *auf* as denoting a SUPPORT relation. This sense of *auf* will be discussed in section 3.
motivation in terms of VERT: *auf* contributes that the length of *d_{vert}* of some three-dimensional object *y* had been shorter in context than during a later state:

\[
\begin{align*}
\text{(30)} &\quad \text{auf} \sim \\
&\quad \left\{ \begin{array}{l}
\text{s}^0 \text{ l}^0 \\
\text{s}^0: \text{length}(d_{\text{vert}}(y)) = l^0
\end{array} \right\} \quad \left\{ \begin{array}{l}
\text{s} \text{ l} y \\
\text{s}: \text{length}(d_{\text{vert}}(y)) = l
\end{array} \right\} \\
&\quad ; \quad \text{s}^0 \prec s \\
&\quad l^0 < l
\end{align*}
\]

We believe that this sense of *auf* can also mark an increase in volume of three-dimensional objects, as in the following examples.\(^\text{22}\)

\[
\begin{align*}
\text{(31)} &\quad \text{Die neue geleeartige Substanz ist eine Weiterentwicklung der so genannten Superabsorber, die bis auf das Hundertfache ihrer Größen aufquellen und Wasser oder andere polare Flüssigkeiten aufnehmen können.} \\
&\quad \text{‘The new jellylike substance is a further development of so-called superabsorbers, which swell [quellen] up [auf] to their hundredfold size or are able to absorb other polar liquids.’}
\end{align*}
\]

\[
\begin{align*}
\text{(32)} &\quad \text{atme tief ein, lass die Luft so langsam zwischen den Lippen entweichen, dass die Wangen dick aufgebläht sind.} \\
&\quad \text{‘take a deep breath, let the air escape slowly between your lips so that the cheeks are grossly bloated [aufgebläht].’}
\end{align*}
\]

\[
\begin{align*}
\text{(33)} &\quad \text{Wer je mit dem Mund eine Luftmatratze aufgeblasen hat, weiß, wie viel 60 Liter Luft sind} \\
&\quad \text{‘Whoever has blown up an airbed with his mouth will know how much 60 litres of air are’}
\end{align*}
\]

Note that increase of volume is expressed with the help of *auf* only if the material object described in the direct object is conceptualized as three-dimensional. Increase of extension of two-dimensional objects or two-dimensional regions is typically described with the help of *aus*-particle verbs. See for instance (34) and the minimal pair in (35).

\[
\begin{align*}
\text{(34)} &\quad \text{Der Becher kippt und auf dem Tisch breitet sich eine schwarze Pfütze aus.} \\
&\quad \text{‘The mug topples and a black puddle spreads on the table.’}
\end{align*}
\]

\(^{22}\)Cf. Lindner, p. 116.
Teig auf einem bemehlten Küchentuch zu einem Rechteck von ca. 30 x 40 cm ausrollen. Füllung auf einer Längsseite verteilen und zu einem Strudel aufrollen.

‘Roll out dough on a floured tea towel into a rectangle of about 30 x 40 cm. Spread the filling on one of the long sides and roll up to a strudel.’

We speculate that there are conceptual reasons for the difference in linguistic form: Let’s think of a ball-like object, say a balloon. Although the ball-like object grows in all three dimensions, growth of length with respect to the dimension $d_{vert}$, i.e. the dimension of the object that aligns with VERT, is the most salient one. True or not, linguistic description chooses $d_{vert}$ to mark growth of volume of three-dimensional objects in terms of growth of the length of the object’s axis $d_{vert}$. With brick-like objects $d_{vert}$ may be the maximal, intermediate, or either the minimal dimension. The latter obtains with the airbed in (33). With the cannabis plants, which are three-dimensional objects as well, it is the maximal that follows VERT.

So much for our explanation of why growth is described with the help of auf. What we still have to make precise is the semantic contribution of auf in these cases. All three interpretations of growth discussed here can be used to model an increase in volume. We will here only show this by means of the analysis of growth as an increase in length and the corresponding sense of auf [30]. The growth of the cannabis plants described in (29) can thus be represented in the following way.

\[
\begin{align*}
&s^0 \sqsubseteq^0 e \sqsubseteq Y \\
&s^0 : \text{length}(d_{vert}(y)) = l^0 \\
&\text{e:schießen}(Y) \\
&\text{res}(s,e) \\
&s : \text{length}(d_{vert}(Y)) = 1 \\
&\exists^0 < 1 \\
&\text{beg}(s^0) < e \\
&\text{end}(s^0) = \text{end}(e)
\end{align*}
\]

Composition is successful, once inferred that schießen describes growth. The theme of the description, Y, is a three-dimensional object undergoing growth along VERT. With (31) composition is similar insofar as the increase in the volume of the direct object described by quellen justifies the constraint of auf in (30). With (33) composition is more involved. First, blasen (to blow) is an intransitive action verb involving an agent x only. Second, x does not introduce an object whose vertical grows in length, so it is not
sufficient to justify the constraints set by *auf*. Thus the description of the blowing event must be extended to a transitive description involving some y the dimension $d_{vert}(y)$ of which increases. Note that *auf* is responsible for introducing this variable. The discourse referent y that comes into the construction in virtue of *auf* must be both a participant of the blowing event and increasing in length with regard to its vertical dimension. The direct object of the transitive *etwas aufblasen* (to blow up something) qualifies for that because y increases in volume. We display the semantic construction in (33) as a merge of *auf* as in (30) and the intransitive verb *blasen*. The construction leaves open the severe question of how the intransitive *blasen* ends up in a transitive construction. We have reason to hope that a precise reconstruction can be achieved within the word-syntactic ‘Distributive Morphology’- framework. This would involve discussing the syntactic principles underlying such constructions. Yet in this paper we confine ourselves to providing the semantics of the construction and leave the syntactic details for another occasion.

(i) extend the semantics of the verb *blasen*

(ii) justify the constraints of *auf* in (30), involving unification of y and $y'$, $s^0$ and $s'$, s and $s'$,
2.4 Metaphorical extensions

The following sentences are examples of a further class of occurrences of *auf* where the idea of an upward movement may have come to be replaced by a more specific sense.

(38) *Den Ball so hoch wie möglich schießen und durch Nachlaufen wieder auffangen.*

‘Shoot the ball as high as possible and catch [auffangen] it again through running after it.’

In cases where *auf* is combined with literal uses of *fangen* a downward movement is stopped through an upward movement. Although the aspect of moving upwards is clearly what originally caused the use of *auf* in such cases, the aspect of acting against a downward movement has become more prominent, so that it is often not clear what sense is present. That there is this distinct sense of *auf* as stopping a downward movement is shown by cases such as (39) where no upward movement takes place.

(39) *Mit entsprechenden Sammelgefäßen lässt sich das Regenwasser auffangen und anschließend wieder im Garten, für die Waschmaschine oder auch für die Toilette verwenden.*

‘Rain water can be collected [auffangen] with appropriate storage containers and subsequently be used again in the garden, for the washing machine or for the toilet.’

This analysis might be questioned by pointing to cases where *fangen* combines with *auf* and refers to the stopping of a movement, but where this movement is not directed downwards. It might be thought that there is another sense of *auf* which explains both (39) and (40).
(40) Ein Hühnerei reagiert mit Essig in einem Zylinder, der oben durch einen Gasähn verschlossen ist, damit man das aufsteigende Gas auffangen kann.

‘A chicken egg reacts with vinegar in a cylinder, which is sealed at the top through a gas tap, so that the rising [aufsteigende] gas can be collected [auffangen].’

Yet (40) can also be accounted for by slightly extending the sense of auf just discussed, so that it comprises not only downward movements in the literal sense of the term, but also downward movements in an abstract sense, e.g. movements in a direction that is considered negative or undesirable. Thus the evasion of the gas in (40) is regarded as negative and thus as something to be stopped or prevented. auf in this sense can also refer to events which do not involve any spatial movement, but rather movements at an abstract level, as can be seen in the following examples.

(41) Siemens will Mitarbeiter der Handysparte auffangen

‘Siemens wants to save [auffangen, literally: catch] employees of the mobile phone sector.’

(42) Ausgleichszahlungen können Preissenkung nur teilweise auffangen

‘Compensations can only partly make up [auffangen] for price cut.’

(43) Den größten Teil der Preissteigerungen konnten wir jedoch durch größere Einkäufe auffangen, so dass der Preis für unseren Gartenzaun für Sie trotzdem nur 7,90 DM pro Meter beträgt.

‘We could make up [auffangen] for the greatest part of the price increases through bigger purchases, so that the price of our garden fence is only 7,90 DM per meter for you.’

(44) Therapeutische und medikamentöse Behandlungen können den Krankheitsverlauf um wenige Jahre verzögern. Aufhalten können sie ihn nicht - Alzheimer ist bislang unheilbar.24

‘Therapeutical and medicamentous treatments can delay disease progression by few years. But they can’t stop [aufhalten] it - Alzheimer’s is so far uncurable.’

24Note that in this case aufhalten refers to the prevention of a negative course of events, whereas in other cases it only describes the delay of negative developments. E.g. in the sentence “Können Vitamine & Co. den gefürchteten Gedächtnisschwund möglicherweise verhindern oder aufhalten?” aufhalten is explicitly contrasted with verhindern (prevent). This means that either the current sense of auf leaves open whether the prevention of the described event is temporary or permanent, so that this has to be made clear through the context, or there is a separate sense of auf which can account for cases where aufhalten expresses a delay. The latter hypothesis will be discussed in 6.
These examples refer to people descending to the socially and financially inferior state of unemployment, to a decrease in, and thus downward movement of, prices, and to a deterioration of people’s state of health. (43) appears to not fit into this pattern because it speaks of preventing an increase of prices. Yet this can be explained by the fact that an increase in prices is here conceived of as something negative (because it is seen from the perspective of customers) whereas in (42) a decrease is considered as negative (because it is seen from the perspective of farmers who want to sell their produces). This suggests that such metaphorical uses of *auf* are regular extensions of the original spatial meaning of *auf* and do not need to be stored as idiomatic expressions. When we look at a wider range of data, we can in fact see that many non-spatial uses of *auf* lie within a limited set of meanings which are all related to its original spatial meaning.

(45) *Nur bei wenigen Arbeitgebern kann man vom Platzwart zum Abteilungsleiter aufsteigen*   
‘Only few employers allow one to rise [aufsteigen] from a groundkeeper to a head of department.’

(46) *Bonns Trainer Michael Koch musste seine enttäuschten Spieler nach der Niederlage gegen Ludwigsburg moralisch aufbauen.*   
‘Bonn’s coach Michael Koch had to cheer up [moralisch aufbauen] his disappointed players after the defeat against Ludwigsburg.’

(47) *Die Öffentlichkeit will zu ihren Adelslieblingen aufblicken können.*   
‘The public wants to be able to look [blicken] up [auf] to their favourite nobles.’

(48) *Einer israelischen Forderung folgend legt der Plan fest, dass beide Seiten nicht zur Gewalt aufhetzen dürfen.*   
‘Following an Israeli request the plan stipulates that both parties must not incite [aufhetzen] to violence.’

(49) *Es gibt Zeiten, da wünscht man sich eindeutig eine Wohnung, wo man solche Musik aufdrehen kann und im Gute-Laute-Feeling baden kann.*   
‘There are times where one clearly wishes a flat where one can turn [drehen] up [auf] such music and bathe in a good-mood-feeling.’

(50) *Ein mit Dosencreme gepflegter Schuh lässt sich auch mal zwischen durch auf die Schnelle in wenigen Sekunden aufpolieren, ohne dass zuvor neue Creme aufgetragen werden müsste.*   
‘A shoe which is cared for with tinned shoe polish can be polished
[polieren] up [auf] at odd moments quickly within few seconds without having to apply new polish first.'

(51) *Seit den 60er Jahren sind insgesamt mehr als 70 Millionen Bäume gepflanzt und rund 140 000 Hektar Berge zum Aufforsten abgesperrt worden.*

‘Since the 1960s more than 70 million trees have been planted altogether and about 140,000 hectares of mountains have been closed for reforestation.’

In many cases *auf* has the meaning of increase, enhancement or improvement which can all be considered as an upward movement in an abstract domain. A further common metaphorical extension of *auf* is an upward movement within a social order. As Lindner points out, these extension principles are not restricted to *auf* (or *up*). They apply to the vertical axis in general.

There are many different ways in which the interpretation mechanisms can arrive at the correct meaning of a discourse containing such a metaphorical extension of *auf*. In some cases it is necessary to start with the spatial meaning and only switch to an abstract domain, once part of the meaning of the discourse has been constructed in the spatial domain. This can be seen in (45), where *auf* and *steigen* have to be interpreted together as standing for an upward movement before their joint representation can be transferred to the domain of professional rankings. *steigen* does not add much to the spatial meaning of *auf*, so its metaphorical use is fairly flexible. Yet other verbs add more detailed information about the upward movement and its causing event. The meaning of these verbs is also relevant when transferral to an abstract domain is required. This effect can be seen when we compare contexts where the meaning of *auf* is transferred to the domain of feelings or mental states. *bauen* describes the construction of something and thus has a positive connotation. Therefore it can in (46) together with *auf* stand for encouragement and the bringing about of a positive state of mind. In contrast, if a being is caused to move upwards through an action of *hetzen*, it is negatively affected. This negative connotation is kept when the expression is transferred to the domain of emotions and political action as in (48). Note that such metaphorical extensions are often not unique to individual verb-particle constructions, but are similar for groups of related verbs. Thus *hetzen* is a member of a large group of verbs which can be used in combination with *auf* to describe the strong negative feelings or attitudes of a group of people,

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26 The following applies to a certain extent also to other words which refer to the vertical axis.
often accompanied by violent actions, against another group of people, often in a socially higher position. Similarly, visual perception verbs used in combination with *auf* regularly have the meaning of admiring someone, so *auf* here refers to some sort of ranking of people. A regular metaphorical extension can also be found with some verb-particle constructions where *auf* denotes an increase in volume. Thus *aufblähen*, *aufplustern*, *aufblasen* and *aufbauschen* can mean that something is assigned more importance than it deserves.

In many cases, *auf* can be interpreted as having a metaphorical reading on its own, so it can be combined directly with verbs that retain their literal spatial meaning while *auf* is used in a metaphorical sense or with verbs that cannot be used to refer to a spatial upward movement at all. For instance, *drehen* in (49) refers to the physical action of drehen, whereas *auf* is used in an abstract sense to stand for an increase in sound volume. It would be difficult to find a context where *polieren* can be combined with *auf* to describe an actual upward movement. Yet it can be combined with *auf* in an abstract sense to denote an improvement that is brought about through the process of polishing. Note that *auf* can here be interpreted as having the further connotation that the improvement puts the object back into its original state, or a state similar to its original state. This meaning of *auf* is frequent and occurs especially in the context of crafts. It is unlikely that the additional meaning aspect of putting something in its original state is derived online from the spatial meaning of *auf*. Rather, it has to be learned as a distinct meaning of *auf*.

In some cases the meaning of the combination of *auf* and a particular verb has to be stored in the lexicon. This is especially likely if the verb only occurs in combination with *auf* (or related particles such as *ab*), as is the case for *forsten* in (51). It is generally very difficult to determine when the meaning of complex expressions is stored in the lexicon and when it is constructed through combining the lexical entries of the individual parts by means of general interpretation rules. Often it seems to be the case that general rules are not sufficient to determine the meaning of a complex expression within a context, yet there are still regularities which help to correctly memorize it and retrieve it from the lexicon. This phenomenon can be observed with what is often called ‘analogical formations’ or ‘semantic niches’, whose meaning is not clearly compositional, but where a group of verb-particle constructions have a similar meaning. A good example is the group of verb-particle

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27 Further examples of such verbs are *rühren*, *wählen*, *mischen*, *reizen*, *wiegeln*, *mischen*, or *putschen*.
28 See (47).
constructions comprising *aufputzen*, *aufstylen*, *aufdirndeln*, *aufmachen*, *auf-takeln*, *aufdonnern*, or *aufbrezeln*. In all these constructions *auf* can denote the attempt to improve a person’s external appearance by extreme or exaggerated means. With *aufputzen* or *aufstylen* the attempt to improve one’s external appearance is already expressed in the verbs, so *auf* only adds the aspect of enhancement or intensity, which it also contributes in other contexts. The meaning of the complex construction is thus clearly compositional. Yet in some of the other examples the content of the verb is bleached and *auf* contributes the meaning which in the other cases only came into place through compositional mechanisms. There are different explanations in the literature for how such verb-particle constructions are built, which we do not have room to discuss here. What matters for our purposes is the fact that despite the apparent non-compositionality of these constructions *auf* makes a regular meaning contribution which is cognitively relevant. Thus in order to use and understand such expressions correctly and efficiently it is not sufficient to store the meaning of each individual item in the lexicon.

3  *auf* is SUPPORT

(52) *Jogger sollten sich beim Training im Winter eine Mütze aufsetzen.*

‘Runners should put *setzen* on *auf* a hat when exercising in winter.’

(53) *Ich habe gewöhnlich Zeige- und Mittelfinger vorne auf der Maus aufliegen.*

‘I usually have my index and middle finger lying *aufliegen* on *auf* the front part of the mouse.’

(54) *Zum Schutz der Wunde sollten Sie für 30 min auf einen Tupfer aufbeißen.*

‘To protect the wound you should bite *aufbeißen* onto *auf* a pad for 30 minutes.’

(52) can be understood as expressing an upward movement and thus as containing the original meaning of *auf*. Nevertheless it seems appropriate to analyse this sentence as making use of a different sense of *auf* because the aspect of support provided by another object which results from the upward movement is similarly, or even more, important than the movement itself. This use of *auf* thus corresponds to the most prominent meaning of the preposition *auf*. As, for instance, [Grimm] point out, this preposition has resulted...
from merging the Old High German words *auf* and *ana* (which roughly correspond to the English *up* and *on*). 

(53) shows that the aspect of an upward movement has totally disappeared in some cases. Yet it remains implicitly present in the fact that the supported object whose position is described is prevented by another object from moving in the direction of gravity. Thus *auf* can again be understood as stopping or preventing a downward movement.

The following lexical entry captures this sense of *auf*.

\[
(55) \quad \text{auf} \leadsto \begin{array}{c}
\text{SUPPOR TS}(z, y)
\end{array}
\]

Composition of *Jogger sich eine Mütze aufsetzen* goes as follows:

\[
(56) \quad \text{auf} \leadsto \begin{array}{c}
\text{SUPPOR TS}(z, y)
\end{array}
\]

\[
\text{Jogger Mütze setzen} \leadsto \begin{cases}
\text{ev}^0 \leadsto \text{SUPPOR TS}(z', y') \\
\text{ev}^0 \supset \subseteq \text{e'}
\end{cases}
\]

\[
\text{ec e'' CAUSE ev'}
\]

\[
\text{Agent(e'')=x}
\]

\[
\text{ev':SUPPOR TS(x,y')}
\]

\[
\text{ev':sitzen(y')}
\]

\[
(\text{i}) \text{ justification of auf boils down to identifying the auf-relation with the condition implied by change of position verb setzen. y = y' and z is x. (We skip the final representation of Jogger sich eine Mütze aufsetzen.)}
\]

\[30\]

The two-place relation SUPPORTS is implied by the resultant state of position verbs such as *sitzen* and its causative alternates e.g. *setzen*. Typically these verbs subcategorize support prepositions such as *auf*, e.g. *sitzen auf* (to sit on), and *an*, e.g. *lehnen, hängen an* (to lean on, to hang on).

The support relation between material objects *z* and *y* always implies contact between certain faces, rims or edges of the respective objects. For example think of two bricks *z* and *y*, where *z* supports *y*. This can be expressed by *(y auf z)*, where *y* is the discourse referent of the external argument of the preposition and *z* is describes by the internal argument. We can infer contact between the top-face of *z* and the bottom-face of *y*, where ‘top’ and ‘bottom’ are top and bottom with regard the the brick’s position in **Primary Perceptual Space**. Which faces (or rims and edges) have contact depends on the object schemata of *z* and *y*. We omit details here. What is crucial for our investigation here is that SUPPORTS always implies CONTACT.
Note that in some rare cases the meaning of *auf* is merely contact between objects. This can be seen in (57). The same reading of *auf* can also occur in combination with the verbs *brummen, kommen, laufen, prallen, rücken, rutschen,* and *schließen.* It is not clear whether this sense of *auf* is related to or has the same origin as the support reading. There also seems to be a connection to the metaphorical interpretation of *auf* as denoting the stopping of a movement, which we encountered in the previous section. The contact interpretation is particularly adequate if a gap or deficit is bridged and a positively valued state is thus reached. Hence abstract uses are frequent for this sense of *auf* in (58) and (59).

(57) Völlig unvermittelt ist an der Ampel ein Kleinlaster auf ihr Auto aufgefahren.  
‘All of a sudden a light lorry drove [gefahren] into [auf] her car at the traffic light.’

(58) BDI: Deutschland muss zu den führenden Online-Nationen aufschließen  
‘BDI (Federation of German Industries): Germany must close [schließen] up [auf] with the leading online nations.’

(59) Deutschland muss die ökonomischen und technologischen Vorsprünge anderer Länder auf dem Gebiet der Informationstechnologie aufholen.  
‘Germany must catch up [aufholen] with the economic and technological advantage of other countries in the area of information technology.’

With this sense of *auf* it is again the case that one variable, namely the supported object *y*, always refers to the theme of the sentence, or some part of it. This can be clearly seen in the above examples. In (54) the supported object is not explicitly specified, but the verb makes clear that it consists in the teeth of the subject. This meaning of *auf* differs from the one discussed in the previous section in that a second variable, namely the supporting object *z*, has to be resolved. In this case there are even more possibilities for how the variable can be realized. In simple cases the supporting object is introduced by a dative object, such as *sich* in (52), or by an *auf*-PP as in (53), (54) and (57). A further way of expressing it explicitly are denominal verbs, many of which only occur in combination with *auf* or other particles.

(60) In Köln hat man schon in der Innenstadt die Qual der Wahl unter mehreren Hundert Restaurants, die Speisen und Getränke aus nahezu jedem Land der Erde auftischen.
‘In the centre of Cologne alone one is spoilt for choice among several hundred restaurants, which dish [tischen] up [auf] meals and drinks from almost every country in the world.’

(61) LGB-Loks und Wagen lassen sich sehr leicht aufgleisen, auch von Kindern.
‘LGB engines and waggons can very easily be rerailed, even by children.’

Yet in many cases the supporting object remains implicit and has to be determined by means of world knowledge.

(62) Das Pferd ist fertig gesattelt und der Reiter möchte aufsteigen.
‘The horse is saddled and the rider wants to mount [aufsteigen].’

(63) Creme-Rouges können auch mit den Fingern als Lippenfarbe aufgetupft werden.
‘You can also dab [tupfen] cream rouges on [auf] your lips with your fingers.’

(64) Wenn ihr auf den Knien aufgekommen seid, setzt ihr euch seitwärts hin, ohne euch mit den Händen aufzustützen.
‘When you have landed on [aufgekommen] your knees sit sidewards without resting on your hands.’

(65) Die Kaninchen haben heute mit den Hinterläufen immer so stark aufgestampft, dass es einen Riesenkrach gemacht hat.
‘Today the rabbits stamped on their feet [mit den Hinterbeinen aufgestampft] so strongly that they made a big noise.’

(64) and (65) also show another phenomenon: auf-PPs or mit-PPs can be used to specify the part of the theme which is in contact with the supporting object. This means that auf-PPs can have two functions in connection with such verb particle combinations and which is present has to be determined by means of the context and world knowledge.

The most prominent metaphorical extension of this sense of auf has developed from uses of auf in the context of heavy loads which have to be carried (and thus supported) by a person. Thus auf has come to stand for

31Further examples of verb particle combinations which can be interpreted in this way are aufbahnen, aufbuckeln, aufspießen, aufspulen, aufrollen, aufbänken, aufbaumen, aufbeten, aufblocken, auffädeln, aufbuckeln, aufgabeln, aufkanten, auflisten, aufständern, and auftablieren.
non-physical burdens, especially for the possession of an obligation, responsibility, commitment, or another kind of constraint on a person’s action. This meaning of *auf* is present in the following examples.

(66) *Die Kirche dürfe nicht der gesamten Gesellschaft Dogmen und Gebote aufzwingen.*
     ‘The church must not force [zwingen] dogmas and commandments on [auf] the entire society.’

(67) *Es besagt, dass Lehrende ihren Schülern nicht ihre Meinung aufnötigen dürfen.*
     ‘It says that teachers must not force [nötigen] their opinion on [auf] their students.’

(68) *Die Forschung zeige zudem, dass Lehrer, die häufig Hausaufgaben aufgeben, ihre Schüler zu besseren Leistungen bringen.*
     ‘Research also shows that students of teachers which frequently assign [aufgeben] homework achieve better performances.’

(69) *Viele Kinder wissen manchmal nämlich nicht, was sie aufhaben.*
     ‘Indeed many children sometimes don’t know what they have been assigned [no English equivalent in active voice].’

(70) *Lassen Sie sich keine so genannten “Nebenprodukte” wie beispielsweise eine Unfall-Versicherung aufschwatzen.*
     ‘Don’t let yourself be talked into [aufschwatzen] so-called “byproducts”, such as for instance an accident insurance.’

The fact that a person acquires a constraint on her future action which is conceived of as negative is in some cases made clear by verbs such as *zwingen* or *nötigen*, which express the exertion of force. Sometimes the theme of the sentence clearly expresses a constraint. In other cases the noun which introduces the theme is neutral and only associated with a constraint in the particular combination with *auf* and certain verbs. Typical verbs in this context are verbs of possession or change of possession, and verbs of utterance.

The constraint or the object which is associated with the constraint is usually the theme of the sentence, whereas the person who is thus constrained is normally referred to via a dative object or, in the case of possession verbs, the subject. If it is obvious who acquires the constraint, the recipient does not need to be specified explicitly. Thus consider the following example.
(71) Wenn Sie ein Paket aufgeben wollen, melden Sie sich an einer Packstation mit Ihrer Kundenkarte und der PIN an.
‘If you want to post a parcel, please sign in at a packing station with your customer card and PIN.’

This example can also be analysed as displaying a different perspective on the event of transferring a constraint: the focus is on the person who gives away responsibility, rather than on the person who receives it. Such a usage of auf, especially in combination with geben, has been extended to cases where there is no recipient of a constraint and all that is expressed is that a person loses or gives away a constraint. Interestingly the meaning of auf in such contexts seems to be almost the opposite of that observed in the previous examples. The following sentence is an example of this phenomenon. Here a sports team ends its participation in a competition and thus its commitment to win.

(72) Nach einem leichten Zusammenstoß musste die Germany 1 das Rennen vorzeitig aufgeben.
‘After a slight crash the Germany 1 had to give [geben] up [auf] the race early.’

Note, however, that this is not the only possible analysis of auf in this context. It may in fact be more adequate to regard the ending of a constraint as a separate sense of auf, which might have derived from different spatial meanings of auf. For instance, the following way of using auf in combination with stecken may have resulted from spatial uses of those words in describing the placing of needles in a save position when stopping one’s daily knitting work. This etymological explanation is suggested by the lexical entry for aufstecken in [Grimm].

(73) Wenn Sie jetzt schon Herzprobleme haben, sollten Sie in jedem Falle das Rauchen aufstecken!
‘If you already have heart problems right now, you should in any case give up [aufstecken] smoking.’

In contrast, the similar meaning of aufheben in the next example can be understood as being derived from its literal spatial meaning, namely the lifting of an object, where auf stands for an upward movement.

(74) Der Landtag soll am Donnerstag die so genannte Handymastensteuer aufheben.
‘The Parliament is supposed to lift the so-called “Handymastensteuer” [mobile phone tower tax] on Thursday.’
From these metaphorical uses of entire verb-particle constructions, the meaning of *auf* as the end of a constraint seems to have developed. *auf* in this sense can be combined with verbs which have no spatial meaning:

(75) *Das haben ihm die Soldaten verübelt und ihm die Treue aufgesagt.* (internet)
   ‘Because of this the soldiers resented him and withdrew their loyalty to him.’

Although this use of *auf* differs significantly from its use in (66) to (70), it is interesting to see that there is at least some overlap in meaning in that *auf* always refers to a change in constraints on people’s actions. It is possible that this meaning overlap provides some help in learning the different uses of *auf*.

4 *auf* is perception

In this section we will argue that one distinct sense of *auf* is something’s being or coming to be (sensually or cognitively) perceived. This interpretation of *auf* is, for instance, possible in the following cases:

   ‘He somehow attracted my attention / struck me? [ist mir aufgefallen] immediately. First I heard his music, which made its way to my ears from far through the tangle of voices, streets and air traffic.’

(77) *Besonders kritisch ist die Situation, falls unverhofft unwetterartige Gewitter aufziehen*
   ‘The situation is particularly critical if thunderstorms come [ziehen] up [auf] unexpectedly.’

(78) *Nun dürfen in Wunsiedel an diesem Samstag doch Neo-Nazis aufmarschieren.*
   ‘Now neo-nazis are allowed after all to parade in Wunsiedel on Saturday.’

   ‘On 31 March 2007 the musical “The Black Brothers” celebrated its
world premiere in the steel foundry Schaffhausen and has since been performed 40 times without incident.’

(80) \textit{Seitdem wird am Querweg einmal wöchentlich geprobt und bei den verschiedensten Gelegenheiten dem Publikum aufgespielt.} 
‘Since then rehearsals have taken place in Querweg once a week and audiences have been played for at a wide variety of occasions.’

(81) \textit{Nachdem alle einmal aufgetanzt haben, gibt es einen Rücktanz, bei dem sich aber nur noch sechs Paare beteiligen, einige davon gemeinsam.} 
‘After all have danced once, there is a reverse dance, in which, however, only six couples participate, some of which together.’

(82) \textit{Da ich einer der wenigen war, der verkleidet dort aufgetanzt ist, gibt es doch tatsächlich ein Bild von mir} 
‘As I was one of the few people who appeared there in disguise, there is in fact a picture of me.’

In the literature this sense of \textit{auf} has been identified by Eichinger (2000), who speaks of a movement over the horizon of perception (“Bewegung über den Wahrnehmungshorizont”). He draws on Lindner’s work on \textit{up}, where \textit{up} is said to describe a path into the “range of viewer’s access” \(^{32}\). Both think that this sense of \textit{auf} has evolved directly from the original sense of an upward movement since objects can be thought to become perceivable by moving upwards. The connection between an upward movement and this meaning of \textit{auf} has also been noted by [Grimm]. They say that \textit{auftreten} (engl. appear, perform) was originally used to denote events where someone had to move upwards, for instance on a pulpit or stage. For certain verb-particle combinations, this meaning may also have evolved via the sense of causing a support relation between things. Thus [Kluge2002] states that \textit{aufführen} (engl. perform) originally meant to take something on (\textit{auf}) the stage. This explanation might also be possible for \textit{aufmarschieren} and similar combinations. However, for our purposes, it is not necessary to settle this issue. We are only interested in whether \textit{auf} currently has the function of referring to a perceptual event. The fact that this sense may have evolved from various other senses and that these original senses can sometimes still be used as an alternative interpretation does not speak against our analysis. There is no reason why one particular sense of a word could not have evolved from two other senses of the same word. Moreover it is an important caveat throughout this paper that different senses of \textit{auf} cannot always be clearly

\(^{32}\)Lindner1983, p. 125
distinguished and that often several interpretations are possible. Therefore we suggest the following lexical entry for this sense of *auf*.

\[
(83) \text{auf} \sim \\
\begin{array}{c}
e' \times x \times y \\
\text{e:PERCEPTION} \\
\text{EXPERIENCER}(e) = x \\
\text{STIMULUS}(e) = y
\end{array}
\]

Semantic composition involving justification of *auf* in the sense of contributing perception as in *er mir auffallen* according to (76) works as follows:

\[
(84) (76) ; \text{fall(en)} \sim \\
\begin{array}{c}
e' \\
\text{e':fall}
\end{array} \Rightarrow \\
\begin{array}{c}
e'
\end{array} \\
\text{e': contingency}
\]

The verbal root in *auffallen* is the one we find in *falls* (if), and *der Fall Oppenheimer* (the case Oppenheimer) introducing the usually unpredictable occurrence of an event of some type. The sentence is interpreted along the lines: an event *e’* occurred being one aspect of a perception event *e*, where *x* is the dative and *y* the subject of *auffallen*. Note that the verbal root does not introduce any arguments. There is no verb *fallen*, except in particle constructions. Again the syntactic foundations of the word-internal composition are missing in our representation. Still it is worth mentioning that *auffallen* subcategorizes a dative and nominal subjects, as verbs of perception and attitude often do in German. Justification of the constraints of *auf* in (76) is accommodation of all conditions in (83).

\[
(85) \text{er mir auffallen} \sim \\
\begin{array}{c}
e' \times e \times x \times y \\
\text{e':contingency} \\
\text{e’} \lor e \\
\text{PERCEPTION}(e) \\
\text{EXPERIENCER}(e) = x \\
\text{STIMULUS}(e) = y
\end{array}
\]

\(\lor\) stands for an overlap between two events. Note that this representation leaves open how much overlap there is between *e’* and *e*, so it leaves

\[33\] You find the root in *die Klausuren sind gut ausgefallen* (the results of the exams were good), *die Wahl fiel auf ihn* (he was chosen), *mir ist etwas eingefallen* (something occurred to me).

\[34\] We are not sure whether an identification of *e* and *e’* would be a better analysis.
open whether or how long the contingency e’ has been going on before the stimulus starts to be perceived. It does not specify either how long the event of perception (e) lasts.

All the other examples above can also be interpreted using 83. Determining the referents for the stimulus y is fairly straightforward. In the first four cases the verb describes an event e’ which overlaps with the event of perception e of which the theme of the sentence (introduced by the subject in (76), (77) and (78), and by the object in (79)) is the stimulus. This analysis is not possible for (81) since this sentence does not contain a theme. Here the stimulus can be identified with the event itself. Thus, as in the case of auf referring to an upward movement, it is again the case that the particle refers to an internal participant of the event described by the verb. It is interesting to compare (81) to (82). In the latter the perfect is formed with sein, so the event is conceptualized as motion and the subject thus introduces a theme, which can then be interpreted as the stimulus. The contents of the sentences make clear that these different ways of unifying the DRS of auf with the context are justified. In (81) the entire activity of dancing is said to be perceived, whereas in (82) the speaker arrives at the event he talks about and thus comes to be perceived by the other people who are present there, while engaged with the activity of dancing (in a metaphorical sense). This hypothesis about the correspondence between the thematic roles in a sentence and the identification of the stimulus was confirmed when we considered a wider set of data. We are hence in a position to answer the question of why certain verb-particle constructions with auf occur in the perfect with different auxiliaries. This question has been raised, and left unanswered, by Stiebels regarding the combination of auf with certain acoustic and optical verbs. We will come back to Stiebels’ analysis of this group of verbs later.

Finding the experiencer x in the above examples is less easy. Although there are cases where the experiencer is clearly specified, there are no clear rules for how it must be introduced. One common way of introducing it is by means of a dative object, as in (76) and (80). Moreover in most cases the experiencer is not explicitly introduced and needs to be determined by means of world knowledge, taking into consideration the context. In (79), as in many other cases, the subject of perception is the audience in a public performance. Frequently the perceiver is the general public, as in (78). A further possibility is that it is left open who experiences the event because it either does not matter who is the experiencer or because the experiencer is only virtual. In the latter case the situation is only conceptualized as an event of perception and it would probably be more adequate to speak of an event becoming perceivable, rather than coming to be perceived. Yet it seems that in most context where auf is used in this sense some kind of experiencer
is thought to be present.

In all the examples above an event of perception is only introduced by *auf* and related to the event expressed by the verb through unification. Yet *auf* in the sense of (83) also frequently combines with verbs whose lexical entries already contain an event of perception. The simplest case are verbs of perception, as in the following examples.

(86) *Mehrere Personalien bei Ebay Deutschland lassen einen aufhorchen, gerade weil Ebay im Stammgeschäft doch zunehmend unter Druck gerät.*

‘Several particulars at Ebay Germany make one prick up one’s ears, precisely because Ebay comes more and more under pressure in its core business.’

(87) *Verstärkt auftretende Beben im Neuwieder Becken und im Aachener Raum und eine zunehmende Entgasung im Laacher-See lassen Böhms aufmerken.*

‘More frequently occurring earthquakes in the Neuwied Basin and in the Aachen area and an increasing degasification in the Laach Lake call Böhm’s attention.’

It is typical that such constructions involve the verb *lassen*, whose subject introduces the stimulus. In this case the experiencer is expressed by the direct object. Unification is similarly straightforward in the following examples since the verbs involved already refer to events of perception.

(88) *Der Systemadministrator Thomas A. Limoncelli hat daher speziell für seine Berufskollegen ein Buch über Zeitmanagement geschrieben, in dem er typische Probleme aufzeigt und praktische Lösungen für den Alltag anbietet.*

‘Therefore the system administrator Thomas A. Limoncelli wrote a book about time management specifically for his colleagues, in which he shows up typical problems and offers practical solutions for everyday life.’

(89) *Das Buch fängt sehr detailliert und vielversprechend mit dem Aufdeuten von Zusammenhängen der menschlichen Psyche mit dem Gehirn an.*

‘The book starts with a very detailed and promising discussion of connections between the human psyche and the brain.’

(90) *Der seit letzten Donnerstag vermisste US-Diplomat Thomas Mooney (SN berichtete) wurde am Montag von einem Bauern tot aufgefunden.*
‘The U.S. diplomat Thomas Mooney, who had been missing since last Thursday (SN reported), was found dead by a farmer on Monday.’

(91) Sie können ungenutzte Bibliothekselemente auffinden und löschen, um ein Dokument zu organisieren. (internet)
‘You can find and delete unused library elements in order to organise a document.’

(92) Ich habe, wie empfohlen, einen Experten aufgesucht.
‘As recommended, I consulted an expert.’

(93) Mit “Trojan Check” können Sie Trojanische Pferde auf Ihrem Rechner aufspüren und beseitigen.
‘With “Trojan Check” you can detect and remove Trojan Horses on your computer.’

(94) Wir haben wieder lesenswerte und online abrufbare Zeitungsartikel für Sie aufgestöbert.
‘We have again tracked down for you newspaper articles which are worth reading and available online.’

The lexical entries of zeigen and deuten express that through an event of pointing the theme is placed in the perceptual field of others. Similarly, finden expresses that something comes to be perceived (in this case by the agent), so unification with (83) is possible. The examples show that this is the case for intentional uses of finden, which carry the presupposition that an object was sought, and for non-intentional occurrences. The presupposition that a person tries to make it the case that an object enters his perceptual field is the main meaning of suchen, spüren and stöbern. A unification of the lexical entries of these verbs with that of auf leads to the conclusion that this attempt has been successful.

Let us now come back to Stiebels’ analysis of auf in combination with acoustic and optical verbs, such as weinen, schreien, brummen, blitzen, leuchten, glimmen, glühen, or flackern. Some examples of such constructions are given in the following.

(95) eine der Szenen hat sogar auffällige Verfärbungen, die aber glücklicherweise nur kurz aufflimmern, bevor sich das Bild wieder beruhigt.
‘one of the scenes even has noticeable stainings, which, however, luckily only flicker up briefly before the picture gets back to normal.’

(96) Ich muß noch hinzufügen, dass die Öllampe nach längerer Fahrt daheim kurz aufgeleuchtet hat, obwohl genügend Öl vorhanden ist.
'I must add that the oil light flashed up briefly after a longer drive although there is enough oil.'


‘From Friday on television sets will again flicker up more frequently in Czech living rooms, bars and restaurants. This will happen regularly until 13 May because exactly on the 17 days in between the 71 world championship in ice hockey will take place in the Russian cities Moscow and Mytishi.’

(98)  *also ich möchte eine LED dazu bringen, langsam aufzuleuchten und dann nach einer gewissen Zeit, wenn sie nicht mehr angesteuert wird, wieder langsam zu erlischen.*

‘I want to get an LED to slowly start to glow and then after a certain time, when it isn’t activated any longer, to slowly die down again.’

We suggest that in these cases *auf* is most plausibly understood in the sense of (83). For instance, the stainings in (95) can be interpreted as a stimulus that becomes perceivable during an event of flickering. Such an analysis is supported by the fact that verbs such as *flimmern* refer to optical or acoustic qualities which depend on events of perception for their very existence. A similar interpretation is suggested by [Eichinger2000] for *aufheulen* (yet not for *auflachen*). However, like most analyses of *auf* in the literature he regards *auf* in such cases as an aspectual marker which indicates that an event begins or is only of a short duration. This view is also held by Stiebels. In the following we will focus on Stiebels’ account because she offers the most thorough discussion.

According to Stiebels, *auf* is a marker of punctuality and thus describes a closed interval during which the state or process denoted by the verb holds and which is preceded and followed by states where this activity does not hold. When *auf* occurs together with an optical or acoustic verb, the activity

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35E.g. [Kempcke1966], [Kuethold1973], [FleischerBarz1992], [Motsch2004].

36[Stiebels:1996], pp. 74ff. This analysis is supported, and probably partly caused, by the definitions of the relevant verb-particle constructions in the Duden dictionary. Stiebels states that she got the set of particle verbs she tried to account for from the edition from 1989, but the definitions are still similar in the latest version. For most of these constructions it is stated that the activity described by the verb suddenly begins and/or lasts for a short while.
expressed is in fact often described as being of a short duration. This is the case in (95) and (96). Yet more often than Stiebels is willing to admit *auf* occurs in sentences where events are described as gradually beginning or lasting for a while. Examples are given in (97) and (98).

Therefore, if *auf* is analysed as an aspectual marker, then it must be understood as being able to indicate both the beginning of and a short duration of an event or state. This analysis has in fact been presented in the literature and it is also the analysis which Stiebels offers for the prefix *er-* which similarly combines with acoustic and optical verbs, but is not productive any more. She thinks that the main difference between the meanings of *auf* and *er-* is that *auf* is always punctual whereas *er-* can be a punctual or ingressive marker. It will therefore be interesting to consider her discussion of *er-*. According to Stiebels, this prefix is interpreted differently depending on the verb it combines with. Thus, if the verb describes a continuous process or a permanent state, then the prefix denotes a change into this state or process. Whereas if the verb describes a punctual event or a short state, then the prefix indicates that this event or state is only of a short duration. Yet Stiebels rejects the idea of distinct lexical entries for these interpretations of *er-* because the different interpretations occur due to different base verbs. She holds that the entry for *er-* leaves open whether the described process or state lasts, or whether it lies within a closed interval. Although this view seems plausible, it is misleading that she speaks of the prefix having different denotations, depending on the verb it is combined with. It seems more accurate to say that there is one meaning of the prefix, which leaves open how long the event or state lasts, and that this aspect of duration has to be fixed by the context.

A similar account could be proposed for *auf*. It must, however, be noted that the meanings of the verbs with which *auf* combines determine the temporal structure of the events they denote less clearly than it would have to be the case if Stiebels’ analysis of *er-* was correct for *auf*. If people want to express that an event is of a very short duration or that it lasts for a longer period, then they often have to make this clear by means of adverbials. Thus the events of flickering and flashing in (95) and (96) are interpreted as punctual because they are modified by the adverb *kurz*, whereas (97) describes longer lasting events of flickering since it is made clear in the context that these events always last for the duration of an ice hockey match. Yet this is not a real problem for the account as such because it can allow for the context to play

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37 Stiebels:1996, pp. 72ff
38 We do not have time here to discuss whether her analysis is adequate for the case of *er-*
a larger role in determining the temporal features of the interpretation and often details about the duration of events can even be left underspecified. We have thus arrived at an analysis of *auf* as merely denoting the beginning of an event. As our examples have made clear, it cannot even be understood as expressing that an event begins slowly or suddenly. On the basis of what we have said so far this analysis seems possible. However, the fact that it has to be postulated especially for a very limited group of verbs or contexts speaks rather against it, especially given that the analysis we suggest is necessary anyway to account for a variety of other contexts in which *auf* occurs. This is particularly problematic because the lexical entry needs strong selectional restrictions in order to avoid significant overgeneration or misinterpretation. Imagine *auf* had the following representation.

\[
(99) \quad \text{auf} \sim \left\{ \begin{array}{c}
\text{s}^0 \\
\text{e}' \\
\text{e}' : \alpha(x)
\end{array} \right\}
\]

This representation could easily be unified with a variety of contexts, definitely more than Stiebels and others would want to allow for. In order to avoid this the entry would have to specify that it can only be used in combination with certain verbs. Stiebels herself rejects arbitrary selectional restrictions. Nevertheless she seems to think that in the case of *auf* as an aspectual marker, some such restrictions are needed. Thus she claims that *auf* in this sense only combines with verbs which express the emission of acoustic or optical signals and with some agentive verbs which describe the display of emotions. However, she claims that within this group of verbs no selectional restrictions are needed because *auf* as a punctual marker has the implicit semantic restriction that the verb it occurs with must be able to denote processes which can be contracted on one point. Yet her analysis is not convincing. She claims that this interpretation is not possible for the combination of *auf* with the punctual verb *klopfen* because it does not denote a process that can have a culmination point. But she does not explain why this would be required by a punctual marker, so it seems that the aspect of punctuality is not strong enough a constraint. If not even punctuality can serve as a semantic constraint, then this seems even less likely for the representation \(\text{(99)}\), which we have shown to be a more adequate analysis of *auf*.

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40 Stiebels:1996, p. 74
41 Stiebels:1996, p. 279
than punctuality. Of course, there is always the possibility that particular interpretations of certain verb-particle combinations are excluded because they are blocked through similar, but more frequent or even lexicalised contexts where *auf* is used in a different sense. This phenomenon is in fact mentioned by Stiebels. Yet it seems unlikely that this can account for all the cases that have to be excluded. Moreover the fact remains that the suggested analysis of *auf* as an aspectual marker definitely needs selectional restrictions about the class of verbs that can combine with *auf*. Such arbitrary restrictions are clearly not in accordance with the idea that the question of whether or not a word can be interpreted in a certain way in a particular context mainly depends on whether or not the relevant representation can be unified with the representations of the context. Even though we have to allow for some arbitrary restrictions, in particular due to historical developments, the fact that such restrictions are needed for this analysis to work is a pro tanto consideration against it.

The foregoing consideration gains in weight if we can show that our analysis does not need such arbitrary selectional restrictions. This may seem questionable on the grounds that our analysis is similarly general, and as most activities can be perceived one would expect *auf* in this sense to occur in more contexts than it actually does. Hence our analysis might be thought to require selectional restrictions too. In response to this we must first note that (83) is present in more contexts than those considered by Stiebels and others for *auf* as an aspectual marker. This has become apparent in the examples above. Besides there are explanations other than selectional restrictions which can account for the fact that *auf* in the sense of (83) does not occur more often. One of them is blocking through similar contexts, which we mentioned above. Another reason why (83) is not a possible interpretation of *auf* in more cases is that it introduces stricter constraints for unification than may seem at first sight. It is only a plausible interpretation if it makes sense to emphasize that a theme or event comes to be perceived (or perceivable). This is, for instance, the case if there is a transition from non-perceivability to perceivability of a theme or event, if the perceivability of the theme or event allows of degrees, or if the theme or event is displayed in front of an audience or for the general public. That the aspect of perception is relevant in a given context is more easily detected by the unification mechanism if the concept of perception already figures in the context, e.g. in the meaning of the verb. This is why acoustic and optical verbs, but also the verbs in (88) to (94) occur particularly often together with *auf* in this sense.

As we have seen above, a further advantage of (83) over (94) is that it can explain the fact that some verbs can occur with different auxiliaries in combination with *auf*, depending on the context. Stiebels offers some possible
explanations for this variation, yet in the end she has to admit that her account is unsatisfactory because it cannot adequately explain the fact that er-verbs always form the perfect tense with sein. Her hypothesis is (following [Kaufmann1995]) that the perfect tense is formed with haben if the event is restricted to a closed intervall, and with sein if the event has a resultant state. Given that her analysis of auf and er- are similar in the relevant respects, her hypothesis should be able to account for both particles. However, according to Stiebels there are er-verbs which form the perfect with sein, yet do not have a clear resultant state. A further problem with regard to auf is that the perfect is often formed with sein if punctual events are described. This is the case in (100) and (101).

(100) Dunkel war es dort gewesen, aus der einen oder anderen Ecke hatten sie ein Flattern gehört, und gelegentlich waren diamanthelle Aufgenpaare aufgeblitzt.

'It was dark there, from some corner or other they heard a flutter and occasionally diamond-bright pairs of eyes flashed up.'

(101) Und so schlecht war die Dramaturgie der Performance als Ganzes ja auch wieder nicht, dass die lautere Absicht nicht doch immer wieder aufgeblitzt wäre.

'And after all the dramaturgy of the performance as a whole wasn’t so bad that the sincere intention would not have flashed up occasionally.'

(102) Während er sie angesehen hatte, hatte er beinahe unmerklich eine Augenbraue gehoben, und seine Augen hatten aufgeblitzt.

'While he was looking at her, he almost unnoticed lifted one eyebrow and his eyes flashed up.'

Thus Stiebels’ hypothesis cannot explain why, for instance, in (100) and (102) different auxiliaries are used. Yet our analysis identifies a significant difference between the two sentences. The eyes of the person referred to in (102) are perceived before and after the event described by the sentence; what is said to be perceivable only for a short time is a certain activity of his eyes. In contrast, in (100) it is the pairs of eyes referred to that are only perceivable for a short time. Therefore the subject of the sentence introducing them is a theme and the perfect is consequently formed with sein.

We can conclude that contexts where auf has been interpreted as an aspectual marker are better accounted for by (83). This sense of auf is present in seemingly very different contexts, which have in the literature been analyzed in different ways or have even been left unanalyzed. Yet all these
contexts can be interpreted by means of one lexical entry for *auf* and general interpretation mechanisms. The fact that some special meaning aspects have evolved through historical processes does not affect this general conclusion. Of course, in some cases alternative interpretations of *auf* may be possible. Thus the original vertical interpretation may sometimes still be adequate or even more plausible. In other cases, such as the following, (83) competes with the aspects of increase or openness.

(103) *Ich habe jeden Morgen aufgeatmet, wenn sie noch am Leben war.*

‘I respired every morning if she was still alive.’

(104) *In den letzten vier Wochen sind überall die Tulpen aufgeblüht und oft auch schon wieder verblüht.*

‘During the last four weeks tulips have started to blossom everywhere and have often withered again already.

However, which interpretation is chosen does not seem to matter much for the meaning of the entire context. As the different interpretations are compatible with each other, they do not lead to ambiguities which would need to be resolved. Which one is chosen in a given context may depend on individual speakers or communities.

5 *auf* is OPEN

A further meaning of *auf* is the individual property of being open. This sense of *auf* is very similar to the adjective *offen*. Both can be represented by the following lexical entry.

(105) \[ \text{auf} \sim \frac{Y \subseteq}{s: \text{OFFEN}(y)} \] ^42

Despite being roughly identical in meaning, *auf* and *offen* differ with regard to the syntactical contexts they are commonly used in. Thus *auf* frequently occurs in resultative constructions (see (106)), whereas *offen* is seldom used in such contexts. In contrast, *offen* often functions as a direct

^42 We leave here open whether OFFEN is just a placeholder which can here be used to simplify matters, but which would have to be further analyzed into different meanings for a proper representation; or whether OFFEN is a semantic prime, which could also be represented as OPEN, and whose various uses are unified by expressing a fundamental concept. Candidates for such a fundamental concept are accessibility of a region which is limited by some sort of skin, or lack of cohesion of a region.
modifier of nouns (see (108)), a function which is usually unacceptable for auf. There are only few contexts, such as copula verbs, where both words seem equally appropriate (see (109) and (110)).

(106) Sie sollten zu jederzeit Ihren Besucher identifizieren, und zwar bevor Sie die Tür aufmachen.
‘You should always identify your visitor, and do so before opening the door.’

(107) Denn Nüsse sind in ihren Schalen frostsicher verpackt, und die Eichhörnchen müssen nur noch die Nusschale mit ihren scharfen Nagezähnen aufbeißen.
‘This is because nuts are packaged frost-proof in their shells, and the squirrels only have to open the nutshell with their sharp gnawing teeth.’

(108) Ich schlaf gerne bei offenem Fenster
‘I like sleeping with my window open.’

(109) Es regnet draußen vor dem Fenster, das Fenster ist auf und auf der Straße fahren die Autos nach Hause.
‘It is raining outside the window, the window is open and on the street cars are driving home.’

(110) Ein Mann betritt sein Zimmer, das Fenster ist offen.
‘A man is entering his room, the window is open.’

Although auf in the sense of open is thus restricted in its usage, it is important to note that in those syntactical contexts where it can occur it functions like other individual properties and does therefore not require special interpretative mechanisms. Thus, whether or not this interpretation is possible mainly depends on whether the object to which it refers can be described as OFFEN (in the original spatial sense as well as in abstract senses), though other aspects of the context are of course relevant too. For example, in resultative constructions it must be possible that the theme becomes open through the event described by the verb. Whether or not this is possible has to be determined in the particular context and cannot be decided for certain verb-particle constructions considered in isolation.

The construction algorithm with (107): beißen is an basically intransitive action verb, which occurs with internal arguments, e.g., which undergoes change of property, e.g. das Brot (the bread) goes to pieces in das Brot beißen. With the transitive extension of the verb there is an resultant state
where the theme $y$ has some intended state property. In the context of *auf* that property is further specified.

\[
\begin{array}{c}
(111) \text{beißen} \sim \\
x \in e \\
\text{e: beissen}(x) \\
x= \text{agent}(e)
\end{array}
\]

\[
\begin{array}{c}
(112) \text{(transitive extension):} \\
x \in e y s \\
\text{e: beissen}(x) \\
x= \text{agent}(e) \\
\text{res}(e,s) \\
y= \text{theme}(e)
\end{array}
\]

\[
\begin{array}{c}
(113) \text{die Eichhörnchen die Nüsse aufbeißen} \sim \\
x \in e Y s \\
\text{die Eichhörnchen}(x) \\
\text{die Nüsse}(Y) \\
\text{e: beissen}(x) \\
x= \text{agent}(e) \\
\text{res}(e,s) \\
Y= \text{theme}(e) \\
\text{res}(s,e) \\
s: \text{auf}(Y)
\end{array}
\]

Although this meaning of *auf* seems fairly straightforward, one type of context where *auf* means open has been regarded in the literature as requiring special treatment. These are cases where *auf* is combined with a verb which is thought to have as a resultant state an object’s being *ZU* (closed), and which would thus on the basis of the interpretation mechanisms assumed so far be excluded from combining with *auf* in the sense of open.\(^{43}\) For instance, events of *schließen* (engl. to shut, close) normally lead to the state of an object’s being ZU.

\[
(114) \text{Ich kam nach Hause und wollte die Haustür aufschließen, aber mein Schlüssel ließ sich nicht drehen.}
\]

\(^{43}\)Although we do not attempt here to give a precise analysis of the meaning of OFFEN, we take it for granted that the state of being ZU (closed) is incompatible with the state of being OFFEN, and that we have an intuitive understanding of when objects can be described as OFFEN or ZU.
'I got home and wanted to unlock the door, but I couldn’t turn the key.'

(115) *Will ich die Bänder auf etwa 50 cm kürzen, muss ich sie abschneiden und jedesmal aufknoten und neu verknoten, weil sie zu kurz sind, um sie über den Kopf zu ziehen.*

‘If I want to shorten the laces to about 50 cm, I have to cut them and each time unknot them and knot them again because they are too short for being pulled over my head.’

Similar phenomena can be found with other verb-particle constructions and there are a number of suggestions in the literature for how to explain them. McIntyre calls such verb-particle constructions “pseudoreversatives” and claims that a special composition rule is necessary to allow them. Stiebels agrees that special semantic mechanisms are needed in the case of such constructions. Yet she suggests that the combination of certain particles with verbs which express an aspect that contradicts the meaning of the particle is made possible through removing this aspect from the meaning of the verb before combining it with the particle (bleaching). So according to her *auf* or other particles can be combined with a particular verb if either the unification of their meanings makes sense or such bleaching is possible for the verb. We think that an explanation along those lines is correct, yet we have not room to discuss this issue further. The important point to note here is that it seems possible to account for *auf*-verb combinations of this type by means of general interpretation mechanisms.

6  *auf* marks planning

There is a further niche of *auf*-particle construction which does not fit any of the patterns discussed so far, and which has the flavour of idiosyncrasy at first sight. These few constructions, however, direct our attention to the polysemy of the preposition *auf*. We find the same relation expressed by the preposition and the particle in the following examples. There is one construction that has *auf* as particle and heading a PP.

44Further examples of verbs which can be interpreted as normally describing events which lead to the closure of an object are *binden, decken, falten, flechten, knüpfen, knüpfen, korken, packen, riegeln, rollen, schnüren, sperren, and wickeln.*

45[McIntyre:2002, p. 116: “If a verb \( V \) entails a result \( R \), the reversal of \( R \) may be expressed by combining \( V \) with a particle contradicting \( R \).”](McIntyre:2002)

46She calls this “Bedeutungsentleerung” ([Stiebels:1996, p. 237].)
Manchmal ärgerten die großen Kinder die kleinen, aber Macky hatte ja seine große Schwester, die auf ihn aufpaßte.

‘Sometimes the older children teased the younger ones, but Macky had his older sister, who kept an eye on him.’

Logan glaubte, dass die Soldaten den Riegel nicht für den Notfall aufsparen sondern als Zwischenmahlzeit essen würden, wenn er gut schmecke.

‘Logan believed that the soldiers would not save (up) the [chocolate] bar for an emergency case, but eat it as a snack if it tasted good.’

Rudi spart auf ein neues Fahrrad.

‘Rudi saves (up) for a new bike.’

Ich tröstete, beruhigte, verabreichte Tee, Medikamente und hoffte auf baldige Besserung.

‘I comforted and reassured him, gave him tea and medicine and hoped he would get better soon.’

Bereits im Februar ’07 rief RTL zum Casting auf und hoffte auf viele Bewerber aus vielen Schichten und mit viel Talent.

‘RTL already called for a casting in February and hoped for many applicants from many classes and with lots of talent.’

All occurrences of auf in the examples above have something in common: they make explicit an intensional relation between some time or eventuality ev of a propositional attitude of some person the one hand and another future event e’ in the attitudinal context of that person on the other hand. This relation is immediate in (119). Here the attitude is hope and the future event is the event of someone getting better. In (118) the future event is implied in the description ein Fahrrad, which is the goal of the action described in the verb sparen: Rudi saves up money in order to purchase a bike in the future. The same semantic relation is found in the particle verb aufsparen in (117). Here the future event is the emergency case. And although it is plausible that the soldiers do not hope nor believe that it will actually come to a case of emergency, they fear (or are are made to believe that they should fear) that it might come to it, and their action of saving the chocolate bar is driven by that belief. They save it in order to have it, then. In aufpassen in (116) we have a combination of the two aspects of implicitness above. First the description ihn (him) of the boy is coerced into some contingent future event of the type his sister is too familiar with: Either he will be teased by the other children or else he himself will do something silly. In any case, his sister will be ready to intervene.
We represent the contribution of *auf* in these examples as follows.

\[
\begin{array}{c}
\downarrow s_{att} x \\
t = TP \quad t \subseteq s_{att} \\
\{ \langle MOD \quad t < e \rangle \} \\
\end{array}
\]

where MOD is BELIEF, PLAN, HOPE, WANT, FEAR,...

t is a temporal perspective point of a state *s*\(_{att}\) of some propositional attitude. The bearer is *x* and the event in the attitudinal context is *e*.

Composition of *einen Schokoriegel aufsparen* goes accordingly as follows:

\[
\begin{array}{c}
s' \times y' \quad s'_{att} t' \\
\text{Schokoriegel(y')} \quad \text{Soldat(x')} \\
\{ \langle INT \quad s' \quad e'' \rangle \} \\
\{ \langle EXECUTE(x, l, s') \rangle \} \\
\text{beg}(s'_{att}) \prec \text{beg}(s') \\
\text{end}(s'_{att}) \prec / \text{end}(s') \\
\end{array}
\]

According to this representation the omission of consuming the chocolate bar is the execution of an intention.

\[
\begin{array}{c}
\text{Soldat einen Schokoriegel (für den Notfall) aufsparen} \\
(i) \text{justification: } s_{att} := s'_{att}, \ \underline{x} = x, \ t := t' \\
(ii) \text{accommodation of } e. \ \text{Resolution of } MOD := \text{FEAR. (In context (117) } e \text{ is ein Notfall.)}
\end{array}
\]
Our representation (123) predicts that the attitude towards the emergency drives the action of saving. This implemented by means of the execution relation,'EXECUTE(x,l,s')' which binds x's action s' of saving to the the label 'l', which in turn binds the two propositional attitude ascription of fear and intention to the action s'. The representation is silent on what the soldier takes for an emergency case (plausibly lack of food) and is also silent on what he intends to do with the chocolate in that case (plausibly eat it). As we are only interested in how composition works in principal, we leave the representation as it is and take a further look at the justification mechanism in the other examples (116) — (120).

With (118) the internal argument of auf, the bicycle, is coerced from a participant in the intended purchase to the purchase itself. 47 The contribution of the verb sparen is as with (122), except that y' is an implicit discourse referent, denoting money. Coercion of an entity denoting internal argument of auf to an event where that entity plays some role in also happens in (120). We have a simple shift from agents Bewerber (applicants) to events Bewerbung (applications). Finally with (116) the internal argument of the preposition auf coerces to an event description, as already discussed.

47 The NP Fahrrad enters the description as internal argument of auf. Interpretation must establish a close connection to the intensional event e.
The harder problem here is to determine the contribution of the verb *passen*. This is a complicated matter which we cannot go into here. We speculate that it means omission of action while paying close attention. In any case *passen* contributes an intentional action. The latter is predicted by the constraints introduced by *auf*. *Auf*- in this reading is expected to combine with either action or attitude ascribing verbal constructions. We end this chapter in listing some examples of verbal constructions having either the particle or preposition *auf* in the sense of (121) as a part.

(124) achten auf etwas (to mind something, pay attention to) / etwas aufachten (out of use; references from Goethe's oeuvre)

(125) eine Feier aufschieben (to postpone a party); Essen aufheben (to preserve / save food) / Andenken aufbewahren (to keep / preserve souvenirs);

(126) auf etwas lauern vs. jemandem auflauern (to lie in wait for someone); auf etwas warten (to wait for something) vs. jemandem aufwarten (to serve somebody)

(127) auf etwas zielen (to aim at something); auf etwas aus sein (to aim at something); sich auf etwas vorbereiten (to prepare for something), auf etwas verzichten (to refrain from something)

(128) auf Zeit spielen (to play in a slow manner (soccer))

7 \textit{auf} is German *alle*

There is a strong correlation between the contribution of the particle *auf* and the German adjective *alle*. German *alle* contains the lexical root \(\sqrt{\text{all}}\) which is known as quantifier *alle* (Engl. *all*). The predicate *alle* as well as the predicate *auf* as a particle involve universal quantification over parts of the predicate bearer. For instance, *das Eis ist alle* (the ice cream is finished) describes the target state of an eventuality of decrease in existence of mereological parts of the denotation of the predicate bearer. A predication involving negation *das Eis ist nicht alle* implies the extistence of parts of the ice cream. The following example shows that *alle* and *auf* have the same contribution.

(129) Zum Eis: Nein der hat das nicht allegefuttert, das war ich selbst. Warum überlebt Schokoeis nie länger als ein paar Tage im Gefrierschrank? 'Regarding the ice cream: No, it wasn’t him who finished the ice cream, I did it myself. Why does chocolate ice cream never survive more than a few days in the freezer?’
(130) Nein der hat das nicht aufgefuttert, das war ich selbst. 'No, it wasn’t him who ate [futtern] up [auf] the ice cream, I did it myself.'

The contribution of alle in resultative constructions as well as auf- in particle verbs presupposes some deconstructive or consumptive action — which is contributed by the verbal description — with respect to the existence of the theme. The assertion is the culmination of the decrease.

How is (130) constructed?
We have reason to assume that futtern is a basically intransitive verb.

According to the literature transitive futtern [Kratzer:TEL??] or essen has an incremental theme and is telic. Er hat das Eis gefuttert yields a representation of the following form:

---

This example is constructed analogously to the previous one and thus not taken from the internet or another corpus. Yet it sounds correct to native speakers who use auf in the sense discussed here in their dialect.

Kratzer:2002 argues that resultative constructions are only possible with verbs that are inherently intransitive. As futtern goes with resultative constructions, (e.g. sich voll-futtern (= to eat oneself full)), we assume that it is intransitive.
As far as assertion is concerned *das Eis futtern* and *das Eis auffuttern* describe the same telic action that comes to an end as soon all parts of the helping portion of ice cream are eaten up.

In the composition involving merge of *auf* in (131) and (132) the internal argument $y$ of *auffuttern* enters the representation as the variable introduced by *auf*. $y$ is the variable over parts of which quantification applies. But interestingly this does not just lead to a representation of the form (133). It carries into the representation an information structural effect: It generates a presupposition to the effect that in the immediate pre-state of the described eventuality a state of affairs to the negative obtains: There still exist some parts different from the final one which the agent is consuming. Thus composed predication asserts the consumption of the final part only. We are not in the position to explain how this special effect comes about. Is it a matter of information structure? Note that *auf* bears the focus of verbal predication. Does this focussed predicate "alle" (= finished, gone) evoke its negation — "¬alle" — in context? So it seems, but reconstruction needs further investigation. We confine ourselves here to the semantics of the construction. It should be clear that the predicate of universal quantification $y$ is justified as the target state of incremental consumption in eating parts of $y$.

(134) *er das Eis auffuttern* $\rightsquigarrow$

\[
\begin{align*}
&\text{prog} \\
\text{y}^0 \subset y & y^0 \not\supset y^0 \oplus y^0 = y
\end{align*}
\]
The pattern is productive with verbal constructions that can be interpreted along the lines of incremental consumption. We mention only a few instances. Note that (in contrast to the case of futtern) some of these verbs, such as brauchen or opfern, usually do not have an incremental theme, so in the following verb-particle constructions this aspect is solely contributed by auf.

(135) etwas aufessen (to eat something up), etwas aufbrauchen (to use something up), etwas aufkaufen (to buy something up), sich aufopfern (to sacrifice oneself), etwas aufzehren (to consume something), etwas aufbekommen (in the sense of aufessen), Zigaretten aufrauchen (to smoke all the cigarettes?), etwas aufräumen (to tidy something up)...

8 auf marks iteration

In contrast to the use of auf discussed in the previous section, where auf implies the entire consumption of an object, in certain verbal contexts auf introduces iteration, rather than universal quantification. Instructive examples of this pattern are listen (to (make a) list) and reihen (to make a string).

(136) Lobbyisten.[...] Auf dieser Seite sind die bisher bekannten Fälle von ”externen Mitarbeitern“ nach den einzelnen Bundesministerien aufgelistet.
‘Lobbyists.[...] On this page the currently known cases of ’freelancers’ are listed [aufgelistet] by the federal ministries.’

(137) Die Perlen, die zu Halsketten aufgereiht werden, können entweder alle von gleicher Größe sein, oder auch abgestufte Größen haben, mit der größten Perle in der Mitte und den nachfolgenden, kleineren Perlen beidseitig aufgereiht bis zum Verschluss.
‘The pearls which are strung into necklaces can either all be of the same size or graded by size, with the biggest pearl in the middle and the following, smaller pearls strung on both sides up to the closure.’

(138) Alle Blutgefäße eines einzigen menschlichen Körpers wären aneinander gereiht mehr als 100.000 Kilometer lang.
‘If all the blood vessels of a single human body were strung together, they would be more than 100,000 kilometres long.’

Auf dieser Seite sind die 10 berühmtesten Attraktionen und Sehenswürdigkeiten für Touristen in Barcelona, nach Beliebtheit aufgereiht. ‘On this page the ten most famous tourist attractions and sights in Barcelona are listed by their popularity.’

There is a characteristic difference between listen and reihen on the one hand and auflisten or aufreihen on the other hand. die Lobbyisten listen just means to make a list out of the set of Lobbyists, but auflisten involves following some order in doing so. The order in (136) follows the federal ministries. Aneinander gereihte Butgefäß just involves the set of blood vessels in a row, but aufreihen implies an order in the set, as the result of the making a row of pictures in (139) follows their ranking in popularity. The same can be said for the pearls in (137).

What is the semantic contribution of auf? Auf contributes a constraint to the effect that the action follows iteration of events. We represent this in the form of some constraint of a temporally ordered set of events in (140).

\[
\begin{align*}
& \text{(140) } \text{auf} \sim \\
& i \in \mathbb{N} \\
& e_i < e_{i+1}
\end{align*}
\]

Composition of jemand die Lobbyisten auflisten relies on the transitive verbal phrase jemand die Lobbyisten listen

\[
\begin{align*}
& \text{(141) jemand die Lobbyisten listen } \sim \\
& \begin{array}{l}
\text{e Z y s x} \\
\text{die Lobbyisten(Z)} \\
\text{e: listen(x,Z)} \\
\text{res(s,e)} \\
\text{s: EXISTS(y)} \\
\text{Liste(y,Z)}
\end{array}
\end{align*}
\]

\[
\begin{align*}
& \text{(142) jemand die Lobbyisten auflisten } \sim \text{ (140) ; (141)} \\
& (i) \text{ Justification of } e_i < e_{i+1} : \text{e is the sum of iterated events } e_i.
\end{align*}
\]
The question arises how common this pattern is and how it is connected with the other readings of *auf*. Naturally, we will not find many instances of this pattern because the eventualities or actions must be conceptualized as occurring or being performed one by one. We list some of those.

(143) die Beträge aufsummieren (to sum up the figures), aufaddieren (to add up), eine Baustelle aufmessen (to measure the different parts of a building site), Perlen auffädeln (to thread pearls, root: thread)

(144) etwas aufzählen (to enumerate something, root: tell), ein Gedicht aufsagen (to recite a poem, root: say)

(145) auffächern (divide up, root: compartment), aufgliedern (divide up, root: element, limb, member), eine Festplatte aufteilen (partition a hard drive, root: divide), Beiträge aufschlüsseln (to break down the fees, root: key), aufsplittern (to fragment, root: splinter), aufsplitten (to split up), aufspalten (to split up), eine Torte aufschneiden (to cut up a cake), aufbröckeln (to crumble up)

Conceptualization of building sums clearly qualifies for iteration. In *ein Kapitel aufgliedern* the chapter is conceptualized as the sum of units bearing some content. The activity of making sections of a chapter may follow the main ideas of it, then making subsections of certain aspects, subsubsections, etc. Similar remarks apply to *auffächern*. The conceptualization of *eine Festplatte aufteilen* involves iteration as well.\(^{50}\) Note that this conception of

\(^{50}\)Recently I was told by an expert that making partitions of a hard drive is a tricky thing: The second partition must lie entirely in the first. If not so, things go wrong.
aufteilen does not involve consumption of the hard drive, i.e. German ‘alle’. With the cake in eine Torte aufschneiden you may pursue as follows: First you make two halves of a cake, then four quarters out the halves, etc.

Note that in the verbal construction of aufzählen zählen is not rooted in Zahl, but in a root corresponding to tell (also present in erzählen (to tell stories). Eine Menge aufzählen means providing a representation of the members of the set, one by one. What could iteration be with ein Gedicht aufsagen (to cite a poem)? We believe that iteration is justified by citing the poem line by line.

Still, for some of the particle constructions in our list auf might be classified in a different manner: With the pearls on a string in (137) auf might mark support. But both ways of conceptualization are compatible. This is also the case with iteration and universal quantification as described in section 7. The initial example (136) in this chapter is an instance of that. Auflisten here also involves a complete list of the lobbyists, known so far. The aspect of universally quantifying over events involving sets of individuals is of course not incompatible with the idea that quantification follows an order. That there is a difference in concepts shows up in result readings such as die Aufteilung der Festplatte (the partitioning of the hard drive). What matters is how it has been partitioned.

9 auf in combination with deadjectival verbs

auf occurs in combination with a number of deadjectival verbs. Such constructions have sometimes been analysed as merely expressing that an object acquires the property described by the adjective, and thus that the resultant state of the event introduced by the verb is achieved. This would mean that auf does not add much to the meaning of a deadjectival verb occurring in isolation (i.e. without auf). However, this seems wrong. Of course, not all deadjectival verbs which can be combined with auf can occur in isolation. But even for those verbs which cannot (any longer) the semantic contribution of auf usually seems to be stronger. Moreover it is not the case that auf makes the same semantic contribution whenever it is combined with deadjectival verbs and that there is a special meaning of auf in the context of deadjectival verbs. Rather, auf in such contexts normally has one of the meanings discussed in the previous sections. Thus whether it can occur in combination with a deadjectival verb and how it is to be interpreted in such

---

51 E.g. Kuehnhold1973, Motsch2004
a case depends on the meaning of the adjective. Let us support these claims by discussing some examples.

(146) *Nun findet sie aber ihre Augenbrauen viel zu dunkel und möchte diese etwas aufhellen.*
‘But now she finds her eyebrows much too dark and wants to lighten them up a bit.’

(147) *Es ist keine einfache Aufgabe, die sie sich für ihr Praktikum ausgesucht hat, denn sie muß schwerkranken Kinder aufmuntern und gramgebeugte Eltern trösten.*
‘She hasn’t chosen an easy task for her placement, as she has to cheer up seriously ill children and comfort deeply afflicted parents.’

(148) *Die gerade für Biobauern wichtigen Regenwürmer können in Ruhe weiter den Boden auflockern.*
‘Earth worms, which are especially important for organic farmers, can continue in peace to loosen the ground.’

The combination of *auf* and *hellen* in (146) may appear to mean no more than that an object becomes light (*hell*). In fact, nothing else is expressed in the English translation. Yet in accordance with the metaphorical meaning of *auf* discussed in 2, *auf* expresses the further fact that the acquired property (in this case lightness) is regarded as positive by the speaker (or the language community which established this use of the verb-particle construction). This is also the case in the other three examples and most other cases where *auf* is combined with deadjectival verbs. However, the following examples show that *auf* can also have other meanings in such contexts.

(149) *Der ständige Wind hat dazu beigetragen, dass das wenige Wasser noch schneller aufgetrocknet ist.*
‘The permanent wind contributed to the even quicker drying up of the little water.’

‘Globuli velati [...] are little sugar pellets which are impregnated with a medical dilution.’

\footnote{Of course, as discussed in previous sections, there can also be non-semantic reasons, such as blocking through common existing combinations, for why certain combinations are not possible.}
In the fact that an object dries (up) completely, and thus disappears, seems to be emphasized. Thus the meaning of \textit{auf} discussed in section \ref{sec:auf} plays a role here. Moreover, as in constructions with other verbs of cleaning where the unwanted substance is moved upwards\textsuperscript{53} the vertical aspect of \textit{auf} may here be relevant, too. All the meaning aspects discussed so far are related and can occur in combination. Moreover, their semantic contribution to the meaning of the sentence is not very strong. Therefore it is often difficult to judge what exactly \textit{auf} means in a given context. In contrast, the sense of \textit{auf} relevant in \ref{ex:aufblonden} does not seem to share these other aspects. Here \textit{auf} introduces a support relation: a substance is added to an object through putting liquid containing it on the object and letting the liquid evaporate.

The fact that some of the senses of \textit{auf} discussed in earlier sections are responsible for combinations of \textit{auf} with deadjectival verbs also means that such constructions are still built online and may newly come to be established within a language community, as can be seen in the following examples. This contradicts Motsch’s claim that the combination of \textit{auf} with deadjectival verbs is an inactive word formation pattern\textsuperscript{54}.

\begin{quote}
\textit{(151) Bei mir half eine Färbung, ich bin blond und habe mich eine Stufe aufblonden lassen, die Haare sind dann viel stärker.} \\
For me dyeing helped, I’m blonde and had my hair dyed to a slightly lighter shade of blonde, the hair is then much stronger.
\end{quote}

\begin{quote}
\textit{(152) Dies ist überhaupt kein Problem, du musst einfach das Gelände am Anfang und am Ende des Tunnels aufebnen damit dies schön flach ist.} \\
That’s no problem at all, you just have to level the ground at the beginning and end of the tunnel so it is nice and flat.
\end{quote}

\textsuperscript{53}E.g. \textit{putzen, wischen, kehren, saugen}.  
\textsuperscript{54}[Motsch2004], p. \textit{?????}
10 Overview over different meanings of \textit{auf}

The section includes examples of verbs which allow for the various interpretations of \textit{auf}.

10.1 Upward movement (of a material object)

intransitive verbs:

branden, brausen, brodeln, dampfen, fahren, flattern, fliegen, frieren, gehen, laufen, schnellen, schrecken, schwimmen, schwingen, spritzen, sprudeln, sprühen, steigen, stieben, streben, tauchen, wirbeln, wogen, ziehen, züngeln, rauschen, brausen, schießen, wallen, kochen

transitive with verb describing activity of agent (either the theme moves upwards as a result or the activity involves an upward movement of the agent, whereas the theme may only change its position):

raffen, klappen, schleudern, spülen, stoßen, werfen, winden (mit der Winde bewegen), scheuchen / jagen, schlagen, seilen, (Bodensatz) rühren, drehen, arbeiten, schürzen, hängen (compare English 'hang up the washing'), biegen, bürsten, kämmen, binden, stecken, hängen

transitive with verb not describing activity of agent:

wölben, zwirbeln, schrecken, krempeln, falten

10.2 Getting hold of something + raising it

nehmen, greifen, fischen, sammeln, heben, lesen, picken, raffen, saugen, lecken, schlecken, tupfen, dippen, klauben, fegen, kehren, wischen, suchen (vom Boden)

\textit{auffassen} would also belong to this group, but has now only metaphorical uses (cognitive grasp or reception)

10.3 Virtual path

ragen, streben

verbs of visual perception (sehen, blicken, schauen, gucken, schielen, starren)
further possibility for verbs of visual perception: upward movement of focus of attention

10.4 Growth

sprießen, wachsen, schießen, schütten, türmen, bringen, stapeln, häufe(l)n, hocken, schichten, kegeln (old, doesn’t occur in isolation in this sense???), stauen, werfen, (schwäbisch?: beugen)

schottern, schlicken, schlämmen, sanden, teeren, mulchen

Increase of volume of 3D-objects, conceptualized through growth of functional vertical

schwellen, quellen, laufen (Auflauf: Souffle)

trans / refl: bauschen, blasen, schlagen, schäumen, blähen, plustern, pusten, schwemmen, rollen,

auftragen?

metaphorical extension: negative, do something in an unproportional way (i.e. too much, too big), pretend to be more important

10.5 Upward movement of bottom?

krempeln, schürzen

10.6 Stopping of downward movement

fangen, wiegen

10.7 Vertical position

kommen, springen, stehen, stellen, richten, setzen, recken, bäumen?, raffen, rappeln, helfen, peitschen

10.7.1 Not in bed

sein, bleiben, stehen
10.8 Metaphorical uses

10.8.1 Awake, lively, healthy, grown-up, ready for action

intransitive:
  wachsen, schrecken?, wachen?, drehen, leben,...

transitive:
  ziehen, füttern, bringen (veraltet), rütteln, küssten?, wecken?, raffen, pulvern, putschen, richten, bauen, möbeln, püppeln, sich aufrappeln

10.8.2 Strong negative emotions, agitation

(sich) aufregen, (sich) aufnerven (Pferd)

aufrühren (can also be uprising), aufzählen

10.8.3 Uprising against people in higher positions

(can involve strong negative emotions against those people, often contained in or indicated by the base verb, sometimes only aspect of strong negative emotions present, e.g. aufbringen, aufwiegen):

intransitive:
  aufbegehren (AS (changes in argument structure): trans-i, intrans) (Grimm: zornig auffahren oder auf/hoch wollen), aufstehen, aufmucken, (sich) auflehnen,

transitive:
  aufbringen, aufreizen, aufwiegen (AS: Basisverb auch intrans, aber selten), aufhetzen, aufhussen, aufmischen?, aufstacheln, aufputschen,

10.8.4 Enhancement

aufdrehen, aufheizen, aufwerten, aufbrisen, aufstocken, aufholzen, aufforsten, aufsiedeln, aufbetten, aufrunden, aufladen (elektrisch + Motor: Leistung erhöhen), aufstufen, aufrutschen

(teilweise Gegenteil mit ab-, z.B. abrunden, abholzen, abstufen, abwerten)

aufatmen,
10.8.5 Improvement

backen, polieren, mischen, bauen, beizen, binden, braten, bürsten, kämmen, bügeln, färben, forsten?, holzen?, füllen, tanken, polstern, pudern (alt), arbeiten?, rühren?, schwärzen (alt), tunen

(often bringing about of the original state; here also deficit, compare to)

deadjectival: aufhellen, aufwärmen, aufbessern, auflockern, aufbereiten, aufhöhen
(always property regarded as positive, could also be interpreted as resultative, iteration)

10.8.6 Improve one’s external appearance (in an extreme or exaggerated way)

aufstylen, auftakeln, aufbrezeln, aufdonnern, aufmachen, aufpoppen, aufmötzen, aufmöbeln, aufdirndeln, aufputzen, aufpeppen (not for one’s own appearance?)

11 auf marks a spatial support relation or similar relations

11.1 SUPPORTS

ruhen, sitzen, liegen, schwimmen (Aquaplaning)?

(Hut) haben / lassen / behalten / bekommen

(AS: intransitive, ground sometimes specified in auf-PP; sometimes (body) part that has contact specified in auf- or mit-PP or in verb, e.g. beißen, knien):

default support (ground, subject), ground can be land or seabed: treten, prallen, treffen, kommen, krachen, klatschen, fahren, laufen, schlagen, stampfen, bumsen, tippen

springen, steigen (both lexicalised, only for vehicles, horses..., not for mountain, chair...)

knien, gleiten, sitzen (understood as motion verb), hocken, beißen
many verbs in this group from gymnastics: aufknien, aufhocken, aufgrätchen

(setzen, stellen, binden, brennen, bringen, bügeln, bumsen, applizieren, dampfen, decken?, drehen, drücken, drücken, fllicken, gabeln, geben, gießen, hängen, heften, hucken, kleben, kaschieren, knöpfen, knüpfen, laden, lagern, lasten, legen, leimen, löten, malen, montieren, packen, pappen, pflanzen, pfropfen, plätten, prägen, probieren, schmelzen, schnallen, schnüren, schrauben, schreiben, schrumpfen, schweißen, spritzen, spannen, sprayen, sprühen, stemmen, stecken, stoßen, streichen, stilpen, stützen, tragen, treiben, walzen, wickeln, winden, zeichnen, ziehen, fegen?, kehren?, nehmen)
pelzen, sacken, halsen, buckeln, bucken -denominal
brummen

subject receives constraint/obligation: haben, bekommen, kriegen, nehmen

12 Planning
bewahren, heben, behalten, speichern, sparen, halten, schieben

13 alle
fressen, futtern, füttern, kaufen, knabbern, lutschen, rauchen, sacken, schlucken, tragen, zehren, trinken, reiben, arbeiten, bekommen, opfern, aufgehen (Rechnung, zu verteilende Menge), räumen, lösen

14 Iteration
division:
teilen, schlüsseln, gliedern, fächern (can also have open interpretation?), bröckeln (trans + intrans), splittern, splitten, spalten, schneiden,
composition:
messen, zählen, summieren, addieren, reihen (can also have perceivability interpretation?), listen (can also have support and perceivability interpretation?),

15 Deadjectival verbs
aufweichen, aufmuntern, aufklären/aufklaren, auffrischen, aufhellen, aufwei¬ßen, aufgrünen, auflockern, aufrauhen, aufwärmen, aufwachen, aufbessern, auflösen?, auftrocknen, aufhöhen, aufbereiten, aufreinigen, aufrunden, auffüllen (obwohl adjektivische Basis nicht mehr so deutlich; halb füllen, aber nicht: halb auffüllen)
old: aufspitzen (may be denominal), auftrüben

new (i.e. not in dictionaries)?: aufbleichen, aufsäubern, aufnässen, aufbräunen, aufröten (may be older in context of meat), aufhärten, aufdicken, aufdünnen (Wem die Suppe zu dickflüssig ist, kann sie mit Wasser aufdünnen), aufstärken (Alkoholgehalt aufstärken und herabsetzen: here technical term, but also used in other contexts), aufglätten (eg Kleidungsstücke), aufebnen, aufblonden, aufblauern, aufweiten, auffeuchten, aufschöne(r)n, aufsüßen, aufsauern?, aufkürzen

(some not possible because other particles too dominant, eg vergrößern)
Literatur


<table>
<thead>
<tr>
<th>Reference</th>
<th>Author/Title</th>
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