Intransitive Accomplishments and the Lexicon: The Role of Implicit Arguments, Definiteness, and Reflexivity in Aspectual Composition

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Abstract

Theories of aspectual composition assume that accomplishments arise when a transitive verb has an incremental theme argument which is realized as a quantized NP—foremost, an NP which is not a mass noun or a bare plural—in direct object position. A problem confronting this assumption is the large number of intransitive, unergative verbs in German and English that occur in accomplishment expressions. The paper argues that this problem can be solved within a standard theory of aspectual composition if additional, independently motivated lexical assumptions about argument structure, the representation of implicit arguments and lexical presuppositions are made.

It turns out that a distinction between lexically determined definiteness versus non-definiteness of implicit arguments in particular plays a crucial role, as well as one between implicitly reflexive and non-reflexive arguments in that implicitly definite and implicitly reflexive arguments allow for accomplishment expressions. This is explained by the semantics of definiteness and reflexivity, respectively. Apart from these verbs, there is another large group of unergatives which show that, in contrast to a common assumption in aspectual composition theory, verbs themselves and not only VPs can be quantized. This leads to a lexical distinction between 'mass' and 'count' verbs.

1 INTRODUCTION

Theories of aspectual composition try to answer the question of how different parts of an expression contribute to its aspectual properties. These properties, among other things, determine the co-occurrence of the expression with certain adverbials such as *in five minutes* in (1). One major finding of these theories is that expressions of the aspectual type 'accomplishment' occur when a transitive verb selects an incremental theme which is realized by a quantized NP, i.e. an NP which is not a

bare plural or a mass noun. The compatibility with *in*-adverbials serves as an indicator for the accomplishment status of an expression:[1]

(1) a. *Rebecca ate the octopus in five minutes*
     b. *??Rebecca petted the octopus in five minutes*

Since the one-place verbs as in (2), and two-place verbs with implicit arguments as in (3), do not have a second argument realized by a quantized NP, the basic assumption above predicts that they will not show up in accomplishment expressions:

(2) a. *??Rebecca worked in five minutes*
     b. *??Jamaal slept in five minutes*

(3) a. *??Rebecca read in five minutes*
     b. *??Jamaal sewed in five minutes*

Yet, there is quite a large group of intransitive verbs that do allow *in*-PPs, as the following examples from German show:

(4) a. *das Eis schmolz in etwa zwanzig Minuten*
         'the ice melted in about twenty minutes'
     b. *sie duschte in fünf Minuten*
         'she showered in five minutes'
     c. *sie   räumte   in nur fünf Minuten   auf*
         she   tidied   in only five minutes   up
         'she straightened / tidied up in only five minutes'
     d. *sie   frühstückte   in fünf Minuten*
         she   'breakfasted'   in five minutes
         'she had breakfast in five minutes'
     e. *sie   kassierte   in fünf Minuten   ab*
         she   collected-money   in five minutes   off
         'she collected all unpaid tabs in five minutes'

In particular, the existence of unergative accomplishments, as in (4b) through (4e), has not been considered in the literature on aspectual composition.[2] Thus, no explanation for their aspectual status has been given so far. The aim of the paper at hand is to show that the theory

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[1] I will use "??" and "?" to mark different degrees of semantic deviance.

[2] The appendix of Engelberg (1997) consists of a list of about 180 unergative verbs in German with example sentences which show their accomplishment status.

of aspectual composition as developed by Krifka (e.g. Krifka 1989a,b, 1998) can account for the examples in (4) if some independently motivated assumptions about the representation of implicit arguments are made.[3] In particular, the properties of Davidsonian-style argument structures and the distinction between definite and non-definite implicit arguments will play a role here. The argumentation will be mainly based on German examples, but most of what is said holds for similar examples from English, too.

The paper proceeds as follows. In section 2 some basic assumptions will be presented about lexical representations (section 2.1) and aspectual composition (section 2.2), and a brief description of the aspectual status of unaccusatives will be provided (section 2.3). In section 3 unergative accomplishments are discussed. They fall into three groups, namely implicitly definite verbs (section 3.1), implicitly reflexive verbs (section 3.4), and implicitly quantized verbs (section 3.5), each of which requires a different explanation. Two case studies (sections 3.2, 3.3) serve to discuss in greater detail how the definiteness and indefiniteness of implicit thematic arguments, the presuppositions tied to resultative particles, and the lexically determined partitivity of some verbs determine the aspectual status of intransitive VPs. The results of the study are summarized in section 4.

2   BASIC ASSUMPTIONS

2.1   *Lexical assumptions*

The first lexical assumption concerns the argument structure of verbs. Verbs will be represented in a Davidsonian manner (Davidson 1967), which will be important for the analyses presented in later sections. Thus, a verb has thematic arguments and an event argument (5a). The first line in (5a) expresses that the verb requires the realization of two constituents, an accusative NP and a nominative NP. By convention, the first element in the syntactic valency list of the verb corresponds to the first λ-bound argument and so on.[4] Thematic relations hold between an event and a participant in this event. The roles of the arguments of the predicate constant, i.e. ESS in (5a), which can be

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[3] The are a number of other papers which aim at extending Krifka's theory to new phenomena in different languages; cf. Filip (1993) on the influence of grammatical aspect on the referential properties of determinerless NPs in Czech, Singh (1998) on the semantics of perfective aspect in Hindi, Eberle (1998) on the contribution of German bare plurals to activity and accomplishment readings of sentences.

[4] These conventions follow the multidimensional valence theory developed within the research project 'Theory of the Lexicon' (SFB 282); cf. e.g. Jacobs (1993, 1994).

understood as proto-roles in the sense of Dowty (1991), are expressed in meaning postulates like (5b).

(5) a. *essen* 'to eat': SYN: /acc/nom
                         SEM: $\lambda y \lambda x \lambda e [\text{ESS}(x, y, e)]$
    b. $\forall x \forall y \forall e [\text{ESS}(x, y, e) \rightarrow \text{AGENT}(x, e) \& \text{THEME}(y, e)]$

Krifka (1989b) favours a neo-Davidsonian theory, i.e. an argument theory in which all verbs are one-place predicates over events. He briefly discusses some apparent problems of Davidsonian theories. The first one concerns adverbial modification. Krifka (1989b: 228) assumes that the application of a Davidsonian-style predicate to an argument changes its logical type such that adverbials would have to be variable in type. This problem is very much dependent on the compositional mechanisms used and does not show up in compositional semantic theories which allow a less syntax-dependent logical type assignment (cf. Engelberg 2000: 176). Furthermore, he assumes that predicates like CUM and QUA are no longer applicable to the semantic translation of verbs if these verbs are Davidsonian multi-place verbs. It will be shown later in this paper that CUM and QUA can be used in Davidsonian theories without changing the type or definition by relativizing them with respect to particular verb arguments by λ-abstraction over these arguments.[5]

There are strong arguments that can be brought against neo-Davidsonian theories, which I will briefly summarize here. For one, since in neo-Davidsonian theories thematic roles can only be related to verbs via conjuncts, e.g. EAT(e) & AGENT(x, e) & PATIENT (y, e), arguments can only be unambiguously identified if a uniqueness condition holds that says that every event has at most one agent, one patient, etc. In a discussion of double-agent sentences like *Rebecca played chess with Jamaal*, it is argued in Engelberg (2000) that this uniqueness condition is either false or empirically void. As a consequence, neo-Davidsonian theories run into problems with phenomena which require the unambiguous identification of verb arguments, such as the formulation of selectional restrictions (cf. also Dowty 1989).

A further argument against neo-Davidsonian theories concerns the idea that variables corresponding to the verb's arguments enter the representation via thematic conjuncts. They are then no longer part of the verbal entry and are all bound in the same manner (usually by existential closure). When one of the arguments is implicit, there is

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[5] Notably, Krifka uses Davidsonian representations instead of neo-Davidsonian ones in more recent papers (e.g. Krifka 1998).

no way to represent the distinction between definite and non–definite implicit arguments. I will argue in section 3.1.2 that it is necessary to make such a distinction and that it is a lexical one.[6]

The second lexical assumption concerns the treatment of implicit arguments. For some verbs, the realization of one or more of their arguments in simple, non-embedded declarative sentences is optional. In this case, the verb is to be represented as having two lexical variants, namely a non–reduced variant as in (6a) and a reduced variant as in (6b) (cf. Jacobs 1993, 1994; Engelberg 2000). The close semantic relation between the two variants can be captured by a meaning postulate as in (6c). The reduced variant has a non–λ–bound, i.e. implicit argument. I will say more about the interpretation of these arguments in section 3, for the time being they will occur as free variables in the representation.

(6) a. *akzeptieren*₁ 'to accept': SYN: /acc/nom
                                          SEM: $\lambda y \lambda x \lambda e [\text{AKZEPT}_1(x, y, e)]$

   b. *akzeptieren*₂: SYN: /nom
                                            SEM: $\lambda x \lambda e [\text{AKZEPT}_2(x, y, e)]$

   c. $\forall x \forall y \forall e [\text{AKZEPT}_2(x, y, e) \rightarrow \text{AKZEPT}_1(x, y, e)]$

The main reason for assuming two variants is that reduced variants of verbs are characterized by semantic peculiarities which do not hold for the non–reduced variant. In particular, in most cases the interpretation of an implicit argument underlies restrictions that are stronger than the selectional restrictions which the transitive variants impose on the respective non–implicit argument. In contrast to the non–reduced variant of *akzeptieren*, the reduced one only selects NPs

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[6] Additional problems for neo–Davidsonian theories like the one argued for by Krifka (1989a,b: 228) occur because they treat thematic roles as syntactic subcategorization features of verbs (i) which have to be matched by the complement NP (ii) which applies to the verb (iii). Within the NP it is the determiner—which is phonologically empty in this case—that introduces the thematic information. (The following representations are adapted to the format used in this paper.)

(i) *essen* 'eat': SYN: {V, ..., /{nom, agent, ...}/{acc, patient, ...}}
                SEM: $\lambda e [\text{ESS}(e)]_{\langle t \rangle}$

(ii) *Äpfel* 'apples': SYN: {NP, acc, patient, ...}
                   SEM: $\lambda P \lambda e \exists x [P(e) \,\&\, \text{PATIENT}(x, e) \,\&\, \text{ÄPFEL}(x)]_{\langle\langle e, t\rangle\langle e, t\rangle\rangle}$

(iii) *Äpfel essen* 'eat apples': SYN: {V, ... /{nom, agent, ...}}
                      SEM: $\lambda P \lambda e \exists x [P(e) \,\&\, \text{PATIENT}(x, e) \,\&\, \text{ÄPFEL}(x)](\lambda e [\text{ESS}(e)]) =$
                      $\lambda e \exists x [\text{ESS}(e) \,\&\, \text{PATIENT}(x, e) \,\&\, \text{ÄPFEL}(x)]_{\langle e, t \rangle}$

    This does not seem to be a very convincing solution. Firstly, it runs counter to the idea that 'thematic role' is not a morphosyntactic notion. Thematic roles are genuinely semantic concepts and are not mapped one–to–one onto morpho–syntactic categories. What they should do is allow a semantic classification of arguments to intersect with syntactic subcategorization. Secondly, since representations for NPs and determiners already include thematic specifications these representations have to be multiplied by the number of thematic roles they can assume.

denoting suggestions, plans, and the like as referents for its implicit argument (cf. Jacobs 1993):

(7) a. *er akzeptierte ihren Plan / ihren Vorschlag / ihre politische Überzeugungen / seine Krankheit*
         'he accepted her plan / her suggestion / her political convictions / his illness'
     b. *er akzeptierte*
         'he accepted' (where the implicit argument stands for 'plan', 'suggestion', but $^{??}$'convictions', $^{??}$'illness')

Thus, the two variants of *akzeptieren* are represented by different predicate constants, $AKZEPT_1$ and $AKZEPT_2$, each of which imposes particular restrictions upon its arguments.

It might be argued that a general principle governs the change in selectional restrictions from the transitive to the intransitive variant, either a semantic principle that says that only the core meaning(s) of a verb allow intransitivization or, as suggested by an anonymous reviewer, a pragmatic one which claims that one relates to the standard situation if a relevant parameter is missing. Two things can be said with respect to the pragmatic principle. First of all, what we do not want is that the result of the intransitivization process is not lexical in nature. In order to avoid a second lexical entry for the intransitivized version of the verb, the results of the application of the principle would have to be completely predictable. It is hard to tell, though, to what extent the variant of *akzeptieren* 'to accept' that allows intransitivization (selecting 'plan', 'suggestion'; meaning 'agree to something') relates to a situation that is more 'standard' than the obligatorily transitive variant (selecting 'illness', 'fate', 'conviction'; meaning 'acknowledge as a fact'). A solution of this kind would probably need a precise notion of the 'core meaning' of a word. Secondly, the principle seems to be wrong in many cases of intransitivization. The one-place variant of German *geben* 'to give' has only one reading in non-generic contexts, namely as in *sie gab* 'she gave playing cards to the other players'/'she dealt'. Since this does not describe a more standard situation of giving than the one described in *sie gab ihren Kindern Bonbons* 'she gave her children candy' the principle would predict that this interpretation would be available for *sie gab*, too, which it is not—not even in a situation where the children are the other players and they get cards and candy.

It is still open to debate whether implicit arguments are visible to syntax, and if so, which ones exactly. Partee (1989) discusses the pros and cons of representing implicit arguments as empty pronouns and points to several differences between explicit pronouns and implicit

arguments. Rizzi (1986) argues for a language-specific answer to the question whether or not implicit object arguments show up as *pro* in syntax. For the paper at hand, I will assume that the missing objects of multi-place verbs are represented semantically as implicit arguments, but do not show up in syntax.[7] On the one hand, the question of whether the implicit arguments need to be represented syntactically does not affect the main points of this paper. The results of this investigation should be easily adaptable to a syntactic solution. The semantic representation of the missing object—on the other hand—is crucial. Approaches which do not represent the missing object as a variable in the verb's representation are not compatible with the solutions presented in the course of this paper.

Finally, a remark is in order as to the differentiation of instances in which implicit arguments should be represented semantically and when they should not. I will assume that a verb's predicate constant has an implicit argument iff either (i) the verb has a variant with an explicit argument (i.e. an argument that gets syntactically realized) in the same semantic relation or (ii) there is a morphologically related verb with an explicit argument in the same semantic relation. Thus, the reduced variant of *lesen* 'to read' has an implicit argument (8a), as well as the obligatorily intransitive *zuschlagen* 'to hit', which is morphologically related to transitive *schlagen* 'to hit' (8b). Contrary to the assumptions of others (e.g. Chierchia 1990), the obligatorily intransitive verb *dinieren*

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[7] A reason for this assumption not mentioned in the literature cited here is that, with respect to certain well-formedness conditons, verbs with implicit arguments do not behave as if the implicit argument is realized syntactically. In German, valence frames requiring just a nominative NP and a dative NP are not well-formed (*/dat/nom) if the dative is coindexed with an argument in a patient, recipient, or beneficiary role. Datives of this sort require an accusative NP to be present (i.e. acc/dat/nom), as in (i). In general, the verb *kochen* 'to cook' allows the omission of the accusative (ii) as well as the dative complement (iii). But take a look at (iv). If the accusative NP was still implicitly syntactically present, i.e. if *kochen* in (iv) had the valency /acc/dat/nom, (iv) should be well-formed. But it is not, which shows that the underlying valency is /dat/nom, with no syntactically implicit accusative (cf. also Jacobs 1994).

(i) er   *kochte*   *ihr*   *eine Kartoffelsuppe*
     he-NOM   cooked   her-DAT   a potato soup-ACC
     'he cooked a potato soup for her'

(ii) er   *kochte*
     he-NOM   cooked
     'he cooked'

(iii) er   *kochte*   *eine Kartoffelsuppe*
     he-NOM   cooked   a potato soup-ACC
     'he cooked a potato soup'

(iv) *er   *kochte*   *ihr*
     he-NOM   cooked   her-DAT'
     'he cooked her'

'to dine' will not be represented as having two thematic arguments, since there is no morphologically related transitive verb. The fact that the involvement of some object in the event—like the food with *dine*—is implied by the verb seems an insufficient reason to assume an implicit argument. It would raise the question why we do not assume an implicit argument for legs with *jog* or the brain with *remember*, etc. which are likewise implied by the verb's·meaning. Relations like this can still be expressed in meaning postulates like (8c):

(8) a. intr. *lesen* 'to read': $\lambda x \lambda e[\text{LES}_2(x, y, e)]$
      because of tr. *lesen*: $\lambda y \lambda x \lambda e[\text{LES}_1(x, y, e)]$

  b. intr. *zuschlagen* 'to hit (sb.)': $\lambda x \lambda e[\text{ZUSCHLAG}(x, y, e)]$
      because of tr. *schlagen* 'to hit': $\lambda y \lambda x \lambda e[\text{SCHLAG}(x, y, e)]$

  c. but intr. *dinieren* 'to dine': $\lambda x \lambda e[\text{DINIER}(x, e)]$
      $\forall x \forall e[\text{DINIER}(x, e)$
      $\rightarrow \exists y[\text{ESS}(x, y, e)]]$

This assumption is supported by the fact that verbs like *dinieren* as opposed to other intransitively used verbs do not show any effect of an alleged implicit argument with regards to the aspectual properties of expressions containing it, as we will see in the course of this paper.

2.2 *Assumptions about aspectual composition*

The term 'accomplishment' refers to one of the four classes in Vendler's (1957) aspectual classification. These classes are distinguished mainly by their ability to occur in the progressive and by their co-occurrence with certain types of aspectual adverbials. According to Vendler (1957), accomplishments are distinguished from activities in that the former allow adverbials of the type *in five minutes* but not adverbials of the type *for five minutes*, while for the latter it is just the other way around. It should be noted, though, that Vendler is mistaken in his assumption that modifiability by the *for*-PP and modifiability by the *in*-PP are mutually exclusive. Many verbs with a quantized NP realizing an incremental theme allow both adverbials:[8]

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[8] This is easier to see for German as opposed to English because there is no progressive construction for transitive verbs in Standard German which could serve to express activities.

(9) a. *Jamaal   las   · die Zeitung   in zwanzig Minuten /   las*
Jamaal read the newspaper in twenty minutes / read
zwanzig Minuten lang   die Zeitung
for twenty minutes   the newspaper
'Jammal read the newspaper in twenty minutes/read the
newspaper for twenty minutes' ·

b. *Rebecca   räumte   ihr Zimmer   in wenigen Minuten*
Rebecca tidied her room   in a couple of minutes

auf /   räumte   ihr Zimmer   ein paar Minuten lang   auf
up / tidied her room   for a couple of minutes up
'Rebecca tidied up her room in a couple of minutes/tidied up
her room for a couple of minutes'

Several proposals have been made as to how this is to be explained
(e.g. Moens & Steedman 1988; Krifka 1989a; Eckardt 1996; Swart
1998), which I will not review here, since the following treatment
of intransitive verbs does not depend on any particular solution to
this problem. What should be clear is that referring to expressions
as accomplishments implies that they can be modified by *in*-PPs, but
it does not imply that they cannot be modified by *for*-PPs. More
precisely, only the interpretation of the *in*-PP as in (10a), where the
time interval given by the *in*-PP corresponds to the event time, serves
as an accomplishment indicator, and not the uses of the *in*-PP in (10b)
and (10c):

(10) a. *sie schrieb   den Brief   in zwanzig Minuten*

(*in*-interval = event time)
she wrote the letter in twenty minutes
'she wrote the letter in twenty minutes'

b. *in drei Minuten   war   der Ballon   geplatzt*

(end of *in*-interval = event time)
in three minutes was the ballon burst
'in three minutes, the balloon had burst'

c. · *ich   fahre   in zwanzig Minuten   nach Dallas*

(end of *in*-interval = begin of event time)
I   drive in twenty minutes to Dallas
'in twenty minutes, I'll drive to Dallas'

The interesting question is, of course, not which operational tests
determine whether an expression is an accomplishment or not, but
what it means for an expression to be an accomplishment and how this
meaning comes about. It is generally assumed that accomplishments
are the result of a compositional process. The most elaborate theory

on Vendler-class aspectuality has been formulated by Krifka in his dissertation (Krifka 1989b) and a number of papers, in particular Krifka (1989a, 1995, 1998).[9] The following investigation is based on the standard version of this theory, which centres around the concepts of quantization and cumulativity, and a notion of incrementality.

A predicate P is quantized, $QUA(P)$, iff in the case that it can be truthfully applied to an entity x and an entity y, y is not a proper part of x (11a). A predicate P is cumulative iff in the case that it can be applied to x and y, it can be applied to the sum of x and y, $x \oplus y$, too (11b).[10]

(11) a. $\forall P[QUA(P) \leftrightarrow \forall x \forall y[(P(x) \& P(y)) \rightarrow \neg(y \subset x)]]$

    b. $\forall P[CUM(P) \leftrightarrow \exists x \exists y[P(x) \& P(y) \& \neg(x = y)]$

        $\& \forall x \forall y [(P(x) \& P(y) \rightarrow P(x \oplus y)]]$

According to these definitions, nominal expressions like *three pounds of plankton, three octopuses* and *the octopus* are quantized and expressions like *plankton, octopuses* and *the octopus* are cumulative. Definite singular NPs are quantized because if they refer to an object, they cannot refer to any part of it (leaving the problem of incomplete objects aside, cf. Parsons 1990), and they are cumulative in that, due to their definiteness, they can refer to only one object x; any other object y would have to be identical to x, and since the sum of x and x is obviously x itself, they can refer to this sum also. Thus, they are cumulative.

The concept of incrementality captures the idea that objects in certain kinds of events are affected (or effected) bit by bit in this event,

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[9] Ideas about the semantic components involved in aspectual composition can be traced back to research on aspectuality in the first half of the 20th century. The following three conditions for accomplishment status have been established in earlier research: (i) The verb in an accomplishment expression subcategorizes for a direct object (or a directional phrase) (goes back to Wustmann 1894; Romberg 1899 and Pedersen 1901). (ii) Leaving directional phrases aside, the NP realizing the direct object argument may not be a bare plural or a mass noun (Jacobsohn 1933); later approaches have tried to capture this by requiring that the NP denote a specified quantity (Verkuyl 1972) or be divisive (Platzack 1979), i.e. quantized in Krifka's (1989a) terms, which means that in case it can refer to a particular object, it cannot refer to any proper part of that object. (iii) The direct object argument stands in a particular semantic relation to the event denoted by the verb (Jacobsohn 1933); Krifka (1989a) later identifies this relation as incrementality.

[10] Krifka employs cumulativity to characterize homogenous events and objects. Earlier versions of this notion can be found in Carlson (1981) and Bach (1981). The property of divisivity (a predicate is divisive in the case that if it refers to an entity x and x' is part of x, it refers to x', too) might serve this purpose, too, but Krifka (1989b: 40) and others have observed that extremely small parts of entities that can be referred to as *gold* or *run* do not fall into the extension of the respective predicates. Therefore, cumulativity has often been preferred to divisivity. On the other hand, divisivity allows a more straightforward expression of the so-called subinterval property, which has been observed by Vendler (1957), Bennett & Partee (1978), Dowty (1979) and others. Eberle (1998: 68) shows how a refined version of divisivity can overcome this problem. Although Eberle does not discuss the effect of definiteness on aspectual composition in detail, the solutions presented in this paper seem to be available for his approach to aspectual composition, too.

such that temporal parts of the event and spatial parts of the object are mapped onto each other.[11] According to Krifka (1989a), incrementality is based on four properties of thematic relations: (i) 'Mapping to objects' holds iff every part of the event corresponds to a part of the object (12a); (ii) 'Mapping to events' holds iff every part of the object corresponds to a part of the event (12b); (iii) 'Uniqueness of objects' holds iff for each part of an event there is exactly one part of an object (12c); (iv) 'Uniqueness of events' holds iff for each part of an object there is exactly one part of an event (12d) (cf. Krifka 1989a and for refinements Krifka 1998). In addition, since we do not want to apply the notion of incrementality to the thematic relations that underlie expressions like *make a dot* it should hold that e and x in $R(e, x)$ have proper parts (Krifka 1998).

(12) a. $\forall R[\text{MAP-O}(R) \leftrightarrow \forall e \forall e' \forall x [R(e, x) \& e' \subset e$
$\rightarrow \exists x'[x' \subset x \& R(e', x')]]]$

b. $\forall R[\text{MAP-E}(R) \leftrightarrow \forall e \forall x \forall x'[R(e, x) \& x' \subset x$
$\rightarrow \exists e'[e' \subset e \& R(e', x')]]]$

c. $\forall R[\text{UNI-O}(R) \leftrightarrow \forall e \forall e' \forall x[R(e, x) \& e' \subseteq e$
$\rightarrow \exists! x'[x' \subseteq x \& R(e', x')]]]$

d. $\forall R[\text{UNI-E}(R) \leftrightarrow \forall e \forall x \forall x'[R(e, x) \& x' \subseteq x$
$\rightarrow \exists! e'[e' \subseteq e \& R(e', x')]]]$

A thematic relation is incremental in a strong sense iff all four of these conditions hold (13a). Incrementality in this strong sense covers verbs of consumption and creation like *eat* and *draw*. A weaker notion of incrementality characterizes other verbs that can show up as accomplishments like *read*. If you read a book in two hours, you might have read a certain section twice, in which case 'Uniqueness of events' does not hold (13b).

(13) a. $\forall R[\text{INCR-ST}(R) \leftrightarrow \text{MAP-O}(R) \& \text{MAP-E}(R)$
$\& \text{UNI-O}(R) \& \text{UNI-E}(R)]$

b. $\forall R[\text{INCR-WK}(R) \leftrightarrow \text{MAP-O}(R) \& \text{MAP-E}(R)$
$\& \text{UNI-O}(R)]$

None of the explanations for unergative accomplishments will rely on assumptions about thematic relations or interpretations of incrementality that are peculiar to unergatives. Unergatives do not introduce any new complexity or problems in this respect which do not have to be solved for transitive verbs anyways. Thus, I will not focus here on

[11] Instead of incrementality, a related but slightly weaker notion of telicity is employed in explaining aspectual composition in Krifka (1998).

a further discussion of different versions of incrementality and similar properties of thematic relations, which can be found in Krifka (1998).

What will be important for the later discussion of unergatives (cf. section 3.3) is Krifka's (1989a) assumption that verbs themselves are always cumulative, which I will challenge. A verb is cumulative if in case it can truthfully refer to a particular event e and to a particular event e', it can also refer to the sum of these events. On the assumption that verbs themselves are never quantized, quantization, i.e. accomplishmenthood of the verbal expression, always comes about in a compositional way, according to the following rules: if (i) a thematic argument x of the verbal predicate stands in an incremental relation to e and (ii) x is predicated over by a quantized (NP-)predicate, the complex predicate over the event e is quantized. For example, since y in $EAT(x, y, e)$ stands in an incremental relation to e and *the octopus* is a quantized predicate, *eat the octopus* is quantized and thereby an accomplishment: it cannot be applied to any proper part of this event.[12] Thus, the conditions for accomplishmenthood of the VP are fulfilled in (14a) but not in (14b–d).

(14) a. *she ate the octopus*   *(in two minutes)*
       $+CUM^V$ $+INCR$ $+QUA^{NP}$ $> +QUA^{VP}$

    b. *she ate plankton*   *($^{??}$in two minutes)*
       $+CUM^V$ $+INCR$ $-QUA^{NP}$ $> -QUA^{VP}$

    c. *she teased the armadillo*   *($^{??}$in two minutes)*
       $+CUM^V$ $-INCR$ $+QUA^{NP}$ $> -QUA^{VP}$

    d. *she teased armadillos*   *($^{??}$in two minutes)*
       $+CUM^V$ $-INCR$ $-QUA^{NP}$ $> -QUA^{VP}$

Apart from the type of accomplishment illustrated in (14a), there are two other types of accomplishments which cannot be explained by assuming an incremental relation between the event and the direct object referent, namely expressions involving a path (15a,b) and expressions involving a scalar change (15c,d). Krifka (1998) shows that both cases can be handled when appropriate path structures are defined. Incrementality in these cases holds between an event and a (spatial or scalar) path.

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[12] I ignore here the influence of the subject NP on the aspectuality of the sentence. Even under the conditions in (14a), bare plural subject NPs that are cumulative lead to cumulative sentences as in *boats crossed the river for two hours*. This has been discussed in Verkuyl (1993). The examples in the paper at hand always involve quantized subject NPs. Another subject-dependent phenomenon shows up in *the train crossed the border in thirty seconds*, which is one of the few instances where the event is incremental with respect to the subject NP of a transitive verb (cf. similar examples in Krifka 1998).

(15) a. *they climbed the mountain in four hours*
    b. *they jogged from the mall to the park*
    c. *she dried her hair in five minutes*
    d. *she fixed her bike in twenty minutes*

Again, the discussion of unergative accomplishments below does not involve any properties of thematic relations which differ from what we find with transitive verbs. For simplification, I will therefore adopt the following convention: I will mark a thematic relation as an aspectual theme 'ASPTHEME(x, e)' iff either (i) x stands in an incremental relation to e (14a), (ii) x stands for an object for which a path can be constructed which stands in an incremental relation to e (15a) or (iii) x stands for an object which changes with respect to a limited scale, where the change is understood as a movement on a property path which stands in an incremental relation to e (15c,d). The quantization condition always holds for the ASPTHEME argument.[13]

The lexical representations for verbs that express movements on local and scalar paths can be rendered as in (16).[14] The directional variant of *to jog* as a valence extension of one-place *to jog* syntactically requires two PPs which denote point v on the path u, which is the starting point (SOURCE) of the event, and point w, which serves at the end point (GOAL) (16a). With *to climb*, the goal and the source are understood as the top and the bottom, respectively, of the direct object referent (16b). Transitive *to dry* (and similarly *to fix*) comes with an inherent specification of the source and the goal, where in particular the exact interpretation of the source is dependent on the context (16c).

(16) a. *jog₂*:   SYN: PP/PP/NP
               SEM: $\lambda v \lambda w \lambda x \lambda e \exists u [\text{JOG}_2(x, e) \, \& \, \text{PATH}(u, e)$
                       $\& \, \text{SOURCE}(u, v, e) \, \& \, \text{GOAL}(u, w, e)]$
                       $\forall x \forall y \forall e [\text{JOG}_2(x, e) \rightarrow \text{AGENT}(x, e)]$
    b. *climb*:   SYN: /NP/NP
               SEM: $\lambda y \lambda x \lambda e \exists u [\text{CLIMB}(x, y, e) \, \& \, \text{PATH}(u, e)$
                       $\& \, \text{SOURCE}(u, v^{\text{BOTTOM}(y)}, e)$
                       $\& \, \text{GOAL}(u, w^{\text{TOP}(y)}, e)]$
                       $\forall x \forall y \forall e [\text{CLIMB}(x, y, e) \rightarrow \text{AGENT}(x, e)$
                       $\& \, \text{ASPTHEME}(y, e)]$

[13] For the semantics of the *in*-adverbial cf. Krifka (1989b, 1998).
[14] The representations in (16) adapt the format in Krifka (1998) to the lexical assumptions made in this paper.

c. *dry*:   SYN: /NP/NP

SEM: $\lambda y \lambda x \lambda e \exists u [\text{DRY}(x, y, e) \& \text{PATH}(u, e)$
$\& \text{SOURCE}(u, v^{\text{DAMP/WET}}, e)$
$\& \text{GOAL}(u, w^{\text{DRY}}, e)]$

$\forall x \forall y \forall e [\text{DRY}(x, y, e) \rightarrow \text{AGENT}(x, e)$
$\& \text{ASPTHEME}(y, e)]$

I will not go into detail here as to how paths contribute to the aspectual properties of an expression (cf. Krifka 1998). Two conditions should be kept in mind, though: (i) In order to yield an accomplishment reading the starting point and the end point of the path must be unique. When there is an implicit argument involved, this is expressed by an index on the respective argument variables (e.g. $v^{TOP(y)}$). (ii) If, in addition to the path, an aspectual theme is involved, as in (16b,c), the NP predicating over this argument has to be quantized, even if the starting point and end point of the path are explicitly or implicitly given. Bare plurals as in (17) do not lead to accomplishment readings:[15]

(17)   a. $^{??}$*she climbed mountains in ten hours*

b. $^{??}$*she emptied beer mugs in five minutes*

2.3   *Some remarks about unaccusative accomplishments*

Unaccusative and unergative verbs in German are generally distinguished by the four criteria in (18) (cf. e.g. Toman 1986). These criteria do not yield extensionally equivalent classes, though. For example, *bluten* 'to bleed' takes *haben* as an auxiliary but does not occur in impersonal passive constructions; *joggen* 'to jog' allows impersonal passives and agent nominalizations but takes *sein* as an auxiliary. By convention, I will call those verbs unergatives that take *haben* as their auxiliary in the perfect tenses:

(18)		*tanzen* 'dance' (unergative)	*sinken* 'sink' (unaccusative)
a.	perfect auxiliary:	*der Mann hat getanzt*	*das Schiff ist gesunken*
		the man has danced	the ship is sunken
		'the man has danced'	'the ship has sunken'
b.	attributive participle II:	*der getanzte Mann	*das gesunkene Schiff*
		'the danced man'	'the sunken ship'
c.	impersonal passive:	*es wird getanzt*	*es wird gesunken
		it PAS danced	it PAS sunken
		'there is dancing going on'	'there is sinking going on'
d.	agent nominalization:	*der Tänzer*	*der Sinker
		'the dancer'	'the sinker'

[15] As is always the case with bare plurals, we can of course get distributive readings if the context allows this interpretation.

As the following examples show, accomplishments can be found in the domain of unaccusatives, as is indicated by the *in*-adverbials:

(19) a. *die Socken trockneten in zwei Stunden*
          'the socks dried in two hours'
      b. *das Eis schmolz in wenigen Minuten*
          'the ice melted in a couple of minutes'
      c. *das Schloss verfiel in wenigen Jahrzehnten*
          'the castle deteriorated in a few centuries'

Unaccusatives do not pose any particular problems for aspectual composition. The same conditions that hold for transitive verbs also hold for unaccusative ones, with the expected difference that it is the surface subject NP which has to be quantized and which has to realize the aspectual theme:

(20) a. *schmelzen* 'to melt': SYN: /nom

SEM: $\lambda x \lambda e \exists u [\text{SCHMELZ}(x, e)$
$\& \text{PATH}(u, e)$
$\& \text{SOURCE}(u, v^{\text{SOLID}}, e)$
$\& \text{GOAL}(u, w^{\text{LIQUID}}, e)]$
$\forall x \forall e [\text{SCHMELZ}(x, e) \rightarrow$
$\text{ASPTHEMA}(x, e)]$

Although there is a tendency in the literature to identify unaccusatives with a particular aspectual class (especially achievements), they do not form an aspectually homogeneous one (cf. Engelberg 2000). Instead, they exhibit almost the same range of behavior as transitive verbs. Of the three unaccusatives in (21), only *schmelzen* 'to melt' is an accomplishment (21a). Neither the punctual verb *zerbrechen* 'to break' (21b), nor *steigen* 'to rise', a verb not related to a scale with an endpoint (21c), allow *in*-PPs:[16]

(21) a. *das Eis schmolz (in zwanzig Minuten/$^?$zwanzig Minuten lang)*
          'the ice melted (in twenty minutes/for twenty minutes)'
      b. *der Stock zerbrach ($^{??}$in zwanzig Minuten/$^{??}$zwanzig Minuten lang)*
          'the stick broke (in twenty minutes/for twenty minutes)'
      c. *die Temperatur stieg ($^{??}$in zwanzig Minuten/zwanzig Minuten lang)*
          'the temperature rose (in twenty minutes/for twenty minutes)'

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[16] Accomplishment readings are of course possible if the specific points on the scale are explicitly or contextually given: *the temperature rose from 20 to 25 degrees in two hours.*

3 THREE TYPES OF UNERGATIVE ACCOMPLISHMENTS

3.1   *Type I: Implicitly definite unergatives*

3.1.1   The role of resultative particles   The first set of data to be analysed is represented by the examples in (22), which all contain German particle verbs, i.e. verbs which leave their particle in sentence final position when the finite verb occurs in second position:

(22) a. *Ron   aß   in zwei Minuten   auf/fertig*
            Ron   ate   in two minutes   up/ready
            'Ron ate up in two minutes'

    b. *Joana   rauchte   in zwei Minuten   auf/fertig*
            Joana   smoked   in two minutes   up/ready
            'Joana finished smoking ('smoked up') in two minutes'

    c. *Rebecca   tankte   in fünf Minuten   auf*
            Rebecca   'tanked'-gas   in five minutes   up
            'Rebecca filled up in five minutes'

    d. *der Typ   trank   in wenigen Augenblicken   aus*
            the guy   drank   in a couple of moments   up
            'the guy drank up in a couple of seconds'

    e. *der Kassettenrekorder   spulte   in zwei Minuten   zurück*
            the tape recorder   *wound   in two minutes*   back
            'the tape recorder rewound in two minutes'

    f. *sie   rechnete/maß   in zwei Minuten   nach*
            she   computed/measured   in two minutes   after
            'she double-checked the computation/measurement in two minutes'

    g. *sie   räumte   in fünf Minuten   auf*
            she   tidied   in five minutes   up
            'she cleaned up/tidied up in five minutes'

Since verb particles often have a resultative meaning, one might think that the particle itself is responsible for the accomplishment status of the expression. But a look at corresponding transitive constructions does not support this idea. Among transitive verbs, particle verbs (23a), prefixed verbs (23b), and simple verbs (23c) behave alike in that an accomplishment reading does not occur when the object is not quantized. The resultative particle alone obviously does not licence *in*-PPs.[17]

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[17] In German, the present perfect is the more common form for referring to events in the past, replacing the imperfect in most contexts.

(23) a. *sie   hat   (??in zwei Stunden)   Flugzeuge   aufgetankt*
      she   has   (in two hours)   planes   up-'tanked'
      'she (has) filled up planes with gas (in two hours)'

    b. *der Fast-Food-Champion   hat   (??in zwei Stunden)*
      the fast-food champion   has   (in two hours)

      Hamburger   *verschlungen*
      hamburgers   devoured

      'the fast-food champion (has) devoured hamburgers (in two hours)'

    c. *sie   hat   (??in zwei Stunden)   Vogelkäfige   gebaut*
      she   has   (in two hours)   bird cages   built
      'she (has) built bird cages (in two hours)'

What the particle in the examples in (22) does instead is add a presupposition ($\rightarrow_p$) about a preceding event to the meaning of the simple verb (24). We will have a closer look at these presuppositions in section 3.2.

(24) a. *aufrauchen*(x, y, e) 'finish smoking' $\rightarrow_p$ a part of y has been smoked before
    b. *austrinken*(x, y, e) 'drink up' $\rightarrow_p$ a part of y has been drunk before
    c. *zurückspulen*(x, y, e) 'rewind' $\rightarrow_p$ y has been played/wound forward before
    d. *nachrechnen*(x, y, e) 'double check (a computation)' $\rightarrow_p$ y has been computed/ counted before
    e. *nachmessen*(x, y, e) 'double check (a measurement)' $\rightarrow_p$ y has been measured before
    f. *aufräumen*(x, y, e) 'tidy up' $\rightarrow_p$ y has been brought into disorder before/was in a state of disorder before

That it is not the particle itself which is responsible for the accomplishment status of the intransitives is furthermore shown by the following non-compound verbs:

(25) a. *Aspirin   hilft   auch   bei Kater   in weniger als fünf Minuten*
      Aspirin   helps   also   at hangover   in less than five minutes
      'Aspirin even helps a hangover in less than five minutes'

b. ?*Lysol   desinfiziert   in wenigen Minuten*
   Lysol   disinfects   in a few minutes
   'Lysol disinfects in a few minutes'

c. *das Mittel   wirkte   in wenigen Sekunden*
   the substance   took effect   in a few seconds
   'the substance took effect in a few seconds'

d. *das Gift   einer Kobra   lähmt   in etwa 30 Sekunden*
   the poison   of a cobra   paralyses   in about 30 seconds
   'the poison of a cobra paralyses in about 30 seconds'

e. *hochprozentiger Alkohol   enthemmt meist schon*
   high-proof alcohol   disinhibits mostly already

   in wenigen Minuten
   in a couple of minutes

   'with high-proof alcohol a disinhibiting effect often occurs in
   only a few of minutes'

These verbs share a semantic property with the verbs in (22): they
involve a presupposition about a preceding event, namely that the
aspirin, the poison and the other substances denoted by the subject NPs
in (25) have been applied to the referent of the implicit argument. The
in-PP then refers to the time between the application of this substance
and the time when the change in this referent has led to a certain
degree of painlessness, paralysis or whatever the purpose of the applied
substance is.[18]

Thus, a solution tying the accomplishment status of unergatives to
a resultative particle would be neither a very general one, as the *help-*
type verbs show, nor is it correct, as a look at the transitive variants of
particle verbs reveal.

3.1.2 *Implicit definiteness and quantization*   In this section, I will
show that properties of the implicit argument are responsible for the

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[18] The examples in (25) might suggest that genericity is involved in the licensing of the *in*-adverbial,
since, for example, (25d) is not acceptable in a non-generic reading (i) But this is independent of the
in-PP, as can be seen in (ii):

(i)   ?? *die Kobra biss ihn und das Gift lähmte in dreissig Sekunden*
      'the cobra bit him and the poison paralysed in thirty seconds'
(ii) ?? *die Kobra biss ihn und das Gift lähmte*
      'the cobra bit him and the poison paralysed'

Blume (1993) has shown that some verbs with optional complements only allow the omission of this
complement in certain contexts, namely generic, habitual and contrastive ones. Most of the verbs in
(25) underlie these restrictions.

accomplishment status of the expressions discussed in the last section (22, 25). It has sometimes been noticed that for verbs with implicit arguments, it is necessary to lexically indicate whether this argument is to be interpreted as definite or non-definite (cf. Fraser & Ross 1970; Allerton 1975; Sæbø 1984; Fillmore 1986; Jacobs 1993, 1994; Lambrecht & Lemoine 1996). A sentence like (26a) cannot be uttered without it being clear from the context what exactly Konrad accepted, while (26b) does not require that we know exactly what Konrad read. The implicit argument here is interpreted as indefinite; we could express (26b) by saying that Konrad read something, but (26a) could not be adequately rendered as *Konrad hat endlich etwas akzeptiert* 'Konrad finally accepted something'.[19]

(26) a. *Konrad hat endlich akzeptiert*
   Konrad has finally accepted
   'Konrad finally accepted'

  b. *Konrad hat im Sessel gesessen und gelesen*
   Konrad has in the chair sat and read
   'Konrad was sitting in the chair and read/was reading'

This difference is a lexical one, which I will express here by means of an index on the implicit argument, where y^{+d} marks a definite, and y^{-d} a non-definite implicit argument (cf. section 3.3 for slight modifications):

(27) a. intransitive *akzeptieren* 'to accept': $\lambda x \lambda e[\text{AKZEPT}(x, y^{+d}, e)]$
  b. intransitive *lesen* 'to read': $\lambda x \lambda e[\text{LES}(x, y^{-d}, e)]$

The textual behaviour of these two types of implicit arguments is similar to that of explicitly definite and indefinite NPs in that (i) the referent of a definite implicit argument has to be anaphorically (28a) or situationally (28b) identifiable; (ii) verbs with definite implicit arguments come with an existence presupposition with respect to the referent of this argument, i.e. in (28a) and (28b) it is presupposed that the identified referent exists; (iii) verbs with definite implicit arguments imply that there is exactly one referent for this argument in the situation; (iv) implicit non-definite arguments can introduce a new

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[19] Note that the insertion of *etwas/something* in (26b) changes the aspectuality of the construction, which is then modifiable by an *in*-PP (cf. Krifka 1998).

referent into the discourse which can then be picked up by a definite NP (28c).[20]

(28) a. *das Kartoffelpüree   ist   ja   immer noch*
the potato mash   is   yes   always still

da;   nun   iss   doch mal   endlich auf!
there;   now   eat   (reinforcement)   finally up!

'the potato mash is still there; will you please eat up now!'

b. [glaring at somebody's plate:]   *nun   iss   doch mal*
now   eat   (reinforcment)

endlich auf!
finally up!

'will you please eat up now!'

c. *er saß   im Sessel   und   las,   aber   das Buch*
he sat   in the chair   and   read,   but   the book

schien   ihm   nicht   zu   gefallen
seemed   him   not   to   please

'he was sitting in his chair and reading, but he didn't seem to like the book'

Interestingly, all the verbs in (22) and (25) have definite arguments. For some of the sentences in (25) this is not so obvious, because the implicit argument is within the scope of a generic operator. But the fact that we cannot replace the implicit argument by an indefinite pronoun as in (29a) supports the view that the implicit argument is indeed to be understood as definite. In (29b) the implicit argument is replaced by a definite pronoun accompanied by a relative clause which expresses the lexical presupposition about the preceding event.

[20] In a recent paper Koenig & Mauner (2000) made some interesting observations concerning implicit arguments of verbs like *read*. While the implicit argument of *read* kann be picked up by a definite NP in a following sentence, it is not available for pronouns: *?er las, aber es schien ihm nicht zu gefallen*, 'he was reading, but he didn't seem to like it [referring to the book]'. Koenig & Mauner argue that implicit arguments are not indefinites but 'a-definites'. In contrast to indefinites, a-definites do not introduce a discourse variable, which explains why they are not available as antecedents for pronouns. This holds for implicit ones, as in the above case, and for explicit ones, like French a-definite *on* v. the indefinite *quelqu'un*. The fact that the implicit argument can be followed by a co-referent definite NP like *the book* is explained by presupposition accommodation. Bridging inferences drive the accommodation of the existence presupposition tied to the definite NP which, as a result, is identified with the implicit argument.

Koenig & Mauner (2000) do not distinguish between definite and a-definite implicit arguments. As far as I can see, they are only concerned with implicit arguments of the type which I have treated as indefinites. The analysis of the aspectual influence of implicit arguments in the paper at hand is open to both types of analysis.

(29) a. _??das Gift   einer Kobra   lähmt   irgend jemanden_
the poison of a cobra paralyses somebody

in dreißig Sekunden
in thirty seconds

'the poison of a cobra paralyses somebody in thirty seconds'

b. _das Gift   einer Kobra   lähmt   den,   in den_
the poison of a cobra paralyses the one, in whom

es   injiziert wurde,   in dreißig Sekunden
it   injected PAS,   in thirty seconds

'the poison of a cobra paralyses the person, to which is has been injected, in thirty seconds'

It can be observed that whereas some indefinite NPs are quantized (30a,c) while others are not (30b,d), explicitly definite NPs are always quantized (31).

(30) a. QUA(_a bike'_)
   b. ¬QUA(_bikes'_)
   c. QUA(_two bikes'_)
   d. ¬QUA(_milk'_)

(31) a. QUA(_the bike'_)
   b. QUA(_the two bikes'_)
   c. QUA(_the bikes'_)
   d. QUA(_Joe's bike'_)

This suggests that it is not only the explicit definiteness of an argument that always leads to quantization of the complex verbal predicate, provided that the right thematic relations hold, but also the implicit definiteness of an argument.

Among the properties of definiteness mentioned above, the one which is crucial for definite expressions being quantized is the uniqueness of the referent in a given discourse situation.[21] Along with von Heusinger (1996) and Egli & von Heusinger (1995), I will therefore assume the following: definite NPs are translated as in (32), where the epsilon operator ε selects exactly one element out of the set of elements that have the properties described in its scope. The index

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[21] The uniqueness assumption is confronted with apparent counterexamples when the definite expression occurs within the scope of quantifiers as in _every man looks like his car_, where uniqueness has to be relativized with respect to the antecedent; cf. Kadmon (1990) and van der Sandt (1992) for solutions within DRT-based approaches.

i provides the relation to the context. It orders the elements in this set according to their salience and ε picks out the most salient entity.[22]

(32) *die Insel* 'the island':   SEM: $\varepsilon_i x[\text{INSEL}(x)]$

We can now extend Egli & von Heusinger's approach to verbs with definite implicit arguments. The intransitive verb *aufräumen* 'to tidy up' expresses a movement on a scale from 'untidy' to 'tidy' and has an aspectual theme which is represented by an implicit definite argument (33). Since ε-expressions are of the logical type 'entity', we can replace a definite implicit argument with such an expression. (33) implies that, relative to a given context, *aufräumen₂* picks out just one and only the most salient entity in the set of things that are tidied up. Thus, intransitive *aufräumen* is a definite description with respect to its implicit argument.[23]

(33) a. *aufräumen₂* 'tidy up':
        SYN: /nom
        SEM: $\lambda x \lambda e \exists u[\text{AUFRÄUM}_2(x, y^{+d}, e) \& y$
$= \varepsilon_i z[\text{AUFRÄUM}_2(x, z, e)] \& \text{PATH}(u, e)$
$\& \text{SOURCE}(u, v^{\text{UNTIDY}}, e) \& \text{GOAL}(u, w^{\text{TIDY}}, e)]$
$= \lambda x \lambda e \exists u[\text{AUFRÄUM}_2(x, \varepsilon_i z[\text{AUFRÄUM}_2(x, z, e)], e)$
$\& \text{PATH}(u, e) \& \text{SOURCE}(u, v^{\text{UNTIDY}}, e)$
$\& \text{GOAL}(u, w^{\text{TIDY}}, e)]$
$\forall x \forall y \forall e[\text{AUFRÄUM}_2(x, y, e) \rightarrow \text{AGENT}(x, e)$
$\& \text{ASPTHEME}(y, e)]$

How does implicit definiteness formally relate to quantization? Most event semantics approaches to aspectuality assume a neo-Davidsonian argument theory, according to which all verbs and all nouns are one-place predicates over events or things, respectively. Thus, being quantized with respect to a thing is always a property of a nominal predicate. But within a Davidsonian approach to event semantics,

[22] The ε-operator itself does not come with an existence presupposition and a Russelian uniqueness presupposition (cf. Egli & von Heusinger 1995). Applied to an empty set, ε assigns an arbitrary element as a value. This allows the treatment of sentences where the existence of the referent of a definite NP is denied. Uniqueness comes into play not in the Russelian sense, according to which only one referent may fit a definite description—which is obviously false for common noun NPs like *the island*—but via the contextually determined salience hierarchy which provides its highest element as the NP referent. Thus, uniqueness is to be understood not only with respect to the descriptive content of the NP but also with respect to the salience hierarchy.

[23] It is not quite clear to me to what extent intransitive *aufräumen* might allow indefinite readings with respect to the implicit argument, too. This would not affect the argumentation here, though. We will look at similar cases in section 3.3.

which has multi-place verbal predicates in the lexicon, QUA can in principle be a property of a verbal predicate with respect to one of its thematic arguments. This possibility will be employed in the following explanation for the aspectual properties of intransitive *aufräumen*.

We have seen that AUFRÄUM$_2$ is a definite description with respect to its aspectual theme (34a). Furthermore, AUFRÄUM$_2$ is a singular predicate with respect to its implicit argument (34b), which is to say (according to Krifka 1989a) that it has exactly one entity in its extension (34c). This is the case because the ε-operator picks out exactly one element, namely the contextually given thing to be tidied up. It can be shown that singularity implies quantization (34d) since, if a predicate P has only one entity x in its extension, and a proper part y of this entity would be an entity different from x, there is no proper part y of x that P could be applied to (Krifka 1989a). Therefore, AUFRÄUM$_2$ is quantized with respect to its aspectual theme argument (34e): if it can be applied to the entity to be tidied up, it cannot be applied to any part of this entity. We can now stay with the original assumption that a predicate which is quantized with respect to its aspectual theme argument leads to quantization of the event predicate (34f) and thereby to an accomplishment reading (34g).

(34) a. $\text{AUFRÄUM}_2(x, y^{+d}, e)$
   i.e. : $\text{AUFRÄUM}_2(x, \varepsilon_i z\,[\text{AUFRÄUM}_2(x, z, e)], e)$
   b. $\text{SNG}(\lambda y[\text{AUFRÄUM}_2(x, y^{+d}, e)])$
   c. $\forall P[\text{SNG}(P) \leftrightarrow \exists x[P(x)\,\&\,\forall y[P(y) \to x = y]]]$
   d. $\text{SNG}(P) \to \text{QUA}(P)$
   e. $\text{QUA}(\lambda y[\text{AUFRÄUM}_2(x, y^{+d}, e)])$
   f. $\text{QUA}(\lambda e[\text{AUFRÄUM}_2(x, y^{+d}, e)])$
   g. *er   räumte   (in zehn Minuten)   auf*
      he   tidied   (in ten minutes)   up/on
      'he tidied up in ten minutes'

It seems worthwhile to emphasize how the treatment of implicit definiteness does away with apparent counter examples to (34e). An objection to (34e) could go like this: let us assume that the second argument of *aufräumen$_2$* in (34a) is instantiated with some salient object, let's say the apartment of the agent, such that *Ron hat (in vier Stunden) aufgeräumt* 'Ron tidied up (in four hours)', uttered in a conversation about the devastating consequences of the last party to Ron's apartment, is true with respect to that object. If we then went and instantiated this argument of *aufräumen$_2$* with a part of this object, let's say Ron's living room, then *Ron räumte auf* is true in this second case, too, since if he

tidied up the whole apartment he also tidied up the living room. If this argumentation is correct, intransitive *aufräumen* would not be quantized with respect to its object argument since it can be applied to an entity and a proper part of it, and thus, (34e) would be false. This objection is of course unfounded, since in the context described the living room is simply not available as a referent. Only one aspectual theme referent is in the extension of the predicate, namely the apartment as the contextually most salient entity.

A similar example from the domain of definite nominal predicates will illustrate how the uniqueness condition tied to definite expressions results in quantization of the expression. Whereas (35a) is obviously quantized, (35b) is not:

(35) a. *she drank the milk (in five minutes)*
     b. *she drank milk (*in five minutes)*

Since (35) constitutes a minimal pair, this can only be due to the difference between *milk* and *the milk*; *milk* is a non-quantized, cumulative predicate that results in a cumulative VP, while *the milk* is quantized, thereby leading to a quantized VP. One might object that *the milk* is not quantized because, in principle, one can refer to parts of this object with *the milk*, too. But this would ignore the built-in context-dependency of definite predicates, which restricts the available entities in the extension of *the milk* to exactly one, namely to the most salient one. Thus, parts of the milk-entity are simply not available to be referred to by *the milk*. The uniqueness condition and the context-dependence of the extension of the predicate are inherent in the semantics of explicit and implicit definites and thus determine their aspectual properties.[24]

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[24] Note that although this article assumes that the unique referent of a definite expression is chosen with respect to a salience hierarchy, Krifka takes a different route: According to Krifka (1989b: 74ff), the definite article in *the milk* picks out the maximal individual which is in the extension of *milk*. Parts of this individual are thereby excluded as referents of *the milk*. The salience-based approach adopted here is of course more vague unless the pragmatic construction of salience hierarchies is specified. In the case at hand, perceptual salience plays a role: if an entity is perceptible, the whole entity is always perceptually more salient than any non-delineated parts of it.

There are some cases where the maximality approach does not yield the right interpretation. In the following example, *the milk* does not refer to the maximal contextually available individual that counts as milk, i.e. it refers to a glass of milk, not a bottle: *Didn't the doctor say you should drink a glass of milk and a glass of wine every evening? I did buy some low-fat milk; there's a full bottle in the fridge. Maybe you should drink the milk before dinner.* A salience-hierarchy could take the current linguistic context of *the milk*, namely *drink*, into consideration and rank those milk individuals higher that have been introduced in a drinking context than those that have been introduced in a buying context.

In the next two sections, I will present two case studies which deal in more detail with the influence of implicit definiteness (section 3.2) and indefiniteness (section 3.3) on the aspectual properties of verbal expressions.

3.2   Case study: intransitive aufessen 'to eat up' and hidden incrementality

One of the particle verbs involving implicit definite arguments is intransitive *aufessen* 'eat up'. Taking a closer look at this verb, two related meanings of the transitive variant of the verb need to be distinguished. In one meaning, the use of *aufessen* is just a slightly emphatic way to express the same kind of event the verb *essen* 'to eat' refers to. Looking in the cupboard and noticing that the chocolate bar which has been laying there for the last few days is gone, one can utter (36a). In the second reading, *aufessen* means something like 'finish eating'; it refers to an event of eating a part of a thing x and presupposes that there is another part of x that has been eaten before (36b).

(36) a. *wer   hat   meinen Schokoriegel   aufgegessen?*
         who   has   my chocolate bar   up-eaten
         'who ate my chocolate bar?' (the whole bar in one eating event)

   b. *er hat   seine Suppe   (nicht)   aufgegessen*
      he has   his soup   (not)   up-eaten
      'he ate up/didn't eat up his soup' (of which the first part had been eaten some time before)

Besides the two transitive variants *aufessen*₁ (37a) and *aufessen*₂ (37b), there is the intransitive variant *aufessen*₃ (37c) which, interestingly, is a valency reduction of *aufessen*₂ only:

(37) a. *aufessen*₁: SYN: transitive   SEM: 'to eat' (emphatic)
   b. *aufessen*₂: SYN: transitive   SEM: 'to eat one of the two parts of the object referent' presupposes: eating of the other part in a preceding event
   c. *aufessen*₃: SYN: intransitive SEM: *aufessen*₂

Thus, two distinct readings for transitive *aufessen* are assumed here. Besides this polysemy approach, two other views come to mind, which describe transitive *aufessen* as underspecified or as vague. In both cases

the two readings of transitive *aufessen* would be subsumed in one. Eating the whole object would just be something like the maximal event variant of 'eating the end piece of the object'. These solutions are more economic in terms of numbers of lexical readings. The underspecification view can be construed as assuming that *aufessen* means *essen* and that there is an open parameter for the thing eaten which is set by contextual information either to the whole object or to a remaining part of the object. The vagueness approach could then assume that *aufessen* means *essen* where it is possible that only a remaining part of the object is eaten. If we assume that ambiguity is resolved by contextual information, the polysemy approach and the underspecification approach have in common that both rely on the context and that the two readings of transitive *aufessen* are distinct, while the vagueness approach and the underspecification view share the assumption that there is only one variant of transitive *aufessen*.

The analysis of a sample of corpus-based occurrences of *aufessen* reveals that the vagueness approach is inappropriate.[25] If *aufessen* were vague we would expect wide readings in which the question does not arise whether a whole object or only a part of the object is eaten. In the vast majority of cases, though, the interpretation of *aufessen* forces us to choose between one of two discrete meanings where the context provides the relevant clues as to which meaning is to be chosen. Some corpus examples illustrate the discreteness of the readings and their context-based disambiguation.

(38) a. *Die erfolgreichen Werfer   müssen   nach dem Turnier*
the successful pitchers   must   after the tournament

das geworfene Ei   aufessen,   um   der Jury
the thrown egg   up-eat   in order   the jury

zu beweisen,   daß   es sich um ein Naturprodukt
to prove   that   it RFL PREP a nature-product

und nicht etwa   um ein Gipsei   handelt.
and not (contrast)   PREP a plaster-egg   (approx.:) be

'The successful pitchers have to eat up the thrown egg after the tournament in order to prove to the jury that it is a natural product and not, e.g. a plaster egg.'

b. *Tatsache ist, daß sie den Apfel nicht einmal*
   fact is   that   they   the apple   not even

   aufessen, sondern nur anbeißen durften.
   up-eat   but only   at-bite may-PAST

   'Actually, they weren't allowed to eat the apple up, they were only allowed to bite into it.'

c. *'Was ich halt nicht aufessen kann, das nehm ich*
   What I   (particle)   not up-eat can   that   take I

   mit in meinem Ranzen,' sprach der Bruder Lustig,
   with   in my satchel   said   the Brother Lustig

   aß das halbe Lamm und steckte das übrige in seinen Ranzen.
   ate   the half lamb   and   put   the rest   in his satchel

   ' "What I can't eat up, I carry with me in my satchel," said Brother Lustig, who ate half of the lamb and put the remainder in his satchel.'

The interpretation is guided by a pragmatic principle of object constancy. By default, objects that have been introduced in narrative contexts which consist of descriptions of successive events do not change unless otherwise stated. So, if (i) the entity x that is eaten up in an event e^2 is referred to by an NP that does not denote a part of x and which occurs as the object of a preceding event e^1, and (ii) no information is given about any event between e^1 and e^2 in which x is partly consumed, then *aufessen* is interpreted as *aufessen*$_1$. Cf. (38a), which describes an easter egg throwing contest. Since the egg occurs as the object of a preceding throwing event and no event between the throwing and the eating up is mentioned, we understand that the whole egg is eaten in the eating up event. The meaning of *aufessen*$_2$ is not available because the above mentioned principle seems to block the accomodation of the presupposition which comes with this reading of *aufessen*. In contrast, *aufessen* is understood in the sense of *aufessen*$_2$ under one of the following two conditions: (i) the entity x that is eaten up in e^2 is referred to explicitly as the object of a preceding event e^1 in which x is partly consumed (cf. 38b); (ii) a part of the entity x eaten up in e^2 is mentioned as the object of a preceding event e^1 (cf. 38c).

As to the choice between a polysemy and an underspecification view, there are reasons to choose the former, keeping the readings separate. Firstly, both readings of transitive *aufessen* can get lexicalized separately; the first meaning by *essen*, and the second one by *fertigessen*

'finish eating', which lacks the first reading of *aufessen*. Secondly, since *fertigessen* does not have the reading of *aufessen*₁, this would have to be marked explicitly in its lexical entry. Thus, while the underspecification view would allow us to decrease the number of readings, we would have to increase the idiosyncratic information within the entries. Thirdly, the particular emphasis of *aufessen*₁ is, according to my intuition, tied to the whole-object reading and is not a property of a general, underspecified meaning of *aufessen*. I do not think, though, that the choice of a polysemy approach v. an underspecification approach affects the solution to the aspectual problems presented here.[26]

To understand the following argumentation about the particular problems with the explanation for the accomplishment status of intransitive *aufessen*, we have to look at a more detailed lexical representation of the verb.

(39) a. *aufessen*₁':   SYN: /acc/nom

                     SEM: $\lambda y \lambda x \lambda e [\text{ESS}(x, y, e)]$(emphatic)

    b. *aufessen*₂':   SYN: /acc/nom

                     SEM: $\lambda y \lambda x \lambda e [\text{ESS}(x, y'^{+d}, e) \& y = y' \oplus y'']$

                     $\forall x \forall y \forall e [\text{aufessen}_2(x, y, e)$

                     $\rightarrow_p \exists e' \exists z [(\text{ESS}(z, y''^{+d}, e') \& \tau(e') < \tau(e)]]$

    c. *aufessen*₃':   SYN: /nom

                     SEM: $\lambda x \lambda e [\text{aufessen}_2(x, y^{+d}, e)]$

    d. $\forall x \forall y \forall e [\text{ESS}(x, y, e) \rightarrow \text{AGENT}(x, e) \& \text{ASPTHEME}(y, e)]$

The first reading, *aufessen*₁, is truth-conditionally equivalent to the meaning of *essen* 'eat' (39a). The other transitive reading, *aufessen*₂, is rendered by (39b); the semantic translation of *aufessen*₂ expresses that the referent of the theme argument y is the sum of its two parts y' and y'' and that the meaning of *aufessen*₂ involves eating one of these parts. This part is represented by the definite implicit argument y'^{+d} which means that its referent has to be uniquely identifiable in the context. The presupposition ($\rightarrow_p$) connected to *aufessen*₂ says that there was an eating event e' before the event referred to by *aufessen*₂, in which the other part of y, namely y'', had been eaten by somebody.[27]

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[26] For a DRT-based approach to underspecification cf. the theory presented in Reyle *et al.* (2000) and—concerning the representation of verbs—Kamp *et al.* (1995). Based on Discourse Representation Structures, lexical typed feature structures, and the ideas of a hierarchical lexicon, Asher & Lascarides' (1995) disambiguation theory seems particularly adept at handling the phenomena discussed briefly in this chapter.

[27] Cf. Givón (1972) for other types of 'backward' presuppositions with verbs.

(39c) specifies *aufessen₃* as the intransitive variant of *aufessen₂*, and, finally, (39d) renders the thematic relations of the underlying predicate constant for *essen*.

Some remarks about the relationship between definiteness and presuppositions might add to the understanding of the representations in (39). DRT-based approaches usually assume that presuppositions are anaphors which need an antecedent in the preceding discourse (van der Sandt 1992). Lexical verb-based presuppositions like the one connected to *aufessen₂* can—in case no antecedent is found—usually be accommodated if they do not contradict other propositions in the context.[28] Nonetheless, the accommodation of the presupposition that comes with *aufessen₂* is restricted by the condition that the principle of object constancy mentioned above is not violated.

Presuppositions are also involved in the interpretation of definite NPs in that—according to a common assumption—a definite NP presupposes the presence of the entity denoted within the discourse context. Presuppositions of this kind are not easily accommodated, i.e. in case the entity has not been previously introduced into the discourse, the sentence is pragmatically odd. In contrast to the common assumption above, Egli & von Heusinger (1995) assume that it is not the NP-referent which has to be given in the discourse, but the salience hierarchy that determines it. Salience hierarchies can be introduced into discourse by preceding indefinite expressions. However, in both approaches the NP-referent identified in the context is unique. Uniqueness is also characteristic for implicit definites, i.e. with *aufessen₃* the whole object (*y* in 39b) as well as the remaining part (*y'* in 39b) can be identified in the context. In the following example, *y* is understood as one of the doughnuts while *y'* is identified with that part of the doughnut which is left over at the time of the cited utterance:

(40)   *Bodo, der Bäcker, stand am Sonderschalter und ließ*
       Bodo the baker   stood at the makeshift counter   and let

       von drei Serviererinnen Krapfen kredenzen, an denen auch
       by three waitresses   doughnuts serve   of which also

       Ottmar Hitzfeld Geschmack fand [...] 'Ich
       Ottmar Hitzfeld taste found   'I

       muss erst aufessen', sagte also der Bayern-Trainer,
       must first up-eat'   said (particle) the Bayern-coach

[28] Cf. Kamp *et al.* (1995) for the treatment of lexical presuppositions tied to verbs within DRT.

als einer	*nach Mario Basler*	*fragte.*	*'Haben Sie*
when somebody	for Mario Basler	asked	'have you

noch nie	*Berliner gegessen?*	*Das zerläuft*	*ja*	*an den Fingern.'*
never	Berliner eaten?	that melts	yes	at the fingers'

'Bodo, the baker, stood at the makeshift counter and had doughnuts served by three waitresses, which [the doughnuts] Ottmar Hitzfeld acquired a taste for, too. [...] 'I have to eat up first,' said the Bayern-coach, when somebody asked about Mario Basler [one of the players of the soccer team 'Bayern München']. 'Haven't you ever eaten a Berliner [a marmalade-filled doughnut]? It melts in your fingers."

What can be said now about the reasons for intransitive *aufessen* being an accomplishment? If we want to stay with our original assumption and exploit the property of incrementality with respect to the aspectual theme, we ignore the fact that there is still a flaw in the argumentation. I have argued that the accomplishment status of transitive *aufessen*$_2$ and intransitive *aufessen*$_3$ is due to the quantization of the aspectual theme. The object argument is supposed to count as an aspectual theme because it is an incremental theme in the strong sense of incrementality (see section 2.2). But this is not the case, and it is easy to see why. In *sie aß die Pizza auf* 'she ate up the pizza' (in the sense of *aufessen*$_2$) the object NP denotes a whole pizza while the *aufessen*-event only affects the remaining part of this object. Thus, there are parts of the pizza which are not mapped onto the event of *aufessen*. It is a peculiarity of some of the particle verbs in (22) (*aufrauchen* 'finish smoking', *austrinken* 'finish drinking') that their object NP denotes a whole entity while the event referred to by the verb is only related to a contextually given part of it. This comes as no surprise, though, if we look at the semantic representation of *aufessen*$_3$ (41a). It is the verbal predicate constant ESS 'eat' within the decomposition which provides the thematic structure, i.e. ESS specifies one of its arguments as an aspectual theme (41b) and, in fact, this argument—namely the final part y' of the object—stands in an incremental relation to the event referred to. Thus, the quantization condition should hold with respect to this argument, and it does, since the aspectual theme argument is definite and thereby quantized. This, in turn, means that ESS is also quantized with respect to its event argument (41d). It seems reasonable to assume that since ESS is the only event description involved in the translation of *aufessen*$_3$ which comes with a thematic role specification, the quantization of *aufessen*$_3$ is determined by ESS (41e).

(41) a. *aufessen₃*':   SEM: $\lambda x \lambda e[\text{ESS}(x, y'^{+d}, e) \& y^{+d} = y' \oplus y'']$

    b. $\forall x \forall y \forall e[\text{ESS}(x, y, e) \rightarrow \text{AGENT}(x, e) \& \text{ASPTHEME}(y, e)]$

    c. $\text{QUA}(\lambda y[\text{ESS}(x, y, e) \& y = \varepsilon_i z[\text{ESS}(x, z, e)]])$

    d. $\text{QUA}(\lambda e[\text{ESS}(x, y, e) \& y = \varepsilon_i z[\text{ESS}(x, z, e)]])$

    e. $\text{QUA}(\lambda e[\text{AUFESS}_3(x, y, e) \& y = \varepsilon_i z[\text{AUFESS}_3(x, z, e)]])$

    f.   *sie*   *aß*   (*in zwei Minuten*)   *auf*

       she   ate   (in two minutes)   up

       'she ate up in two minutes'

In the last section I surmounted a possible objection to the claim that intransitive *aufräumen* 'to tidy up' is quantized with respect to its theme argument. Here, I want to discuss another objection that was put forward by an anonymous reviewer, who argued that intransitive *aufessen* is not quantized at all with respect to its event argument. His/her argumentation is as follows: each event of the type *aufessen* contains as parts events which contain the endpoint of the event and which can be called *aufessen*, too. If there is an event of the type *aufessen* or *die Pizza aufessen* 'eat up the pizza', then every continuous part of this event which includes the end point of the whole event is also an event of the type (*die Pizza*) *aufessen*. But, if *aufessen* can refer to an event and a proper part of it, it cannot be quantized. A possible response to this objection, but one which I will not ultimately follow, would be to apply a weaker notion than quantization, for example a second-order predicate of telicity: an event predicate is telic if, in case it can be applied to an event, it can't be applied to any parts of this event except those continuous parts which contain the end point of the event. The final part of an event is defined as in (42a), telicity as in (42b):[29]

(42) a. $\forall e \forall e'[\text{FIN}(e, e') \leftrightarrow e' \subseteq \& \neg \exists e''[e'' \subseteq e \& e' < e'']]$

    b. $\forall P[\text{TEL}(P) \leftrightarrow \forall e \forall e'[P(e) \& P(e') \& e' \subseteq e \rightarrow \text{FW}(e', e)]]$

Instead of going this route I will show that the original definition of quantization is sufficient for the explanation of the accomplishment status of *aufessen*. I consider the following explanation an alternative solution to the one in (41), which also relies on the assumption that it is the definite implicit theme argument which leads to the quantization of the whole event predicate.

A slightly different phenomenon will illustrate why we do not need the notion of telicity (42b) to explain the accomplishmenthood of intransitive *aufessen*. Krifka (1995: 73) has discussed cases like *Mary*

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[29] Cf. (Krifka 1995: 65, 1998: 207) for a discussion of telicity. Note that (42a) is Krifka's definition of 'final part' but (42b) is not Krifka's concept of telicity.

walked to the university (in an hour), where the initial point of the walk is not explicitly mentioned. Although it seems at first sight that every continuous part of this event that includes the end point is a walk to the university, too, this argumentation ignores the fact that in expressions of this kind, the initial point of the movement is always provided by the context. That is to say, the source argument of the reduced variant of *walk* is a definite implicit argument. In (43), the representation of the directional variant of *walk*, u is a path of which the source v is marked as implicitly definite and the goal w is specified by a locative phrase.[30] Other initial walking points are simply not available—as they would be if the source argument was existentially bound.

(43) a. *walk'*:   SYN: /PP/NP

SEM: $\lambda w \lambda x \lambda e \exists u [\text{WALK}(x, e) \,\&\, \text{PATH}(u, e)$

$\&\, \text{SOURCE}(u, v^{+d}, e) \,\&\, \text{GOAL}(u, w, e)]$

Exploiting the similarities to the *walk*-sentence above, we can present the second solution to the aspectual properties of *aufessen*. It can be observed that the starting point of intransitive *aufessen* is determined by the remaining piece of whatever is eaten here, i.e. y' in (39b). The variable y' is in fact an implicitly definite one: in an utterance like *bitte, iss jetzt auf!* 'please, eat up now!' the speaker can only refer to that part of the food that is left on the plate at the time of utterance. Smaller parts of the food—like the parts that will constitute the last three bites of the meal—are not being referred to in this situation. The variable y' is definite, which means that only the most salient entity meeting the selectional restrictions of the verb is within its extension.[31] Thus, there is only one starting point for the event, namely the one defined by this entity. Since the starting point is thereby contextually fixed, there are no parts of an event of the type *aufessen₃* that *aufessen₃* can apply to. Thus, *aufessen₃* is indeed quantized with respect to its event argument. We can capture this idea in a way that reveals the similarity to movement and change-of-state verbs if we understand *aufessen₃* as a movement on a scale that is conceived of as a path structure as in Krifka (1998), such that there is an incremental relation between the event and the path. To express this, we have to extend the lexical entry of *aufessen₃* (and similarly for *aufessen₂*) as in (44). The scale expresses the degree of consumption in terms of a decrease in the substance that

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[30] Cf. for similar representations and the definition of path structures Krifka (1998).

[31] Krifka's maximality approach and the salience approach adopted in this paper will yield the same results in this case, since y' is the maximal individual in this situation and it is the perceptually most salient one.

the object eaten consists of. The starting point of the scalar movement, i.e. the SOURCE, is the amount of substance that the remaining part y' of the object y consists of, rendered as a numeric value, and the endpoint, i.e. the GOAL, is the zero end of the scale.

(44) a. *aufessen₃*: SYN: /nom

SEM: $\lambda x \lambda e \exists u [\text{ESS}(x, y'^{+d}, e)$

$\& \, y^{+d} = y' \oplus y'' \, \& \, \text{PATH}(u, e)$

$\& \, \text{SOURCE}(u, v^{\text{AMOUNT-OF-SUBSTANCE}(y')}, e)$

$\& \, \text{GOAL}(u, w^0, e)]$

Both solutions presented here, the one exploiting the incremental theme of ESS and the one based on the incremental path, are available and in both cases it is the implicit definiteness of the thematic argument that guarantees the quantization of the VP.

3.3 Case study: intransitive lesen 'to read' and forced partitivity

The description of non-definite implicit arguments in section 3.1.2 was, in a certain way, simplified. Although a non-definite implicit argument x^{-d} is interpreted indefinitely in most cases, it allows definite interpretations, too. Thus, it can be said to be neutral with respect to definiteness and might better be represented as $x^{\pm d}$ (Jacobs 1993).[32] The following sentences illustrate the definite and indefinite uses of some $x^{\pm d}$-verbs:

(45) a. *als ich ins Zimmer kam, saß sie im Sessel und las*
when I into the room came, sat she in the chair and read
(indefinite)

'when I entered the room she was sitting in the chair and was reading'

b. *sie nahm den neuen Roman von Grass und las* (definite)
she took the new novel by Grass and read

'she picked up the new novel by Grass and read'

[32] Lambrecht & Lemoine (1996), who discuss French data, assume a threefold classification: (i) definite null instantiation, (ii) indefinite null instantiation and (iii) free null instantiation which means that the argument can be interpreted as a definite or an indefinite. For German, there are only very few verbs whose implicit argument is obligatorily interpreted indefinitely, e.g. the habitual variant of intransitive *trinken* 'to drink', meaning 'to drink large amounts of alcoholic beverages habitually'.

(46) a. *zwei Arbeiter sind noch unten an der Rampe und <u>laden</u> <u>ab,</u>*
two workers are still down at the ramp and load off,

die anderen fegen die Lagerhalle   (indefinite)
the others sweep the warehouse

'two workers are down at the ramp unloading, the others
sweep (are sweeping) the warehouse'

b. *sie fuhren den Wagen mit den Möbeln*
they drove the car with the furniture

vors Haus   *und <u>luden</u> <u>ab</u>*   (definite)
in front of the house and loaded off

'they drove the truck with the furniture in front of the house
and unloaded'

(47) a. *er saß den ganzen Abend vorm Fernseher und <u>strickte</u>*
he sat the whole evening in front of the TV and knitted
(indefinite)

'he was sitting in front of the TV the whole evening and was
knitting'

b. *weil er den Pullover schnell fertighaben*
because he the sweater quickly ready-have

wollte, setzte er sich hin und <u>strickte</u> (definite)
wanted, sat he himself down and knitted

'because he wanted to finish the sweater quickly he sat down
and knitted'

(48) a. *Jamaal ist hinten im Teppichlager*   *und <u>saugt</u>*
Jamaal is behind in the carpet warehouse and vacuums
(indefinite)

'Jamaal is out back in the carpet warehouse and is vacuuming'

b. *er spülte schnell das Geschirr, <u>saugte</u> und*
he rinsed quickly the dishes, vacuumed and

verließ dann das Haus   (definite)
left then the house

'he quickly did the dishes, vacuumed, and then left the house'

Since all these verbs select aspectual themes, we would expect,
according to what has been said in the last section, that the definite
sentences will show up as accomplishments. This in fact is the case for
(49b,d) but, disturbingly, not for (49a,c):

(49) a. [??]*sie nahm den neuen Roman von Grass und las*
           she took the new novel by Grass and read in two hours
           'she picked up the new novel by Grass and read in two hours'

    b. *sie fuhren den Wagen mit den Möbeln*
        they drove the car with the furniture

        vors Haus und luden in zwanzig Minuten ab
        in front of the house and loaded in twenty minutes off
        'they drove the truck with the furniture in front of the house
        and unloaded in twenty minutes'

    c. [??]*weil er den Pullover schnell fertighaben wollte,*
        because he the sweater quickly ready-have wanted,

        setzte er sich hin und strickte in drei Stunden
        sat he himself down and knitted in three hours
        'because he wanted to finish the sweater quickly he sat down
        and knitted in three hours'

    d. *er spülte schnell das Geschirr, saugte in fünf Minuten*
        he rinsed quickly the dishes, vacuumed in five minutes

        und verließ dann das Haus
        and left then the house
        'he quickly did the dishes, vacuumed in five minutes, and then
        left the house'

Interestingly, there is one property in particular that distinguishes the verbs that do not allow an *in*-PP under the definite interpretation of the implicit argument from those which do allow it: the transitive variant of these verbs allows a valency alternation between an accusative NP and a prepositional phrase expressing partitivity. In the second sentence in (50a), only a part of the book is being read in this event, and in the second sentence of (50b), only a part of the sweater is being knitted. Notice that this is clearly not the meaning of *saugen* 'to vacuum' in (48b), where it is understood that whatever counts as the whole carpet was affected:[33]

(50) a. *sie las das Buch* v. *sie las in dem Buch*
        she read the book she read in the book
        'she read the book' 'she was reading (part of) the book'

[33] For a discussion of the meaning and distribution of the *an*-construction, cf. Krifka (1989b), Filip (1989) and Engelberg (1994).

b.	*er strickte*	*den Pullover*	v.	*er strickte*	*an dem Pullover*
	he knitted	the sweater		he knitted	at the sweater
	'he knitted the sweater'			'he was knitting (part of) the sweater'	

How does this valence alternation affect the lexical entries of the verbs? For two reasons, the partitive meaning of the expressions to the right in (50) has to be expressed in the semantic translation of the respective entry of the verb and not in the translation of the PP. Firstly, the preposition is lexically governed by the verb. It only occurs with a small subclass of transitive verbs (Krifka 1989b), and furthermore, while *an* is the most common choice, some verbs select *in* (*lesen* 'to read'), others *von* (literally 'of', *essen* 'to eat'), where these prepositions can, of course, have different meanings when they occur with other verbs. Secondly, it is not always partitivity with respect to an object which is expressed in this construction. With verbs like *reparieren* 'to fix', the event expressed by the prepositional variant is partitive with respect to a movement on a fixed-broken scale that comes with the verb. This information cannot be encoded in the lexical entry of the preposition heading a PP like *an dem Fahrrad* (literally 'at the bike'), since the same prepositional construction might involve partitivity with respect to the object entity when combined with other verbs. Thus, I will assume the representation in (51a) for the accusative variant and the one in (51b) for the prepositional variant of *lesen* 'to read', where the translation in (51b) says that there is a part of the entity denoted by the PP which is the aspectual theme of *lesen*. The variants of *lesen* 'to read' and *stricken* 'to knit' with a reduced valency, as in (45b) and (47b), clearly employ this partitive meaning. This leads to the assumption that the process of valence reduction that results in the intransitive meaning of these verbs takes the partitive construction as input and not the /acc/nom-variant. The intransitive variant of *lesen* would therefore look like (51c). The definiteness or indefiniteness of the implicit argument y does not affect the existential binding of the aspectual theme of LES_3, y'. Meaning postulates guarantee that the aspectually relevant thematic relations hold for all variants. The representation will look like (51c) independently of the assumption that it is the result of a valency reduction from the prepositional variant of the verb.

(51) a. *lesen₁*: SYN: /acc/nom
  SEM: $\lambda y \lambda x \lambda e [LES_1(x, y, e)]$
  $\forall x \forall y \forall e [LES_1(x, y, e) \rightarrow AGENT(x, e)$
  & $ASPTHEME(y, e)]$

b. *lesen₂:* SYN: /PP^{in}/nom

SEM: $\lambda y \lambda x \lambda e \exists y'[\text{LES}_2(x, y', e) \ \& \ y' \subseteq y]$

$\forall x \forall y \forall e[\text{LES}_2(x, y, e) \rightarrow \text{LES}_1(x, y, e)]$

c. *lesen₃:* SYN: /nom

SEM: $\lambda x \lambda e \exists y'[\text{LES}_3(x, y', e) \ \& \ y' \subseteq y^{\pm d}]$

$\forall x \forall y \forall e[\text{LES}_3(x, y, e) \rightarrow \text{LES}_2(x, y, e)]$

The semantic translation in (51c) explains why the intransitive variants of these verbs never show up as accomplishments: their partitive meaning comes from the lexicon and unspecific partitivity is incompatible with quantization. In contrast to AUFESS₃, with LES₃ it is neither presupposed that the other parts of the theme have been read before nor is the part read specified as a particular end piece of the theme. The predicate LES₃ is cumulative with respect to its second argument because, if there is a part y' of an entity y (definite or indefinite) for which $\text{LES}_3(x, y', e)$ is true, and another part y'' for which $\text{LES}_3(x, y'', e)$ is true, then the predicate is also truthfully applied to the sum of these parts: $\text{LES}_3(x, y' \oplus y'', e)$. Furthermore, the predicate is not quantized with respect to its second argument because, if there is a part y' of an object y for which $\text{LES}_3(x, y', e)$ is true, there is also a part y'' of y' such that $\text{LES}_3(x, y', e)$ is true. Thus:

(52) a. $\text{CUM}(\lambda y'[\text{LES}_3(x, y', e) \ \& \ y' \subseteq y^{\pm d}])$

b. $\neg\text{QUA}(\lambda y'[\text{LES}_3(x, y', e) \ \& \ y' \subseteq y^{\pm d}])$

This does not mean that verbs like *saugen* 'to vacuum' as in *er saugte* 'he vacuumed' or *er saugte den Teppich* 'he vacuumed the carpet', as well as the transitive variant of *lesen* 'to read' as in *er las ein Buch* 'he read a book' cannot have partitive meanings, just that these readings are not forced by the lexical meaning of the verb. Furthermore, adverbials like *zuende* 'up to the end' or *bis Seite 30* 'up to page 30' can still turn the intransitive partitives into quantized predicates:

(53) a. *sie   las   in zehn Minuten   zuende*

she   read   in ten minutes   to the end

'she read up to the end in ten minutes'

b. *sie   las   in zehn Minuten   bis Seite 30*

she   read   in ten minutes   up to page 30

'she read up to page 30 in ten minutes'.

While this line of the argument renders the semantics of intransitive *lesen* correctly, it does not explain why verbs of this kind do not allow valency reductions of their accusative variants, too. But this can be

addressed as an independent question which concerns the still unsolved problem of why some verbs allow valency reductions with respect to some of their arguments while others do not.

3.4 Type II: Implicitly reflexive unergatives

A second type of unergative is represented by the following examples from German and English:

(54) a. *er duschte in fünf Minuten*
   'he showered in five minutes'
   b. *sie badete in zwanzig Minuten*
   'she bathed in twenty minutes'
   c. *he shaved in ten minutes*
   d. *she dressed in five minutes*
   e. *he flossed in three minutes*

All of these verbs have transitive variants in which the object argument serves as an aspectual theme, as can be seen in (55).

(55) a. *John dressed Robert in five minutes*
   b. *John dressed in five minutes*

The interpretation of the intransitive variants is reflexive. Although we might think that the reflexive interpretation comes about because the implicit argument is a definite one and the most salient referent for the aspectual theme is the referent expressed by the subject argument, not every verb which can in principle be interpreted reflexively gets a reflexive interpretation for its reduced variant. The verb *kratzen* 'to scratch', which allows explicit reflexives in its transitive variant (56a), is . usually not interpreted reflexively in its intransitive variant (56b):

(56) a. *Klaus hat sich gekratzt*
   Klaus has himself scratched
   'Klaus scratched himself'
   b. *Klaus hat gekratzt*
   Klaus has scratched
   'Klaus scratched (→ somebody)'

The verbs in (54), on the other hand, seem to evoke reflexive interpretations only. We can capture this implicit reflexivity by identifying the variables of the two thematic arguments (cf. Jacobs 1993, 1994):[34]

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[34] Cf. Bach (1980) and Koenig & Mauner (2000) for similar considerations concerning reflexive variants of transitive verbs with explicit reflexivity markers.

(57) a. *dress*$_1$:   SYN: /NP/NP

                  SEM: $\lambda y \lambda x \lambda e [\mathrm{DRESS}_1(x, y, e)]$

     b. *dress*$_2$:   SYN: /NP

                  SEM: $\lambda x \lambda e [\mathrm{DRESS}_2(x, x, e)]$

     c. $\forall x \forall y \forall e [\mathrm{DRESS}_1(x, y, e) \rightarrow \mathrm{AGENT}(x, e)$

           $\& \mathrm{ASPTHEME}(y, e)]$

     d. $\forall x \forall y \forall e [\mathrm{DRESS}_2(x, y, e) \rightarrow \mathrm{DRESS}_1(x, y, e)]$

The second argument of *dress* is an aspectual theme. It is incremental in a vague sense: the body (at least most of its parts) gets successively covered with one or more layers of clothing. In the implicitly reflexive variant, the referent of the second argument is identical with the referent of the first one. Thus, if there is a quantized predicate over the first argument, it is also a predicate over the second argument. Therefore, the complex verbal expression is quantized.

With some implicitly reflexive verbs, the second argument stands only for a certain part of the referent of the first argument, e.g. with *floss*, where the referent of the implicit argument is understood to be the teeth of the subject referent (58b in shorthand notation).

(58) a. *to floss*$_1$:   SYN: /NP/NP

                     SEM: $\lambda y^{[+\mathrm{teeth}]} \lambda x \lambda e [\mathrm{FLOSS}_1(x, y, e)]$

     b. *to floss*$_2$:   SYN: /NP

                     SEM: $\lambda x \lambda e [\mathrm{FLOSS}_2(x, y^{[+x's\ \mathrm{teeth}]}, e)]$

In these cases, the quantization of the VP with respect to the event argument comes about because the implicit argument stands for a possessive construction. This possessive is definite and thereby quantized, such that quantization is transferred to the VP.

3.5   Type III: Implicitly quantized unergatives

The following data exemplify the third group of unergative accomplishments discussed in this paper:

(59) a.   *wie immer*   *stand*   *sie*   *zu spät*   *auf*   *und*   *musste*

         as always   stood   she   too late   up   and   must-PAST

         dann in zwei Minuten   *frühstücken*

         then in two minutes   'breakfast'

         'as usual she got up too late and then had to eat breakfast in two minutes'

b. *die Gäste   haben   in nur zehn Minuten   diniert   und*
   the guests   have   in only ten minutes   dined   and

   dann überstürzt   das Haus   verlassen
   then hectically   the house   left

   'the guests dined in only ten minutes and then hectically left
   the house'

c. *sie   fuhr   mit ihrem Truck   vor die Zapfsäule,*
   she   drove   with her truck   in front of the gas pump,

   tankte   in nur drei Minuten   und   brauste   davon
   'tanked'   in only three minutes   and   sped   away

   'she drove her truck in front of the pump, got gasoline in
   only three minutes and sped away'

d. *erst   spielte   sie   die große Sünderin,   und   dann beichtete*
   first   acts   she   the big sinner,   and   then confessed

   sie   in nur drei Minuten
   she   in only three minutes

   'first she acts like the big sinner and then she confessed (to the
   preast) in only three minutes'

e. *ich   habe   in drei Jahren   promoviert*
   I   have   in three years   done-a-Ph.D.

   'I did my Ph.D. in three years'

f. *sie   referierte   in zwanzig Minuten*
   she   gave-a-report   in twenty minutes

   über die texanische Hutmode
   over the Texan hat-fashion

   'she gave a talk on Texan hat fashion in twenty minutes'

g. *die Waschmaschine   hat   in sieben Minuten   geschleudert*
   the washer   has   in seven minutes   spun

   'the washer executed its spin cycle in seven minutes'

h. *wir haben in zehn Minuten gespült und dann Seinfeld angemacht*
   we have   in ten minutes   rinsed and then Seinfeld on-turned

   'we did the dishes in ten minutes and then turned on Seinfeld'

i. *ich   habe in neun Semestern   studiert*
   I   have in nine semesters   studied

   'I completed my university studies in nine semesters'

j. *wir   haben   heute Mittag   in fünf Minuten   gegessen   und*
   we   have   today noon   in five minutes eaten   and

   sind   dann sofort   los
   are   then right away off

   'today we ate lunch in five minutes and then left immediately'

k. *der Lavamat   wäscht   und   schleudert   in 25 Minuten*
   the Speed Queen washes and   spins   in 25 minutes

   'the Speed Queen agitates and spins in 25 minutes'

l. *sie   hat   in nur eineinhalb Jahren   habilitiert*
   she has in only one and a half years done-a-habilitation

   'she did her habilitation in only one and a half years'[35]

m. *ich   habe in sechs Monaten   auf Rechtsanwaltsgehilfe   umgeschult*
   I   have in six months   on paralegal   retrained

   'I retrained as a paralegal in six months'

n. *?in der letzten Messe predigte   der neue Pfarrer   in nur 4 Minuten*
   in the last mass   preached the new pastor in only 4 minutes

   'at the last mass the new pastor preached in only four minutes'

o. *sie   hat in 12 Minuten   vorgetragen*
   she has in 12 minutes given-a-talk

   'she gave a talk in twelve minutes'

There are three reasons why the accomplishment status of these verbs cannot be explained along the lines pursued in section 3.1. There it was assumed that accomplishment status is attained by the verb's quantization with respect to an implicit definite aspectual theme argument. The first reason is that most of the two-place verbs in (59) have non-definite implicit arguments, e.g. *tanken* 'to get gasoline', *beichten* 'to confess', *schleudern* 'to spin' or *studieren* 'to study'. It does not have to be given in the context what it is exactly that is 'tanked',

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[35] A 'Habilitation' is a postdoctoral qualification procedure and is still a requirement for assuming a full professor position at German universities. At the time of writing this paper, this additional qualification requirement is being abolished by federal law.

confessed, spun or studied. The second reason is that with the verbs in (59), it is not implied that the referent of the implicit argument is completely affected by the event, as is the case with implicitly definite arguments in an aspectual theme relation. For example, in (59a) it is not implied that she ate all her cereal and drank all her coffee and it is not implied in (59c) that the tank was full or that a specific amount of gas was in the tank, as would be expected with definite incremental objects. The third and last reason is that some of the verbs in (59) are one-place verbs or two-place verbs which are not valency reductions from a transitive variant and thus do not have an implicit argument corresponding to a direct object argument, e.g. *promovieren* 'to do a Ph.D.', *dinieren* 'to dine', *habilitieren* 'to do a habilitation'.

If there is no quantization with respect to an implicit argument for the verbs in (59), which ultimately provided an explanation for the sets of data discussed in section 3.1, the question arises as to the properties responsible for their use as accomplishments. The decisive property seems to be that the verbs in (59) denote events which follow a very specifically structured course like *tanken* 'to get gasoline' and *promovieren* 'to do a Ph.D.' in (60).[36] In contrast to these expressions, the verbs *basteln* 'to make crafts' and *arbeiten* 'to work' (61) can express a lot of very different actions and thus are quite unspecific, and the verbs *joggen* 'to jog' or *trinken* 'to drink' refer to events which consist of unlimited sequences of repeated short actions (62).

(60) a. *tanken* 'to get gasoline':
      SYN: /nom
      SEM: $\lambda x \lambda e [\text{TANK}_{\text{intr}}(x, y^{\pm d}, e)]$
      $_e$[Agent drives to the pump, removes the gas cap, inserts the nozzle into the tank,
      sets the flow latch, lets the gas run into the tank, removes the nozzle, puts the gas
      cap back on, (pays the bill)]

    b. *promovieren* 'to do a Ph.D.:
      SYN: /nom
      SEM: $\lambda x \lambda e [\text{PROMOVIER}(x, e)]$
      $_e$[Agent writes a dissertation and takes particular classes and tests]

---

[36] It is not surprising that events of this sort are lexically expressed. Psychological research on event perception has shown that subjects who are asked to structure a complex stream of events make their cuts on the basis of two criteria: important changes of state and recurring sequences of events (Avrahami & Kareev 1994). Thus, on the one hand we have verbs whose meaning is based on a certain change of state. And on the other hand, we find verbs like *tanken*, which denote an event that consists of a fixed, specifically structured sequence of events which reoccurs in everyday life always according to the same pattern.

(61) a. *arbeiten* 'to work':
SYN: /nom
SEM: $\lambda x \lambda e [ARBEIT(x, e)]$
$_e$[Agent does something (strengthening, productive, unamusing)]

b. *basteln* 'to make crafts':
SYN: /nom
SEM: $\lambda x \lambda e [BASTEL_{intr}(x, y^{\pm d}, e)]$
$_e$[Agent assembles stuff in an unspecified manner]

(62) a. *joggen* 'to jog':
SYN: /nom
SEM: $\lambda x \lambda e [JOGG(x, e)]$
$_e$[Agent moves in a running manner (i.e. in repeated, rhythmic movements)]

b. *trinken* 'to drink':
SYN: /nom
SEM: $\lambda x \lambda e [TRINK_{intr}(x, y^{+d}, e)]$
$_e$[Agent repeatedly brings a liquid into his mouth and swallows]

The verbs in (60) require that all the different parts of the event take place.[38] Only then do the events culminate such that *in*-adverbials are possible. Their non-homogenous nature is reflected by the fact that two succeeding events of the same sort cannot be referred to without the appropriate quantifier, i.e. two events of the type in (60) cannot be referred to by (63a), but only by (63b).[39]

(63) a. *sie tankte/promovierte*
'she got gas/did a Ph.D.'
b. *sie tankte zweimal/promovierte zweimal*
'she got gas twice/did a Ph.D. twice'

Non-quantized VPs behave differently in this respect. Some non-quantized VPs do not allow quantifiers of the type *zweimal* at all (64a). For non-quantized VPs that do allow these quantifiers, note that, in contrast to *tanken* in (63b), the resulting expression cannot be applied to situations where the two events are temporally adjacent (64b):

[37] There is another intransitive variant of *trinken* meaning 'consume alcohol habitually'.

[38] The specific steps involved in getting gas can, of course, be subject to minor differences in gas pumps and technological innovation, and the steps involved in doing a Ph.D. are institutionally determined and are thus subject to cultural variation.

[39] Some of the implicitly reflexive verbs might belong to this group, too, in particular those like *duschen* 'to shower' and *baden* 'to bathe' which do not show a clear incremental relation between event and object. In a wider sense of *duschen*, the verb can refer to specifically structured events which include soaping, rinsing, drying off the body.

(64) a. $^{??}$*Jamaal arbeitete heute dreimal*
Jamaal   worked   today   three times
'Jamaal worked three times today'
b. *Patricia hat heute zweimal gejoggt*
(only if referring to non-adjacent events)
Patricia   has   today   twice   jogged
'Patricia jogged twice today'

Thus, the verbs in (59) are not cumulative: the sum of two events of the sort TANK or PROMOVIER is not in the extension of these predicates. The expressions in (59) do not get their quantization property from a quantized predicate over the aspectual theme, but rather from verbs that are inherently quantized. This contradicts Krifka's (1989a, 1995) assumption that all verbs as lexical entities are cumulative. Yet, this cannot be seen as a counter-example to Krifka's theory of aspectual composition outlined in section 2.2. On the contrary: it would be an unexplained and surprising fact if nouns would show a lexical distinction between mass nouns (*water, gold*) and count nouns (*octopus, rock*), while verbs were always cumulative event predicates. Thus, we find the same kind of lexical distinction in the nominal and in the verbal domain: there are count nouns and mass nouns as well as 'count verbs' (65a,b) and 'mass verbs' (65c,d).[40] It is of course not the predicate constant as such or the semantic translation of the verb that is quantized but the predicate relative to its event argument. This follows from applying Krifka's notion of quantization to Davidsonian verb representations.

(65) a. $QUA(\lambda e[TANK(x, y, e)])$
b. $QUA(\lambda e[PROMOVIER(x, e)])$
c. $\neg QUA(\lambda e[TRINK(x, y, e)])$
d. $\neg QUA(\lambda e[ARBEIT(x, e)])$

As is to be expected, this distinction is reflected in a very similar way in both domains. Mass nouns, in contrast to count nouns, do not allow numeral quantifiers (66a), while count nouns in contrast to mass nouns do not allow quantifiers like (uninflected) *viel* 'much' (66b) and *mehr* 'more' (66c):

(66) a. *drei Ringe*   v. $^{??}$*drei Milch(e)*
'three rings'   'three milk(s)'

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[40] The parallels between the distinction of count and mass nouns and the distinction between events and processes have been discussed in many papers; cf. in particular Bach (1986).

b. *?? viel Ring*   v. *viel Milch*
  'much ring'   'much milk'
c. *?? mehr Ring*   v. *mehr Milch*
  'more ring'   'more milk'

The same holds in the verbal domain. Count verbs co-occur with numeral quantifiers, as we have seen in (63b), while mass verbs but not count verbs co-occur with the quantifiers *viel* and *mehr* (67):

(67) a. *she   hat   viel/mehr   gearbeitet*
      she   has   much/more   worked
      'she worked a lot/more'
  b. *?? sie   hat   viel/mehr   promoviert*
      she   has   much/more   done-a-Ph.D.
      'she did her Ph.D. a lot / more'

4 CONCLUSION

The paper has shown that unergative accomplishments do not constitute a counterexample to the central claims of Krifka's theory of aspectual composition if we make certain assumptions about the lexical properties of verbs. These assumptions, concerning argument structure and the representation of implicit arguments, are independently motivated and thus do not add any complexity to the theory. For verbs with definite implicit arguments, it has been shown that definiteness of an implicit argument leads to quantization of the verb with respect to this argument such that—if the right thematic relations hold— quantization is transferred to the VP predicate. Implicitly reflexive verbs show up as accomplishments because their implicit argument is identified with the subject argument. Under the proper thematic relations, a quantized subject predicate then leads to quantization of the VP predicate. For a third group of verbs it has been shown that these are inherently quantized with respect to their event argument. Thus, not only nouns but also verbs are lexically characterized as cumulative, i.e. 'mass', or quantized, i.e. 'count'.

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