

# Events

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## 1 Why Events? The Davidsonian proposal

- Adverbs

- (1) a. Herb buttered the bread.  
b.  $\text{butter}(\text{Herb}, b)$   
c. Herb slowly buttered the bread.  
d. What do we add?

Straw man proposal:  $\text{slowly}(\text{butter})(\text{Herb}, s)$

But what does this *straw proposal mean*? The truth conditions aren't obvious....

- e. Davidson's entailment:

Herb slowly butter the salami  $\longrightarrow$  Herb butter the salami

Straw man proposal does not derive this entailment.

- Events: An answer

$\exists e \text{butter}(e, \text{Herb}, s) \wedge \text{slow}(e)$

Notice we immediately get Davidson's entailment:

$\exists e \text{butter}(e, \text{Herb}, s) \wedge \text{slow}(e) \longrightarrow$   
 $\exists e \text{butter}(e, \text{Herb}, s)$

Because in general:

$$p \wedge q \rightarrow q$$

Example

John smokes and Harry drinks  
→  
Harry drinks

But there still had better be independent motivation for events....

- Counting

- (2) a. The rock struck the vase three times.  
b. What are there 3 of?

[3 X ??]strike( $r, v$ )

- c. Sue visited Jane 3 more times than Harry did.  
d.

$m$  : The number of times Harry visited Jane  
 $n$  : The number of times Sue visited Jane  
 $n = m + 3$

What kind of entities are we counting in 'A did B M times'?

- Causality

- (3) Herb's pouring the poison into the tank caused the city's water supply to be poisoned.

What kind of entities stands in the causality relation? What kind of entity causes something? What kind of entity is caused?

- Seeing

- (4) a. Mary saw [the rock strike the vase]  
b. see(Mary, [strike( $r, v$ )])

What kind of entity stands in the seeing relation to Mary?

Notice the difference between an example like (4) and (5):

- (5) a. Mary believes the rock struck the vase.

b. believe(Mary, [strike( $r$ ,  $v$ )])

What kind of entity stands in the believing relation to Mary?

• and other perceptions

- (6) a. Herb felt the earth move.  
b. Herb heard the plane land.

- Answer: All these are events

What kind of entities are we counting in ‘A did B M times’? Events.

What kind of entities stands in the causality relation? What kind of entity causes something? What kind of entity is caused? Events

What kind of entity stands in the believing relation to Mary? An event

What kind of entities are perceived (seen, heard)? Events

- The Davidsonian treatment extends to an arbitrary number of modifiers...
  - (7) John buttered the bread slowly in the kitchen at midnight with a knife.

## 2 Issues and Counterexamples to Davidsonian Entailment Pattern

The (a) sentences do not entail the (b) sentences

- (8)
  - a. John partially cleaned the house.
  - b. John cleaned the house.
- (9)
  - a. Red stripes covered the shirt from the collar to the top of the pocket.
  - b. Red stripes covered the shirt.
- (10)
  - a. John allegedly shot the mayor.
  - b. John shot the mayor.
- (11)
  - a. Possibly John shot the mayor
  - b. John shot the mayor

These can’t be treated simply as conjoined relations on a Davidsonian treatment. So we haven’t solved the problem of ALL optional obliques and adverbials.

Truth conditional challenge

Can we really explain the truth conditions of

slow(*e*)

for all events independent of what kind of event it is?

- (12)
- a. John slowly mounted the stairs.
  - b. The leaves slowly turned color.
  - c. John slowly realized the truth.
  - d. ? John slowly knew the truth.
  - e. John slowly built a 3-story house.
  - f. John spoke slowly.
  - g. ? John slowly denied that he had visited Mary.

### References

Davidson, D. 1967. 'The Logical Form of Action Sentences.' In Rescher, N. *The Logic of Decision and Action*. Pittsburgh: University of Pittsburgh Press. Reprinted in Davidson, D. 1980. *Essays on Actions and Events*. Oxford: Oxford University Press.

## 3 NeoDavidsonian Treatment: Castaneda

the Davidsonian entailment again

- (13)
- a. I flew my spaceship to the morning star.
  - b. I flew to the morning store.
  - c. My spaceship was flown to the morning star.
  - d. I flew.
  - e. My spaceship was flown.

Entailment pattern

1. (13a) entails (13b)-(13e)
2. (13b) optionality of object: just like the obliques. When missing you get a sentence entailed by (13a)
3. (13c) optionality of subject: just like the obliques. When missing you get a sentence entailed by (13a)

4. (13d) optionality of object and oblique: just like the obliques. When missing you get a sentence entailed by (13a)

#### Conclusion

Subject and object must be treated parallel to the others.

- (14) a. I flew my spaceship to the morning star.  
b. Neo-Davidsonian

$$\exists e[\text{fly}(e) \wedge \text{subj}(e, I) \wedge \text{obj}(e, \text{my ship}) \wedge \text{to}(e, \text{morn star})]$$

- c. Davidsonian

$$\exists e[\text{fly}(e, I, \text{my ship}) \wedge \text{to}(e, \text{morn star})]$$

- d. My spaceship was flown to the morning star.

$$\exists e[\text{fly}(e) \wedge \text{obj}(e, \text{my ship}) \wedge \text{to}(e, \text{morn star})]$$

What does ‘obj’ really mean?

The Davidsonian treatment is called a **decomposition** of the verbal predicate or (less often) a **sub-atomic treatment**

- (15) a. Davidsonian

$$\exists e \text{give}(e, x, y, z)$$

- b. Neo-Davidsonian

$$\exists e[\text{give}(e) \wedge \text{subj}(e, x) \wedge \text{obj}(e, y) \wedge \text{to}(e, z)]$$

#### References

Castaneda, Hector Neri. 1967. Comments. In Rescher, N. *The Logic of Decision and Action*. Pittsburgh: University of Pittsburgh Press.

## 4 Optionality: Definite and indefinite missing arguments

The Davidsonian analysis needs to existentially quantify when an argument is optional

- (16) a. Brutus stabbed Caesar.

$$\exists e[\text{stab}(e, b, c)]$$

- b. Brutus stabbed.

$$\exists e, x[\text{stab}(e, b, x)]$$

The Neo-Davidsonian analysis just leaves out a conjunct

- (17) a. Brutus stabbed Caesar.

$$\exists e[\text{stab}(e) \wedge \text{subj}(e, b) \wedge \text{obj}(e, c)]$$

- b. Brutus stabbed.

$$\exists e[\text{stab}(e) \wedge \text{subj}(e, b)]$$

Different predictions: (16b) representation is WRONG! (17b) representation is RIGHT!

- (18) a.

Brutus stabbed  $\not\rightarrow$  There is someone Brutus stabbed

- b. Brutus might have missed!
- c. Fred kicked the chair.
- d. Fred kicked.
- e. Fred kicked  $\not\rightarrow$  There is something that Fred kicked

Let's call the inference pattern with *stab* the Parsons (1990) pattern. Other verbs show the predicted Davidsonian pattern

- (19) a. Fred ate.

- b. Fred ate  $\rightarrow$  There is something that Fred ate

Similarly, there are obliques that follow a Davidsonian entailment pattern...

- (20) a. Brutus stabbed Caesar  
 b. Brutus stabbed Caesar  $\rightarrow$   
 There is something that Brutus stabbed Caesar with.

Observation The Parsonian analysis is simpler for the Parsonian inference pattern. It seems to be a tie for the Davidsonian pattern:

- (21) a. Brutus ate  
 $\exists x[\text{eat}(e) \wedge \text{subj}(e, b) \wedge \text{obj}(e, x)]$   
 $\exists x[\text{stab}(e, b, x)]$

There are optional elements that behave like definites or pronouns

- (22) a. # John found a sandwich and ate. [reading: he ate the sandwich]  
 b. John found a sandwich and ate it.  
 c. John entered a contest and won. [reading: he won the contest]  
 d. There was a job at Xerox and John applied. [reading: he applied for the job at Xerox]

## 5 Thematic Roles

A variant of the NeoDavidsonian analysis

- (23) a. Brutus stabbed Caesar with a knife  
 $\exists e[\text{stab}(e) \wedge \text{agent}(e, b) \wedge \text{patient}(e, c) \wedge \text{with}(e, k)]$

There are issues about these new **labels**, called **thematic roles**. Can the notion agent be assigned a consistent set of semantic features (entailments)?

- (24) a. Jubal left early.  
 b. Jubal did not leave early.  
 c.  
 $\neg \exists e[\text{leave}(e) \wedge \text{agent}(e, j) \wedge \text{early}(e)]$   
 d. Inadvertently, Jubal left early and missed the speeches. [volitionality]  
 e. Deliberately, Jubal left early and missed the speeches.

### Assignment

1. Find 3 transitive verbs that fit the Parsonian entailment pattern (other than *stab*, *kick*). Avoid violence if possible.
2. Find 3 transitive verbs that fit the Davidsonian entailment pattern (other than *eat*) in which the existence of an entity filling the direct object role is entailed when the direct object is omitted. Avoid dietary excess if possible. Now find 3 obliques which are existentially entailed, like the instrumental in (20).
3. Find 3 verbs that have definitely omissible objects or obliques (other than *win*). Avoid competitiveness if possible.

## References

Parsons, T. 1990. Comments. In Rescher, N. *Events in the Semantics of English*. Mabrbridge, MA: MIT Press.

# 6 Aspectual Categories

## 6.1 Four Aspectual Classes

- States: Homogenous, unbounded, durative
- (25)
- a. Brigitte is taller than Danny/tall/angry/angrier than Sue/...
  - b. The light is on/off/out/broken/..
  - c. Danny knows the answer/that you're coming/Fred./
  - d. Coal and Coke are different/similar/a good combo/in competition/complementary tastes....
  - e.  $2 + 2$  is 4/ The sum of the first  $n$  odd numbers is  $n$  squared....
  - f. The cat asleep/The boat is adrift./The door is ajar.
  - g. Your umbrella is in the hall/under the oak tree/out by the red bench/...

Homogeneous	One randomly chosen moment identical to next
Unbounded	No natural boundaries: culminations, points of change
Durative	Take up time

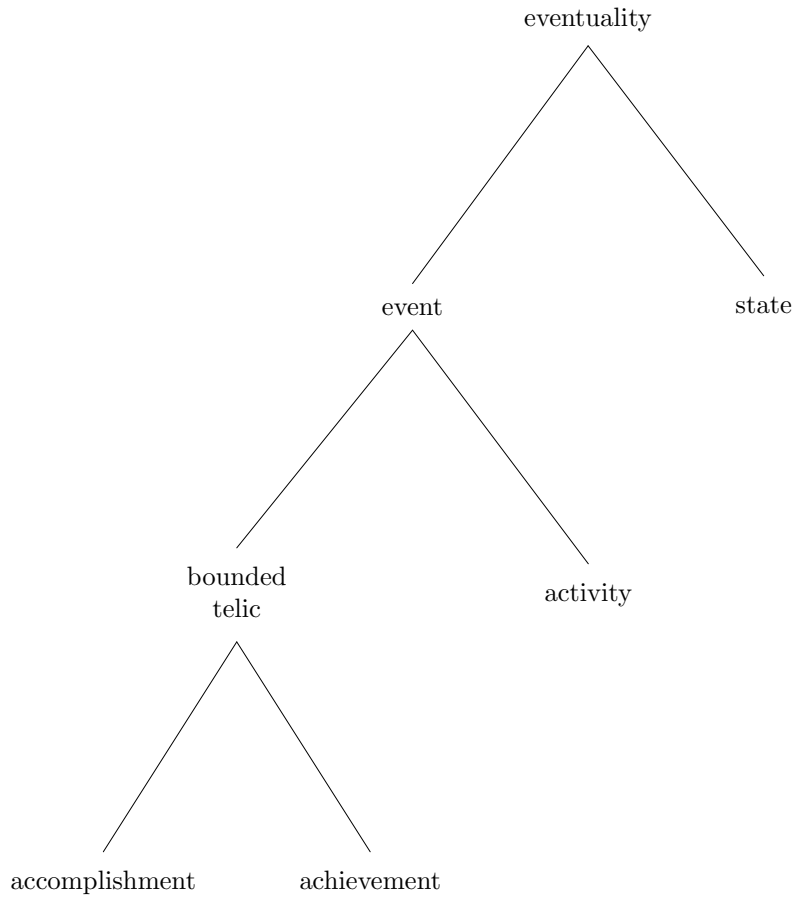


Figure 1: The tree of eventualities

- Processes or activities

- (26)
- a. John walked in the garden.
  - b. The leaves fluttered in the wind.
  - c. Clive pushed a supermarket trolley.
  - d. They chatted.
  - e. Sue swam in the river.
  - f. The guests played cards.

Heterogeneous    Change from one moment to next

Unbounded        No natural boundaries: culminations, points of change

Durative          Take up time

- Accomplishments: Processes that lead to end points

- (27)
- a. John built a house.
  - b. John drew a circle.
  - c. Marcia ate an apple.
  - d. Sue swam a mile.
  - e. We did the dishes.
  - f. The incumbent made a speech.

Heterogeneous    Change from one moment to next

Bounded          A natural boundary: culminations, points of change

Durative          Take up time

Note: events that have sharply defined beginnings or onsets are also called bounded.

- Achievements

- (28)
- a. Clive realized that Deirdre was gone.
  - b. He recognized her.
  - c. They reached the summit.
  - d. John noticed a mark on the wallpaper.
  - e. Wilbon lost his temper.

Heterogeneous Describe an instant of change  
 Bounded Cross a natural boundary: a point of change  
 Non-Durative Take place in an instant

(29) *Summarizing:*

	<b>Change</b>	<b>Duration</b>	<b>Bound</b>
State	-	+	-
Achievement	+	-	+
Activity/Process	+	+	-
Accomplishment	+	+	+

Note: Boundedness also called telicity

(30) *Extending the concept:*

Boundedness is also sometimes used with respect to the count mass distinction with nouns

Countable things are bounded

Mass nouns are unbounded.

more on this later when we talk about tests

- Semelfactives (Slavic aspect): V describes a sequence of identical subevents, a single one of which counts as an instance of V.

Flickering describes a series of on/off alternations of a light source. A single on/off alternation counts as a flicker.

→

Flickering is semelfactive.

Running describes a series of steps but a single step does not count as an event of running.

→

Running is not semelfactive.

Culminations available, but no process leading up to them, like iterated achievements...

- (31) a. Jubal rapped the table.
- b. Sue blinked.
- c. Heather coughed.
- d. The light flashed.
- e. The cloth fluttered. (a single flutter okay?)
- f. Harry waved.

## 6.2 Tests: Thank heaven

- *In frame* adverbials

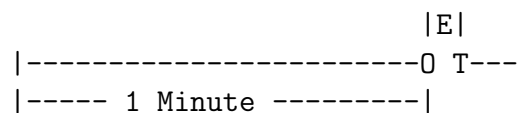
- (32) *Accomplishment: duration readings*
  - (a) He ate the pie in 60 seconds.
  - (b) They built the barn in two days.
  - (c) John walked to town in 45 minutes.

- (33) *Achievement: onset readings*
- (a) He recognized her in a minute of so.
  - (b) John noticed the marks in a few minutes at most.
  - (c) Wilbon lost his temper in 3 days.
- (34) *States: onset readings*
- (a) The couple were happy in two years/will be happy in two years.
  - (b) The room was sunny in an hour/will be sunny in an hour.
  - (c) John knew him well in five years/will know him well in five years.
- (35) *Activity: no reading*
- (a) # They walked in the park in half an hour.
  - (b) # People waiting to buy tickets chatted in 5 hours.
  - (c) # Jubal pushed a supermarket trolley in 60 seconds.

*Event duration versus Event onset delay*

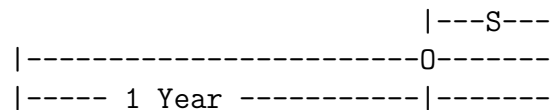
Achievement: onset delay

He noticed her in a minute.



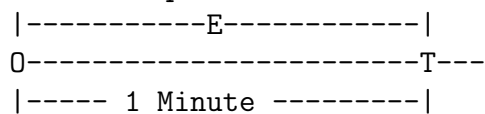
State: onset delay

They were happy in a year.



Accomplishment: Duration

He ran a quarter-mile in a minute.



- (36) *Semantically related test: It took ...*
- (a) It took a minute for him to notice her. [onset delay for achievement]
  - (b) It took a year for them to be happy. [onset delay for state]
  - (c) It took a minute for him run a quarter mile. [duration for activity]
  - (d) ? It took half an hour to walk in the park.
  - (e) ? It took 5 hours for people waiting to buy tickets to chat.
  - (f) ? It took 60 seconds for Jubal to push a supermarket trolley.
- (37) *Support for the idea of onset readings*
- (a) He began pushing the supermarket trolley at 3:01. He stopped pushing the supermarket trolley at 3:02.
  - (b)  $\nrightarrow$  He pushed the supermarket trolley in 60 seconds.
  - (c) He arrived at 3:01. He pushed the supermarket trolley in 60 seconds.
  - (d)  $\leftrightarrow$  He arrived at 3:01. He began pushing the supermarket trolley in 60 seconds.
- (38) *Future tense: onset reading throughout*
- (a) They will walk in the park in half an hour.
  - (b) People waiting to buy tickets will chat in 5 hours.
  - (c) Jubal will push a supermarket trolley in 60 seconds.
  - (d) Jubal will walk a mile in 15 minutes.[ambiguous! Duration or onset]
- (39) *Summary: in frame adverbials*
- (a) Accomplishment: duration reading always possible (even in Future)
  - (b) Activity: duration reading ungrammatical (rescue: Activity  $\rightarrow$  Accomplishment)  
That evening he prayed in 10 minutes. (= said his evening prayers in 10 minutes)
  - (c) State: duration reading ungrammatical (rescue: onset reading)
  - (d) Achievement: duration reading ungrammatical (rescue: onset reading)

- *For* frame adverbials
  - (40) *Activities, States: For time frame adverbial*
    - (a) He drew for an hour.
    - (b) He walked in the park for an hour.
    - (c) He smiled for an hour.
    - (d) They were in Spain for two weeks.
    - (e) He loved her for almost two weeks. Then, one morning at Starbuck's, ...
    - (f) # He was intelligent for a year. [individual level property, a state that tends to be permanent.]
  - (41) *Accomplishment: For time frame adverbial*
    - (a) # He drew the circle for 60 seconds.
    - (b) # John walked to town for 45 minutes.
    - (c) # They built the barn for two days.
  - (42) *Achievement: For time frame adverbial*
    - (a) ? He recognized her for a minute.
    - (b) ? John noticed the marks for a few minutes.
    - (c) John noticed the marks for a few months. (iterated)
    - (d) # Wilbon reached the summit for half an hour.
  - (43) *Iterated readings: Repair reading for accomplishments*
    - (a) She painted the view from her window for five years.
    - (b) The gang painted the bridge for ten years.
  - (44) *Semelfactives: Iterated readings*
    - (a) John rapped the table for a minute.
    - (b) Jubal blinked for a minute.
    - (c) John coughed for an hour.
    - (d) The light flashed for 10 minutes.
  - (45) *Summarizing:*
    - (a) *In* frame adverbials are compatible with bounded events;  
*For* frame adverbials are compatible with unbounded events.

- (b) Iteration is (often) a repair reading that reinterprets a bounded event as unbounded. However, with semelfactives it isn't a repair reading; it seems to be a normal lexical property. 0
  - (c) Onset readings are repair readings that reinterpret unbounded events (states, activities) as bounded.
- Tense test
    - (46) *Non statives habitual in simple present*
      - (a) Heath bikes to work.
      - (b) Harry feeds the dogs.
      - (c) Sue writes with a fountain pen.
    - (47) *Statives true present reading in simple present*
      - (a) Heath knows Sue.
      - (b) Harry loves the abacus
      - (c)  $2 + 2$  is 4.
  - Progressive test
    - (48) *Statives unhappy in progressive*
      - (a) # Jubal is knowing French.
      - (b) # This box is containing all my worldly goods.
      - (c) # Jubal is being in Frankfurt.
    - (49) *However, some get 'temporariness' reading*
      - (a) We live in London.
      - (b) We are living in London.
      - (c) The statue stands at the entrance to the park.
      - (d) The statue is standing at the entrance to the park.
      - (e) John's house sits at the top of the hill.
      - (f) John's house is sitting at the top of the hill. [hurricane?]
      - (g) My bag of groceries is sitting at the top of the hill.

## 7 Aspectual Categories and Boundedness

- Boundedness in events and nouns: Boundedness is property of properties of things and events, not of the things or events themselves

- (50) *Misleading fact*
  - (a) Water is continuous, flowing
  - (b) Soldiers are discrete countable

- (51) *Alternative conceptualizations*
  - (a) water: A glass of water
  - (b) water: a gallon of water
  - (c) water: a drop(let) of water
  - (d) infantry: footsoldiers
  - (e) furniture: pieces of furniture (French *meuble*)
  - (f) foliage: leaves
  - (g) gravel: pebbles
  - (h) kindling, firewood, timber: sticks, branches, logs

1. Quantization for individuals: Quantized = NonBounded (Krifka 1989, 1992, 1998)

- (52) *A property true of x...*
  - (a) ... but not true of any subparts of individual x is **quantized**
  - (b) Examples

Quantized	Non Quantized
3 boys	boys
3 gallons of water	water
the boys	some boys
a piece of equipment	equipment
a block of cheese	cheese
an armful of cake	cake
a cord of wood	wood
a truckload of coal	coal

2. Quantization for events

- (53) *A property true of event x...*
  - (a) ... but not true of any subevents of event x is **quantized**
  - (b) Examples

Quantized	Non Quantized
running a mile	running in the park
drawing a circle	drawing
eating sandwich	eating
beat the eggs	beat the eggs to a froth
pul the rope	pull the rope off the hook

3. Combining the two

Quantized	Non Quantized
running a mile	running miles
drawing a circle	drawing circles
eating sandwich	eating sandwiches

- (54) a. He ran a mile in 4 minutes.  
 b. # He ran miles in 4 minutes.  
 c. He drew a circle in 5 seconds.  
 d. # He drew circles in 5 seconds.  
 e. He ate a sandwich in 12 seconds.  
 f. # He ate sandwiches in 12 seconds.
- (55) *Iteration and Quantization*  
 (a) He signed the check all night. [weird iterative interpretation]  
 (b) He signed checks all night. [iterative but not weird]  
 (c) # He finished his book until November.  
 (d) He finished books until November.

## References

- Krifka, Manfred. 1989. Nominal reference, temporal constitution and quantification in event semantics. In R. Bartsch, J. van Benthem, and P. van Emde Boas (Eds.), *Semantics and Contextual Expressions*. Dordrecht.
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