# 10 Verbs and time

**Key words:** AKTIONSART, ASPECT, STATIC, DYNAMIC, DURATIVE, PUNCTUAL, TELIC, ATELIC, VENDLER CLASS, ACTIVITY, ACCOMPLISHMENT, ACHIEVEMENT

## 10.1 Overview

As we saw in chapter 7, typical verbs denote change – that is, the SITUATIONS they describe are not time-stable. The last chapter concentrated on predication and the conflation of arguments into verb meanings, but it also discussed two types of SITUATION that differ in their relationship to time: STATES and EVENTS. Stative verbs describe SITUATIONS that involve little or no change, while dynamic verbs describe EVENTS in which changes, including physical actions or changes of STATE, happen. This chapter delves further into the relationship of verbs with time, exploring the differences between STATES and EVENTS and among various kinds of EVENT. We are particularly interested here in **lexical aspect**, also known as **Aktionsart**.

The next section defines *lexical aspect* and contrasts it to other related terms. Section 10.3 looks at various ways in which verb senses can differ in their relation to time. In §10.4, most of the elements from §10.3 are organized into aspectual types – the Vendler classes. Section 10.5 relates the notion of telicity to the notion of boundedness (introduced in chapter 8) and asks whether telicity can be considered to be a lexical matter or not. In 10.6, we revisit semantic relations, last discussed in chapter 6, to ask what types of logical entailment relations exist among verbs and how those relate to time.

## 10.2 Tense, aspect, and Aktionsart

Language is very sensitive to matters of time. When we talk about SITUATIONS, our sentences represent both when the SITUATION happened (or happens or will happen), and how it progressed (or progresses or will progress) through time. Much of the information about time, in many languages, is grammaticalized and expressed through inflectional morphology, usually attached to

verbs – for example, *yawn*, *yawned*, *yawning*. But verbs themselves, regardless of whether they have been inflected, carry quite a bit of information about time in themselves. Consider, for example, the difference between *know* and *realize* in (1) and (2).

(1) I **knew** why I liked semantics.

(2) I **realized** why I liked semantics.

Both verbs relate to having some knowledge, but *realize* involves a change in knowledge that happens in an instant, while *know* indicates an unchanging situation that can go on and on. Categorizing verb senses according to their relationships to time can help us to identify particular classes of meaning, and these types of meaning have repercussions when the verb is used in a sentence – since the temporal properties of the verb sense affect the other kinds of temporal information in the sentence.

Before we go any further, we should define some terminology. **Tense** is the grammatical marking of the *when* of a situation – past, present, or future. Tense information may be found in verbal inflections, but it is not part of the verb meaning itself. For example, there are no lexical (content) verbs that refer only to the past. While there are verb forms like *flew* that express past tense without the *-ed* suffix that usually indicates past in English, such verbs are always past tense forms of lexical verbs – that is, they can be considered to be variants on the same lexeme.

**Aspect** is *how* the situation relates to time, rather than *when*. For example, an action could happen in a prolonged way or a repetitive way; we could describe the onset of the action or its continuation; and the action could happen in a flash or very slowly. English has many ways of marking aspect in sentences, including those in (3)–(6):

(3) *Through functional morphology* [auxiliary verbs and verbal inflection]:
The children **are** play**ing** tag. [progressive – on-going event]
The children **have** play**ed** tag. [perfect – completed event]

(4) *Repetition of the verb*:
The bell **rang and rang**. [repetition]

(5) *Verb particles*:
They ate **up** the cake. [completion]

(6) *Certain "helping" verbs*:
Arthur **kept** talking. [continuation]
Enid **used to** jog. [habitual]
Ida **stopped** eating her lunch. [non-continuation]
Oliver **finished** eating his lunch. [completion]
Ulla **started** making dinner. [onset]

This chapter is about the "in-built" aspectual properties of verbs themselves. Thus, we are less concerned about describing grammatical aspect, as marked

by functional morphology and grammatical structures, and more interested in looking at **lexical aspect**. Lexical aspect is sometimes called by the German term **Aktionsart**, meaning 'type of action' (plural: **Aktionsarten**), because studying lexical aspect involves sorting verb senses into different categories based on how the SITUATION described by the verb unfolds in time. In order to detect the aspectual properties of verbs and to sort them into Aktionsart categories, we often use diagnostic tests involving grammatical and other means of expressing aspect. For instance, if a verb is never used in the progressive, or if putting it into the progressive changes its meaning in a different way from other verbs in the progressive, then that tells us that there is something about that verb's relation to time that prevents its normal interpretation in the progressive.

A caveat here is that the aspectual qualities of a verb itself can be intertwined with the verb's interactions with its arguments. As we saw in the last chapter, argument structure is an inherent part of verb meaning, yet the arguments are usually separate expressions from the verb. Those arguments themselves may contribute or entail particular aspectual information. To start, we concentrate on verbs that differ in their aspectual properties, but toward the end of the chapter we look at how arguments can change the picture.

## 10.3 Aktionsart categories

Verb meanings can be categorized into classes in terms of various temporal properties they might have. The following subsections introduce some of the main distinctions.

### 10.3.1 Static and dynamic

In chapter 7, we saw that ontological categories differ in their temporal qualities, and chapter 9 introduced the two major subcategories of SITUATION: STATES and EVENTS. In this section, we look in more detail at the properties of STATES and EVENTS and how to tell them apart. STATES are more constant across time, and EVENTS less so. Let's take the example of *know*, which describes a STATE, and *learn*, which describes an EVENT:

(7) Jack knew Swedish. [STATIC]

(8) Jack learned Swedish. [DYNAMIC]

Sentence (7) describes a situation that was relatively unchanging, or **static** (also called ***stative***). Example (8), on the other hand, describes a **dynamic** situation – something happened or changed – that is, Jack went from not knowing Swedish to knowing Swedish. This is the essence of the difference between STATES and EVENTS. Thus, as we saw in chapter 9, one test for whether a SITUATION is a STATE or an EVENT is whether the sentence could be sensibly used as an answer

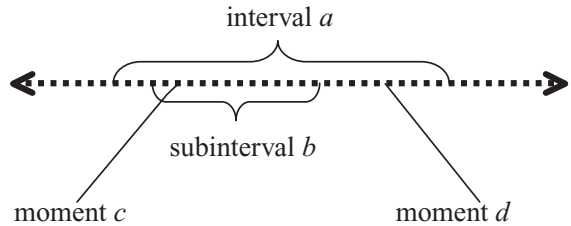


Figure 10.1 *Divisions of time*

to the question *What happened?* In (9), (9a) is a strange answer to the question, since *knowing* doesn't really *happen*. But we can see that *learn* is dynamic, since (9b) is a reasonable answer to the question.

(9) What happened?
a. ??Jack knew Swedish.
b. Jack learned Swedish.

Before looking at other tests for distinguishing STATES and EVENTS, let's look in more depth at how to define *static* and *dynamic*, following work by semanticists David Dowty (1979) and Emmon Bach (1986). They propose that time is divided into **moments**, which are the smallest discernable units of time, and **intervals**, which are made up of some number of contiguous moments. Intervals can also be broken down into **subintervals**, contiguous groups of moments within an interval. A STATE **saturates** its time interval – in other words, the SITUATION holds equally at all moments within the relevant interval. An EVENT, on the other hand, only saturates a subinterval of the interval – not every moment within the interval. This can be visualized using the timeline in figure 10.1. Each black or white space on the line is a moment. Interval *a* is a stretch of time in which a SITUATION might take place. Subinterval *b* is a time within that interval.

In (10) and (11), the relevant interval is 'when Jack was young,' which we can visualize as interval *a* in figure 10.1.

(10) Jack knew Swedish when he was young.

(11) Jack learned Swedish when he was young.

Because (10) describes a STATE, if we were to look at any moment in interval *a*, such as moment *c*, we would find that he knew Swedish then. But the EVENT in (11) is different. If we looked at what Jack was doing at any particular moment on this timeline, we would not necessarily find that what he was doing at that moment would be recognizable as 'learning Swedish.' We don't expect that 'learning Swedish' was happening at every moment of Jack's youth, but rather that some subinterval of it (e.g. his school days) involved some learning of Swedish. We also expect that *learning Swedish* took different forms

at different times – e.g. sometimes Jack memorized vocabulary and sometimes he practiced pronunciation. If we say that Jack *knew Swedish*, we don't expect that at some moments he knew verbs and at others he knew sentence structure. We imagine *knowing Swedish* as a fairly uniform situation. While STATES are time-sensitive to the extent that they are not necessarily permanent, their distribution through time is nevertheless more even and unchanging than is the case for EVENTS.

As ever, we must remember that words are polysemous and that context can affect how we interpret the meaning of a word. So, a particular verb form may be associated with both static and dynamic meanings, depending on which sense is used or how the context affects the interpretation. Using the *What happened?* test on different sentences with the verb *stand* illustrates this:

(12) What happened?
a. #The clock stood in the hall.
b. Jill stood when the teacher arrived.

According to the *What happened?* test, (12a) looks to be static – *stand* here means something like 'is located in an upright position.' Sentence (12b), on the other hand, uses a different sense of *stand*, one that involves movement to an upright position, and that sense is dynamic. Those examples show that two senses of the same word may differ in their aspectual type. Still there are some cases that are less clear. For example, the answer in (13) is stranger than (12b), but not as clearly static as (12a) is.

(13) *What happened?*
?Jill stood (still) under an umbrella.

The difference between a person standing still under an umbrella and a clock standing in a room is that we expect that people stand themselves in particular positions, since we know that people are **volitional** beings – that is, they have free will to do things. Arguably, then, we have three interpretations of *stand*: to be located in a standing position (12a), to hold oneself in a standing position (13), and to move to a standing position (12b), and these have different levels of stativity. In other words, there seems to be a continuum from static to dynamic, which is affected by pragmatic issues like whether we know that the STATE was achieved volitionally or not.

In order to get a clearer idea of whether a particular verb sense represents an EVENT or a STATE, other tests can help us. The more tests that say that a SITUATION is static, the further it is toward the static end of the static–dynamic continuum.

One test is whether a sentence that uses that particular sense of the verb can be rephrased in **pseudocleft** form. In other words, can you change a sentence in the form *X VERBED Y* to *What X did was VERB Y*? Because the *do* verb in

the cleft indicates an EVENT rather than a STATE, EVENTS are more natural in pseudocleft form:

(14) #What Jack did was know Swedish. [STATE]

(15) What Jack did was learn Swedish. [EVENT]

Another test that works well for English is whether the verb can be used in the **progressive** (*be V-ing*) form. The progressive form indicates that the SITUATION is in progress – that it started but, at the time we're talking about, it has not yet ended. This makes us perceive the SITUATIONS described by progressive statements as temporary and changing, which conflicts with the longer lasting and unchanging nature of STATES. Thus, static verbs are often strange in the progressive, as shown in (16), while the progressive dynamic verb in (17) is perfectly normal.

(16) #Jack is knowing Swedish.

(17) Jack is learning Swedish.

Finally, another test that relates to volitionality is whether the verb can be used in the **imperative** (command) form. Since STATES are not volitional, it does not make much sense to command someone to be in one. So, if you wanted Jack to know Swedish, you would tell him to take action toward getting to that STATE, as in (18), rather than telling him to be in that STATE, as in (19).

(18) Learn Swedish, Jack!

(19) ?? Know Swedish, Jack!

## Puzzle 10–1

While *know* and *learn* provide clear examples of static and dynamic verbs, we have noted that the distinction between static and dynamic senses is sometimes not so clear, as shown for the 'hold oneself in an upright position' sense of *stand* and the *What happened?* test. Try the other tests with the three *stand* sentences below and fill out the rest of the table using the following symbols. Be very careful not to inadvertently change the sense of the verb when making your judgments.

√ = passes the test **?** = odd, but not impossible **X** = fails the test

**!!** = the sense of the verb has changed in the test conditions.

| Sentence | Test *What happened?* | Pseudocleft | Progressive | Imperative |
|---|---|---|---|---|
| The clock stood in the hall. | X | | | |
| Jill stood under an umbrella. | ?/!! | | | |
| Jill stood when the teacher arrived. | √ | | | |

### 10.3.2 Punctual and durative

EVENTS can be divided into those that happen in an instant and those that develop through time. (STATES are all relatively time-stable and thus cannot be divided in this way.) EVENTS that happen in a moment are said to be **punctual** (or sometimes ***punctive***), while longer ones (involving intervals) are **durative**. While one can usually tell punctual from durative predicates just by thinking about the EVENTS they describe, we can also use some linguistic tests to support those intuitions. Durative predicates, like *search*, go well with the progressive in English, but punctual ones, like *find*, do not.

(20) I am searching for my keys. [DURATIVE]

(21) #I am finding my keys. [PUNCTUAL]

The progressive indicates the on-going nature of an EVENT. Since punctual EVENTS take place in a moment, rather than an interval (i.e. a series of moments), they cannot really be 'on-going.' Not all punctual verbs sound as strange in the progressive as *find* in (21) does, but still we can tell that they are punctual because they are not interpreted in the same way as durative verbs in those contexts. For example, *to flash* involves a momentary burst of light, so it is punctual, but it seems fine in the progressive, as in (22).

(22) The light is flashing.

But compare the interpretation of *flash* in (22) to that of *search* (20). Sentence (20) describes one SEARCHING EVENT. In (22), we understand that multiple FLASHING EVENTS have occurred. In other words, in order to reconcile the punctual nature of the verb meaning and the understanding that progressives indicate intervals, an **iterative** (i.e. indicating repetition) interpretation is construed within the context. We get such interpretations with punctual verbs that denote perceivable actions that are repeatable, like *flash*, *beep* or *punch*, but less so with mental punctives, like *realize* or *recognize*, which, like *find* in (21), are just plain odd in the progressive. (Notice, however, that we can get an iterative interpretation for the mental punctives if we use the *keep X-ing* construction – for example, *I kept noticing the clock*.)

Since *punctual* and *durative* refer to length in time, we could view them as gradable properties along a continuum, not just a binary distinction. For instance, the length of a moment in which one can recognize someone is probably shorter than the length of time it takes for a light to flash. Nevertheless, there does seem to be a perceptual distinction between EVENTS that happen so quickly that we perceive them as being instantaneous and those that go on for more extended periods of time. The distinctions between those two types are played out in the linguistic contexts in which the verbs describing those EVENTS occur.

### 10.3.3 Telic and atelic

The term **telic** is derived from the Greek *telos* 'end,' and refers to EVENTS that can be followed through to a state of completion. Having a 'state of completion' has a couple of consequences: if an EVENT described by a telic verb is stopped partway through, then the telic verb can no longer be used to describe it. So, *slam* is telic because (23) would not be true if Esme had started to slam a door, but, say, a gust of wind kept it from closing all the way.

(23) Esme slammed the door. [TELIC]

If Esme did succeed in slamming the door, then in order to slam the door some more, she would have to undo the outcome of the previous action (by opening the door) and then slam the door again. She could not continue to do the same slam once she had slammed the door. However, note that it is not only at the moment when the door slams that we would say that she is *slamming* the door. Telicity does not necessarily involve punctuality. Carol Tenny (1987) describes this in terms of a 'measuring out' of the action on the door. If a high-speed camera were to photograph Esme's action, there would be many moments in which we would see Esme's interaction with and force on the door – the door would change position in each photo. But at some point, the door would be closed, and it is that moment that determines the completion of the EVENT, even though it is not the entire EVENT.

**Atelic** verbs, on the other hand, describe SITUATIONS that could go on without a conclusion. For (24), if Esme started pushing the door, and then got distracted and stopped pushing, it would still be true that she had pushed the door.

(24) Esme pushed the door. [ATELIC]

Starting the action of pushing is thus the same as doing the action, whereas starting to slam is not the same as slamming.

You might say, "Well, there is a natural conclusion to pushing the door: the door moves. So, *push* must be telic." But there's a problem with that reasoning; 'movement' is not part of the meaning of *push*, nor part of the meaning of (24). The reason you might think that *push* involves movement is because you know why people usually push doors. In that case, you would be relying on pragmatic reasoning rather than relying on the semantics of *push*. Since we can have pushing without moving, as in (25), we can see that the *push* action could occur without a 'moving' outcome.

(25) Esme pushed the door, but she couldn't move it.

Another test for telicity is whether the sentence still makes sense with an *in* time phrase or a *for* time phrase. Telic EVENTS make sense with *in*, but atelic EVENTS need *for* instead:

(26) Esme slammed the door in an instant/#for an instant. [telic]

(27) Esme pushed the door for an hour/#in an hour. [atelic]

**Puzzle 10–2**

Determine whether the sentences represent telic EVENTS or not.

a. Nadine spotted Jay.
b. Nadine watched Jay.
c. Jay dropped his hat.
d. The hat fell.

### 10.3.4 Inchoative

Verbs whose meanings involve 'beginning' or 'becoming' are referred to as **inchoative**, from the Latin for 'begin.' Inchoative verbs describe a change of STATE or a beginning of having a STATE. For example, *blacken* means 'become black' and *open* denotes the change from being closed to not being closed.

Inchoatives are a type of EVENT. In Conceptual Semantics, they can be represented using the predicative component INCH (like GO and CAUSE, discussed in chapter 9). This INCH predicate takes a STATE as its argument, as in (28).

(28) $[_{EVENT}$ INCH $([STATE])]$

In (29) we see how this is spelt out for the meaning of *blacken* – it says that *blacken* denotes an inchoative EVENT in which something starts to be black.

(29) *blacken* = $[_{EVENT}$ INCH $([_{STATE}$ BE$_{ident}$ $([THING], [_{PLACE}$ AT $([_{PROP}$ black$])])])]$

*Break* is another inchoative verb, which, in the sense used in (30), describes the change from the STATE of being whole to the STATE of being in pieces.

(30) The glass broke.
*break* = $[_{EVENT}$ INCH $([_{STATE}$ BE$_{ident}$ $([THING], [_{PLACE}$ AT $([_{PROP}$ broken$])])])]$

*Break* belongs to a class of verbs for which we can see polysemy between the inchoative sense and a causative sense (recall §9.4.3) that incorporates the inchoative, as in (31).

(31) Ian broke the glass.
*break* = $[_{EVENT}$ CAUSE $([THING], [_{EVENT}$ INCH $([_{STATE}$ BE$_{ident}$ $([THING],$
$[_{PLACE}$ AT $([_{PROP}$ broken$])])])])]$

**Puzzle 10–3**

Determine whether each of the following change-of-STATE verbs has an additional causative sense by devising example sentences that use the inchoative and causative senses of each verb:

*close*, *darken*, *dry*, *pale*

Table 10.1 *Vendler classes*

| SITUATION TYPES *examples* | Static – dynamic | Punctual – durative | Telic – atelic |
|---|---|---|---|
| STATE | | | |
| *Dee **liked** Dom.* | static | (durative) | n/a |
| *Dom **resembled** Dee.* | | | |
| ACTIVITY | | | |
| *Dee **danced**.* | dynamic | durative | atelic |
| *Dom **considered** the problem.* | | | |
| ACCOMPLISHMENT | | | |
| *Dee **emigrated**.* | dynamic | durative | telic |
| *The flower **bloomed**.* | | | |
| ACHIEVEMENT | | | |
| *Dee **arrived**.* | dynamic | punctual | telic |
| *Dom **fainted**.* | | | |

## 10.4 Vendler classes

The philosopher Zeno Vendler (1957) described types of verbs based on their inherent aspectual differences, and these classes can be broken down componentially according to the three dichotomies we've seen so far. These are shown in table 10.1. His classification remains one of the most popular in describing SITUATION types.

Table 10.1 shows the breakdown of the Vendler classes STATE, ACTIVITY, ACCOMPLISHMENT, and ACHIEVEMENT using the binary distinctions static/dynamic, punctual/durative, and telic/atelic. Note that if a verb sense describes a static SITUATION, then the other two dichotomies (punctuality and telicity) do not really apply to it, since those are properties of dynamic SITUATIONS. Nevertheless, static SITUATIONS are sometimes labeled 'durative' because they tend to hold for long periods of time.

Since Vendler, other classifications have been proposed, but many still make reference to Vendler's classes. Bernard Comrie (1976) added a **SEMELFACTIVE** category, which includes atelic, punctual events, such as in a non-iterative reading of (32).

(32) The computer beeped.

Among other authors, it is not unusual to see STATES, EVENTS, and ACTIVITIES (or some variations on those terms) as the main SITUATION types, with ACHIEVEMENTS and ACCOMPLISHMENTS being subtypes of EVENT. In other words, some authors reserve the term *EVENT* for telic situations.

While Vendler initially thought of his categories as categories of verb meaning, they are more properly types of SITUATION – and it takes more than a verb to

describe a SITUATION. In particular, a single verb sense can occur in sentences about both telic and atelic SITUATIONS. For example, (33) describes a telic ACCOMPLISHMENT – once three apples are consumed, the SITUATION is complete. On the other hand, (34) is atelic, since the apple-eating ACTIVITY could go on indefinitely.

(33) I'll eat three apples.

(34) I'll eat apples.

Clearly, it is the specification of a quantity of apples in (33) that makes the SITUATION telic, so we could think of *eat* as a verb that is dynamic and durative but unspecified for telicity. In other words, its meaning is consistent with describing ACTIVITIES or ACCOMPLISHMENTS. The question arises: is telicity only a property of whole verb phrases, rather than of lexical verbs? We consider this question further in the next section.

## 10.5 Boundedness and telicity

One of the criteria by which the telicity of a verb can be diagnosed is the possibility of the action being interrupted, yet still describable by that verb (§10.3.2). So *scream* is atelic because if you start to scream then stop, it is still true that you have screamed. This criterion probably sounded a little familiar, since it is much like the criterion by which we decided whether or not a noun was bounded or not in §8.3. Recall that *mud* was [–bounded] because if you had some mud and dropped half, you would still have some mud. So just as screaming for half as long as expected is still screaming, having half as much mud as you expected is still having mud. This similarity has been exploited by theorists who apply the concept of boundedness to both nouns and verbs. The difference, however, is that boundedness in verbs is heavily dependent on non-lexical contributions to meaning, including tense and the verb's arguments.

It would be tempting to think of boundedness in verbs as being the same as telicity, since telic EVENTS are 'bounded' by their natural end-points. However, the term *bounded* is used to refer to any (durative) situation that comes to an end. Once tense is added into the mix any SITUATION can be bounded – since anything described in the simple past tense is understood to have ended already. So *I screamed* is bounded (because it refers to a SITUATION that ended), but not telic (because the screaming could have gone on, even though it didn't).

While the tense of the verb can affect its boundedness, it does not affect its telicity. What does affect telicity are the verb's arguments – and their boundedness. As was shown in (33), the addition of arguments can create a telic situation – but this depends on the boundedness of the arguments. Only bounded arguments force telic interpretations. So EATING APPLES in (34) is atelic, but EATING

THREE APPLES in (33) is telic because the *three* has put a boundary on the apple-eating EVENT.

Because telicity is so dependent on clausal elements besides the verb, it could be debated whether it is represented in verb meaning at all. In order to explore that debate, let's start by comparing *watch* and *eat*. Examples (35) and (36) provide a minimal pair, in that the only element that differs in the two sentences is the verb.

(35) I watched a fish. [ATELIC – ACTIVITY]

(36) I ate a fish. [TELIC – ACCOMPLISHMENT]

Since the sentence with *watch* is atelic and the sentence with *eat* is telic, it seems we must conclude that the verb is responsible for the (a)telicity of the sentence in these cases, and that *watch* is by its nature atelic. However, that easy conclusion is complicated by the fact that telic SITUATIONS can also be described with *watch*:

(37) I watched a film. [TELIC – ACCOMPLISHMENT]

The key to whether each of these SITUATIONS is telic or not is in the second argument – the verb's object. In the atelic *watch* example (35) and the telic *eat* example (36), the arguments look identical. Go a little deeper, however, and the arguments do not seem so similar. When one eats a fish, one eats its physical body. When one watches a fish, it is more than the physical body of the fish that is relevant – one watches a fish doing something, even if all it is doing is existing. That is, when one watches, one watches not a THING, but a SITUATION. If the SITUATION that is watched is telic (e.g. the playing of a film), then so is the watching SITUATION. If the watched SITUATION is not telic (e.g. the existence of a fish), then neither is the watching SITUATION. So, we cannot conclude that *watch* itself is telic or atelic, but we can conclude that the semantics of *watch* tell us that it has a SITUATION argument, and that the watching activity is **co-extensive** with (i.e. happens at the same time as) the argument's SITUATION. In other words, if there is information about telicity in *watch*'s lexical entry, it is indirectly represented through its argument structure.

Many verbs are like this – their telicity is directly influenced by the boundedness or telicity of their arguments, and so we must conclude that those verbs themselves are unspecified for telicity. But some verbs do seem to be inherently telic or atelic. Intransitive verbs don't have object arguments that would force particular telicity interpretations in the same way as the *eat* and *watch* examples above. In the case of *foam*, (38) below, we can see that even with a bounded subject, the situation can be read as atelic:

(38) After the chemical spill, the pond$_{[+b]}$ foamed {for a month/#in a month}.

In the same context, *die* is understood as telic:

(39) After the chemical spill, those trees$_{[+b]}$ died {in a month/#for a month}.

In (39), *those trees* is bounded (since we have identified a particular, finite set of trees), so we could wonder whether making an unbounded entity the subject of *die* would make 'dying' atelic. But, at least as far as my idiolect goes – the result seems a bit odd, as shown in (40):

(40) ??After the chemical spill, $\text{trees}_{[-b]}$ died for a month.

If (40) is interpretable, then it must be interpreted as involving many dying EVENTS, rather than one. We can observe this for certain other verbs, like *notice*, *discover*, and *find*, which are telic in their 'discovery' senses. For any of these verbs, their telicity status can be reversed if just the right other elements are present in the sentence. For instance, one could get an atelic interpretation of *the grass died* in (41) if it is understood to be iterative – in which case some grass dies, then some new grass grows and then dies, and on and on indefinitely.

(41) After the chemical spill, the grass died for a month. [ITERATIVE]

The iterative interpretation is even clearer when we use the CONTINUOUS marker *kept Xing*, as in (42) and (43).

(42) After the chemical spill, the grass kept dying.

(43) I kept noticing her accent.

The fact that any verb can be used to describe both telic and atelic situations has led some (e.g. Verkuyl 1993, Ramchand 1997) to conclude that it doesn't make sense to talk about lexical verbs in terms of telicity or Vendler classes. Instead, they reason, telicity is a property of entire clauses, with any arguments,

**Puzzle 10–4**

A frequent type of noun-to-verb conversion creates a verb meaning 'to put NOUN on [something].' So, *to saddle* is 'to put a saddle on [something]' and *to paint* is 'to put paint on [something].' Yet these verbs differ in their telicity, even when they occur with similar types of objects – singular, bounded things in the following examples. *Saddle* is only interpreted as telic, whereas *paint* could be interpreted as either telic or atelic, as the *for/in* test shows:

*Kerstin saddled the horse {in a minute/#for a minute}.*
*Martin painted the bench {in an hour/for an hour}.*

Investigate the following verbs (given here with example objects), determining whether they fall into the same telicity class as *saddle* or as *paint*. Then try to find a semantic reason for their differences.

| | | |
|---|---|---|
| *shoe (the horse)* | *water (the garden)* | *oil (the machine)* |
| *butter (the toast)* | *cap (the bottle)* | *blindfold (the contestant)* |
| *(wall)paper (the hall)* | *shutter (the window)* | *sugar (the doughnut)* |

aspectual marking, and adverbial modification taken into account. Others argue that telicity should be represented lexically. Olsen (1997) holds that some verbs are [+telic] – that the iterative interpretations of telic verbs in contexts like (42) and (43) do not cancel out the fact that the verbs denote an EVENT type with a natural completion point. Instead, the fact that iteration is the only way to make the EVENT atelic is considered to be evidence that the verb is [+telic] – since the iterative interpretation retains the 'completion' aspect – it just repeats it.

## 10.6 Semantic relations among verbs

Chapter 6 reviewed a number of semantic relations among words, which were mostly illustrated with nouns and adjectives. Relations among verbs have a dimension not covered in chapter 6: the possibility of relation in time. Christiane Fellbaum (e.g. 1998a) and her colleagues in the WordNet lexical database project have developed the taxonomy of entailment relations among verbs presented in figure 10.2. Because verb meanings denote SITUATIONS that happen through time, two verb senses can be related to each other in terms of whether they describe SITUATIONS that happen at the same time, whether one SITUATION is within the other's time interval, or whether one precedes or follows the other. The first dichotomy in figure 10.2 divides those relations on the basis of whether **temporal inclusion** (i.e. occurring in the same time interval) forces an entailment relation between the two verbs or not. The temporally inclusive relations are troponymy and proper inclusion.

**Troponymy** is also referred to as hyponymy among verbs (see, for example, the semantic field treatment of verbs of MOTION in figure 6.5 in chapter 6). The term comes from the Greek *tropos* meaning 'manner,' and it refers to relations in which one verb expresses a specific MANNER (see chapter 9) in which the other verb's ACTION (or other SITUATION type) could be done. Like hyponymy

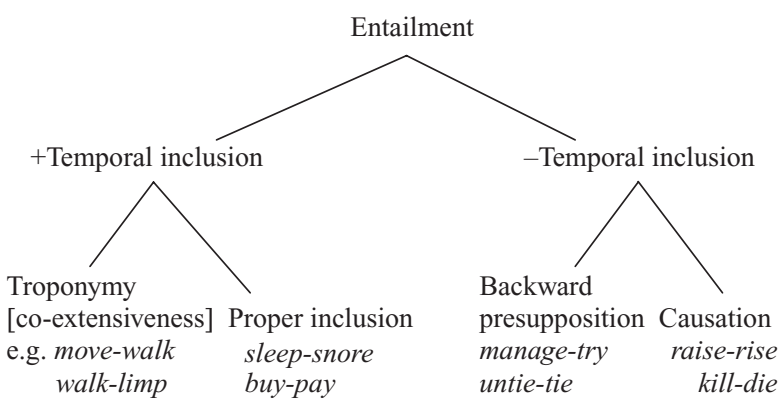


Figure 10.2 *Entailment relations among verbs (after Fellbaum 1998a)*

(§6.2.2), troponymy is an asymmetrical relation – *walk* is a troponym of *move*, but *move* is not a troponym of *walk*. Instead, we can use the term *hyperonym* (as in §6.2.2) to refer to the relation between a broader sense (*move*) and a narrower one (*walk*). Verbs in the troponymy relation are entirely co-extensive – that is, any time a MANNER-specifying verb like *fry* is used, its hyperonym *cook* could also describe the SITUATION. Every moment within a FRYING event can also be described as *cooking*. It's the same for *walk* and *move* in (44), where → stands for 'entails.'

(44) Troponymy:
*Morgan walks* → *Morgan moves*
WALKING inhabits the same time interval as MOVING
→ WALKING is temporally included within MOVING

The other temporal inclusion relation among verbs is **proper temporal inclusion** (also known as ***non-troponymic inclusion***). In this case, the EVENT described by one verb happens within a subinterval of the other verb's EVENT. For instance, *paying* describes a SUB-EVENT of a *buying* EVENT and *snoring* is a SUB-EVENT of a *sleeping* EVENT, as in (45).

(45) Proper inclusion:
*Leonard snores* → *Leonard sleeps*
SNORING inhabits a subinterval of a SLEEPING interval
→ SNORING is temporally included within SLEEPING

Here the terminology does not distinguish between necessary SUBEVENTS and merely possible ones. 'Paying' is a necessary part of 'buying,' but while 'snoring' EVENTS are always contained within 'sleeping' EVENTS, not every 'sleeping' EVENT contains a 'snoring' EVENT.

The other two relations in figure 10.2 are temporally related, but the entailed EVENT does not temporally include the entailing EVENT. In **backward presupposition**, in order for one verb's sense to be true, the EVENT described by the other verb must have already happened. For instance, if someone *manages* to do something, then one must have *tried* to do it. If you *untie* something, someone must have *tied* it earlier. In this case, one EVENT must precede the other, but the earlier EVENT does not necessarily result in the later EVENT. Just because one *tries* doesn't mean they will *manage* to do something, and if something is *tied*, it doesn't force a later 'untying' EVENT.

(46) Backward presupposition:
*Bea managed to do it* → *Bea tried to do it.*
• MANAGING is preceded by TRYING – not temporally included

**Causation** involves a necessary relation between a causative verb (see §9.4.3) and the verb describing the EVENT that is caused. If someone *kills* something, then the something necessarily *dies*, and if someone *raises* an object, the object *rises*.

(47) Causation:
a. *Paul killed the tulips.* → *The tulips died.*
b. *Ellen raised the flag.* → *The flag rose.*

It is tempting to think of the causative EVENT as being earlier than the 'caused' EVENT, since we say that if someone kills something it *follows* that the thing dies. But to *follow* in a causal sense is not the same as to *follow* temporally. Ellen's *raising the flag* and the flag's *rising* happen at more or less the same time, and we cannot say that *Paul killed the tulips* until the tulips have died. That the temporal relation is different from backward presupposition is evident from the fact that the entailment relation can be expressed with the temporal conjunction *and then* in the backward presupposition cases in (48), but not in the causation cases in (49).

(48) Backward presupposition:
a. Bea tried to finish her homework, and then she managed to finish her homework.
b. Warren tied his laces, and then he untied his laces.

(49) Causation:
a. #Paul killed the tulips, and then they died.
b. #Ellen raised the flag, and then it rose.

The causation cases act more like the temporal inclusion cases in this way, since they too are strange with *and then*, as shown in (50) and (51).

(50) Troponymy:
#John limped and then he walked.

(51) Proper inclusion:
#Amy bought the peaches and then she paid for them.

The only possible way to interpret these sentences (if they are interpretable at all) is to ignore the temporal inclusion relation between the verbs and interpret the two clauses as describing entirely separate EVENTS. For instance, (50) only makes sense if we ignore the possibility that *limp* and *walk* can refer to the same EVENT and instead construe *walk* as meaning 'walk without a limp.'

If 'caused' EVENTS occur within the same time intervals as their related causative EVENTS, why has Fellbaum classified them as temporally non-inclusive? The difference is that temporal inclusion in the cases of troponymy and proper inclusion causes the entailment relation between the verbs. *Snoring* entails *sleeping* because SNORING always happens within the time when SLEEPING happens. But it is not temporal co-extension that determines the entailment relation between *killing* and *dying*. Note that if one of these EVENTS is 'shorter' in time than the other and is included in the other's time interval, it must be the 'dying' EVENT that is the shorter, included one. Still, the 'shorter' EVENT described by *dying* does not entail the 'longer' *killing* EVENT that surrounds it. Instead, it is *killing* that entails *dying*: the entailment relation arises because the meaning of *die* is included in the meaning of *kill*: 'cause to die.'

Causation also differs from the other relations in figure 10.2 in that it involves verbs with different argument structures (recall chapter 9), as shown in (52)–(53).

(52) Troponymy: *Morgan walks* → *Morgan moves*
Proper inclusion: *Leonard snores* → *Leonard sleeps*
Backward presupposition:
*Bea managed to do it* → *Bea tried to do it*.

(53) Causation:
a. *Paul killed the tulips*. → *The tulips died*.
b. *Ellen raised the flag*. → *The flag rose*.

All of the examples in (52) involve the same argument structures – the 'doer' of the action in the entailing sentence is the same person as the 'doer' in the entailed sentence. In (53), in contrast, the 'doer' of the causing action is not an argument of the entailed verb. For instance, in (53a), *Paul* is not to be found in the *die* sentence, although he was a key element of the *kill* sentence. So, while causation is a semantic relation among verbs, it is the odd one out in figure 10.2, since the relation between the verbs is not determined by their temporal relation.

## 10.7 Summary and conclusion

In comparison to other parts of speech, verb meanings are particularly temporally complex, describing various levels of dynamism and various lengths of time, and with more or less attention to the beginnings and conclusions of SITUATIONS. Each of these dimensions of time-complexity has linguistic repercussions, as we saw in the various tests for telling whether a verb sense is dynamic or stative, durative or punctual, telic or atelic, and inchoative or not. Still, lexical aspect is but one contributor to the overall aspectual character of a clause, particularly when it comes to telicity. For many verb senses, telicity seems to be unspecified, allowing for different telicity properties to arise with different arguments or other aspectual markers.

The temporal complexity of verb meanings affects the types of semantic relations that verbs enter into. Unlike noun and adjective meanings, verb senses are typically related by temporal relations – for instance, occurring in contiguous or subsequent time intervals.

## 10.8 Further reading

Several scholarly sources on aspect are cited in this chapter. Bernard Comrie's *Aspect* (1976) remains a valuable textbook for the description of aspect, particularly grammatical aspect. William Frawley's *Linguistic Semantics* (1992) has a thorough discussion of STATE and EVENT types, including the tests

discussed here, though he prefers a different classification system from Vendler's. On categorizing semantic relations among verbs, see Fellbaum 1998a.

## 10.9 Answers to puzzles

### 10–1

Some of the tests can be tricky to interpret, so see the footnotes beneath the table for clarification.

| Sentence | Test<br>Pseudocleft | Progressive | Imperative |
|---|---|---|---|
| The clock stood in the hall. | **X**<br>#What the clock did was stand in the hall. | √<br>The clock was standing in the hall.[a] | **!!**<br>Stand in the hall, clock![b] |
| Jill stood under an umbrella. | **?/!!**<br>What Jill did was stand under an umbrella.[b] | √<br>Jill was standing under an umbrella. | **X/!!**<br>Stand under an umbrella, Jill![b] |
| Jill stood when the teacher arrived. | √<br>What Jill did was stand when the teacher arrived. | **!!**<br>Jill was standing when the teacher arrived.[c] | √<br>Stand when the teacher arrives, Jill! |

[a] Note that making the *clock* sentence progressive gives the impression that the clock is only temporarily in the hall. The non-progressive version seems more permanent.

[b] These sentences may be misleading, since if they sound fine, it is probably because you have reinterpreted them as having the 'move to standing position' rather than the 'be standing in a place' or 'hold oneself standing' meanings that were evident in the original versions. Remember, a verb sense only passes the test if it remains the same sense in the text sentence. The 'hold oneself standing' senses might be possible in these clauses, but one is much more likely to interpret *stand* in those sentences as 'move to standing position.'

[c] Note that putting this sentence in the progressive forces us to interpret the verb differently. Now it sounds like Jill was already standing when the teacher arrived. In order to clearly get the 'move to upright position' sense of *stand* in this case, one may have to make the action more explicit, as in *Jill was in the process of standing (up) when the teacher arrived*.

### 10–2

a. *Spot*: telic – spotting is completed once Nadine has gained sight of Jay.
b. *Watch*: atelic – there is no natural conclusion to watching and it is interruptible.
c. *Drop*: telic – the action is completed when the hat is released.

d. *Fall*: atelic – though we know that falls are usually broken by the ground, there is nothing in the meaning of *fall* itself that makes it telic. If the hat did not fall all the way to the ground, it would still have fallen, and if it fell down a bottomless pit, it would fall indefinitely.

### 10–3

Only *pale* does not have a causative sense:

| INCHOATIVE | CAUSATIVE |
|---|---|
| The door **closed**. | I **closed** the door. |
| The sky **darkened**. | I **darkened** the page with ink. |
| My hair **dried**. | I **dried** my hair. |
| She **paled** at the thought of mice. | *I **paled** my face with powder. |

### 10–4

If you've given up on this one, **don't look at the answers yet!** Have another look at the verbs, keeping this hint in mind: remember from chapter 9 that arguments can be conflated in the verb.

You should find that the verbs fall into the following two categories:

| ***saddle* type** (*in/#for a time*) | ***paint*-type** (*in/for a time*) |
|---|---|
| *shoe (the horse)* | *water (the garden)* |
| *cap (the bottle)* | *oil (the machine)* |
| *blindfold (the contestant)* | *butter (the toast)* |
| *shutter (the window)* | *sugar (the doughnut)* |
| | *(wall)paper (the hall)* |

As observed by Heidi Harley (1999), the key to the two classes is the type of noun from which the verb was derived. The verbs that derive from nouns for [–bounded] substances can be telic or atelic, while those that derive from [+bounded] count nouns are telic only. In each of these cases, the denominal verb conflates one of its own arguments (the THING that is being put – recall our discussion of *paint* in chapter 9), and it is the boundedness of that internal argument that determines the telicity of the verb.

## 10.10 Exercises

### Adopt-a-word

A. If your word is a verb, explore its aspectual qualities, using the diagnostic tests described in this chapter to determine its properties. Starting with a single sense of your verb, consider:

- Is it static or dynamic? Punctual or durative?
- Is its telicity affected by the nature of its arguments?
- Is it inchoative?

If your verb has more than one sense, discuss whether its senses differ in their aspectual properties. For example, does it have both static and dynamic senses?

## General

1. All of the following verbs, in the senses found in these example sentences, can be considered stative, since they refer to fairly static situations. Nevertheless, some of them sound better in the progressive than others. Test each in the progressive, classifying them into two categories according to whether they sound good or odd. Examine the verbs in each of these categories and determine whether they have any semantic characteristics in common. Can you offer any hypotheses as to why the two groups differ in their interpretation in the progressive?
   i. The room **smells** awful.
   ii. Phil **lives** in England.
   iii. The portrait **hangs** in the National Gallery.
   iv. The soup **tastes** great.
   v. That **sounds** like Harriet.
   vi. My suitcase **sits** in the attic.

2. Classify the verb senses in each of the following song titles according to their Vendler classes. Point out any ambiguities or difficulties of interpretation and discuss whether the interpretation of telicity is due to the verb itself or some other element in the sentence.
   i. (You gotta) **Fight** for your right to party.
   ii. Nothing **compares** to you.
   iii. **Fly** me to the moon.
   iv. **Shake** your booty.
   v. Smoke **gets** in your eyes.
   vi. **Unbreak** my heart.

3. The verb *eat* seems to be unspecified for telicity.
   - As an intransitive verb, it can be interpreted as telic or atelic – passing both the *in* and *for* tests:

     *I ate for an hour*. [ATELIC]
     *I ate in an hour*. [TELIC]

   - Its telicity is determined by the boundedness of its argument.

     *I ate rice*. [ATELIC]
     *I ate a bowl of rice*. [TELIC]

Test the verb *drink* to see whether it follows the same pattern. Explain any differences between *eat* and *drink*. (It might help to review chapter 9.)

4. Using the terminology and tests presented in §10.6, describe the semantic relations between the following pairs of verbs. Consider whether there are entailment relations in both directions (i.e. *a* entails *b* AND *b* entails *a*).
   a. *show–see*
   b. *sleep–nap*
   c. *whisper–speak*
   d. *golf–swing*
   e. *have–hold*