It takes two, baby!

CAUSE and the prerequisites for eventivity

Antonia Rothmayr

This paper discusses two major classes of stative verbs: those displaying a systematic stative/eventive ambiguity, and those allowing for a stative reading only. By examining the possible lexical-semantic structures for these verbs, the paper argues that it is the presence of CAUSE that enables the ambiguity. If CAUSE is absent, no other aspectual operators may be inserted, and no eventive reading can be created. This hints towards the idea that CAUSE is a prerequisite for the eventive reading, and that CAUSE is the only way natural language allows for two sub-events to be expressed within a single verb.

1. Introduction

This paper deals with the event structure of verbs, in particular, with the relationship between stative and eventive readings of verbs. In what is to follow, I will put forward and defend the claim in (1).

(1) **Main claim:**

- CAUSE is a prerequisite for eventivity
- CAUSE is the only way to combine two sub-eventualities within a verb

Certain classes of verbs (e.g. verbs like *obstruct*, cf. Kratzer 2000) display a systematic stative/eventive ambiguity, i.e., these verbs may receive an eventive reading (usually when an agent is present), or they may be interpreted as statives. The relation between these two readings is systematic, hence, rule-governed. In contrast, there are other verbs (like *last* in *last two hours*) that are stative only and cannot receive an eventive reading. I will show that the former group contains the CAUSE-operator in their lexical-semantic structure, and that the latter group lacks this operator. The distinction between the systematic stative/eventive ambiguity on the one hand and the stative-only readings on the other hand is therefore due to the presence or absence of the CAUSE-operator.

Proceedings of ConSOLE XV, 2008, 189-205
http://www.sole.leidenuniv.nl

I conclude that CAUSE in the counterfactual sense is a necessary prerequisite for eventivity, i.e., a verb can only receive an eventive reading if it contains the CAUSE-operator in its lexical-semantic structure. Moreover, I put forward the additional claim that CAUSE is the only way to combine two sub-eventualities within a verb, where CAUSE is the counterfactual operator and not the causative morpheme of causative verbs like *feed*. Hence, there is no other operation that is able to add a sub-event to a given one.

The paper is structured as follows: after giving a short background on the notion of stativity and a quick review of Dowty's aspectual calculus (Dowty 1979) that I am going to use, I will examine several classes of verbs - those that display the systematic stative/eventive ambiguity (verbs that undergo the instrumental alternation, and experiencer verbs that assign accusative case), and those that allow for the stative reading only (measure verbs, and experiencer verbs that assign dative case). This will provide empirical evidence for the main claim in (1). Before concluding, I will take a look at a tentative counterexample: the aspectual behavior of perception verbs in various languages.

2. Background

This section gives a definition of stativity that I will use throughout this paper. Drawing on a distinction originally made by Jaegwon Kim, Maienborn (2005) argues that there are two main types of stative expressions: *Davidsonian statives* and *Kimian statives*. These differ with respect to the ontological status of their eventuality argument. While the structure of Davidsonian statives contains the well-known event argument *e* (in this case a stative one, i.e., there is an event but in contrast to Davidson's original action sentences there is no action going on), Kimian statives bear an ontologically different argument - a so called Kimian state argument. Davidsonian statives express stative events such as *wait, sit, hang* or *glow*. Although there is no observable action going on, these verbs still refer to a full blown Davidsonian event. In contrast, Kimian statives include verbs such as *cost* and *resemble* as well as copular constructions. As we will see below, these verbs display systematic different properties. An overview of Davidsonian and Kimian statives is given in (2).

(2) **The ontological difference**

- **Davidsonian statives** have the usual event argument e
  - *sit, wait, hang*
- **Kimian statives** have an ontologically different eventuality argument
  - *cost, resemble* and copular constructions

[Maienborn (2003), Maienborn (2005)]

Kimian statives are no real events but are only properties that are exemplified at a particular time. In other words, Kimian stative verbs do not refer to a Davidsonian event, but to something ontologically different. It is a property *P* that is exemplified at a particular time *t*.

(3) **The Kimian state**

- K-states are abstract objects for
  - the exemplification of a property P
  - at a holder x
  - and a time t.

  [Maienborn (2005)]
- $\Rightarrow$ No Davidsonian event argument with Kimian states!!

It is important to understand that Kimian stative verbs do not contain the Davidsonian event argument within their lexical semantic structure. Hence, in order to test if a verb expresses a Kimian state, one has to check whether it refers to an event or not.

Before I turn to these diagnostics, I briefly mention the rest of the theoretical apparatus I am going to employ. First, I will use the aspectual calculus put forward by Dowty (1979). This apparatus uses aspectual predicates in order to capture the behavior of different event classes. A summary is given in (4).

(4) **Dowty (1979) aspectual calculus**

- DO(α, Φ) the proposition Φ is under the immediate control of α
- BECOME(p) change of state from $\neg$p to p
- CAUSE(x, y) Lewis' style counterfactual analysis
  (x and y occur; y would not have occurred if x had not)

Note that I take CAUSE to correspond to the counterfactual analysis of causation, in the sense of Lewis (1973). This way of defining causation focuses on the relation between two events, two propositions or even two states, i.e., the causation relation means that two entities stand in the counterfactual relation to each other (the causee would not have occurred if the causer hadn't). In particular, this definition is not restricted to events. Therefore it is applicable to the relation of two states as well.

Moreover, I will analyze the lexical-semantic entries of the verbs under discussion in terms of *Semantic Form*, a notion that has been developed by Bierwisch (1982) and following work (Bierwisch (1987) and others). This form is used to capture the grammatical information (in contrast to world knowledge / conceptual information) that comes with a verb's lexical entry. In particular, it states the number of arguments and employs a decompositional calculus like the one developed by Dowty. Note that a layer such as Semantic Form is compatible with recent minimalist assumptions, such as lambda features in the lexicon as put forward by Butler (2004).

The diagnostics for a Kimian state rely on the main assumption that Kimian statives do not refer to an event. Therefore, the tests developed by Maienborn (2003) / Maienborn (2005) all try to detect the absence of an event. First, as there is no event, event-related manner adverbials are not compatible with Kimian statives. Hence, an adverbial that describes the way an event happened (not to be confused with adverbials that describe the way an agent carried out the event!) is excluded with Kimian states. Thus, the Kimian stative in (5) is ungrammatical when combined with a manner adverbial, but the Davidsonian stative in (6) is fine.[1]

[1] In examples (5) to (10), the glosses are from Maienborn (2005), the translations are mine.

(5) *Paul besitzt sparsam / spendabel viel Geld.
Paul owns thriftily / generously much money.
‘ Paul owns much money in a generous way.’
[Maienborn (2005): (30b)]

(6) Carol saß reglos / kerzengerade am Tisch.
Carol sat motionless / straight.as.a.die at.the table.
‘ Carol sat motionless at the table.’
[Maienborn (2005): (31b)]

Second, event-related locative adverbials are excluded as well. As there is no event that is being referred to in the first place, this event cannot be specified to happen at a particular location. Note that there are different kinds of locative adverbials; those that are the crucial here are base-generated at a low position in the structure and appear close to the verb in German.[2] The examples in (7) and (8) show the difference between Kimian and Davidsonian statives with respect to event-related locative adverbials:

(7) *Die Tomaten wiegen neben den Zwiebeln 1 Kg.
The tomatoes weigh besides the onions 1 kg.
‘ The tomatoes weigh 1 kg next to the onions.’
[Maienborn (2005): (26a)]

(8) Die spanische Armada lag bei Calais vor Anker.
The Spanish Armada lay near Calais at anchor.
‘ The Spanish Armada lay at anchor near Calais.’
[Maienborn (2005): (27b)]

The third test developed by Maienborn draws on the ambiguity of the adverbial *ein bißchen* ‘ a little’. In eventive verbs such as *to sweat*, this adverbial may either refer to the degree of sweat (the degree reading), or it specifies how long the event of sweating lasts (the time-span reading) (cf. Maienborn 2003). The time-span reading is excluded for Kimian statives, such that only the degree reading is available if the underlying predicate is gradable. See also (9) and (10) below.

(9) Paul hat ein bißchen im Garten gesessen. *eventive reading*
Paul has a little bit in.the garden sat.
‘ Paul has been sitting in the garden for a little while.’
[Maienborn (2003): (37b)]

(10) Carol ähnelte ein bißchen ihrer Großmutter. *only degree reading*
Carol resembled a little bit her grandmother.
‘ Carol resembled her grandmother to a small degree.’
[Maienborn (2005): (39c)]

The three tests are summarized in (11).

[2] See eg. Frey & Pittner (1998).

(11) **Diagnostics for a Kimian state**

- No event-related manner adverbials
- No event-related locative adverbials
- No time-span reading of *ein bißchen* ‘ a little’

[Maienborn (2005)]

To conclude the background section, I list all the candidates for Kimian-stative only verbs and those that display a systematic stative/eventive ambiguity in (12). Due to the lack of space, I will only discuss four classes from the candidates in (12). See Rothmayr (2006) for the complete picture.

(12) **Stative-only verbs**

- subject-experiencer verb (*hate*)
- object-experiencer verbs assigning dative case (*appeal to*)
- measure verbs (*last*)
- verbs that select for a PP complement (*border with*)
- modals

Stative/eventive ambiguous verbs

- verbs of the instrumental alternation (*obstruct*)
- object-experiencer verbs assigning accusative case (*worry*)
- dispositional verbs (*help*)
- *threaten*-type verbs
- perception verbs (*see*)

Finally, note that I am not going to say anything about the status of Davidsonian statives throughout this paper, despite that they do not display the ambiguity in the sense of (12), and they form a class (which is very likely to consist of several subclasses) on their own. I take eventive verbs, then, to be derived from Kimian statives with the help of the aspectual operators. I assume that the eventive nature of Davidsonian statives is due to the presence of some aspectual operator as well, though the detais of their structure remain to be investigated.

3. Example 1: instrumental alternation

In the next sections, I will discuss four classes of verbs that show the stative/eventive ambiguity or stative-only readings in greater detail. First, I want to take a look at those verbs that display the systematic stative/eventive ambiguity. In particular, in this section I want to discuss the behavior of verbs that undergo the instrumental alternation, such as *obstruct* or *decorate*. It has been noted by Kratzer (2000) that this class of verbs have both a stative (non-agentive) and an eventive reading, but a systematic examination and a comparison to other verb classes that display the same behavior have not been undertaken up to now.

In order to show that verbs that undergo the instrumental alternation possess a stative interpretation, I want to test them for the presence of a Kimian stative reading. As outlined in

the previous section, the first test is that event-oriented manner adverbials may not co-occur with Kimian statives, as these do not refer to an event in the first place. Consider the German example in (13).

(13) Die Kerzen schmücken *auf phantasievolle Weise* die Torte.
The candles decorate *in imaginative way* the cake.
‘ The candles decorate the cake in an imaginative way.’

On the first glance, it seems as if (13) is a blatant counterexample to the claim I just made. It looks as if there was a stative verb *schmücken* ‘ decorate’ combined with a manner adverbial, *auf phantasievolle Weise* ‘ in an imaginative way’. However, a closer look reveals that adverbials like the one in (13) are no manner adverbials, but rather so called *result-oriented adverbials*, as argued for in Geuder (2000). Compare the adverbial in (14):

(14) Die Beete waren üppig bepflanzt.
The flower beds were amply planted.
‘ The flower beds were amply planted.’ [Maienborn (2003); my translation]

The adverbial *üppig* ‘ amply’ does not refer to the way the planting was done; rather, it refers to the way the result was, i.e., that there were lots of flowers in the flower beds. Hence, the adverbial in (13) does not count as a manner adverbial. Therefore, the verbs that undergo the instrumental alternation pass this test for Kimian statives.

Next, we have to look at event-related locative modifiers. As before, these adverbials are excluded with Kimian statives as there is no event present that the adverbial could locate in space.

(15) *Die Kerzen haben die Torte *auf dem Tisch* geschmückt.
The candles have the cake *on the table* decorated.
‘ The candles have decorated the cake on the table.’

Example (15) shows that event-related locative adverbials are not compatible with verbs like *schmücken* ‘ decorate’. If these adverbials are acceptable at all in combination with Kimian statives, they receive a *frame-setter interpretation* (cf. Maienborn 2003). Frame-setter adverbials do not locate the event in space, but provide a general background to which the whole sentence is interpreted. In other words, locative frame-setter modifiers provide a background against which the whole proposition is interpreted (Maienborn (2003):77). For example, locative frame-setter adverbials may receive a temporal reading, as in (16) and (17).

(16) In Bolivien sind alle Lamas mit bunten Troddeln markiert.
In Bolivia are all lamas with colored beans marked.
‘ In Bolivia, all lamas are marked with colored beans.’
[Maienborn (2003):p. 78(37b), my translation]

(17) [...] Für alle Lamas gilt für die Zeit, zu der sie in Bolivien sind, dass sie mit bunten Troddeln markiert sind. (temporale Lesart).
‘ All lamas are marked with colored beans during the time when they are in Bolivia. (temporal reading)’
[Maienborn (2003):p. 78(37c), my translation]

In addition, (15) is of course acceptable if the adverbial is interpreted as part of the noun, i.e., under a reading that refers to a cake on the table. In this interpretation, the locative modifier does not refer to the location of the decorating-event.

Finally, we need to examine the different readings *ein bißchen* ‘ a little’ can have. As outlined in the previous section, this adverbial can have a time-span reading and a degree reading when combined with eventive verbs. With statives, however, only the degree reading (if grammatical at all) is available. Example (18) shows a combination of *ein bißchen* with a Kimian stative candidate:

(18) Kerzen haben die Torte *ein bißchen* geschmückt.
Candles have the cake *a little* decorated.
‘ The candles have decorated the cake a little.’

The sentence in (18) can mean that the degree of decoration was not too high, but it cannot refer to a situation of the cake being decorated with candles that lasted only for a short period of time. Hence, the time-span reading is not available for (18).

In sum, the three tests show that a verb like *schmücken* ‘ decorate’ that undergoes the instrumental alternation does indeed have a Kimian stative reading. In order to capture the second half of the ambiguity, we have to examine the existence of the eventive reading in turn.

The eventive reading should allow for the presence of manner adverbials and for event-related locative adverbials. This is indeed the case, as shown in the agentive (and therefore clearly eventive) example (19). It includes the manner adverbial *vorsichtig* ‘ carefully’ and the locative adverbial *in der Küche* ‘ in the kitchen’ that both refer to the event of decorating.

(19) Die Irmi schmückt die Torte in der Küche vorsichtig mit Kerzen.
The Irmi decorates the cake in the kitchen carefully with candles.
‘ Irmi carefully decorates the cake with candles in the kitchen.’

I put forward the following lexical-semantic structure for verbs that undergo the instrumental alternation. For the stative alternant in (20) the corresponding lexical entry (in terms if *Semantic Form*) is given in (21).

(20) Die Haare verstopfen den Abfluß.
The hair obstruct the drain.
‘ The hair obstruct the drain.’

(21) λy λx λs CAUSE(x, OBSTRUCT(y))(s) (*hair*) (*drain*) =
= λs CAUSE(*hair*, OBSTRUCT(*drain*))(s)

(21) expresses the idea that there are hair (a state) and that it is their presence that is relevant for the drain being obstructed. In addition, the drain would not have been obstructed if there

had been no hair. Therefore, (21) contains the CAUSE-relation. Note that CAUSE relates the presence of the hair to the state of the drain being obstructed. As you can see, there are no other aspectual operators present, hence we get the stative reading.

In contrast to the stative variant, the eventive one contains additional aspectual operators. With verbs that undergo the instrumenal alternation, there are two ways of rendering them eventive: by creating an agentive variant and by creating an inchoative one. The agentive version in (22) has the lexical entry in (23).

(22) Die Irmi verstopft die Straße mit ihrem Lastwagen.
The Irmi obstructs the street with her truck.
‘ Irmi is obstructing the street with her truck.’

(23) λz λy λx λs DO(x, CAUSE(y, OBSTRUCT(z))) (s) (*Irmi*) (*truck*) (*street*) =
= λs DO(*Irmi*, CAUSE(*truck*, OBSTRUCT(*street*))) (s)

The structure in (23) is quite similar to the stative one above, but it contains an additional DO operator that is responsible for the agentive meaning. (23) expresses that Irmi is under the immediate control of a proposition (this is the part that DO adds), namely that the truck causes that the street is in a state of being obstructed.

Finally, consider the inchoative variant in (24) and its structure in (25). It is almost always the case that one can force an inchoative reading on a Kimian stative verb with the help of the adverbial *nach und nach* ‘ bit by bit’. This adverbial refers to the gradual onset of the state.

(24) Das Gewebe hat *nach und nach* das Blutgefäß verstopft.
The tissue has bit by bit the *blood vessel* obstructed.
‘ The tissue has obstructed the tissue bit by bit.’

Note that the example in (24) has an interesting peculiarity: the subject *Gewebe* ‘ tissue’ is understood to increase in size until the blood vessel is completely obstructed. Hence, the subject (or rather, the realization of the instrument) must be generated in the scope of the BECOME-operator.

(25) λs BECOME (CAUSE(*tissue*, OBSTRUCT(*blood vessel*)))(s)

Again, the lexical-semantic structure in (24) is similar to the one for the stative variant. It differs with respect to the aspectual operators involved: while the stative variant contains only CAUSE, the inchoative alternant contains the additional BECOME-operator.

4. Example 2: object-experiencer verbs (ACC)

The second example I want to discuss again exemplifies those verbs that display the systematic stative/eventive ambiguity. Apart from verbs that undergo the instrumental alternation, object-experiencer verbs that assign accusative case in German also belong to this group. These class of verbs is also known as the *piacere*-group in Italian or as the *worry*-type verbs in English. It has been observed for Italian by Arad (1998) (and subsequent work), and for Finnish by Pylkkänen (2000) that these experiencer verbs have both an eventive and a stative reading. Using data from

German, I will make sure that the stative reading is a Kimian stative one. Subsequently, I will provide the lexical-semantic structures for the various alternants.

First, manner adverbials are exluded for Kimian statives. The examples in (26) and (27) show that this is the case for the object-experiencer verbs under discussion. Example (26) contains a non-animate subject, and (27) has a sentential subject. Both of them exclude the agentive reading and are unacceptable in combination with the manner adverbial.

(26) *Der Stau ärgerte den Poldi *auf unpassende Weise*.
The traffic jam annoyed the Poldi *in inappropriate way*.
‘ The traffic jam annoyed Poldi in an inappropriate way.’

(27) *Daß die Irmi im Lotto gewonnen hatte, ärgerte den Poldi *auf unpassende Weise*.
That the Irmi in the lottery won had, annoyed the Poldi *in inappropriate way*.
‘ It annoyed Poldi in an inappropriate way that Irmi had won in the lottery.’

Second, event-related locative modifiers cannot co-occur with Kimian statives. As Kimian statives do not refer to a proper event, it is not possible to specify a particular location where this event takes place. The next two examples show that the verbs under consideration conform to this pattern.

(28) *Das Grinsen ärgerte die Irmi *unter einem Baum*.
The grinning annoyed the Irmi *under a tree*.
‘ The grinning annoyed Irmi under a tree.’

(29) *Daß die Irmi im Lotto gewonnen hatte, ärgerte den Poldi *unter einem Baum*.
That the Irmi in the lottery won had, annoyed the Poldi *under a tree*.
‘ It annoyed Poldi under a tree that Irmi had won in the lottery.’

Finally, both the sentence containing the nominal and the sentential subject allow only for the degree reading of *ein bißchen* ‘ a little’, as expected. Both examples in (30) and (31) refer to a small degree of depression/annoyance and cannot express the fact that this emotional state lasted for a short period of time.

(30) Der Witz deprimierte die Irmi *ein bißchen*.
The joke depressed the Irmi *a little*.
‘ The joke depressed Irmi a little.’

(31) Daß die Irmi im Lotto gewonnen hatte, ärgerte den Poldi *ein bißchen*.
That the Irmi in the lottery won had, annoyed the Poldi *a little*.
‘ It annoyed Poldi a little that Irmi had won in the lottery.’

In sum, object-experiencer verbs that assign accusative case in German pass the tests for the presence of a Kimian state. So, let’s look at their lexical entries next.

The stative variant in (32) expresses the fact that there was a traffic jam and that Poldi was annoyed about that. In addition, Poldi would not have been annoyed if the road had been free. This boils down to a counterfactual relation between two states. The structure, therefore, must contain the CAUSE-operator. The stative variant and its structure are given in (32) and (33).

(32) Der Stau ärgerte den Poldi.
The traffic jam annoyed the Poldi.
‘ The traffic jam annoyed Poldi.’

(33) λy λx λs CAUSE(x, ANNOYED(y))(s) (*traffic jam*) (*Poldi*) =
= λs CAUSE(*traffic jam*, ANNOYED(*Poldi*))(s)

In contrast, the eventive variant, exemplified here with the agentive use of the experiencer verb, contains the additional aspectual operators DO and BECOME.

(34) Die Irmi ärgerte den Poldi.
The Irmi annoyed the Poldi.
‘ Irmi annoyed Poldi.’

(35) λy λx λs DO(x, CAUSE(x, BECOME(ANNOYED(y))))(s) (*Irmi*) (*Poldi*) =
= λs DO(*Irmi*, CAUSE(*Irmi*, BECOME(ANNOYED(*Poldi*))))(s)

The discussion so far has shown three major points. First, the ambiguity is due to the presence or the absence of the DO- and the BECOME-operator. Second, there is no ”basic” stative verb (as it has been argued for at various places in the literature, e.g. Harley (1995), Marantz (2001) and others). Rather, there are different types of stative verbs, but they are stative due to the absence of the aspectual operators. It is not just a simple feature that renders a verb stative. Third, we have seen that stative verbs (but maybe not predicates) are not the simplest building blocks of event structure, as they may contain operators and lexical predicates themselves.

In the following, I will turn to those verbs that display the stative reading only. There is no way of coercing them into an eventive reading. The examples I am going to discuss are measure verbs and object-experiencer verbs that assign dative case in German. See the list in (12) for a complete list of all stative-only verbs and Rothmayr (2006) for a detailed examination.

5. Example 3: measure verbs

Measure verbs are part of the group of those verbs that display a stative reading only. Let’s briefly go through the tests that show that measure verbs are true Kimian statives.

As before, let’s start with manner adverbials. As (36) shows, manner adverbials like the German *auf epische Weise* ‘ in an epic way’ are not compatible with measure verbs. This hints towards the fact that measure verbs are Kimian statives.

(36) *Der Film dauert *auf epische Weise* zwei Stunden.
The film lasts *in epic way* two hours.
‘ The film lasts two hours in an epic way.’

Second, event-related locative adverbials are excluded with measure verbs, as the following example shows:

(37) *Der Film dauert *im Garten* zwei Stunden.
The film lasts *in the garden* two hours.
‘ The film lasts two hours in the garden.’

Third, the adverbial *ein bißchen* ‘ a little’ cannot be combined with measure verbs at all, as the degree of the verb is already expressed by the measure phrase. This implies that the time-span reading of *ein bißchen* is not available for measure verbs, as required.

(38) *Der Film dauert *ein bißchen* zwei Stunden.
The film lasts *a little* two hours.
‘ The film lasts a little two hours.’

(39) *Tante Erna wiegt *ein bißchen* 100 Kilo.
Aunt Erna weighs *a little* 100 kilos.
‘ Aunt Erna weighs a little 100 kilos.’

In addition to the aspectual behavior, measure verbs have another interesting property. As noted by Rizzi (1990), the measure phrase does not behave like a direct object, although on the surface both look quite the same. Rizzi discusses extraction properties of the measure phrase. In particular, he gives the example in (40) that shows that extraction out of a wh-island is possible for the direct object (as in the active variant), but prohibited for measure phrases.

(40) ?What did John wonder how to weigh t? [Rizzi (1990)]
⇒ potatoes
⇒ *200 lbs

In addition, measure phrases differ from direct objects in that they do not allow for strong determiners. Example (41) shows that the quantifier *jede* ‘ every’ and the definite determiner *die* ‘ the’ are excluded for the German measure phrase.

(41) *Der Film dauert *jede / die* Stunde.
The film lasts *every / the* hour.
‘ The film lasts every/the hour.’

These two facts show that the measure phrase has a different status than a direct object. I therefore suggest that the measure phrase is not an argument, but that it specifies the value of the degree argument of the measure predicate. This idea is reflected in the structure as folllows:

(42) Der Film dauert zwei Stunden.
The film lasts two hours.
‘ The film lasts two hours.’

(43) $\lambda y\ \lambda x\ \lambda s\ \exists d\ [\textsc{last}(x,d) \wedge d{=}y]\ (s)\ (2\ hours) =$
$= \lambda x\ \lambda s\ \exists d\ [\textsc{last}(x,d) \wedge d{=}2\ hours]\ (s)$

In (43), no aspectual operator is present, and CAUSE is absent, as well. The measure verb does not express the fact that two states, events or propositions stand in a counterfactual relation to each other. Rather, a measure verb specifies a certain dimension of its subject. In addition, the dimension may be further specified by giving an explicit value for the degree argument. The degree argument is existentially closed, thus it cannot be assigned a value directly. If the measure phrase is absent, the verb denotes a very high degree. If the measure phrase is present, it specifies the value of the degree argument in the lexical-semantic entry.

*6. Example 4: object-experiencer verbs (*DAT*)*

The next group of verbs I want to discuss is restricted to a stative interpretation as well: object-experiencer verbs that assign dative case in German. This class of verbs is also known as the *piacere*-group in Italian, or as the *appeal to*-group in English. Again, I start by going through the tests for the presence of a Kimian stative reading.

As expected, manner adverbials like *auf eine enge Weise* ‘ in a tight way’ are not compatible with an object-experiencer verb like *passen* ‘ fit’.

(44) *Die Hose hat dem Poldi *auf eine enge Weise* gepaßt.
The trousers has the Poldi *in a tight way* fitted.
‘ The trousers fitted Poldi in a tight way.’

Second, event-related locative modifiers are excluded as well. This is shown in (45), where the locative adverbial *vor dem Spiegel* ‘ in front of the mirror’ can only have a frame setter interpretation. In other words, the sentence in (45) cannot mean that the event of fitting took place in front of the mirror. Rather, it can only have the frame-setter interpretation which could be as follows. At the shop, when looking at oneself in a miraculous mirror, the trousers fitted very well, but in reality they looked rather bad.

(45) Die Hose hat dem Poldi *vor dem Spiegel* gepaßt.
The trousers has the Poldi *in front of the mirror* fitted.
‘ The trousers fitted Poldi in front of the mirror.’ (*frame-setter reading only*)

Third, the possible interpretations of *ein bißchen* ‘ a little’ are of interest. As (46) shows, this adverbial cannot receive the time-span interpretation, as the inference in (47) is not valid. Thus, (46) can only mean that Poldi thought that the cake was a little bit tasty, but not too much.

(46) Der Kuchen schmeckte dem Poldi *ein bißchen*.
The cake tasted the Poldi *a little*.
‘ Poldi thought the cake was a little bit tasty.’
$\not\Rightarrow$

(47) Etwas später hat er ihn grauslich gefunden.
A bit later has he it disgusting thought of.
‘ A bit later he thought it was disgusting.’

In sum, all three tests hint towards the fact that object-experiencer verbs that assign dative case have a true Kimian stative reading. As before with measure verbs, the underlying lexical-semantic structure is simple, as it involves only one lexical predicate that requires the experiencer and the stimulus as its arguments.

(48) Die Hose paßt dem Poldi.
The trousers fit the Poldi.
‘ The trousers fit Poldi.’

(49) λy λx λs FIT(x,y) (s) (*trousers*) (*Poldi*) =
= λs FIT(*trousers*, *Poldi*) (s)

The structure in (49) only relates the stimulus and the experiencer via the lexical predicate *fit*. There are no aspectual operators present, in particular, the CAUSE-relation is absent as well, since we cannot construct a counterfactual relation: it is not the case that there is a pair of trousers and that Poldi is in a state of being fitted. Nor is it the case that he wouldn't be in a state of being fitted if the trousers hadn't existed. Instead of a counterfactual relation, verbs like *fit* express that the trousers have the property of fitting Poldi.

6.1. No eventive counterpart?

Both of the two groups of verbs that I have discussed previously belong to the class of verbs that display a stative reading only. Interestingly, one cannot derive an eventive counterpart from them without adding a particle or a prefix. Hence, simple statives cannot have derived eventive readings without undergoing non-syntactic morphological processes. In order to illustrate this point, I want to look at possible eventive counterparts from subject-experiencer verbs like *hate* and from measure verbs.

It is easy to imagine a possible eventive counterpart of a verb like *hate*.[3] Instead of experiencing a stative emotion of hating, the subject experiencer could be actively engaged in an action of hating, thus the paraphrase in (50).

(50) Irmi is doing an action of hating Poldi.

This interpretation requires the DO-operator to be present in the lexical-semantic structure of the verb, as in (51).

(51) *λs DO(*Irmi*, (HATE(*Irmi*, *Poldi*))

However, as there is no verb (at least in the languages under consideration, that is German and English, as well as there is - to my knowledge - no reference to such a verb in Italian, Spanish, or Finnish) that expresses this meaning, the structure in (51) is ruled out.

Similarly, one can imagine that a measure verb is rendered eventive by describing the increase of the measure phrase until it reaches a certain value, as suggested in (52).

(52) The price of the book increases until it is 10 euros.

As pointed out by a reviewer, one can express the meaning of (52) as in (53). Still, (53) involves the verb *steigen* ' raise' that is not related to the measure verb at all.

(53) Der Preis steigt auf 10 Euro.
The price increases to 10 euros.
' The price raises to 10 euros.'

Of course there are deadjectival verbs like *cool* in *The soup cools*, but these differ from measure verbs in that they do not select for a measure phrase. Those deadjectival verbs always involve the BECOME-operator, which is added presumably as part of the word-formation process. The corresponding structure of the hypothetical measure verb in (52) that involves a change-of-state

[3] I avoid using the common example *love* for subject-experiencer verbs as this allows for eventive readings I do not want here.

is given in (54). Note that the structure now includes the BECOME-operator, but it is nevertheless ruled out.

(54) *λs BECOME(COST(*book*, *10 euro*)(s)

The two illicit lexical-semantic strucures in (51) and (54) raise an interesting question: what is the underlying reason for the fact that the DO- and the BECOME-operator cannot be inserted into the lexical-semantic representations for these verbs? I want to put forward the following answer: It is only CAUSE that permits the insertion of the aspectual operators. If a lexical-semantic structure does not contain the CAUSE-operator, no other aspectual operator may be inserted. Hence, the presence of CAUSE is a prerequisite for deriving an eventive reading from stative verbs. Thereby we get the distinction between those verbs that display the stative/eventive ambiguity, and those that allow for the stative reading only. While the former group contains the CAUSE-operator (and therefore allows to derive the eventive reading), the latter does not. Remember that these two groups have diverse subgroups as pointed out in (12) above. The alternative characterization of stative verbs that attributes their status to a feature whithin the little *v*-projection does not predict the variety of different verbs in (12). In contrast, the presence/absence of CAUSE allows for different lexical-semantic forms to have a stative reading.

6.2. Summary: stative reading only

In sum, the verbs that allow for a stative reading only display the following common properties. First, they lack the DO and the BECOME operators, just as the stative variants of those verbs that allow for the ambiguity. As none of those operators is present, the verb gets a stative reading.

Second, and more important, the stative-only verbs lack the CAUSE-operator. Presumably, it is the presence of CAUSE that is a prerequisite for the other aspectual operators to be inserted. As there is no CAUSE in the structure of the verbs under discussion, they do not allow for an eventive counterpart to be created.

The counterfactual relation combines two states or two (sub-)events within a single verb. In other words, the presence of the CAUSE-operator requires that the verb expresses two sub-eventualities. In contrast, if the CAUSE-operator is absent, there is only one state expressed by the verb. As I have shown, an eventive reading is only available if there is a CAUSE-relation expressed by the verb, I conclude that eventive readings require two sub-situations. Hence, in order to insert DO/BECOME, two sub-eventualities need to be expressed. It is CAUSE that is the only grammatical mechanism that allows for two sub-eventualities to be expressed within a single verb. There is no other operator that serves a similar purpose. As we have seen, these can be both simultaneous and stative, as in the stative variants of the ambiguous verbs. Of course, they can be also overlapping and eventive, which gives rise to the non-stative alternants.

7. A counterexample?

This section discusses a potential counter example to the picture that I have sketched so far, namely the verb *know* in various languages. First, consider the English *know*: we see that these

verbs have a stative reading only. Therefore one is tempted to analyze them as having a simple structure comparable to subject-experiencer verbs like *hate*.

However, the picture is not as straightforward as it may seem. For example, the Spanish counterpart of *know* is *conocer*, which does display the stative/eventive ambiguity: *conocer*, like many other Spanish verbs, occurs both with the abstract and the marked accusative case.[4] The abstract accusative case, exemplified in (55a), has a stative interpretation, similar to the English *know*. In contrast, the sentence involving the marked accusative in (55b) has an inchoative interpretation, i.e., it refers to the process of getting to know someone.

(55) a. Conocen bien un vecino suyo.
‘ They know a neighbor of theirs well.’

b. Conocen bien *a* un vecino suyo.
‘ They got to know a neighbor of theirs well.’

[Pesetsky & Torrego (2004): 18ab]

Hence, the Spanish case contrasts the English as it displays the systematic stative/eventive ambiguity. Let’s look at German in turn.

The German verb *kennen* may be analyzed as a perception verb. As already discussed in Dowty (1979), perception verbs form stative / inchoative / agentive alternants, such as *see/watch* and *hear/listen* pairs. The ambiguity with *see*, for example, is this. A person can get to see something, like in a situation where a curtain is raised slowly. A person can be actively engaged in the perception process as in *watch*, and of course, a person can take part in a stative situation of perception. In order to allow for these ambiguities, which correspond to the insertion of DO and BECOME into the lexical-semantic structure, perception verbs need to incorporate CAUSE.

If the German verb *kennen* is understood as a perception verb, it involves CAUSE in its structure. Again, it is CAUSE that permits the stative/eventive ambiguity. It is possible that the verb *kennen* gets an eventive reading by overt prefixation with *er-*, as in *er-kennen*. This inchoative alternant must of course contain the BECOME operator. In German, the operation of *er*-prefixation is productive. Compare the case of *hË†ren* ‘ hear’:

(56) a. Die Irmi hË†rt einen Vogel.
The Irmi hears a bird.
‘ Irmi hears a bird.’

b. Die Irmi *er*hË†rt seinen Wunsch.
The Irmi *er*-hears his wish.
‘ Irmi gives in to his wish.’

While the stative variant in (56a) refers to the state in which Irmi percieves that some bird is singing outside, the eventive and prefixed correspondent in (56b) refers to the change of state in which Irmi gets to answer someone’s wish. In other words, the prefixed version expresses that Irmi willingly accepts the perception of the wish.

The same point can be made with the word *schmecken* ‘ taste’. The most common usage of *schmecken* is in combination with a prepositional phrase, such as *schmeckt nach Schwammerl* ‘ tastes of mushroom’. However, this variant is not of interest right now, as it is a stative-only

[4] See Torrego (1998), Pesetsky & Torrego (2004)

verb that expresses a certain property (a taste) of its subject. The second possible usage is the one given in (57), where the verb functions as a mere perception verb, very much like *see a bird* or *hear a noise*.

(57) Die Irmi schmeckt (ein) Schwammerl.
The Irmi tastes (a) mushroom.
‘ Irmi experiences that there is a taste of mushroom on her tongue.’

The corresponding structure is given in (58), incorporating the hypothesis that *schmecken* is a perception verb, hence involves CAUSE. As no other aspectual operators are present, we get the stative reading.

(58) λy λx λs CAUSE(x, TASTE(x,y)) (s) (*Irmi*) (*mushroom*) =
= λs CAUSE(*Irmi*, TASTE(*Irmi*, *mushroom*)) (s)

Like all other perception verbs, *schmecken* allows for *er*-prefixation as well. This process changes also the event structre of the verb: the prefixed variant expresses an inchoative eventuality as in (59): this sentence describes a situation in which Irmi is eating a certain dish. However, she is very much afraid of mushrooms, so she keeps chewing and sucking around, until she judges that one little mushroom was inside the huge pot of food.

(59) Die Irmi *er*schmeckt ein Schwammerl.
The Irmi *er*tastes a mushroom.
‘ Irmi gets to know that there is a taste of mushroom on her tongue.’

The inchoative alternant may be assigned a structure as in (60). This is an extended variant of the structure in (58) - it contains an additional DO- (for the process of chewing and tasting deliberately) and an additional BECOME-operator (for the change of perception).

(60) λy λx λs DO(x, BECOME(CAUSE(x, TASTE(x,y))))(s) (*Irmi*) (*mushroom*) =
= λs DO (*Irmi*, BECOME(CAUSE(*Irmi*, TASTE(*Irmi*, *mushroom*)))) (s)

In sum, we can assign a similar structure as those in (58) and (60) to *kennen* ‘ know’. While Spanish and German permit both the stative-only and the ambiguous variant, English lacks the latter one. Still, there is the possibility of expressing the inchoative variant in English by using the phrase *get to know*. All in all, perception verbs including *know* correspond to the aspectual pattern that is reflected by the presence or absence of CAUSE.

8. Conclusion

In conclusion, I have shown in this paper that the stative reading is due to the lack of both DO and BECOME in the lexical-semantic structure of the verb. In particular, the stative reading does not arise because of the presence of a simple ”stative” feature.

In order to insert DO/BECOME the predicate must contain CAUSE, as CAUSE is the only way to combine two sub-eventualities within a verb.

Acknowledgements

I wish to thank Wolfgang U. Dressler, Claudia Maienborn and Martin Prinzhorn for their support, as well as the audience of ConSOLE XV for useful comments. This research was funded by a DOC grant [Doktorandenprogramm] of the Austrian Academy of Sciences. Of course, all remaining errors are my own.

Antonia Rothmayr
University of Vienna
antonia.rothmayr@univie.ac.at

References

Arad, M. (1998). *VP-Structure and the Syntax-Lexicon Interface*. MIT Working Papers in Linguistics.
Bierwisch, M. (1982). Formal and lexical semantics. *Linguistische Berichte* 80, pp. 3–17.
Bierwisch, M. (1987). Semantik der graduierung. Bierwisch, M. & E. Lang (eds.), *Grammatische und konzeptuelle Aspekte von Dimensionsadjektiven*, Akademie-Verlag, Berlin, pp. 91–286.
Butler, J. (2004). *Phase structure, Phrase structure, and Quantification*. Ph.D. thesis, University of York.
Dowty, D. R. (1979). *Word Meaning and Montague Grammar. The Semantics of Verbs and Times in Generative Semantics and in Montague's PTQ*. Synthese Language Library, D. Reidel, Dordrecht.
Frey, W. & K. Pittner (1998). Zur Positionierung der Adverbiale im Deutschen Mittelfeld. *Linguistische Berichte* 176, pp. 489–534.
Geuder, W. (2000). *Oriented Adverbs. Issues in the Lexical Semantics of Event Adverbs*. Ph.D. thesis, Universität Tübingen.
Harley, H. (1995). *Subjects, Events and Licensing*. Ph.D. thesis, MIT.
Kratzer, A. (2000). Building statives. Berkeley Linguistic Society 26.
Lewis, D. (1973). *Counterfactuals*. Harvard University Press, Cambridge, Mass.
Maienborn, C. (2003). *Die logische Form von Kopula-Sätzen*. Akademie-Verlag, Berlin.
Maienborn, C. (2005). On the limits of the davidsonian approach: The case of copula sentences. *Theoretical Linguistics* 31, pp. 275–316.
Marantz, A. (2001). Words. Ms., MIT.
Pesetsky, D. & E. Torrego (2004). Tense, case, and the nature of syntactic categories. Gueron, J. & J. Lecarme (eds.), *The Syntax of Time*, MIT Press, Cambridge, Mass., pp. 495–538.
Pylkkänen, L. (2000). On stativity and causation. Tenny, C. & J. Pustejovsky (eds.), *Events as Grammatical Objects*, CSLI Publications, Stanford, pp. 417–444.
Rizzi, L. (1990). *Relativized Minimality*. MIT Press, Cambridge, Mass.
Rothmayr, A. (2006). *The Structure of Stative Verbs*. Ph.D. thesis, Universität Wien.
Torrego, E. (1998). *The Dependencies of Objects*. MIT Press, Cambridge, Mass.