Lexical Semantics of Verbs IV:
Aspectual Approaches to Lexical Semantic Representation

Reading: Dowty 1991, Section 4; Kearns 2000; L&RH 2005, Sections 4.2-4.2.4.

1　Aspectual approaches: An introduction

As verbs denote events that take place in time, can verbs be differentiated according to how the events they denote take place in time?

THE PROPOSAL: The inventory of event types is determined by possible temporal contours.
　　　That is, aspectual notions are critical to structuring lexical semantic representation.

THE BIG QUESTIONS:
— How are verbs classified with respect to the internal temporal structure of the events they denote?
— What evidence is there for determining a verb's aspectual class membership?
— What are the appropriate aspectual notions?

2　A starting point: States vs. events

THE MOST BASIC ASPECTUAL DISTINCTION: States vs. events
— events that involve change; include events denoted by manner and result verbs
　　　run, walk, sleep, sweep, reach, win, break, knock, hit
— events that do not involve change: states
　　　hate, know, believe, be red

THE RELATED ASPECTUAL NOTIONS: Stativity and its inverse, dynamicity.

THREE DESCRIPTIVE PROPOSALS CONCERNING HOW BEST TO CHARACTERIZE STATES

• States, unlike nonstates, can be judged true at a moment in time (Dowty 1979).
　　　INADEQUATE: so-called "interval statives": spatial configuration verbs such as *sit, stand, lie*.

(1)　　a.　　My keys are sitting on the shelf.

　　　　b.　　The statue of George Washington stands in the Common.

• States involve no change, nonstates do (Dowty 1979, Kearns 1991, McClure 1994);
　　　i.e., activities are iterated changes.

(2)　　The general observation is that states have no essential changes or transitions, from which
　　　it follows that they are continuous and are not essentially bounded. (Kearns 1991:116)

• Nonstates, but not states, require energy input to maintain event (Comrie 1976:48).

3 Lexical aspectual classes of verbs

Events (=nonstates) are subdivided into several subclasses, again based on their temporal contours.

3.1 The major nonstative aspectual classes

A FIRST CUT: Durative vs. punctual (i.e. instantaneous or non-durative) events.

3.1.1 Subdividing durative verbs

• Many verbs describe events that take time, but have no inherent temporal endpoint; such events could go on indefinitely, at least if real world limitations or conventions weren't a consideration.

(3)   a.   Pat ran.

        b.   Kim wiped the counter.

        c.   Sam poured the milk.

Such events are known as ACTIVITIES.

• There are some verbs which also describe events that take time, but these events have an inherent endpoint, also known as a "culmination" or "telos" at which a result state comes about. The duration of the event up to the endpoint is occupied by the process that leads up to the result state, although the nature of this process is left unspecified by the verb.

(4)   a.   Pat drew a picture of the vase of flowers.

        b.   Kim cleaned the counter.

        c.   Sam filled the pitcher (with the milk).

Such events are known as ACCOMPLISHMENTS.

3.1.2 Subdividing punctual verbs

• Some verbs, such as *hit*, describe events that are punctual—they take no more than a moment in time (Engelberg 2000)—but as with the events described by activities there is no result state that follows. A verb like *hit* can name a single hit or a series of hits; on the latter interpretation, there is again, no inherent endpoint specified to the hitting event; see Section 6.3.

(5)   a.   The baby hit the tabletop. (once or repeatedly)

        b.   Taylor hopped. (once or repeatedly)

        c.   The clown winked. (once or repeatedly)

Such events are known as SEMELFACTIVES.

• Some verbs, such as *explode* or *break*, describe events that are punctual; they describe the moment at which there is a transition to a result state. Thus, they are like accomplishments in being defined by a result state. Unlike accomplishments, the verb itself does not lexicalize an accompanying process, though with some verbs, such as *arrive*, some unspecified accompanying process is presupposed; with others, such as *notice*, none is.

(6)   a.   Carey broke the window.

  b.   The gas main exploded.

  c.   The train arrived at the station.

  d.   The appraiser noticed the flaw in the glass.

Such events are known as ACHIEVEMENTS.

3.1.3   Aspectual classification and the manner/result verb dichotomy

Aspectual classes provide another perspective on the manner/result verb dichotomy as *hit* and *break*—and manner vs. result verbs more generally—denote events with distinct temporal contours.

• Manner verbs, by their very nature, are atelic: they lack an inherent endpoint. Many, including *wipe* and *pour*, describe events with duration; thus, they are achievements. Others, such as *hit*, describe punctual events; thus, they are semelfactives.

(7)   a.   Kim wiped the counter.

  b.   Sam poured the milk.

  c.   I hit the tabletop. (once or repeatedly)

• Result verbs, by their very nature, are telic, though they differ according to whether the events they describe have duration—and, hence, they are accomplishments—such as *fill* or *clear*, or whether the events arepunctual—and, hence, they are achievements—such as *break*.

(8)   a.   Sam filled the pitcher (with the milk).

  b.   The guard cleared the room.

  c.   I broke the tabletop.

3.1.4   A summary of the basics of aspectual classification

MAJOR ASPECTUAL CLASSES: states, activities, accomplishments, achievements, semelfactives.

THE ASPECTUAL NOTIONS UNDERLYING THE CLASSIFICATION:
— stativity vs. dynamicity
— durativity vs. punctuality
— telicity, i.e., having a culmination, telos, or endpoint

3.2 A caution: What is being classified?

POSSIBLE ANSWERS: The verb, the VP, the sentence, the event(uality)?

A RELATED QUESTION: Does a verb have a basic aspectual class?

THE COMPLICATING ISSUE: Aspectual class shifts (also called "event-type shifts").

(9) a. I ran. (taken to be atelic)
     b. I ran. (telic when there is a set distance to run)
     c. I ran a mile/to the lake. (telic)

3.3 More on systems of aspectual classification

The various aspectual classification systems make essentially the same distinctions, collapsing some or subdividing others (Bach 1981, 1986; Dowty 1979; Mourelatos 1978; Vendler 1957).

SOME MAJOR DIMENSIONS OF VARIATION:

• Semelfactives are often neglected and subsumed under achievements, as they also are punctual.

THE CONSEQUENCE: Many systems of aspectual classification recognize only four aspectual classes, the so-called Vendler classes: activity, accomplishment, achievement, state.

• Some researchers privilege the distinction between verbs denoting events with an inherent endpoint (telic) and those without (atelic) over other aspectual distinctions.

• Some researchers argue that the accomplishment/achievement distinction is pragmatic and not linguistic, thus collapsing these two classes (e.g., Verkuyl 1993).

For example, the duration of an eating event reflects the nature of the entity eaten:

(10) a. Taylor ate a peach. (requires a series of bites)
      b. Taylor ate a grape. (may be eaten in one bite)

• Some researchers recognize two subclasses of achievements:
  achievements with an associated process and purely "lucky" achievements
  (called "culminations" and "happenings" by Bach (1986)).

(11) a. The climber reached the summit.
      b. The train arrived at the station.
      c. The balloon popped.

(12) a. The student won the lottery.
      b. My mother missed the bus.
      c. Cameron recognized a movie star.

4 Diagnostics for aspectual classification

A variety of diagnostics have been proposed to determine aspectual classification. Perhaps the most cited collection is from Dowty (1979).

(13) Tests for aspectual verb categories (Dowty 1979:60)

	Criterion	States	Activities	Accomplishments	Achievements
1.	meets nonstative tests	no	yes	yes	?
2.	has habitual interpretation in simple present tense	no	yes	yes	yes
3.	*ϕ for an hour, spend an hour ϕing*:	OK	OK	OK	bad
4.	*ϕ in an hour, take an hour to ϕ*:	bad	bad	OK	OK
5.	*ϕ for an hour* entails ϕ at all times in the hour:	yes	yes	no	d.n.a.
6.	*x is ϕing* entails *x has ϕed*:	d.n.a.	yes	no	d.n.a.
7.	complement of *stop*:	OK	OK	OK	bad
8.	complement of *finish*	bad	bad	OK	bad
9.	ambiguity with *almost*:	no	no	yes	no
10.	*x ϕed in an hour* entails *x was ϕing during that hour*:	d.n.a.	d.n.a.	yes	no
11.	occurs with *studiously*, *attentively*, *carefully*, etc.	bad	OK	OK	bad

OK = The sentence is grammatical, semantically normal.
bad = The sentence is ungrammatical, semantically anomalous.
d.n.a. = The test does not apply to verbs of this class.

4.1 Aspectual diagnostics have to be applied with care

This caution is the reason that Kearns (2000) draws attention to the notion of "repair reading".

AN EXAMPLE: *in* phrases actually have an 'after' interpretation with achievements, rather than a duration of the event interpretation as they do with accomplishments.

(14)   a.   Smith climbed the mountain in six hours. (event took six hours)
        b.   Smith reached the summit in six hours. ('reached after six hours')

NOTE: *reach* is an achievement with an associated process; "lucky" achievements are often odd with *in* phrases (e.g., #*Dale won the lottery in two days*). More generally, the two types of achievements may pattern differently with respect to various aspectual diagnostics.

ANOTHER EXAMPLE: *for* phrases can be interpreted as specifying the duration of the result state with accomplishments (and achievements), rather than the duration of the event as they do with states, activities, and (some) accomplishments.

(15)　The sheriff jailed the bandit for three years.
　　　(the jail term lasted three years; the event of jailing could have been very quick)

4.2　Two aspectual diagnostics exemplified: *finish* and *stop*

• Only accomplishments can be found as complements to *finish*. That is, *finish* requires that its complement describe an event that involves both a process and a culmination (see Kearns 2000:214).

(16)　a.　Kim finished writing the letter. (accomplishment)
　　　b.　# Dana finished pushing the cart. (activity)
　　　　　(This sentence is ok on the "repair" reading which presupposes a specific distance that the cart is supposed to have been pushed, but this reading involves the reinterpretation of the activity as an accomplishment.)
　　　c.　# Kelly finished blinking. (semelfactive)
　　　d.　# Ashley finished noticing the spot. (achievement)
　　　e.　# Pat finished being hot. (state)

• Only achievements cannot be complements of *stop*, though semelfactives are best as complements to *stop* on the iterated interpretation. That is, *stop* requires its complement to have duration.

(17)　a.　# Ashley stopped arriving at the station. (achievement)
　　　b.　Kim stopped writing the letter. (accomplishment)
　　　c.　Dana stopped pushing the cart. (activity)
　　　d.　Kelly stopped blinking. (semelfactive — iterated)
　　　e.　Pat stopped being hot. (state)

4.3　Diagnostics for states

The most referenced discussion of stativity tests is Lakoff (1966); see also Dowty (1979:55-56).

• Progressive: only nonstatives are found in the progressive.

(18)　a.　∗ I am knowing the answer.
　　　b.　I am running.

• Only nonstatives occur as imperatives.

(19)　a.　∗ Know the answer!
　　　b.　Run!

• Only nonstatives occur with adverbs like *deliberately* or *carefully*.

(20)　a.　∗ She knows the answer carefully.
　　　b.　　She writes carefully.

• Only nonstatives occur as complements of *force/persuade*.

(21)　a.　∗ The teacher forced her to know the answer.
　　　b.　　The teacher forced her to write.

• Only nonstatives occur in the pseudo-cleft construction.

(22)　a.　∗ What Sally did was know the answer.
　　　b.　　What Sally did was write.

• Simple present refers to the present with statives, but has a habitual interpretation with nonstatives.

(23)　a.　　I know the answer. → refers to present with statives
　　　b.　　I run. → habitual interpretation with nonstatives

• Only nonstatives appear in *What happened/occurred/took place was . . .* (from Jackendoff 1983)

(24)　a.　∗ What happened was Sally knew the answer.
　　　b.　　What happened was Sally wrote.

REAPPRAISING STATIVITY TESTS

• Carlson (1977) on the progressive:
This diagnostic actually distinguishes stage- from individual-level predicates (Kratzer 1995).
　　— (most) individual-level predicates are stative, i.e., they are permanent states
　　— most stage-level predicates are nonstative, but not all of them are:
　　　they are temporary states, including interval statives

(25)　a.　　My socks ??lie/are lying under the bed.
　　　b.　　New Orleans lies/??is lying at the mouth of the Mississippi.

NOTE: Lack of a progressive does not indicate stativity: some achievements also lack progressives.

(26)　∗ My mother was missing the bus.

• Several purported stativity tests are agentivity tests; see Section 5.2.

• Evidence bearing on the two most robust diagnostics for the stative/nonstative distinction:

— If the simple present tense can be used to refer to refer to the actual present
    (in a non-sports reporting context), then the event being described is a state.

(27) a.   Kim knows the capitals of all 50 states.
            (interpreted as referring to what Kim knows now; a state;
            holds only of individual-level states)
      b.   Kim rides a bicycle to work.
            (interpreted as habitual; activity)
      c.   Kim writes the mayor.
            (interpreted as habitual; accomplishment)
      d.   Kim taps on the glass (once).
            (interpreted as habitual; semelfactive)
      e.   Kim notices the hole in my shoe.
            (interpreted as habitual; achievement)

— If the event can be found in the frame *What happened was . . .* , then it is not a state.
    (This test is not mentioned by Kearns 2000.)

(28) a.   ∗ What happened was Kim knew the capitals of all 50 states. (state)
      b.   What happened was Kim rode a bicycle. (activity)
      c.   What happened was Kim wrote the mayor. (accomplishment)
      d.   What happened was Kim tapped on the glass (once). (semelfactive)
      e.   What happened was Kim noticed the hole in my shoe. (achievement)

4.4   The bottom line in determining aspectual classification

The aspectual classification of a verb and its arguments can be determined in two ways:
— by making reference to the presence of the appropriate temporal properties defining
    an event of that aspectual type.
— by applying an aspectual diagnostic or a set of aspectual diagnostics that reveal
    the precise aspectual type of that event.

A CAUTION: Since the temporal properties of an event are not always so easy to identify or agree on, it can be tempting to resort to diagnostics; however, diagnostics are of limited value unless they are grounded in a theory of aspect.

5   Aspectual classification and agentivity

A QUESTION: Is there any interaction between the notion "agent" and aspectual classes?

Dowty (1979:Chapter 3) shows that agentivity crosscuts aspectual classes: there are agentive and nonagentive members of each class even though there may be tendencies within specific classes.

5.1 Agentivity and accomplishments, activities, and semelfactives

Accomplishments, activities, and semelfactives are often agentive, but there are nonagentive accomplishments, activities, and semelfactives.

(29) a. The sun has evaporated 4 gallons of water. (accomplishment)
     b. The ball rolled. (activity)
     c. The bell tolled. (semelfactive)

The name "accomplishment" suggests agency, though Mourelatos (1978) prefers "development".

5.2 Stativity and agentivity

• As Lakoff himself acknowledges, three of his purported stativity diagnostics really diagnose agentivity: the *force/persuade*, agent-oriented adverb, and imperative diagnostics.

Clearly nonstative verbs with inanimate—and hence necessarily nonagentive—subjects fail these three diagnostics, but not other ones:

(30) a. ∗ I persuaded the rock to roll down the hill.
     b. ∗ The rock rolled down the hill carefully/deliberately.
     c. ∗ Roll down the hill, rock!

(31) a. The rock was rolling down the hill.
     b. What the rock did was roll down the hill.

Why were these diagnostics included with the stativity diagnostics?
Stative verbs with animate subjects tend to be nonagentive, so stativity implies lack of agentivity. However, as shown, nonstativity does not imply agentivity: there are nonstative, nonagentive verbs.

• Are statives necessarily nonagentive? The answer is unclear.

— Stage-level—i.e. temporary—states may pattern as if they were agentive:

(32) a. Stand in the corner!
     b. My brother was deliberately (being) noisy.

— A subset of statives, experiencer subject psych-verbs, vary as to potential agentivity, and even those verbs that seem least agentive, pass agentivity diagnostics when negated (DiDesidero 1999).

(33) a. ? Blake studiously abhorred mushrooms.
     b. ? Blake deliberately feared snakes and insects.
     c. Blake deliberately admired the gallery's new acquisition.
     d. Don't fear snakes and insects!

5.3 Achievements and agentivity

Agent-oriented adverbs are odd with achievements (Smith 1991, Piñón 1997)

(34)   a.   ?? Kerry deliberately lost the game.

     b.   ?? Kerry deliberately won the lottery.

     c.   Kerry deliberately missed the target.

Achievements often do not describe controllable events; that is, the actual state change cannot be completely willed or controlled; possibly, one can deny control of the event with *accidentally*.

(35)   Kerry accidentally lost the game.

Why are achievements nonagentive?
Piñón (1997) proposes that intentional activities need to take time, so instantaneous events
     lack the necessary temporal extent to be intentional;
     e.g., agent-oriented adverbs modify an "earlier" unlexicalized stage in the causal chain.
In fact, achievements with an associated process are better with agent-oriented adverbs.

(36)   Casey deliberately arrived at 5:05pm.

6 Aspectual class shifts

Some verbs regularly show several aspectual classifications, often depending on their complements.

6.1 Activity-to-accomplishment shifts with manner of motion verbs

run is considered an activity verb, but can show an accomplishment interpretation even alone in appropriate contexts or when accompanied by a modifier which gives the event an endpoint.

(37)   a.   I ran. (telic when there is a set distance to run)

     b.   I ran a mile/to the lake. (telic)

6.2 Activity-to-accomplishment shifts with mass/count objects

• Certain verbs can be used to describe telic events when their objects are count NPs,
     but atelic events when their objects are mass NPs.

(38)   a.   Sam ate ice cream. (mass NP object; activity/atelic)

     b.   Sam ate an ice cream cone. (count NP object; accomplishment/telic)

(39)   a.   Cory wrote poetry. (mass NP object; activity/atelic)

     b.   Cory wrote a poem. (count NP object; accomplishment/telic)

The (temporal) boundedness of an event denoted by one of these verbs depends on the (physical) boundedness of the verb's object.

• Homogeneity, a property of mass, but not count, nouns carries over to these verb–object pairs and to activities and accomplishments more generally.

SUBDIVIDABILITY: Subparts are same as whole (can get tricky if subpart is too small)

(40) Nouns:

    a.   half of a pile of salt is still salt

    b.   half of an apple is not an apple

(41) Verb with mass/count objects:

    a.   half of a soup-eating event is still a soup-eating event

    b.   half of an apple-eating event is not an apple-eating event

(42) Activity vs. accomplishment verbs:

    a.   half of a run is still a run

    b.   drawing half a circle is not drawing a circle

ADDITIVITY or CUMULATIVITY: Comparable patterns extend to combining parts.

•Not all transitive verbs show this pattern: many are atelic, even with a count NP object.
That is, having a definite object does not guarantee telicity.

(43) a.   Dana pushed the cart. (count NP object; activity/atelic)

    b.   Brett stirred the batter. (count NP object; activity/atelic)

6.3 Semelfactive-to-activity shifts

• Semelfactives can naturally receive an interpretation where the relevant action is iterated, as well as one where the relevant action is performed only once. That is, *Kelly blinked* can be understood to describe one blink or a series of blinks.

• In Russian the two interpretations require distinct verb forms; semelfactives contain the suffix –*nu*, which is one reason that this class is recognized in the Russian literature on aspect.

(44) a.   prygnut' 'jump once'

    b.   prygat' 'jump more than once'

• Contrast other types of dynamic events, which require a "bare plural" argument (a plural NP without a determiner) to get an iterated interpretation.

(45) a.   Ashley noticed spots.

    b.   Inspectors noticed the spot.

    c.   Kim wrote letters.

• On the iterated interpretation semelfactives still describe a single situation,
   while iterated accomplishments/achievements are understood as describing multiple events.

• Iterated semelfactives are indistinguishable from activities with respect to aspectual diagnostics.
In a sense a semelfactive verb names a minimal sequence that need not be iterated, but may be.
   Contrast semelfactive *step* and *hit* with activity *walk* and *beat*.

Grammatically/semantically, semelfactive verbs pattern as activities, not achievements (Levin 1999).
— Semelfactives, like activities, are manner verbs, not result verbs.
— "Fillmorean" classes may include both semelfactives and activities.

(46)   SURFACE CONTACT VERBS: bang, batter, beat, hit, kick, pound, rap, slap, smack, tap, thump, thwack, whack, . . .

— Semelfactives, like activities, allow various kinds of nonsubcategorized objects,
   as in reflexive resultatives and *out*-prefixation.

(47)   Reflexive Resultative:

   a.   We curled up together like lost children who have finally **cried** themselves quiet. (K. Kijewski, *Katwalk*, St. Martin's, New York, 1989, p. 68)

   b.   "Don't use my name," I said, **blinking** myself awake. (L. Matera, *Havana Twist*, Simon and Schuster, New York, 1998, p. 56)

(48)   *Out*– Prefixation:

   a.   Here was a young girl who could **out-strut** anything on two legs. (G.F. Edwards, *A Toast Before Dying*, Doubleday, New York, 1997, 169)

   b.   Stockowski and Dixon were **outjumped** by bigger, stronger girls . . . (J.C. Cotey, "Parents Enjoy Sweat Rewards", *St. Petersburg Times*, July 10, 1999, p. 7C)

A NOTE ON THE APPLICATION OF ASPECTUAL DIAGNOSTICS TO SEMELFACTIVES:
As iterated semelfactives are indistinguishable from activities, they would be expected to pattern like them with respect to aspectual diagnostics. For example, both are found with *for three minutes* and for both, whenever *X is VPing* is true, then *X VPed* or *X has VPed* is true. The key to determining whether a diagnostic is picking out an activity or an iterated semelfactive is the absence or the presence of an iterated interpretation. On their noniterated interpretation, semelfactives are punctual and would be expected to pattern overall like achievements, which are also punctual. For example, both show "onset" repair readings with the *in five minutes* or the *It took five minutes* tests. But achievements differ from semelfactives in not allowing iterated interpretations naturally. *Ashley noticed the spot* can report on only one instance of noticing the spot and not on multiple instances.

7 Aspectual shifts and argument alternations

Certain argument alternations have been revisited in the context of aspect, with van Hout (1996) proposing alternations represent aspectual class shifts (i.e. event-type shifts).

• Alternations between direct object and oblique realizations reflect alternations
   between telic and atelic uses of verbs;

(49)   a.   Kelly ate the sandwich. (telic)

          b.   Kelly ate at the sandwich. (atelic)

• Alternate choices of direct object reflect alternate choices of the argument which determines the telicity of the sentence.

(50)   a.   The farmer loaded the truck with the hay.

          b.   The farmer loaded the hay on the truck.

8 Analyses of telicity

Most analyses of telicity focus on accomplishments and try to get at the intuition that accomplishments in some sense describe "complex" events.

Two analyses of telic predicates:
— Telic predicates are analyzed in terms of result states.
— Telic predicates are analyzed in terms of an argument-to-event homomorphism.

8.1 Analyses in terms of result states

• Based on the discussion in Dowty (1979, Chapter 2), many researchers equate the notions "accomplishment" and "causative", among them Sybesma (1992), Van Valin and colleagues (see Foley & Van Valin 1984; Van Valin 1990; but contrast Van Valin & LaPolla 1997).

This move is appealing because the notion "accomplishment", given its temporal grounding, provides a way of understanding the nature of complex events and the hard-to-pin-down notion of "causative event".

• This move is made possible because Dowty (1979) merges two traditions: the lexical decompositions of generative semantics and the logical analysis of predicate types in the Vendler tradition. The two traditions are actually concerned with different sets of phenomena.

—Generative semantic decompositions are motivated by lexical entailments, shared selectional restrictions, and the existence of systematic morphological correspondences between word classes.

(51)   a.   The soup was cool.

          b.   The soup cooled.
                  'It come about that the soup was cool.'

          c.   John cooled the soup.
                  'John caused it to come about that the soup was cool.'

(52)   a.   The soup/stove/*innocence/*accident was cool.

          b.   The soup/stove/*innocence/*accident cooled.

          c.   John cooled the soup/stove/*innocence/*accident.

— Vendler classes are based on the distribution of temporal modifiers and of tenses (e.g., simple present, progressive) and entailments (e.g., progressive to perfect).

• The link which brings the two traditions together:

(53) But every performance must be ultimately the bringing about of a state ... One performance
      differs from another in accordance with the differences between states of affairs brought
      about: performances are specified by their ends. (Kenny 1963:178)

This motivated the introduction of the primitives BECOME and CAUSE in Dowty (1979), which
combine with result states to create "inchoative" (e.g., intransitive *cool*) and "causative" verbs (e.g.,
transitive *cool*).

(Dowty's (1979) goal is capturing aspectual properties rather than argument realization regularities.)

• Many have adopted the reinterpretation of the predicate decompositions of generative semantics
as reflecting the Vendler aspectual classes in Chapter 2 of Dowty (1979), including Foley & Van
Valin (1984) (but see Dowty's own discussion in Chapter 3).

8.1.1 Challenges for the result state analysis

However, although the primitives BECOME and CAUSE have been motivated by the generative se-
manticists, subsequent studies affirm that they are independent of temporal properties (Abusch 1986;
Hay, Kennedy & Levin 1999; Pustejovsky 1991; Van Valin & LaPolla 1997).

• *Not all causatives are accomplishments (or even telic)*

Causation cannot be reduced to any aspectual notions (McCawley 1976).
      Verbs of every aspectual type have related causatives (Van Valin & LaPolla 1997),
      and specifically, causatives of certain atelic non-change of state verbs are also atelic.

(54) a.   Robin flew a kite for an hour/#in an hour.
      b.   Pat bounced the ball for ten minutes/#in ten minutes.

• *Not all accomplishments are causatives*

(i) Manner of motion verbs with goal phrases, as in *Kim jogged to the station*.

Conceptually, two subevents are identifiable in such examples, and some have claimed they are
causally related (Croft 1991; Van Valin 1990), though see Van Valin & LaPolla (1997).

(55) a.   The boat sailed into the cave. (Croft 1991:160, (21))
            ('the activity of sailing *causes* the motion to come about')
      b.   Susan ran to the house.
            [**run**′(Susan)] CAUSE [BECOME **be-at**′(house, Susan)]
            (Van Valin 1990:224, (3d))

Reasons for rejecting a causative analysis:

— The syntax suggests a causative analysis of such examples is inappropriate:
      Observationally, prototypical causatives are transitive, and, in fact, RH&L (1998)
      argue for a theory of argument realization that requires causatives to be transitive.

— The subevents are necessarily temporally dependent (i.e., they unfold at the same rate),
    while the subevents of true causatives need not be (L&RH 1999).

(56)   a.   The widow murdered the old man by putting arsenic in his coffee.
             (The act of putting arsenic in the coffee doesn't extend to the point of death.)

       b.   Casey's persistent banging broke the window.
             (The banging may have been protracted, but the breaking is punctual.)

       c.   Terry shocked Sandy by deciding to run for office.
             (Terry's decision could have been made long before Sandy hears of it.)

(ii) Verbs of consumption with count noun objects, as in *Sandy ate the mango*
    (and, presumably, also verbs of creation).

These verbs show variable telicity: they are atelic when objectless or when taking a nonbounded
object, but telic when taking a bounded object.

(57)   a.   Kelly is eating. ⇒ Kelly has eaten. (atelic)

       b.   Kelly is eating rice. ⇒ Kelly has eaten rice. (atelic)

       c.   Kelly eating a plum. ⇏ Kelly has eaten a plum. (telic)

The equation of causatives and accomplishments would support a causative analysis of these verbs
when telic; however, there is evidence against a causative analysis:

— These verbs don't pattern with change of state verbs, such as *break*, for which a causative
    analysis is uncontroversial and assumed whether their objects are bounded or not.

— Verbs of consumption show a necessary temporal dependence between their perceived
    subevents (e.g., in eating, the chewing/ingesting and the consuming unfold together);
    this dependence is not characteristic of true complex events.

It seems best to assign verbs of consumption (and creation) a simple event structure, with bound-
edness of the event determined by boundedness of the direct object—or more accurately, a spatial
property of the object, its volume. (See also Van Valin & LaPolla 1997.)

● *"Degree achievements": Causation and telicity are independent*

Degree achievements (e.g., *cool, lengthen, widen*) display ambiguous telicity
    (Abusch 1986; Bertinetto & Squartini 1995; Dowty 1979; Kennedy & Levin 2008).
As shown by Hay, Kennedy, & Levin (1999), this variability is independent of transitivity.

(58)   a.   The soup cooled for an hour. (atelic)

       b.   The soup cooled in an hour. (telic)

(59)   a.   The cook cooled the soup for an hour. (atelic)

       b.   The cook cooled the soup in an hour. (telic)

Specifically, these verbs are transitive when causative and intransitive when not,
    and both transitive and intransitive degree achievements may be telic or atelic.

8.1.2 A second form of result state analysis

- There is a second type of result state analysis which does not privilege causative verbs but takes
  telic events to involve a TRANSITION from one event to a second,
  often from an atelic process to a result state (Pustejovsky 1991, 1995; van Hout 1996).

- Its core empirical domain is different: Combinations of a verb and a delimiting object or XP:
  e.g., *eat an apple*, *draw a picture*, *run to the store*, *push a cart to the store*,
  with the verb denoting a process and the object or XP adding a result.

- Noteworthy property: Achievements, including noncausative change of state verbs, are
  also transitions (between two states) and, hence, complex events.

8.2 Analyses in terms of argument-to-event homomorphisms

Result state analyses of telic predicates have been superseded by analyses based on argument-to-event homomorphisms (Dowty 1991; Krifka 1989, 1992; Ramchand 1997; Tenny 1992, 1994).

8.2.1 The notion "incremental theme"

- INCREMENTAL THEME (Dowty 1991): The NP that determines the telicity of certain events:
  Specifically, the progress of an event can be determined from its incremental theme.

More formally, the incremental theme is involved in defining a homomorphism from properties of an argument to properties of the event it participates in.

In (60) *the plum* is the incremental theme since every subpart of the plum that is eaten corresponds to a subpart of the event of eating that plum. When half the plum is eaten, the event is half over; when the plum is entirely consumed, the event is over.

(60)   Taylor ate the plum.

- The nature of the incremental theme determines the telicity of the VP:
  — When the incremental theme is physically bounded (e.g., a count NP such as *a plum*
    or *an ice cream cone*), then the event itself is temporally bounded (i.e., telic)
  — When the incremental theme is not physically bounded (e.g., a mass NP such as *soup*
    or *ice cream*), then the event itself lacks a temporal bound (i.e., atelic).

(61)   a.   Sam ate ice cream. (mass NP object; activity/atelic)

         b.   Sam ate an ice cream cone. (count NP object; accomplishment/telic)

(62)   a.   Cory wrote poetry. (mass NP object; activity/atelic)

         b.   Cory wrote a poem. (count NP object; accomplishment/telic)

- Why the label "incremental theme"? These NPs often bear the semantic role "theme" and
  are physically incrementally affected by the event described by the verb.

- ANOTHER PERSPECTIVE: The plum may be said to "measure out" the event (Tenny 1994).

This viewpoint allows Tenny to draw analogies from verbs like *eat* and *build* to change of state and motion verbs, permitting a uniform account of telicity with all these verb types; more in Lecture 5.

8.2.2 Incremental theme and telicity are independent

Events may have an incremental theme without being telic (bounded) (Krifka 1992; Ramchand 1997; see also Jackendoff 1996; contra Dowty 1991:607).

EVIDENCE: Degree achievements (Hay, Kennedy & Levin 1999)
These have an incremental theme—what HK&L call a "difference value"—and their telicity
    depends on whether it is bounded or not.

8.3 The empirical domains of the analyses of telicity

The class of accomplishment verbs is quite heterogeneous, and depending on their interests and goals, researchers have focused on distinct subclasses, perhaps explaining the two types of analyses.

Specifically, the analyses differ as to what are taken as the "core" accomplishments:
— Result state analyses: Causative verbs of change of state (e.g., Dowty 1979)
— Argument-to-event homomorphism analyses: Creation and consumption verbs

9 Appendix: A feature definition of aspectual classes

Several researchers (Kearns 2000; Olsen 1994, 1997) have tried to characterize the aspectual classes in terms of a small set of features.

Although this approach is probably too simplistic to really explain all facets of aspectual behavior, it is useful for getting a basic grasp of the aspectual classes and the relations between them.

9.1 An instantiation of the feature approach

A POSSIBLE SET OF DEFINING FEATURES:
    DYNAMIC (another label for Kearns' "change")
    DURATIVE
    TELIC (roughly Kearns' "bound")

(63)   A feature characterization of aspectual classes (e.g., Olsen 1994, 1997):

	Dynamic	Durative	Telic	
Accomplishment	+	+	+	*draw, build*
Activity	+	+	0	*run, chat, play, gurgle*
Achievement	+	0	+	*notice, recognize, win*
Semelfactive	+	0	0	*jump, hit, tap, cough*
Temporary State	0	+	+	*be sick/available*
(Permanent) State	0	+	0	*be tall, know, contain*
[UNATTESTED]	0	0	+	
[UNATTESTED]	0	0	0	

In this sample classification the features are defined PRIVATIVELY. The use of such features better captures the aspectual potential of verbs with multiple aspectual classifications since it allows for certain properties to be underspecified and to be more fully specified in a larger context.

NOTES ON THE TABLE:

• The label "dynamic" might be preferred to Kearns' "change" since the associated feature is relevant to a notion of change that is broader than change of state or location.

• The label "telic" corresponds roughly to Kearns' "bound", but is preferable since unlike Kearns' "bound", it is applied only to culminations—transitions between states—and not simply to boundedness that arises by ceasing to do something.

• Kearns only includes the most commonly discussed aspectual classes in her table (7) on p. 204; the table above accounts for all the possible feature combinations.

• The two unattested feature combinations are probably unattested because they would give rise to types of events that are "unimaginable" in the actual world.

• Usually, the term "state" is used to refer to permanent (i.e., individual-level) states, rather than temporary (i.e., stage-level) states, such as *be sick* or "interval" statives like *sit* and *stand*. (Compare the temporary state use in *The speaker stood on the podium* to the permanent state use in *The Washington Monument stands on the Mall*.)

• It is unclear that the feature [telic] is the way to capture the permanent/temporary state distinction.

• Kearns' table does not include semelfactives, but the discussion on p. 204 suggests that Kearns would assign semelfactives the same features as achievements, departing from the table above. Kearns' assignment of features is motivated by her broader interpretation of "bounded". The assignment of features in the table above is preferable to Kearns' since semelfactives, unlike achievements, do not involve transitions between states and since this assignment makes semelfactives more like activities, a desirable property, see section 9.2.

9.2 The advantages of privative features

Privative features allow MONOTONICITY to be maintained:
    additional linguistic material adds meaning, but does not take it away.

• Naturally captures activity-to-accomplishment shifts:

The accomplishment interpretations of *run* in (37), repeated in (64), are not unexpected if *run* is [0telic] and modifiers can give this feature a plus value.

(64)   a.   I ran. (telic when there is a set distance to run)
        b.   I ran a mile/to the lake. (telic)

• Naturally captures semelfactive-to-activity shifts:

The existence of iterated interpretations of semelfactives discussed in section 6.3 is not surprising if semelfactives differ from activities only in being [0durative], and the iteration basically contributes the feature [+durative], the value associated with activities.

(65)   The distraught visitor knocked. (once or repeatedly)

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