The semantics of Aspect

Berit Gehrke

LOT winter school, Tilburg, January 2020

Slides available via website (under teaching):
`www.beritgehrke.com/`

What is 'Aspect'?

What is 'Aspect'?

- Standard description:
  Aspect deals with **the internal temporal constituency of an event**.

What is 'Aspect'?

- Standard description:
  Aspect deals with **the internal temporal constituency of an event**.

Two-component approach to aspect:

- **Inner aspect**
  - *aka* lexical / predicational / situation aspect, Aktionsart ('Western' terminology)
  - (a)telic, (non-)resultative, (non-)change-of-state, (non-)atomic ... (non-)durative ... static/dynamic ...

What is 'Aspect'?

- Standard description:
  Aspect deals with **the internal temporal constituency of an event**.

Two-component approach to aspect:

- **Inner aspect**
  - *aka* lexical / predicational / situation aspect, Aktionsart ('Western' terminology)
  - (a)telic, (non-)resultative, (non-)change-of-state, (non-)atomic ... (non-)durative ... static/dynamic ...
  - Predicates or verbs?

What is 'Aspect'?

- Standard description:
  Aspect deals with **the internal temporal constituency of an event**.

Two-component approach to aspect:

- **Inner aspect**
  - *aka* lexical / predicational / situation aspect, Aktionsart ('Western' terminology)
  - (a)telic, (non-)resultative, (non-)change-of-state, (non-)atomic ... (non-)durative ... static/dynamic ...
  - Predicates or verbs?
- **Outer aspect**
  - *aka* grammatical / morphological / viewpoint aspect
  - (Im)perfective (e.g. Slavic), (Non-)Progressive (e.g. English, Spanish), Aorist vs. Imperfect (e.g. Bulgarian, French, Spanish), (Perfect) ...

What is 'Aspect'?

- Standard description:
  Aspect deals with **the internal temporal constituency of an event**.

Two-component approach to aspect:

- **Inner aspect**
  - *aka* lexical / predicational / situation aspect, Aktionsart ('Western' terminology)
  - (a)telic, (non-)resultative, (non-)change-of-state, (non-)atomic ... (non-)durative ... static/dynamic ...
  - Predicates or verbs?
- **Outer aspect**
  - *aka* grammatical / morphological / viewpoint aspect
  - (Im)perfective (e.g. Slavic), (Non-)Progressive (e.g. English, Spanish), Aorist vs. Imperfect (e.g. Bulgarian, French, Spanish), (Perfect) ...

NB: Perfective $\neq$ Perfect (Imperfect $\neq$ Imperfective)

Aspect in this course

- **Inner aspect**:
  - Classification of event types into simple (monoeventive) and complex (bieventive) ones; sub-classifications of these (~ Vendler classes)
  - ~ (a)telic event types at the level of VP (vP) (~ verb + argument(s))

Aspect in this course

- **Inner aspect**:
  - Classification of event types into simple (monoeventive) and complex (bieventive) ones; sub-classifications of these (~ Vendler classes)
  - ~ (a)telic event types at the level of VP (vP) (~ verb + argument(s))
- **Outer aspect**:
  - Event type modification that additionally adds temporality to atemporal event structures
  - Relation between event (situation) time and reference (topic) time

Aspect in this course

- **Inner aspect**:
  - Classification of event types into simple (monoeventive) and complex (bieventive) ones; sub-classifications of these (~ Vendler classes)
  - ~ (a)telic event types at the level of VP (vP) (~ verb + argument(s))
- **Outer aspect**:
  - Event type modification that additionally adds temporality to atemporal event structures
  - Relation between event (situation) time and reference (topic) time

vs. Tense: Relation between reference/topic time and speech/utterance time

Aspect in this course

- Syntactic background assumption, e.g. (1):

(1) [T(ense)P [Mod(al)P [Asp(ect)P [VP]]]]

(Demirdache & Uribe-Etxebarria 2014)

  - VP: Inner Aspect
  - AspP: Outer Aspect

Aspect in this course

- Syntactic background assumption, e.g. (1):

  (1) [T(ense)P [Mod(al)P [Asp(ect)P [VP]]]]

  (Demirdache & Uribe-Etxebarria 2014)

  - VP: Inner Aspect
  - AspP: Outer Aspect

- THU & FRI: Particular focus on ...
  - Russian as a case study (with some comparison to Czech)
  - **How do aspectual verbal morphemes (prefixes, suffixes), adverbials, finiteness and other elements in the sentence combine compositionally leading to particular aspectual interpretations of events at the sentence and ultimately discourse level?**

Course topics

- **Introduction**: Lexical vs. grammatical aspect, aspect vs. tense, syntactic background assumptions (Reichenbach 1947; Klein 1995; Demirdache & Uribe-Etxebarria 2000, 2014; Filip 2011, etc.)
- **Inner aspect**: Vendler classes, (a)telicity, aspectual composition (Vendler 1957; Verkuyl 1972, 1993, 2005; Bach 1981, 1986; Krifka 1989a, 1992, 1998; Ramchand 1997; Hay et al. 1999; Kennedy & Levin 2008; Kennedy 2012; Filip 1999; Rothstein 2004; Zwarts 2005; Caudal & Nicolas 2005; Piñón 2008, etc.)
- **Outer aspect** (Smith 1991/97; Kamp & Reyle 1993; Portner 1998, 2011; de Swart 1998, 2012; Filip 1999, 2003; Alexiadou et al. 2003, etc.)
- **Inner and outer aspect in Russian** (Schoorlemmer 1995; Klein 1995; Mehlig 1996; Borik 2002, 2006; Gehrke 2002, 2003, 2005, 2008a, b, 2019; Paslawska & von Stechow 2003a; Grønn 2004, 2015; Romanova 2007; Altshuler 2012; Tatevosov 2015, etc.)
- **Cross-Slavic variation in outer aspect**: Russian vs. Czech (Stunová 1993; Kresnin 2000; Dickey 2000, 2015; Gehrke 2002, 2003, 2008b; Dickey & Kresnin 2009; Fehrmann et al. 2010; Alvestad 2014; Arregui et al. 2014, etc.)

Inner aspect

Vendler (1957)

- Aspectual classes: "the particular way in which [a] verb [in its dominant use] presupposes and involves the notion of time"
  - **States, activities, accomplishments, achievements**
  - → Durative vs. non-durative: ACT/ACC vs. STA/ACH
  - → Set terminal point vs. no set terminal point [~ telic vs. atelic]: ACC/ACH vs. STA/ACT

Vendler (1957)

- Aspectual classes: "the particular way in which [a] verb [in its dominant use] presupposes and involves the notion of time"
  - **States, activities, accomplishments, achievements**
  - → Durative vs. non-durative: ACT/ACC vs. STA/ACH
  - → Set terminal point vs. no set terminal point [~ telic vs. atelic]: ACC/ACH vs. STA/ACT

[Standard assumption: Classification of predicates (VPs), not of verbs]

Vendler (1957)

- Aspectual classes: "the particular way in which [a] verb [in its dominant use] presupposes and involves the notion of time"
  - **States, activities, accomplishments, achievements**
  - → Durative vs. non-durative: ACT/ACC vs. STA/ACH
  - → Set terminal point vs. no set terminal point [~ telic vs. atelic]: ACC/ACH vs. STA/ACT

  [Standard assumption: Classification of predicates (VPs), not of verbs]
  [Debatable whether this is really about 'time']

Vendler (1957): States

e.g. *have/possess/desire/want sth., (dis)like/love/hate/rule/dominate sb./sth., know/believe things, be married/present/absent/healthy/ill*

- **no process** going on in time
- **non-unique, indefinite time instants**
- incompatible with *deliberately, carefully* [→ no intentionality]
- qualities
- I can say 'I have seen it' as soon as I can say 'I see it'.

Vendler (1957): Activities

e.g. *run, walk, swim, push, pull*

- **process** going on in time / successive phases following one another in time
- **non-unique, indefinite time periods**
- **no 'set terminal point'** [→ atelic]
- **homogeneous**: any part of the process is of the same nature as the whole

Vendler (1957): Accomplishments

e.g. *paint a picture, make a chair, build a house, write/read a novel, deliver a sermon, give/attend a class, play a game of chess, grow up, recover from illness, get ready for sth.*

- **process** going on in time / successive phases following one another in time
- **unique, definite time periods**
- **'set terminal point'** [→ telic]
- **not homogeneous**: proceed towards a terminus which is logically necessary to their being what they are

Vendler (1957): Achievements

e.g. *recognise/realise/spot/identify sth., lose/find an object, reach the summit, win the race, cross the border, start/stop/resume sth., be born, die*

- **no process** going on in time
- **unique, definite time instants**
- can be predicated only for single moments of time
- Present tense is almost exclusively used as historic present or as indicating immediate future.
- can be voluntary (*start/stop running*) or involuntary (*recognising*)

Vendler (1957)

- **(In)compatibility with the Progressive**

(2) - What are you doing?

a.	- I am running / writing / working.	ACT
	- I am writing a letter / painting a picture.	ACC
b.	- #I am recognising.	ACH
	- #I am loving my brother.	STA

→ PROG is only compatible with 'processes going on in time'

Vendler (1957)

- ACT vs. ACC: **(no) 'set terminal point' [(a)telic]**

(3) a. If someone stops running, he ran. ACT
#He finished running / pushing a cart.

b. If someone stops running a mile, he did not run a mile. ACC
He finished running a mile / drawing a circle.

Vendler (1957)

- ACT vs. ACC: **(no) 'set terminal point' [(a)telic]**

(3) a. If someone stops running, he ran. ACT
#He finished running / pushing a cart.
b. If someone stops running a mile, he did not run a mile. ACC
He finished running a mile / drawing a circle.

(4) a. For how long did he push the cart? ACT
#How long did it take to push the cart?
b. #For how long did he draw the circle? ACC
How long did it take to draw the circle?
He did it in twenty seconds.
It took him twenty seconds.

Vendler (1957)

- ACT vs. ACC: **(no) 'set terminal point' [(a)telic]**

(3) a. If someone stops running, he ran. ACT
#He finished running / pushing a cart.
b. If someone stops running a mile, he did not run a mile. ACC
He finished running a mile / drawing a circle.

(4) a. For how long did he push the cart? ACT
#How long did it take to push the cart?
b. #For how long did he draw the circle? ACC
How long did it take to draw the circle?
He did it in twenty seconds.
It took him twenty seconds.

(5) If it is true that someone has been running for half an hour, then it must be true that he has been running for every period within that half-hour. ACT

Vendler (1957): Interaction with temporal expressions

- ACH vs. STA

(6) a. At what time did you reach the top? ACH
At what moment did you spot the plane?

b. For how long did you love her? STA
How long did you believe in the stork?

Vendler (1957): Interaction with temporal expressions

- ACH vs. STA

(6) a. At what time did you reach the top? ACH
At what moment did you spot the plane?
b. For how long did you love her? STA
How long did you believe in the stork?

- ACC vs. ACH

(7) a. It took me an hour to write a letter. ACC

Vendler (1957): Interaction with temporal expressions

- ACH vs. STA

(6) a. At what time did you reach the top? ACH
At what moment did you spot the plane?
b. For how long did you love her? STA
How long did you believe in the stork?

- ACC vs. ACH

(7) a. It took me an hour to write a letter. ACC
(the writing of the letter went on during that hour)

Vendler (1957): Interaction with temporal expressions

- ACH vs. STA

(6) a. At what time did you reach the top? ACH
At what moment did you spot the plane?
b. For how long did you love her? STA
How long did you believe in the stork?

- ACC vs. ACH

(7) a. It took me an hour to write a letter. ACC
(the writing of the letter went on during that hour)
b. It took him three hours to reach the summit. ACH

Vendler (1957): Interaction with temporal expressions

- ACH vs. STA

(6) a. At what time did you reach the top? ACH
At what moment did you spot the plane?
b. For how long did you love her? STA
How long did you believe in the stork?

- ACC vs. ACH

(7) a. It took me an hour to write a letter. ACC
(the writing of the letter went on during that hour)
b. It took him three hours to reach the summit. ACH
(not the reaching of the summit, but climbing went on during those hours)

Vendler (1957): Interaction with temporal expressions

- ACH vs. STA

(6) a. At what time did you reach the top? ACH
At what moment did you spot the plane?
b. For how long did you love her? STA
How long did you believe in the stork?

- ACC vs. ACH

(7) a. It took me an hour to write a letter. ACC
(the writing of the letter went on during that hour)
b. It took him three hours to reach the summit. ACH
(not the reaching of the summit, but climbing went on during those hours)
c. He found it in five minutes. ACH

Vendler (1957): Interaction with temporal expressions

- ACH vs. STA

(6) a. At what time did you reach the top? ACH
At what moment did you spot the plane?
b. For how long did you love her? STA
How long did you believe in the stork?

- ACC vs. ACH

(7) a. It took me an hour to write a letter. ACC
(the writing of the letter went on during that hour)
b. It took him three hours to reach the summit. ACH
(not the reaching of the summit, but climbing went on during those hours)
c. He found it in five minutes. ACH
(not the finding, but searching went on during those 5 minutes)

Vendler (1957)

- **Habits**: Occupations, dispositions, abilities etc.
  - Derived states (generic states)
  - (in opposition to 'specific' states, i.e. STA)

(8) a. He smokes.
b. He writes books / articles.
c. He catches dogs.

Vendler (1957)

- **Habits**: Occupations, dispositions, abilities etc.
  - Derived states (generic states)
  - (in opposition to 'specific' states, i.e. STA)

(8) a. He smokes.
b. He writes books / articles.
c. He catches dogs.

[in English: Simple present tense to describe habits / simple past: habits in the past ...]

Vendler (1957): Different uses of verbs

- *think*

Vendler (1957): Different uses of verbs

- *think*
  - ACT: He is thinking about Jones.
  - STA: He thinks that Jones is a rascal.

Vendler (1957): Different uses of verbs

- *think*
  - ACT: He is thinking about Jones.
  - STA: He thinks that Jones is a rascal.
- *know, understand*

Vendler (1957): Different uses of verbs

- *think*
  - ACT: He is thinking about Jones.
  - STA: He thinks that Jones is a rascal.
- *know, understand*
  - STA: know sth. / how / that — cp. *be married*
  - ACH: Suddenly I knew! Now I know it! — cp. *get married*

Vendler (1957): Different uses of verbs

- *think*
  - ACT: He is thinking about Jones.
  - STA: He thinks that Jones is a rascal.

- *know, understand*
  - STA: know sth. / how / that cp. *be married*
  - ACH: Suddenly I knew! Now I know it! cp. *get married*
    [**inchoative** reinterpretation, conditioned by 'suddenly']

Vendler (1957): Different uses of verbs

- *think*
  - ACT: He is thinking about Jones.
  - STA: He thinks that Jones is a rascal.
- *know, understand*
  - STA: know sth. / how / that cp. *be married*
  - ACH: Suddenly I knew! Now I know it! cp. *get married*
    [**inchoative** reinterpretation, conditioned by 'suddenly']
- *see, hear*

Vendler (1957): Different uses of verbs

- *think*
  - ACT: He is thinking about Jones.
  - STA: He thinks that Jones is a rascal.
- *know, understand*
  - STA: know sth. / how / that cp. *be married*
  - ACH: Suddenly I knew! Now I know it! cp. *get married*
    [**inchoative** reinterpretation, conditioned by 'suddenly']
- *see, hear*
  - STA: *I am seeing. / I saw him running.
  - ACH: spotting sense: I spotted him running. [**inchoative**]
  - ACC: I am seeing *Carmen* on TV.

Other classifications

- Discourse: **states** (temporal overlap) vs. **events** (temporal progression, R-time movement) (e.g. Kamp & Reyle 1993; Lascarides & Asher 1993)

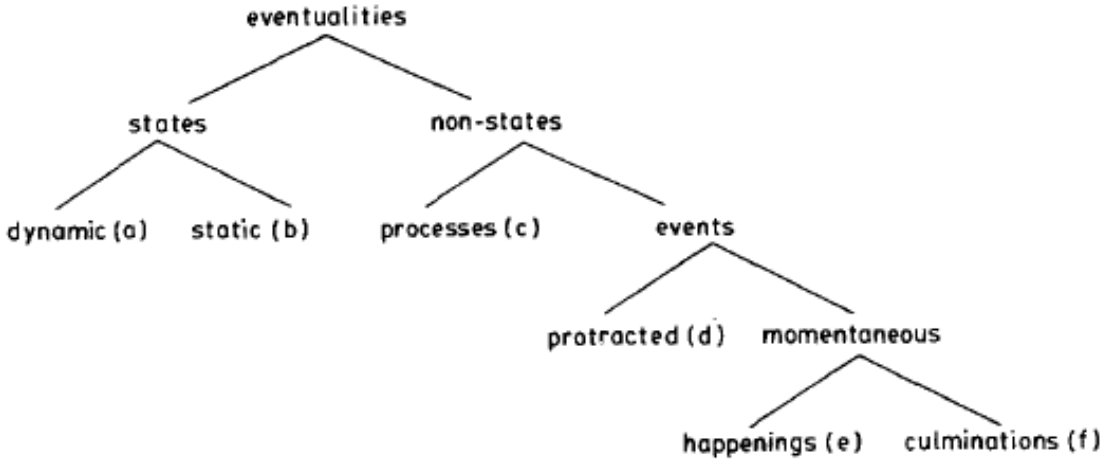
Other classifications

- Discourse: **states** (temporal overlap) vs. **events** (temporal progression, R-time movement) (e.g. Kamp & Reyle 1993; Lascarides & Asher 1993)
- **states**, **processes** [~ ACT] , **events** [~ ACC & ACH] (e.g. Bach 1981, 1986; Verkuyl 1993; de Swart 1998)
  - → Motivation: Difference between ACC and ACH is linguistically not (Verkuyl) / less (Bach, de Swart) relevant (but see, e.g., Rothstein 2004)

Other classifications

- Discourse: **states** (temporal overlap) vs. **events** (temporal progression, R-time movement) (e.g. Kamp & Reyle 1993; Lascarides & Asher 1993)
- **states**, **processes** [~ ACT] , **events** [~ ACC & ACH] (e.g. Bach 1981, 1986; Verkuyl 1993; de Swart 1998)
  - → Motivation: Difference between ACC and ACH is linguistically not (Verkuyl) / less (Bach, de Swart) relevant (but see, e.g., Rothstein 2004)

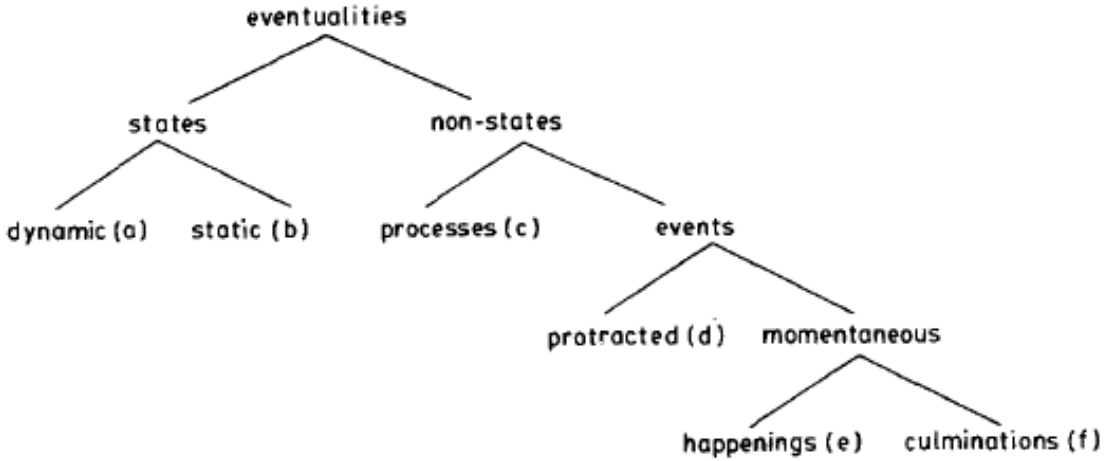
Bach (1981, 1986):



Other classifications

- Discourse: **states** (temporal overlap) vs. **events** (temporal progression, R-time movement) (e.g. Kamp & Reyle 1993; Lascarides & Asher 1993)
- **states**, **processes** [~ ACT] , **events** [~ ACC & ACH] (e.g. Bach 1981, 1986; Verkuyl 1993; de Swart 1998)
  - → Motivation: Difference between ACC and ACH is linguistically not (Verkuyl) / less (Bach, de Swart) relevant (but see, e.g., Rothstein 2004)

Bach (1981, 1986):



(NB: One-component theories)

Additional classes

- **Semelfactives**: *sneeze, knock, jump*
  (Smith 1991/97) (see also Rothstein 2004)
  - e.g. English: ambiguous between one-time (atomic, but no change of state) and iterative reading

Additional classes

- **Semelfactives**: *sneeze, knock, jump*
  (Smith 1991/97) (see also Rothstein 2004)
  - e.g. English: ambiguous between one-time (atomic, but no change of state) and iterative reading
  - Cross-linguistically not clear which one is basic; e.g. Russian: semelfactive is morphologically more complex (suffix *-nu-*) (9)

(9) a. IPF *stučat'* 'knock (iteratively)'
b. PF *stuk-**nu**-t'* 'knock (once)'

Additional classes

- **Semelfactives**: *sneeze, knock, jump*
  (Smith 1991/97) (see also Rothstein 2004)
  - e.g. English: ambiguous between one-time (atomic, but no change of state) and iterative reading
  - Cross-linguistically not clear which one is basic; e.g. Russian: semelfactive is morphologically more complex (suffix *-nu-*) (9)

(9) a. IPF *stučat'* 'knock (iteratively)'
    b. PF *stuk-**nu**-t'* 'knock (once)'

- **Degree achievements**: *rise, fall, cool, lengthen, straighten*
  (Dowty 1979) (see also Krifka 1998; Hay et al. 1999; Kennedy & Levin 2008, i.a.)
  - Gradual, relative change of state
  - Variable behaviour wrt telicity tests

Some standard telicity tests

- **(In)compatibility with for/in-adverbials**

(10) **Atelic predicates**

a. She pushed the cart {for/#in} two hours. ACT

b. She ruled the country {for/#in} two years. STA

(11) **Telic predicates**

a. She drew the circle {#for/in} two hours. ACC

b. She recognised her mistake {#for/in} one second. ACH

Some standard telicity tests

- **(In)compatibility with for/in-adverbials**

(10) **Atelic predicates**

a. She pushed the cart {for/#in} two hours. ACT

b. She ruled the country {for/#in} two years. STA

(11) **Telic predicates**

a. She drew the circle {#for/in} two hours. ACC

b. She recognised her mistake {#for/in} one second. ACH

NB: ACH + *in*-adv (e.g. (11-b)) is sometimes taken to involve (**additive**) **coercion** (reinterpretation), adding a preparatory process (e.g. Moens & Steedman 1987; Rothstein 2004; Bott 2013)

Some standard telicity tests

- **Imperfective Paradox** (Dowty 1979)

(12) a. She was running. → She ran. ACT

b. She was crossing the road. $\not\rightarrow$ She crossed the road. ACC

She was reaching the summit. $\not\rightarrow$ She reached the summit. ACH

(not applicable to states, since they are incompatible with PROG)

Some standard telicity tests

- **Imperfective Paradox** (Dowty 1979)

(12) a. She was running. → She ran. ACT

b. She was crossing the road. $\not\rightarrow$ She crossed the road. ACC

She was reaching the summit. $\not\rightarrow$ She reached the summit. ACH

(not applicable to states, since they are incompatible with PROG)

- **Finish** requires a telic predicate as a complement.
- ...

Potential problems with the in/for-adv test

- **Coercion / Reinterpretation**

(13) a. In ten minutes, she knew the answer.
b. She ran in 2 hours.
c. She discovered fleas on her dog for two hours.
d. For 20 years she read a chapter before going to bed.

Potential problems with the in/for-adv test

- **Coercion / Reinterpretation**

(13) a. In ten minutes, she knew the answer.
b. She ran in 2 hours.
c. She discovered fleas on her dog for two hours.
d. For 20 years she read a chapter before going to bed.

  - **Inchoative / ingressive**: adds a temporal onset to a state or an activity (13-a,b)
  - **Delimitative**: Temporal boundedness of an atelic event (needs stronger context) (13-b)
  - **Iterative**: with telic predicates (13-c,d)

(Different scope of temporal adverbs)

Moens & Steedman (1987)

- Event nucleus:

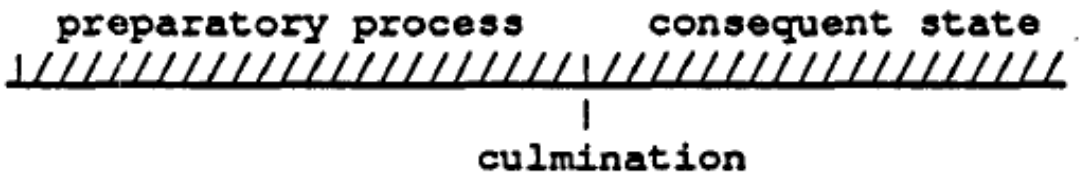


Figure 3

Moens & Steedman (1987)

- Event nucleus:

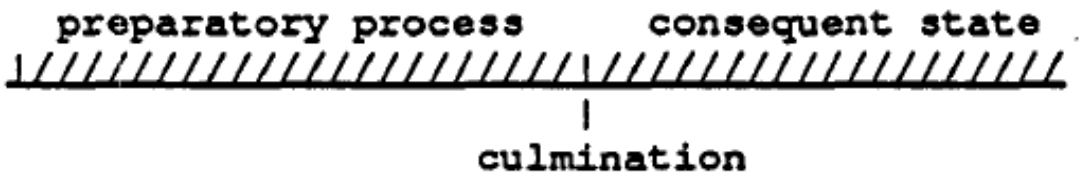


Figure 3

- Aspectual classes:

	EVENTS		STATES
	atomic	extended	
+conseq	Harry left early At six, John arrived	Sue built a sandcastle The ice melted completely	John knows French He was in the kitchen
-conseq	Sandra hiccupped Paul winked	Max worked in the garden Alice played the piano	

Figure 1

Moens & Steedman (1987)

- Coercion routes:

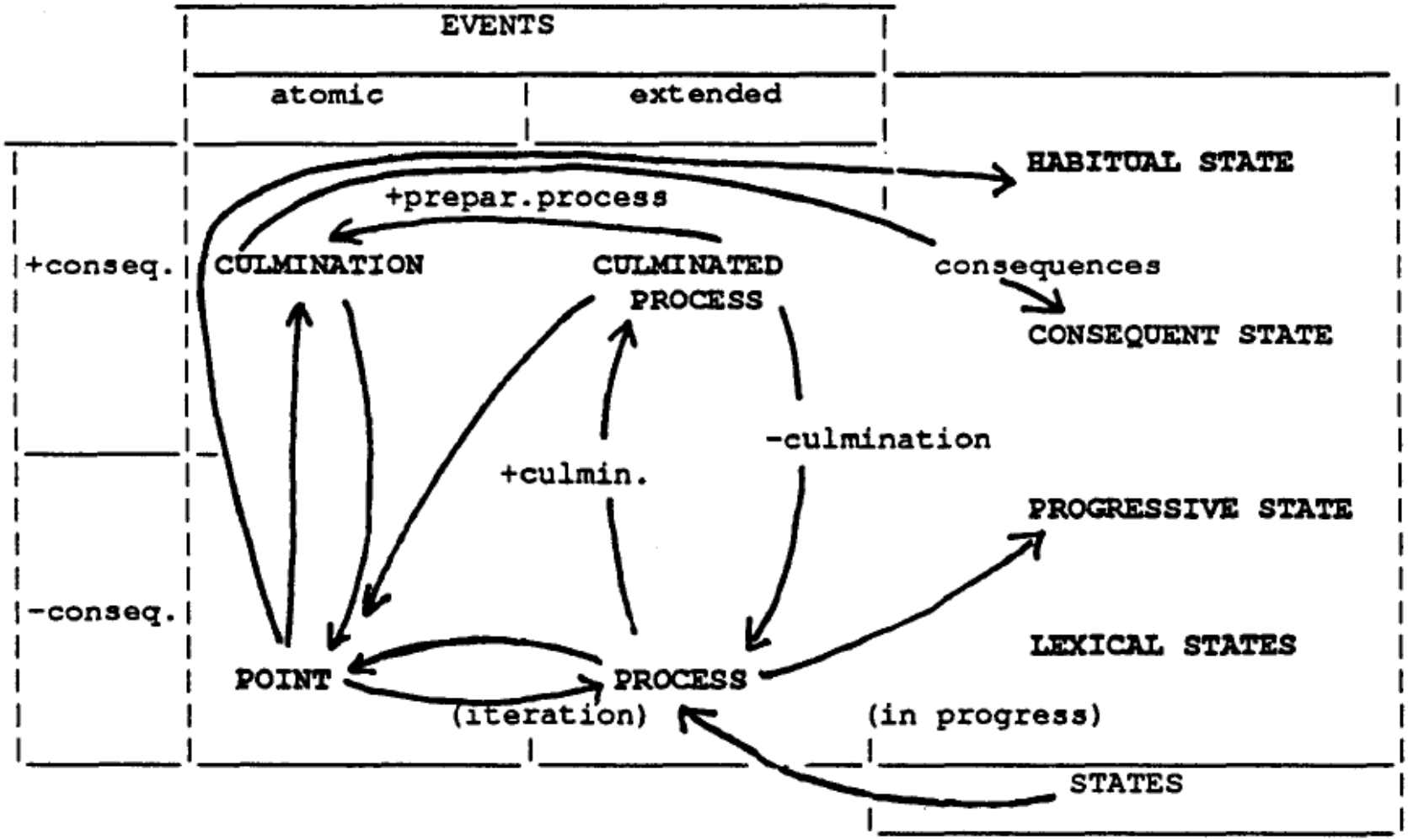


Figure 2

Potential problems with the in/for-adv test

- **Additional sensitivity to outer aspect**
  - e.g. PROG on telic predicates: behaviour like atelic predicates (14)

(14) She was eating the cake for ten minutes/#in ten minutes.

Potential problems with the in/for-adv test

- **Additional sensitivity to outer aspect**
  - e.g. PROG on telic predicates: behaviour like atelic predicates (14)

(14) She was eating the cake for ten minutes/#in ten minutes.

  - In languages without morphological outer aspect simple tenses can receive both perfective and imperfective interpretations so that both adverbials can be ok; e.g. German (15)

(15) Sie aß den Kuchen zehn Minuten lang/in zehn Minuten.
she ate the cake ten minutes long/in ten minutes

Potential problems with the in/for-adv test

- **Additional sensitivity to outer aspect**
  - e.g. PROG on telic predicates: behaviour like atelic predicates (14)

(14) She was eating the cake for ten minutes/#in ten minutes.

  - In languages without morphological outer aspect simple tenses can receive both perfective and imperfective interpretations so that both adverbials can be ok; e.g. German (15)

(15) Sie aß den Kuchen zehn Minuten lang/in zehn Minuten.
she ate the cake ten minutes long/in ten minutes

- **General issues raised by such facts:**
  - Is this a test for outer, rather than for inner aspect?

Potential problems with the in/for-adv test

- **Additional sensitivity to outer aspect**
  - e.g. PROG on telic predicates: behaviour like atelic predicates (14)

(14) She was eating the cake for ten minutes/#in ten minutes.

  - In languages without morphological outer aspect simple tenses can receive both perfective and imperfective interpretations so that both adverbials can be ok; e.g. German (15)

(15) Sie aß den Kuchen zehn Minuten lang/in zehn Minuten.
she ate the cake ten minutes long/in ten minutes

- **General issues raised by such facts:**
  - Is this a test for outer, rather than for inner aspect?
  - Doesn't this show that we should not make a distinction between inner and outer aspect?

Potential problems with the in/for-adv test

- **Additional sensitivity to outer aspect**
  - e.g. PROG on telic predicates: behaviour like atelic predicates (14)

(14) She was eating the cake for ten minutes/#in ten minutes.

  - In languages without morphological outer aspect simple tenses can receive both perfective and imperfective interpretations so that both adverbials can be ok; e.g. German (15)

(15) Sie aß den Kuchen zehn Minuten lang/in zehn Minuten.
she ate the cake ten minutes long/in ten minutes

- **General issues raised by such facts:**
  - Is this a test for outer, rather than for inner aspect?
  - Doesn't this show that we should not make a distinction between inner and outer aspect?
  - (Issues of markedness)

How to capture the property of (a)telicity

- Vendler:
  - ACTs are **homogeneous**: "running and its kind go on in time in a homogeneous way; any part of the process is of the same nature as the whole"
  - ACCs are not homogeneous: "proceed towards a terminus which is logically necessary to their being what they are"

How to capture the property of (a)telicity

- Vendler:
  - ACTs are **homogeneous**: "running and its kind go on in time in a homogeneous way; any part of the process is of the same nature as the whole"
  - ACCs are not homogeneous: "proceed towards a terminus which is logically necessary to their being what they are"

→ Bennett & Partee (1972): **Subinterval property**
  - Non-subinterval VPs, e.g. *walk to Rome*: "If it took an hour to walk to Rome, one did not walk to Rome within the first thirty minutes of the hour"
  - Subinterval VPs, e.g. *walk*: "if they are the main verb phrase of a sentence which is true at some interval of time I, then the sentence is true at every subinterval of I including every moment of time in I"

How to capture the property of (a)telicity

- Vendler:
  - ACTs are **homogeneous**: "running and its kind go on in time in a homogeneous way; any part of the process is of the same nature as the whole"
  - ACCs are not homogeneous: "proceed towards a terminus which is logically necessary to their being what they are"

→ Bennett & Partee (1972): **Subinterval property**
  - Non-subinterval VPs, e.g. *walk to Rome*: "If it took an hour to walk to Rome, one did not walk to Rome within the first thirty minutes of the hour"
  - Subinterval VPs, e.g. *walk*: "if they are the main verb phrase of a sentence which is true at some interval of time I, then the sentence is true at every subinterval of I including every moment of time in I"

Reformulated in terms of events (Champollion 2010):

(16) $\forall e[[[\text{walk}]](e) \rightarrow \forall i[i < \text{runtime}(e) \rightarrow \exists e'[[[\text{walk}]](e') \wedge e' < e \wedge i = \text{runtime}(e')]]]$

Potential problems of the subinterval property

- The first moments of a *walk*-event are not describable by *walk* (see also discussion in Dowty 1979)

Potential problems of the subinterval property

- The first moments of a *walk*-event are not describable by *walk* (see also discussion in Dowty 1979) → Different solutions:
  - Subinterval property only for states (e.g. Maienborn 2007)
  - It is a matter of granularity (most other people)

Potential problems of the subinterval property

- The first moments of a *walk*-event are not describable by *walk* (see also discussion in Dowty 1979) → Different solutions:
  - Subinterval property only for states (e.g. Maienborn 2007)
  - It is a matter of granularity (most other people)

- Bennett & Partee's initial use in the definition of PROG:

(17) [PROG ϕ] is true at interval I iff there exists an interval I' such that $I \subset I'$, I is not a final subinterval of I', and ϕ is true at I'.

→ Generates the imperfective paradox (cf. Dowty 1979)
(common solution: modalisation; we will get back to this when we talk about outer aspect)

Parallels between events and objects

- Taylor (1977):
  - ACTs like *fall*, *blush*: like homogeneous mass nouns (e.g. *gold*)
    → **divisible**

    ACTs like *walk*: like heterogeneous mass nouns (e.g. *fruitcake*)
    → **divisible up to minimal proper parts** (pragm. determined size)

Parallels between events and objects

- Taylor (1977):
  - ACTs like *fall*, *blush*: like homogeneous mass nouns (e.g. *gold*)
    → **divisible**

    ACTs like *walk*: like heterogeneous mass nouns (e.g. *fruitcake*)
    → **divisible up to minimal proper parts** (pragm. determined size)
  - [Telic predicates]: like sortal/count nouns (e.g. *cat*)
    → **indivisible**

    (in mereology: **antisubdivisible**, Bach 1986 / **quantized**, Krifka 1986)

Parallels between events and objects

- Taylor (1977):
  - ACTs like *fall, blush*: like homogeneous mass nouns (e.g. *gold*)
    → **divisible**

    ACTs like *walk*: like heterogeneous mass nouns (e.g. *fruitcake*)
    → **divisible up to minimal proper parts** (pragm. determined size)
  - [Telic predicates]: like sortal/count nouns (e.g. *cat*)
    → **indivisible**
    (in mereology: **antisubdivisible**, Bach 1986 / **quantized**, Krifka 1986)

- Mourelatos (1978): (Non-)Countability (18)

(18) a. fall asleep three times
b. Vesuvius erupted three times
→ There were three eruptions of Vesuvius

(19) a. run (*)three times
b. Onlookers shoved and screamed
→ There was shoving and screaming

Parallels between events and objects

- Bach (1981, 1986):

(20) a. **much** wine / he did not sleep **much**
b. **many/three** books / he arrived **many/three times**

Parallels between events and objects

- Bach (1981, 1986):

(20) a. **much** wine / he did not sleep **much**
b. **many/three** books / he arrived **many/three times**

(21) **Universal Grinder** (Pelletier 1975): count→non-count (predictable)
a. Much missionary was eaten at the festival.
b. John ate the sandwich bit by bit for an hour, but still didn't finish it.

Parallels between events and objects

- Bach (1981, 1986):

(20) a. **much** wine / he did not sleep **much**
b. **many/three** books / he arrived **many/three times**

(21) **Universal Grinder** (Pelletier 1975): count→non-count (predictable)
a. Much missionary was eaten at the festival.
b. John ate the sandwich bit by bit for an hour, but still didn't finish it.

(22) **Universal Packager**: non-count→count (not predictable)
a. After two beers he began to feel better. → portion
He prefers Tuscan wines. → kind
b. John ran in an hour. → *began to* OR *a certain distance*

('universal sorter' in Bunt 1981)

Parallels between events and objects

- Bach (1981, 1986): mereological approach (similar to Krifka; see below)
  - → Mereology (Link 1983; Sharvy 1980): Part-of relation $\leq$, sum $\oplus$ / $\sqcup$
  - Mass nouns, processes: Non-atomic join semilattice → **additive**
  - Count nouns, events: Atomic join semilattice, (23), → **antisubdivisible**

(23) (from Nouwen 2016)

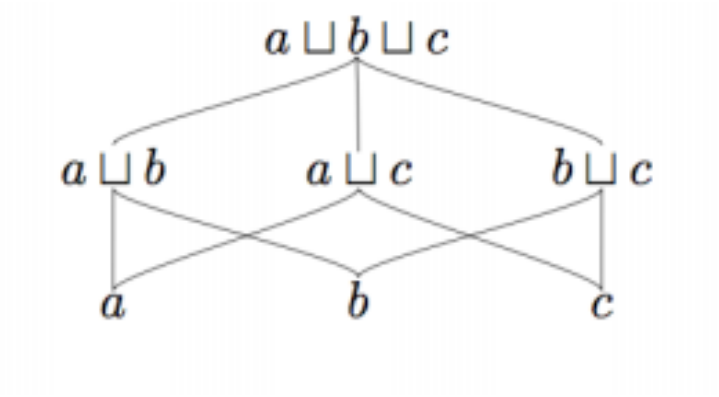


Figure 1.1 A depiction of the complete atomic join semi-lattice with a, b and c as the atomic elements. The arcs represent the $\leq$ relation.

Aspectual composition

Theoretical approaches to (a)telicity

- **Scale structure approaches**
  e.g. Krifka (1989a, 1992, 1998); Hay et al. (1999); Kennedy & Levin (2008); Kennedy (2012); Caudal & Nicolas (2005); Piñón (2008); Beavers (2008)
  (Verkuyl 1972, 1993, 2005)
- **Event structure approaches**
  e.g. von Stechow (1996); Rappaport Hovav & Levin (1998); Levin & Rappaport Hovav (2006); Rappaport Hovav & Levin (2010); Rothstein (2004); Beck (2005)
  (without events: Dowty 1979)
- **Syntactic approaches**
  e.g. Pustejovsky (1991); Travis (2000); Borer (2005); Arsenijević (2006); Ramchand (2008) (Verkuyl 1972, 1993, 2005)

The scale structure approach in a nutshell

- A complement of the verb, e.g. the internal argument, provides (part of) a scale (a linearly ordered structure).
- Properties of the scale determine whether the event is telic (with a closed scale or a scale with an upper bound) or atelic (an open scale, a scale with no upper bound, or no scale):

(24) a. She ate (for/*in an hour).
b. She ate the apple (*for/in an hour).
c. She ate apples (for/*in an hour).

The scale structure approach in a nutshell

- A complement of the verb, e.g. the internal argument, provides (part of) a scale (a linearly ordered structure).
- Properties of the scale determine whether the event is telic (with a closed scale or a scale with an upper bound) or atelic (an open scale, a scale with no upper bound, or no scale):

(24) a. She ate (for/*in an hour).
b. She ate the apple (*for/in an hour).
c. She ate apples (for/*in an hour).

→ This approach draws direct parallels to the literature on scale structures underlying adjectives (literature on degrees).

Event-object homomorphism

- Properties of (some) internal arguments influence the interpretation of the event as (a)telic (25-a):
  - Gradual/successive patient (Krifka 1986, 1989a, 1992)
  - **Incremental Themes** (Dowty 1991)

(25) a. She ate (apples) for/#in two hours.
b. She ate an/the apple / three apples in/#for two hours.

(26) a. He hit a/the dog / (three) dogs for/#in two hours.
b. He pushed a/the cart / (three) carts for/#in two hours.

→ Extent of the object delimits the (temporal) extent of the event

Verkuyl (1972, 1993)

- **terminative** [+T] vs. **durative** [-T]
  - Verbs: [±ADD-TO] [additive ~ dynamic]
  - Arguments: [±SQA] (specified quantity of A)

→ Division states, processes, events

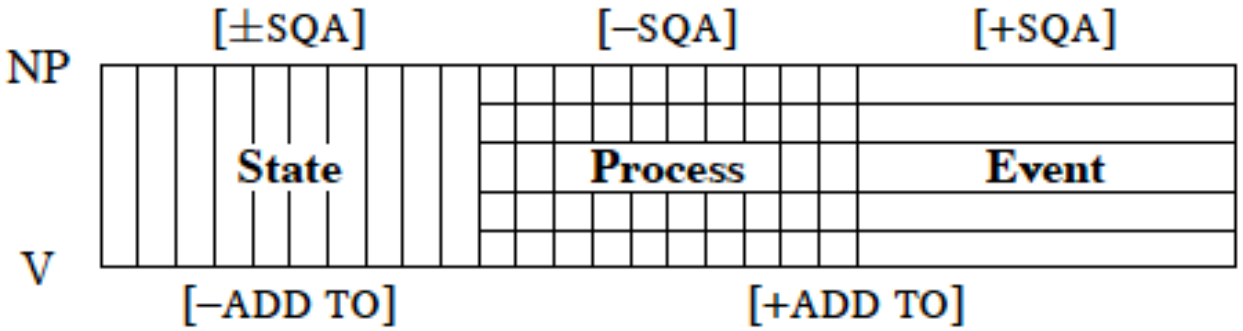


Figure 2: Construal of three aspectual classes

from Verkuyl (2005)

Verkuyl (1972, 1993)

- **terminative** [+T] vs. **durative** [-T]
  - Verbs: [±ADD-TO] [additive ~ dynamic]
  - Arguments: [±SQA] (specified quantity of A)

→ Division states, processes, events

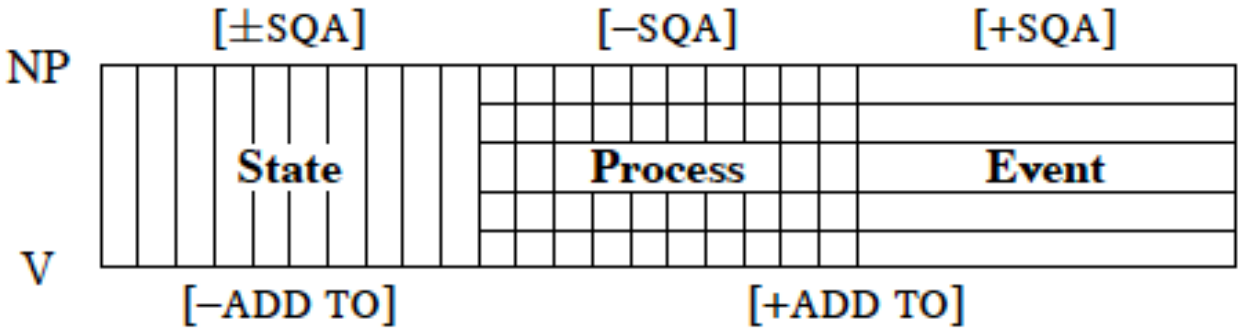


Figure 2: Construal of three aspectual classes

from Verkuyl (2005)

This is independent of the thematic relations involved

- e.g. *push* ~ *give pushes to*

Verkuyl (2005)

- Subject-object asymmetries, inner vs. outer aspect

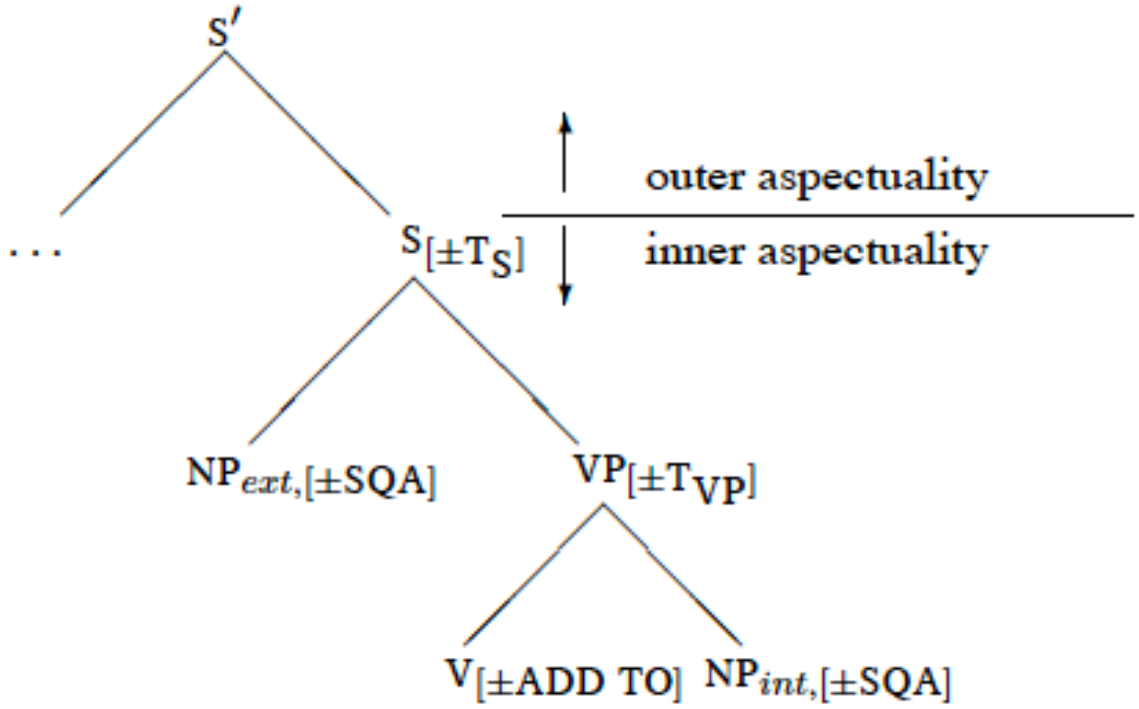


Figure 1: Aspectual composition

(Krifka 1986, 1989a, 1992)

- 2 properties (for both objects and events):

(27) **Cumulative**:
$CM(P) \leftrightarrow \forall x, y[P(x) \wedge P(y) \rightarrow P(x \oplus y)] \wedge \exists x, y[P(x) \wedge P(y) \wedge \neg x = y]$
e.g. *soup, apples // eat (soup/apples)*

(28) **Quantized**: $QUA(P) \leftrightarrow \forall x, y[P(x) \wedge P(y) \rightarrow \neg x < y]$
e.g. *an/two/a bowl of apple(s) // eat an/two/a bowl of apple(s) / eat for two hours*

(Krifka 1986, 1989a, 1992)

- 2 properties (for both objects and events):

(27) **Cumulative**:
$CM(P) \leftrightarrow \forall x, y[P(x) \wedge P(y) \rightarrow P(x \oplus y)] \wedge \exists x, y[P(x) \wedge P(y) \wedge \neg x = y]$
e.g. *soup, apples // eat (soup/apples)*

(28) **Quantized**: $QUA(P) \leftrightarrow \forall x, y[P(x) \wedge P(y) \rightarrow \neg x < y]$
e.g. *an/two/a bowl of apple(s) // eat an/two/a bowl of apple(s) / eat for two hours*

- Mapping from (sub)objects to (sub)events (Germ., Engl. etc.)
- Mapping from (sub)events to (sub)objects (Russ., Chin. etc. / Finnish partitive ...)
- uniqueness of events/objects; measure functions ...

(Krifka 1986, 1989a, 1992)

- 2 properties (for both objects and events):

(27) **Cumulative**:
$CM(P) \leftrightarrow \forall x, y[P(x) \wedge P(y) \rightarrow P(x \oplus y)] \wedge \exists x, y[P(x) \wedge P(y) \wedge \neg x = y]$
e.g. *soup, apples // eat (soup/apples)*

(28) **Quantized**: $QUA(P) \leftrightarrow \forall x, y[P(x) \wedge P(y) \rightarrow \neg x < y]$
e.g. *an/two/a bowl of apple(s) // eat an/two/a bowl of apple(s) / eat for two hours*

  - Mapping from (sub)objects to (sub)events (Germ., Engl. etc.)
  - Mapping from (sub)events to (sub)objects (Russ., Chin. etc. / Finnish partitive ...)
  - uniqueness of events/objects; measure functions ...

- Krifka (1998): Extension to incremental paths, property scales

(Krifka 1989b)

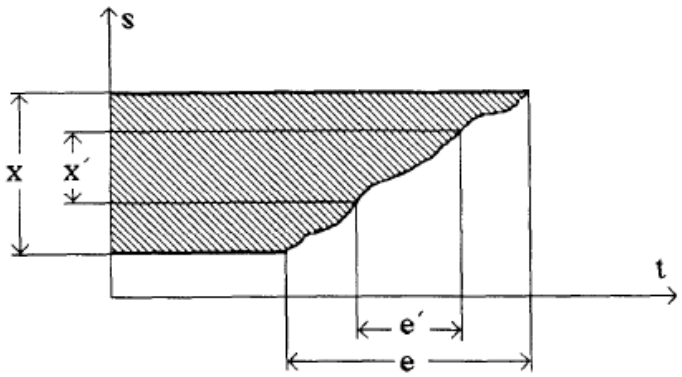


Abbildung 5: Übertragung der Referenzweise

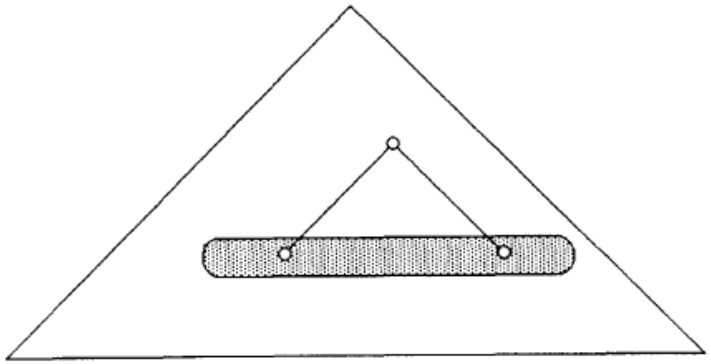


Abbildung 3b: Gequantelte Extension

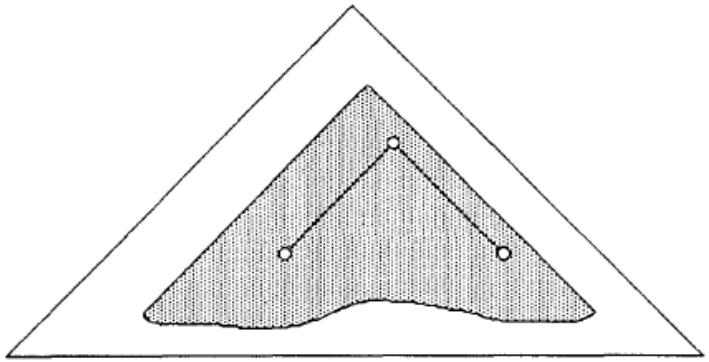


Abbildung 3a: Kumulative Extension

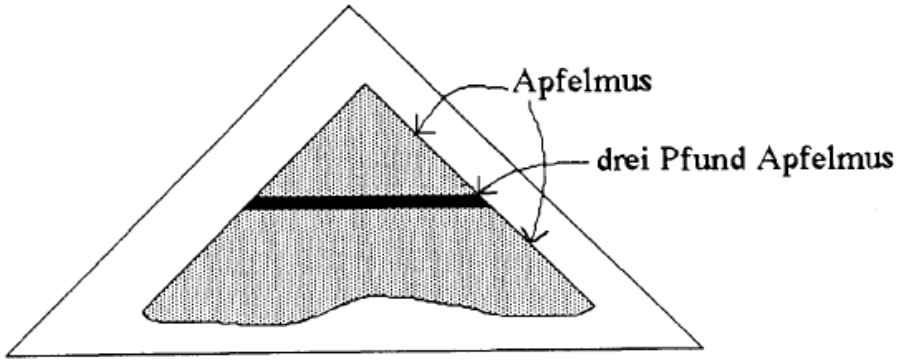


Abbildung 4: Gequantelte Teilextension

Krifka (1989a): Different thematic roles

- Depending on which properties hold:
  - SUM: summativity of the object relation → cumulativity of the object gets mapped onto the event
  - GRAD: graduality [incrementality] → quantizedness of the object gets mapped onto the event
  - UNI-E: unique event

	SUM	GRAD	UNI-E	
write a letter	X	X	X	gradual effected patient
eat an apple	X	X	X	gradual consumed patient
read a letter	X	X	–	gradual patient
touch a cat	X	–	–	affected patient
see a horse	X	–	–	stimulus

(Krifka 1989b): Mapping from (sub)events to (sub)objects

Czech:

(29) a. Ota pil vino.
Ota.NOM drank.IPF wine.ACC
'Ota drank **wine**.'

b. Ota vypil vino.
Ota.NOM drank.PF wine.ACC
'Ota drank **the wine**.'

[NB: oversimplified view]

Generalised 'measuring out' in Krifka (1998)

(see also Jackendoff 1996; Ramchand 1997) ('measuring out': Tenny 1987, 1994)

- **Homomorphism between the event and a scale**
  - Incremental verbs: Extent/volume of an object
    (see also Kennedy 2012, i.a.)

Generalised 'measuring out' in Krifka (1998)

(see also Jackendoff 1996; Ramchand 1997) ('measuring out': Tenny 1987, 1994)

- **Homomorphism between the event and a scale**
  - Incremental verbs: Extent/volume of an object
    (see also Kennedy 2012, i.a.)
  - Directed motion events: Spatial path (30-a)
    (see also Zwarts 2005, 2006; Winter 2006; Gehrke 2008b, i.a.)

(30) a. He pushed the cart to the store in two hours.
b. He pushed the cart down the river / towards the store / to stores for two hours.

Generalised 'measuring out' in Krifka (1998)

(see also Jackendoff 1996; Ramchand 1997) ('measuring out': Tenny 1987, 1994)

- **Homomorphism between the event and a scale**
  - Incremental verbs: Extent/volume of an object
    (see also Kennedy 2012, i.a.)
  - Directed motion events: Spatial path (30-a)
    (see also Zwarts 2005, 2006; Winter 2006; Gehrke 2008b, i.a.)

(30) a. He pushed the cart to the store in two hours.
b. He pushed the cart down the river / towards the store / to stores for two hours.

  - Degree achievements: Scalar adjectival property (31-b)
    (see also Hay et al. 1999; Kennedy & Levin 2008; Kearns 2007, i.a.)

(31) a. The sky darkened in(/for) an hour.
b. The gap widened (in/)for ten minutes.
c. The soup cooled (by) 17 degrees in/#for 30 minutes.

E.g. degree achievements

Hay et al. (1999); Kennedy & Levin (2008):

- With **deadjectival degree achievements**, the telos is the standard associated with the underlying adjective.

E.g. degree achievements

Hay et al. (1999); Kennedy & Levin (2008):

- With **deadjectival degree achievements**, the telos is the standard associated with the underlying adjective.
  - Those derived from **closed-scale adjectives**: telic

E.g. degree achievements

Hay et al. (1999); Kennedy & Levin (2008):

- With **deadjectival degree achievements**, the telos is the standard associated with the underlying adjective.
  - Those derived from **closed-scale adjectives**: telic
  - Those derived from **open-scale adjectives**, which have a context-dependent standard somewhere on the scale: telic or atelic (32)

(32) The soup cooled for/in an hour.

E.g. degree achievements

Hay et al. (1999); Kennedy & Levin (2008):

- With **deadjectival degree achievements**, the telos is the standard associated with the underlying adjective.
  - Those derived from **closed-scale adjectives**: telic
  - Those derived from **open-scale adjectives**, which have a context-dependent standard somewhere on the scale: telic or atelic (32)

(32) The soup cooled for/in an hour.

(33) a. The tailor almost lengthened the pants.
b. The teacher almost lengthened the exam.

(examples from Hay et al. 1999)

Degree achievements

(Hay et al. 1999; Kennedy & Levin 2008)

(34) a. The tailor almost lengthened the pants.
b. The teacher almost lengthened the exam.

- Depending on the standard degree on the underlying scale in the context, such degree achievements can be atelic or telic.
  - Telic (34-a): Pants usually come with some standard bounded length.
  - Atelic (34-b): Exams can be of any random length.

Degree achievements

(Hay et al. 1999; Kennedy & Levin 2008)

(34) a. The tailor almost lengthened the pants.
b. The teacher almost lengthened the exam.

- Depending on the standard degree on the underlying scale in the context, such degree achievements can be atelic or telic.
  - Telic (34-a): Pants usually come with some standard bounded length.
  - Atelic (34-b): Exams can be of any random length.

(A)telicity diagnostics with *almost*:

- Ambiguity in the telic example a.: (i) the entire eventuality almost took place, *or* (ii) the pants almost became long
- No ambiguity in the atelic example b.: only reading (i)

Aspectual classes and scale structure

- Levin & Rappaport Hovav (2006); Rappaport Hovav & Levin (2010):
  - **Result verbs** lexicalise a change of state along a uni-dimensional scale. [~ ACC/ACH]
  - **Manner verbs** do not lexicalise such a uni-dimensional scale, but refer to change in various dimensions. [~ ACT]

- Beavers (2008):
  - **Two-point scales** [~ ACH]
  - **Scales with more intervals** [~ ACC]

Degree modification in the verbal domain

Degree modifiers to diagnose scale properties

Analogy to adjectival scale structures (e.g. Rotstein & Winter 2004; Kennedy & McNally 2005)

- Caudal & Nicolas (2005):
  - **Quantity scales** (with incremental theme verbs, diagnosed by, e.g., *partially* in *Yannig ate the cake partially*)
  - **Intensity scales** (accessed by *perfectly*, *extremely*)

→ Bochnak (2013): Two readings of *half* (35)

(35) John half ate the apple.

a. John ate half of the apple. **eventive**

b. What John did, can only halfway be described as an apple-eating eventuality. **evaluative**

- Kearns (2007): **Standard telos** (associated with non-maximal degrees) vs. **maximum telos**

  → Fleischhauer (2013): change-of-state verbs + *very* (German, Russian)

Event structure approaches

Dowty's (1979) proposal to decompose predicates, reformulated in event semantic terms

- An event (the **macroevent**) can be structurally complex and decomposable into **subevents**.
- Subevents are associated with CAUSE, DO or BECOME, or related notions such as preparatory phase, initiating state, process, transition, culmination, consequent or result state and the like.

Dowty (1979)

- **States** (36) (e.g. *John knows the answer.*)

(36) $\pi_n(\alpha_1, \ldots, \alpha_n)$.

- **Activities** (37) (e.g. *John is walking.*)

(37) $\textsc{do}(\alpha_1, [\pi_n(\alpha_1, \ldots, \alpha_n)])$.

- **Achievements** (38) (z.B. *John discovered the solution.*)

(38) $\textsc{become}[\pi_n(\alpha_1, \ldots, \alpha_n)]$.

- **Accomplishments** (39) (e.g. *John broke the window.*)

(39) $\textsc{do}(\alpha_1, [\pi_n(\alpha_1, \ldots, \alpha_n)])]\textsc{cause}[\textsc{become}\ \rho_m(\beta_1, \ldots, \beta_n)]]]$.

Dowty (1979) on DO, CAUSE, BECOME

(40) $\Box[\textsc{do}(\alpha, \phi) \leftrightarrow \phi \wedge \phi$ is under the immediate control of the agent (an individual denoted by α)]. (Dowty 1979, 118)

Dowty (1979) on DO, CAUSE, BECOME

(40) $\Box[\textsc{do}(\alpha, \phi) \leftrightarrow \phi \wedge \phi$ is under the immediate control of the agent (an individual denoted by α)]. (Dowty 1979, 118)

(41) $[\textsc{become}\ \phi]$ is true at *I* iff there is an interval *J* containing the initial bound of *I* such that $\neg\phi$ is true at *J* and there is an interval *K* containing the final bound of *I* such that ϕ is true at *K*.

(Dowty 1979, 140)

Dowty (1979) on DO, CAUSE, BECOME

(40) $\Box[\textsc{do}(\alpha, \phi) \leftrightarrow \phi \wedge \phi$ is under the immediate control of the agent (an individual denoted by α)]. (Dowty 1979, 118)

(41) $[\textsc{become}\ \phi]$ is true at *I* iff there is an interval *J* containing the initial bound of *I* such that $\neg\phi$ is true at *J* and there is an interval *K* containing the final bound of *I* such that ϕ is true at *K*.

(Dowty 1979, 140)

(42) a. $[\phi$ **cause** $\psi]$ is true iff
   (i) ϕ is a causal factor for ψ, and
   (ii) for all other ϕ' such that ϕ' is also a causal factor for ψ, some $\neg\phi$-world is as similar or more similar to the actual world than any $\neg\phi'$-world is.

   b. ϕ **depends causally on** ψ iff ϕ, ψ and $\neg\phi \mathrel{\Box\!\!\rightarrow} \neg\psi$ are all true.

   c. ϕ *is a* **causal factor** *for* ψ iff there is a series of sentences ϕ, ϕ_1, ..., ϕ_n, ψ(for $n \geqslant 0$) such that each member of the series depends causally on the previous member.

(after Lewis 1973)

Dowty (1979) on accomplishments

- Lexical (43) vs. syntactic ACCs, e.g. resultatives (44)

(43) John kills Bill.
[[*John does something*] CAUSE [BECOME ¬[*Bill is alive*]]]

(44) He sweeps the floor clean.
[[*He sweeps the floor*] CAUSE [BECOME [*the floor is clean*]]]

Dowty (1979) on accomplishments

- Lexical (43) vs. syntactic ACCs, e.g. resultatives (44)

(43) John kills Bill.
[[*John does something*] CAUSE [BECOME ¬[*Bill is alive*]]]

(44) He sweeps the floor clean.
[[*He sweeps the floor*] CAUSE [BECOME [*the floor is clean*]]]

- More examples for syntactic ACCs:
  - Motion verbs + [some] PPs [in some languages] (45-a)
  - *put*-verbs + PP-complements (45-b)
  - More resultatives (Dowty: *factitive (adjective of result)*) (45-c); (45-d)
  - Particle verbs in English [and other languages] (45-e)

(45)
a. walk, swim, fly to NP; drive, carry, push NP to NP
b. put, place, set NP in(to) NP; put NP to sleep
c. hammer NP flat, wipe NP clean, wiggle NP loose
d. drive NP to drink, read oneself to sleep, drink NP under the table
e. take NP out, chase NP away; sit down, dry out

Dowty (1979): telicity

- Defined in terms of the **subinterval property** (Bennett & Partee 1972)
  - (Atelic) states (46), ACTs (47): true at subintervals
  - (Telic) ACCs, ACHs: not true at subintervals (48)

(46) If α is a **stative predicate**, then $\alpha(x)$ is true at an interval *I* just in case $\alpha(x)$ is true at all moments within *I*.

(47) If α is an **activity** verb, then if $\alpha(x)$ is true at *I*, then $\alpha(x)$ is true for all subintervals of *I* which are larger than a moment.

(48) If α is an **accomplishment/achievement** verb, then if $\alpha(x)$ is true at *I*, then $\alpha(x)$ is false at all subintervals of *I*.

Parsons (1990)

- Problem with Dowty's (1979) treatment of DO, CAUSE, BECOME as sentence operators:
  - There is no evidence that the cases under discussion are bisentential: no scope ambiguities, always direct causation
  - → Instead: bieventive

Parsons (1990)

- Problem with Dowty's (1979) treatment of DO, CAUSE, BECOME as sentence operators:
  - There is no evidence that the cases under discussion are bisentential: no scope ambiguities, always direct causation
  - → Instead: bieventive
- **Causatives**:

(49) a. Mary flew the kite.
b. $(\exists e)[\text{Agent}(e,\text{Mary})\ \&\text{Cul}(e)\ \&\ (\exists e')[\text{Flying}(e')\ \&\ \text{Cul}(e')\ \&\ \text{Theme}(e',\text{Kite})\ \&\ \textsc{cause}(e,e')]]$.

(49) entails (50)

(50) a. The kite flies.
b. $(\exists e')[\text{Flying}(e')\ \&\ \text{Cul}(e')\ \&\ \text{Theme}(e',\text{Kite})]$.

Parsons (1990) on inchoatives

- BECOME relates an event and its target state - two postulates:
  - $\text{BECOME}(e, s) \rightarrow [\text{Theme}(e, x) = \text{Theme}(s, x)]$.
  - $\text{BECOME}(e, s)\ \&\text{Cul}(e, t) \rightarrow \text{Hold}(s, t)\ \&\ \neg(\exists t')[t' < t\ \&\text{Hold}(s, t')]$.

Parsons (1990) on inchoatives

- BECOME relates an event and its target state - two postulates:
  - $\text{BECOME}(e, s) \rightarrow [\text{Theme}(e, x) = \text{Theme}(s, x)]$.
  - $\text{BECOME}(e, s)\ \&\text{Cul}(e, t) \rightarrow \text{Hold}(s, t)\ \&\ \neg(\exists t')[t' < t\ \&\text{Hold}(s, t')]$.

(51) a. x closes the door tight.

b. $(\exists e)[\text{Cul}(e)\ \&\text{Agent}(e, x)\ \&\ (\exists e')[\text{Cul}(e')\ \&$ $\text{Theme}(e',\text{door})\ \&\ \text{CAUSE}(e, e')\ \&\ (\exists s)[\text{Being-closed}(s)$ $\&\text{Theme}(s,\text{door})\ \&\text{Hold}(s)\ \&\text{BECOME}(e', s)$ $\&\text{Being-Tight}(s)]]]$.

Event-structural ambiguities

Event structure approaches handle ambiguities of adverbial modifiers in terms of structural (scope) instead of lexical ambiguity.

- Adverbs like *quickly, rudely, clumsily, again, almost* or temporal *for*-adverbials can have more than one reading, depending on the verbal predicate they combine with.

(See also Dowty 1979; Pustejovsky 1991; von Stechow 1996; Eckardt 1998; Ernst 1998; Rapp & von Stechow 1999; Kratzer 2004; Beck 2005, among others)

E.g. von Stechow (1996) on 'again'

(as discussed in Beck 2005)

(52) Clyde cleans his boots again.

a. ... and Clyde has cleaned his boots before. *repetitive*

b. ... and his boots were clean before. *restitutive*

E.g. von Stechow (1996) on 'again'

(as discussed in Beck 2005)

(52) Clyde cleans his boots again.

a. ... and Clyde has cleaned his boots before. *repetitive*

b. ... and his boots were clean before. *restitutive*

(53) $[\![\text{again}]\!]\ (P_{\langle i,t\rangle})(e) = 1$ iff $P(e) \& \exists e'[e' < e \& P(e')]$

$= 0$ iff $\neg P(e) \& \exists e'[e' < e \& P(e')]$

undefined otherwise.

Lexical accomplishments (von Stechow, Beck)

(54) Sally opened the door.

- Lexical entries:

(55) a. $\text{open}_{TV} = \text{open}_{Adj} + \textsc{become} + \textsc{cause}$

b. $[\oslash_V] \rightarrow \lambda p \lambda x \lambda e . \exists P [P_e(x) \& \exists e' [\textsc{become}_{e'}(p) \& \textsc{cause}(e')(e)]$

(56) a. $[\![\textsc{cause}]\!](e')(e) = 1$ iff e' occurred, e occurred and if e hadn't occurred then e' wouldn't have occurred

b. $[\![\textsc{become}]\!](P)(e) = 1$ iff e is the smallest event such that P is not true of the prestate of e but P is true of the result state of e

Lexical accomplishments (von Stechow, Beck)

(54) Sally opened the door.

- Lexical entries:

(55) a. $\text{open}_{TV} = \text{open}_{Adj} + \textsc{become} + \textsc{cause}$

b. $[\oslash_V] \rightarrow \lambda p \lambda x \lambda e. \exists P[P_e(x) \& \exists e'[\textsc{become}_{e'}(p) \& \textsc{cause}(e')(e)]$

(56) a. $[\![\textsc{cause}]\!](e')(e) = 1$ iff e' occurred, e occurred and if e hadn't occurred then e' wouldn't have occurred

b. $[\![\textsc{become}]\!](P)(e) = 1$ iff e is the smallest event such that P is not true of the prestate of e but P is true of the result state of e

- Syntax and Semantics of (54):

(57) a. $[_{VP}$ Sally $[\oslash_V[_{SC}\ \text{open}_{Adj}[\text{the door}]]]]$
$> [_{VP}$ Sally $[[\oslash + \text{open}_{Adj}]_V[_{SC}\, t[\text{the door}]]]]$

b. $\lambda e. \exists P[P_e(\text{Sally}) \& \exists e'[\textsc{become}_{e'}(\lambda e^{\star}.\text{open}_e \star (\text{the\_door}))$
$\& \textsc{cause}(e')(e)]$

→ There was an action of Sally's which caused the door to become open.

Beck (2005): 'again' with syntactically derived ACCs

e.g. *Sally hammered the metal flat again.*

- **Repetitive reading**:

(58) a. $[_{VP}$[the metal][1$[_{VP}$ $[_{VP}$ Sally $[_{V'}\, t_1[_{V'}$ hammered $[_{SC}\mathrm{PRO}_1$ flat]]] again]]]

b. $\lambda e''.\mathrm{again}_{e''}\lambda e.\mathrm{hammer}_e(\mathrm{the\_metal})(y)$
$\&\exists e'[\textsc{become}_{e'}(\lambda e^{\star}.\mathrm{flat}_{e\star}(\mathrm{the\_metal}))\&\textsc{cause}(e')(e)]$

→ Once more, Sally's hammering the metal caused it to become flat.

- **Restitutitive reading**:

(59) a. $[_{VP}$[the metal][1$[_{VP}$ Sally $[_{V'}\, t_1[_{V'}$ hammered $[_{SC}$ $[_{SC}\mathrm{PRO}_1$ flat] again]]]]]

b. $\lambda e.\mathrm{hammer}_e(\mathrm{the\_metal})(y)$
$\&\exists e'[\textsc{become}_{e'}(\lambda e''.\mathrm{again}_{e''}(\lambda e^{\star}.\mathrm{flat}_{e\star}(\mathrm{the\_metal}))\&\textsc{cause}(e')(e)]$

→ Sally's hammering the metal caused it to become once more flat.

Rothstein (2004)

- Verbs denote sets of events of a particular event type
- Event types: lexical aspectual classes
  - Classes as constraints on how events can be individuated
  - E.g. the event structure of a given verbal predicate can be augmented, e.g. by secondary resultative predication

Rothstein (2004)

- Verbs denote sets of events of a particular event type
- Event types: lexical aspectual classes
  - Classes as constraints on how events can be individuated
  - E.g. the event structure of a given verbal predicate can be augmented, e.g. by secondary resultative predication

(60) STA: $\lambda e.P(e)$

(61) ACT: $\lambda e.(\text{DO}(P))(e)$

(62) ACH: $\lambda e.(\text{BECOME}(P))(e)$

(63) ACC:
$\lambda y \lambda e.\exists e_1,e_2[e=^S(e_1 \sqcup e_2)$
$\wedge\ \text{ACTIVITY}_{<x>}(e_1) \wedge \text{Ag}(e_1)=x \wedge \text{Th}(e_1)=y$
$\wedge\ \text{BECOME}_{<y>}(e_2) \wedge \text{Arg}(e_2)=\text{Th}(e_1)$
$\wedge\ \text{INCR}(e_1,e_2,C(e_2))]$

Rothstein (2004)

(64) Let e be a BECOME event.
An **incremental chain** C(e) is a set of parts of e such that:
1. the smallest event in C(e) is the initial bound of e
2. for every e_1,e_2 in C(e) $e_1 \sqsubseteq e_2$ or $e_2 \sqsubseteq e_1$
3. $e \in C(e)$

(65) **Incremental relations**
Let e_1 be an activity, e_2 be a BECOME event, and $C(e_2)$ be an incremental chain defined on e_2.
INCR(e_1,e_2,$C(e_2)$) (e_1 is incrementally related to e_2 with respect to the chain $C(e_2)$) iff:
there is a contextually available one-one function μ from $C(e_2)$ onto PART(e_1) (the set of parts of e_1) such that:
for every $e \in C(e_2)$: $\tau(e)=\tau(\mu(e))$.

Rothstein (2004): Telicity

- Atelic predicates are S-cumulative:

(66) X is **S-cumulative** iff:
$\exists e \exists e'[X(e) \wedge X(e') \wedge \neg e \sqsubseteq e' \wedge \forall e \forall e'[X(e) \wedge X(e') \wedge R(e,e') \rightarrow X^{S}(e \sqcup e')]]$

(X is S-cumulative if it is not a singleton predicate, and if for any two elements x and y in X which stand in the appropriate relation, the singular element which is formed out of the sum of x and y is also in X.)

(67) **The telicity principle**: A VP is telic if it denotes a set of events X which is atomic, or which is a pluralisation of an atomic set (i.e. if the criterion for individuating an atomic event in X are fully recoverable).

Rothstein (2004)

- ACCs & ACHs: definite changes
  - An event of change from $\neg\phi$ to ϕ is a minimal event of change (ACHs)
  - ACC: extended event of change from ψ to ϕ, whereby ψ implies $\neg\phi$
  - → This change takes place during an interval that is long enough to get from ψ to ϕ and that is kept together by an incremental chain.
- Such events are telic if no other factors interfere (e.g. mass nouns, bare plurals)
- Only when it is already lexically specified that the verb is made up of atomic segments, properties of the internal argument can affect telicity.

Syntactic decomposition of event predicates

- Commonly in terms of VP shells, each shell introducing a subevent that is semantically related in some way to the other subevent
  - States, activities: one VP
  - Accomplishments, achievements (changes of states): at least two VPs

Syntactic decomposition of event predicates

- Commonly in terms of VP shells, each shell introducing a subevent that is semantically related in some way to the other subevent
  - States, activities: one VP
  - Accomplishments, achievements (changes of states): at least two VPs
- e.g. Ramchand (2008):
  - init(iator)P, proc(ess)P, res(ult)P
  - Arguments in Spec's: initiator, undergoer, resultee
  - Projections related by a semantically defined 'leads-to'-relation

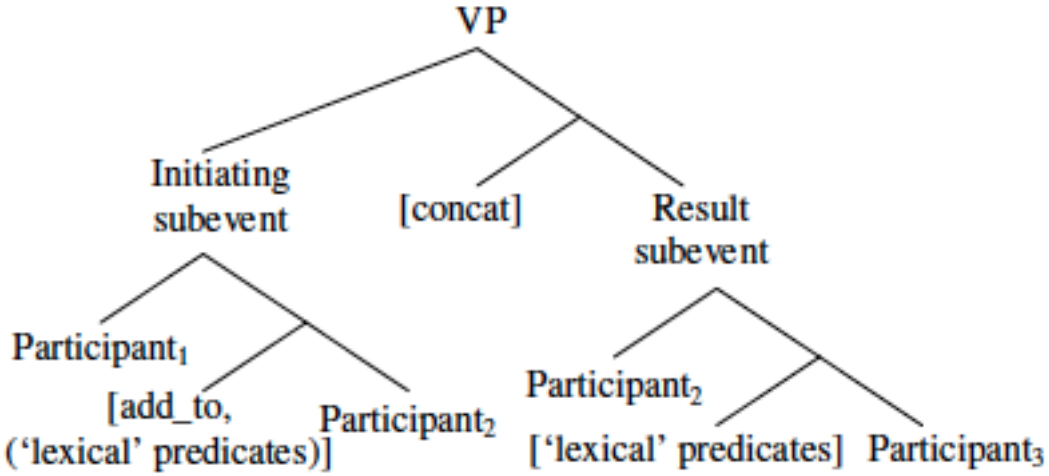
Syntactic decomposition of event predicates

- Commonly in terms of VP shells, each shell introducing a subevent that is semantically related in some way to the other subevent
  - States, activities: one VP
  - Accomplishments, achievements (changes of states): at least two VPs
- e.g. Ramchand (2008):
  - init(iator)P, proc(ess)P, res(ult)P
  - Arguments in Spec's: initiator, undergoer, resultee
  - Projections related by a semantically defined 'leads-to'-relation

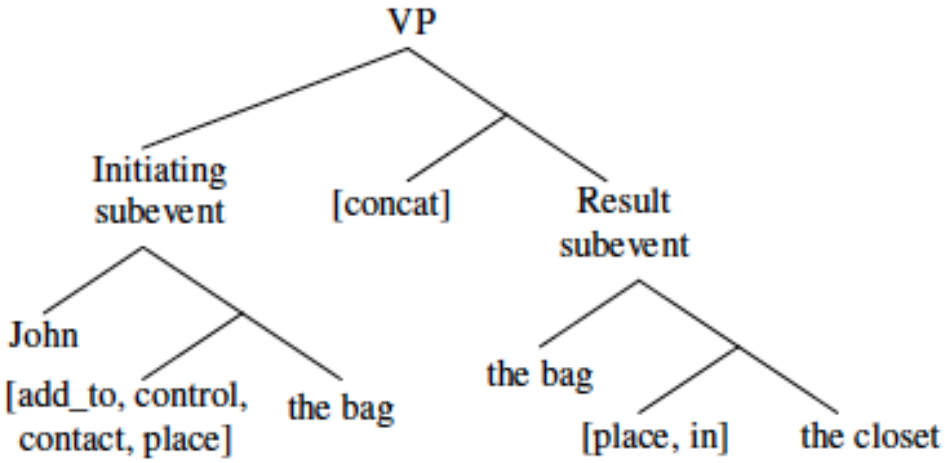
  Arguments in Arsenijević (2006) that you need at most two projections:
  - Undergoer and resultee are never distinct
  - All you need to model is the change of state (prestate vs. poststate)

Arsenijević (2006)

(3) The telic template



(4) An example for the template: 'John put the bag into the closet.'



(from Arsenijević 2006, 238f.)

Interim summary

- **What we have done so far:**
  - Inner vs. outer aspect

  Inner apect:
  - Vendler classes (sta, act, acc, ach) and other classes
  - (A)telicity
  - Aspectual composition
  - Scale structure
  - Event structure
  - Event decomposition in syntax and semantics

Interim summary

- **What we have done so far:**
  - Inner vs. outer aspect

  Inner apect:
  - Vendler classes (sta, act, acc, ach) and other classes
  - (A)telicity
  - Aspectual composition
  - Scale structure
  - Event structure
  - Event decomposition in syntax and semantics
- **Where we are heading now:** Outer aspect
  - Aspect and Tense as relations between times (Reichenbach, Klein)
  - Aspectual operators and coercion (de Swart)
  - Syntactic implementation of pronominal approach to Aspect and Tense (Demirdache & Uribe-Etxebarria)
  - The Progressive and imperfectivity more generally
  - Aspect in Russian (THU)

Outer Aspect

Some cross-linguistic observations

- Where **Imperfective** plays a role:
  - Imperfective (e.g. Slavic)
  - Imperfect (e.g. Bulgarian, Ancient Greek)
    e.g. French imparfait, Spanish imperfecto
  - Progressive (e.g. English, Spanish)
- Where **Perfective** plays a role:
  - Perfective (e.g. Slavic)
  - Aorist (e.g. Bulgarian, Ancient Greek)
    e.g. French passé simple (& passé composé), Spanish indefinido
  - [some literature: Non-Progressive]
- Where **Perfect** plays a role:
  - English (Past, Present, Future) perfect
  - Spanish perfecto ...
  - (German Perfekt, French passé composé)

Some cross-linguistic observations

- Where **Imperfective** plays a role:
  - Imperfective (e.g. Slavic)
  - Imperfect (e.g. Bulgarian, Ancient Greek)
    e.g. French imparfait, Spanish imperfecto
  - Progressive (e.g. English, Spanish)
- Where **Perfective** plays a role:
  - Perfective (e.g. Slavic)
  - Aorist (e.g. Bulgarian, Ancient Greek)
    e.g. French passé simple (& passé composé), Spanish indefinido
  - [some literature: Non-Progressive]
- Where **Perfect** plays a role:
  - English (Past, Present, Future) perfect
  - Spanish perfecto ...
  - (German Perfekt, French passé composé)

Note again: **Perfective** $\neq$ **Perfect**

Distinction between form and meaning

- E.g. **Russian imperfective forms** can be used to refer to completed events, which is usually associated with a 'perfective' meaning.
  - 'General-factual' use of the IPF
    (Sometimes best translated with a Perfect into English)

Distinction between form and meaning

- E.g. **Russian imperfective forms** can be used to refer to completed events, which is usually associated with a 'perfective' meaning.
  - 'General-factual' use of the IPF
    (Sometimes best translated with a Perfect into English)
- E.g. **French passé simple** is only used in written texts (at most) → replaced by the passé composé
  - Passé composé (formally a perfect) can express perfective meanings

Distinction between form and meaning

- E.g. **Russian imperfective forms** can be used to refer to completed events, which is usually associated with a 'perfective' meaning.
  - 'General-factual' use of the IPF
    (Sometimes best translated with a Perfect into English)
- E.g. **French passé simple** is only used in written texts (at most) → replaced by the passé composé
  - Passé composé (formally a perfect) can express perfective meanings
- Reverse situation in many **Spanish** varieties: Perfecto is replaced by indefinido, which then expresses both perfective and perfect meanings

Distinction between form and meaning

- E.g. **Russian imperfective forms** can be used to refer to completed events, which is usually associated with a 'perfective' meaning.
  - 'General-factual' use of the IPF
    (Sometimes best translated with a Perfect into English)
- E.g. **French passé simple** is only used in written texts (at most) → replaced by the passé composé
  - Passé composé (formally a perfect) can express perfective meanings
- Reverse situation in many **Spanish** varieties: Perfecto is replaced by indefinido, which then expresses both perfective and perfect meanings
- In **South German** varieties: Almost exclusive use of Present Perfect → functions like a Simple Past

  (Past Perfect still has more or less the same 'perfect' uses as in English; sometimes also double perfects: 'I have had seen that')

Distinction between form and meaning

- E.g. **Russian imperfective forms** can be used to refer to completed events, which is usually associated with a 'perfective' meaning.
  - 'General-factual' use of the IPF
    (Sometimes best translated with a Perfect into English)
- E.g. **French passé simple** is only used in written texts (at most) → replaced by the passé composé
  - Passé composé (formally a perfect) can express perfective meanings
- Reverse situation in many **Spanish** varieties: Perfecto is replaced by indefinido, which then expresses both perfective and perfect meanings
- In **South German** varieties: Almost exclusive use of Present Perfect → functions like a Simple Past

  (Past Perfect still has more or less the same 'perfect' uses as in English; sometimes also double perfects: 'I have had seen that')

...

Form and meaning

- **Typical imperfective meanings**:
  - In-Process (e.g. English PROG, Russian IPF)
  - Habituality (e.g. Russian IPF, but not English PROG)

(Generic statements in English are incompatible with PROG)

Form and meaning

- **Typical imperfective meanings**:
  - In-Process (e.g. English PROG, Russian IPF)
  - Habituality (e.g. Russian IPF, but not English PROG)

  (Generic statements in English are incompatible with PROG)
- **Issues of 'markedness' and competition**:
  - English only has forms for IPF meaning (PROG) → Should we treat non-PROG forms as PF?

Form and meaning

- **Typical imperfective meanings**:
  - In-Process (e.g. English PROG, Russian IPF)
  - Habituality (e.g. Russian IPF, but not English PROG)

  (Generic statements in English are incompatible with PROG)
- **Issues of 'markedness' and competition**:
  - English only has forms for IPF meaning (PROG) → Should we treat non-PROG forms as PF? (No)

Form and meaning

- **Typical imperfective meanings**:
  - In-Process (e.g. English PROG, Russian IPF)
  - Habituality (e.g. Russian IPF, but not English PROG)

  (Generic statements in English are incompatible with PROG)
- **Issues of 'markedness' and competition**:
  - English only has forms for IPF meaning (PROG) → Should we treat non-PROG forms as PF? (No)
  - Russian IPF can often appear in contexts where also the PF can appear, but not vice versa → Is the (Russ.) IPF 'unmarked', or is it sometimes even 'fake'?

Form and meaning

- **Typical imperfective meanings**:
  - In-Process (e.g. English PROG, Russian IPF)
  - Habituality (e.g. Russian IPF, but not English PROG)

  (Generic statements in English are incompatible with PROG)
- **Issues of 'markedness' and competition**:
  - English only has forms for IPF meaning (PROG) → Should we treat non-PROG forms as PF? (No)
  - Russian IPF can often appear in contexts where also the PF can appear, but not vice versa → Is the (Russ.) IPF 'unmarked', or is it sometimes even 'fake'? (No)

Form and meaning

- **Typical imperfective meanings**:
  - In-Process (e.g. English PROG, Russian IPF)
  - Habituality (e.g. Russian IPF, but not English PROG)

  (Generic statements in English are incompatible with PROG)
- **Issues of 'markedness' and competition**:
  - English only has forms for IPF meaning (PROG) → Should we treat non-PROG forms as PF? (No)
  - Russian IPF can often appear in contexts where also the PF can appear, but not vice versa → Is the (Russ.) IPF 'unmarked', or is it sometimes even 'fake'? (No)
    Russian 'marks' PF on atelic and incremental VPs, IPF on telic ones

Form and meaning

- **Typical imperfective meanings**:
  - In-Process (e.g. English PROG, Russian IPF)
  - Habituality (e.g. Russian IPF, but not English PROG)

  (Generic statements in English are incompatible with PROG)
- **Issues of 'markedness' and competition**:
  - English only has forms for IPF meaning (PROG) → Should we treat non-PROG forms as PF? (No)
  - Russian IPF can often appear in contexts where also the PF can appear, but not vice versa → Is the (Russ.) IPF 'unmarked', or is it sometimes even 'fake'? (No)
    Russian 'marks' PF on atelic and incremental VPs, IPF on telic ones
  - In the absence of (I)PF forms and a present perfect-simple past contrast, e.g. South German:
    Present perfect can express all three meanings

Form and meaning

- **Typical imperfective meanings**:
  - In-Process (e.g. English PROG, Russian IPF)
  - Habituality (e.g. Russian IPF, but not English PROG)

  (Generic statements in English are incompatible with PROG)
- **Issues of 'markedness' and competition**:
  - English only has forms for IPF meaning (PROG) → Should we treat non-PROG forms as PF? (No)
  - Russian IPF can often appear in contexts where also the PF can appear, but not vice versa → Is the (Russ.) IPF 'unmarked', or is it sometimes even 'fake'? (No)
    Russian 'marks' PF on atelic and incremental VPs, IPF on telic ones
  - In the absence of (I)PF forms and a present perfect-simple past contrast, e.g. South German:
    Present perfect can express all three meanings

...

Tense and Aspect

- **Reichenbach (1947)**:
  - **E**(vent Time), **R**(eference Time), **S**(peech Time)
  - Aspects: Relation between E and R
  - Tenses: Relation between S and R

Tense and Aspect

- **Reichenbach (1947)**:
  - **E**(vent Time), **R**(eference Time), **S**(peech Time)
  - Aspects: Relation between E and R
  - Tenses: Relation between S and R

- Reformulation in terms of **temporal intervals**, rather than points

  e.g. Klein (1994, 1995):
  - Situation Time (TSit / **T-SIT**)
  - Assertion Time (**T-AST**; 1995) / Topic Time (TT; 1994)
  - Utterance Time (**TU**)

Klein (1994, 1995)

- **Tenses**:
  - Present: TU INCL T-AST
  - Past: TU AFTER T-AST
  - Future: TU BEFORE T-AST
- **Aspects**:
  - Imperfective: T-AST INCL T-SIT
  - Perfective: T-AST AT T-SIT
  - Perfect: T-AST AFTER T-SIT
  - Prospective: T-AST BEFORE T-SIT

Klein (1994, 1995)

- **Tenses**:
  - Present: TU INCL T-AST
  - Past: TU AFTER T-AST
  - Future: TU BEFORE T-AST
- **Aspects**:
  - Imperfective: T-AST INCL T-SIT
  - Perfective: T-AST AT T-SIT
  - Perfect: T-AST AFTER T-SIT
  - Prospective: T-AST BEFORE T-SIT (ex. in (68))

(68) When I got home yesterday, Mary called and said she <u>would arrive</u> soon.

Event semantic implementation

e.g. Paslawska & von Stechow (2003b):

(69) a. **Perfective**:
$\text{INCLUDES} = \lambda P.\lambda t.\exists e.\tau(e) \subseteq t \& P(e), P$ of type vt

b. **Perfect**:
$\text{POST} = \lambda P.\lambda t.\exists e.\tau(e) < t \& P(e)$

c. **Imperfective**:
$\text{INCLUDED} = \lambda P.\lambda t.\exists e.t \subseteq \tau(e) \& P(e)$

- $\tau(e)$: temporal trace of the event (see also Krifka 1998)
  ~ event time (Klein's T-SIT)
- t ~ reference time (Klein's T-AST)
- (This should further be modalised, to avoid the imperfective paradox)

de Swart (1998): Aspect and coercion

(70) [Tense [Aspect* [eventuality description]]]

- Kleene star *: zero, one or more aspectual operations possible

de Swart (1998): Aspect and coercion

(70) [Tense [Aspect* [eventuality description]]]

- Kleene star *: zero, one or more aspectual operations possible
- **Eventuality descriptions** (cp. Verkuyl 1993):
  - States: homogeneous, stative
  - Processes: homogeneous, dynamic
  - Events: quantized, dynamic

  → Domain of eventualities $\varepsilon = S \cup P \cup E$

de Swart (1998): Aspect and coercion

(70) [Tense [Aspect* [eventuality description]]]

- Kleene star *: zero, one or more aspectual operations possible
- **Eventuality descriptions** (cp. Verkuyl 1993):
  - States: homogeneous, stative
  - Processes: homogeneous, dynamic
  - Events: quantized, dynamic
  - → Domain of eventualities $\varepsilon = S \cup P \cup E$
- **Aspectual operations**:
  - e.g. PROG, PERF, several coercion operators
  - Eventuality description modifiers
  - Can turn an eventuality of one type into another type

(NB: One-component approach to aspect)

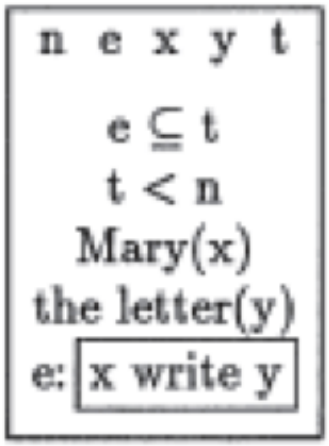
Background on DRT

- **D(iscourse) R(epresentation) T(heory)** (Kamp & Reyle 1993)
  - **DRS**(tructure)s to keep track of d(iscourse) r(eferent)s
  - **dr**s for individuals (x, y, z ...), events (e_1, e_2 ...), states (s_1, s_2 ...), times (t_1, t_2 ...; incl. n for 'now')
  - Construction and interpretation rules etc.

Background on DRT

- **D(iscourse) R(epresentation) T(heory)** (Kamp & Reyle 1993)
  - **DRS**(tructure)s to keep track of d(iscourse) r(eferent)s
  - **dr**s for individuals (x, y, z ...), events (e_1, e_2 ...), states (s_1, s_2 ...), times (t_1, t_2 ...; incl. n for 'now')
  - Construction and interpretation rules etc.

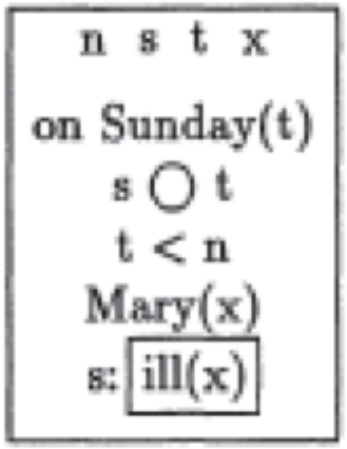
(71) Mary wrote the letter. (simple past of an event)



- $\subseteq$: temporal inclusion
- $<$: temporal precedence

Background on DRT

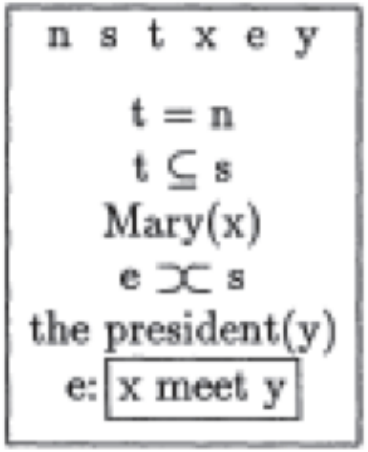
(72) Mary was ill on Sunday. (simple past of a state + temporal adverbial)



- ◯: temporal overlap

Background on DRT

(73) Mary has met the president. (present perfect of an event)



- $e \supset\subset s$: e abuts s

Background on DRT

(74) A man entered the White Hart. He wore a black jacket. Bill served him a beer.

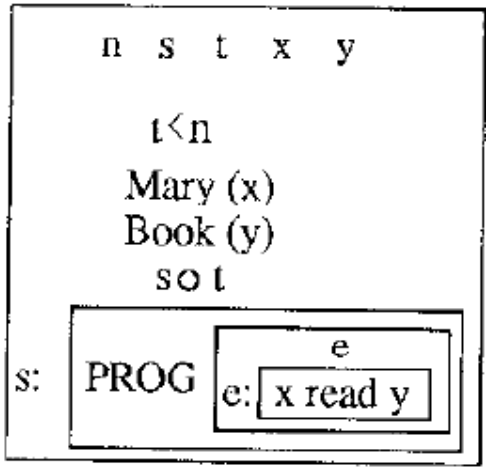
$$
\begin{array}{c}
n \quad e \quad t \quad x \quad y \quad s \quad t' \quad u \\
w \quad e' \quad t'' \quad z \quad r \quad u' \\
\hline
e \subseteq t \\
t < n \\
\text{man}(x) \\
\text{the White Hart}(y) \\
e: \boxed{x \text{ enter } y} \\
s \bigcirc t' \\
t' < n \\
e \subseteq s \\
u = x \\
\text{black jacket}(w) \\
s: \boxed{u \text{ be wearing } w} \\
e' \subseteq t'' \\
t'' < n \\
e < e' \\
\text{Bill}(z) \\
\text{beer}(r) \\
u' = x \\
e': \boxed{z \text{ serve } u' \ r}
\end{array}
$$

Back to de Swart (1998)

- PROG:
  - Introduces a state that is somehow retrieved from the eventuality description provided by the VP (more on this later)
  - Box notation to capture the modal semantics of PROG (again, more on this later): The VP event is introduced in the box only, this dr is not accessible higher up (in the described world)

(75) a. Mary was reading a book.

b. [PAST [PROG [Mary read a book]]]



de Swart (1998) on coercion

- **Input requirements of aspectual and (some) temporal operators**
  - PROG: dynamic eventualities
  - *for*-adverbials: homogeneous eventualities
  - *in*-adverbials: events (quantized eventualities)

de Swart (1998) on coercion

- **Input requirements of aspectual and (some) temporal operators**
  - PROG: dynamic eventualities
  - *for*-adverbials: homogeneous eventualities
  - *in*-adverbials: events (quantized eventualities)
  - **aspectually sensitive past tenses** in French (and other languages):
    passé simple [aorist]: events
    imparfait [imperfect]: homogeneous eventualities

de Swart (1998) on coercion

- **Input requirements of aspectual and (some) temporal operators**
  - PROG: dynamic eventualities
  - *for*-adverbials: homogeneous eventualities
  - *in*-adverbials: events (quantized eventualities)
  - **aspectually sensitive past tenses** in French (and other languages):
    passé simple [aorist]: events
    imparfait [imperfect]: homogeneous eventualities
- If these input requirements are not met, silent **coercion operators** are inserted.

de Swart (1998) on coercion

- **Input requirements of aspectual and (some) temporal operators**
  - PROG: dynamic eventualities
  - *for*-adverbials: homogeneous eventualities
  - *in*-adverbials: events (quantized eventualities)
  - **aspectually sensitive past tenses** in French (and other languages):
    passé simple [aorist]: events
    imparfait [imperfect]: homogeneous eventualities
- If these input requirements are not met, silent **coercion operators** are inserted.
  - C_{he}: coercion from homogeneous eventualities to events (adds initial or final bound → inchoative or bounded)

de Swart (1998) on coercion

- **Input requirements of aspectual and (some) temporal operators**
  - PROG: dynamic eventualities
  - *for*-adverbials: homogeneous eventualities
  - *in*-adverbials: events (quantized eventualities)
  - **aspectually sensitive past tenses** in French (and other languages):
    passé simple [aorist]: events
    imparfait [imperfect]: homogeneous eventualities
- If these input requirements are not met, silent **coercion operators** are inserted.
  - C_{he}: coercion from homogeneous eventualities to events (adds initial or final bound → inchoative or bounded)
  - C_{eh}: coercion from events to homogeneous eventualities (e.g. in-process, iterativity, habituality)

de Swart (1998) on coercion

- **Input requirements of aspectual and (some) temporal operators**
  - PROG: dynamic eventualities
  - *for*-adverbials: homogeneous eventualities
  - *in*-adverbials: events (quantized eventualities)
  - **aspectually sensitive past tenses** in French (and other languages):
    passé simple [aorist]: events
    imparfait [imperfect]: homogeneous eventualities
- If these input requirements are not met, silent **coercion operators** are inserted.
  - C_{he}: coercion from homogeneous eventualities to events (adds initial or final bound → inchoative or bounded)
  - C_{eh}: coercion from events to homogeneous eventualities (e.g. in-process, iterativity, habituality)
  - C_{sd}: coercion from static to dynamic eventualities (e.g. PROG on states)

de Swart (1998) on coercion

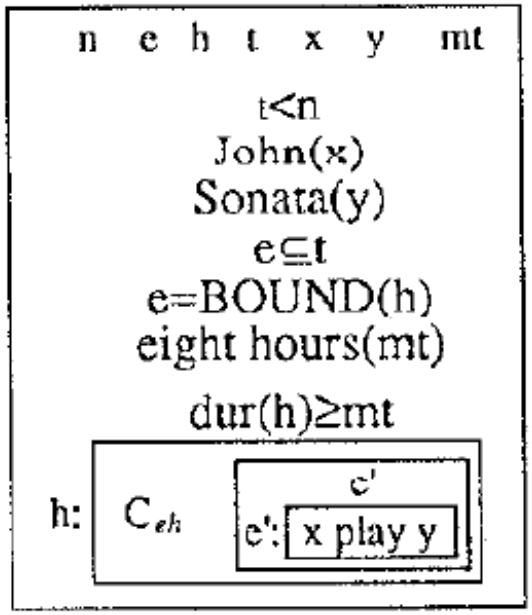
- **Input requirements of aspectual and (some) temporal operators**
  - PROG: dynamic eventualities
  - *for*-adverbials: homogeneous eventualities
  - *in*-adverbials: events (quantized eventualities)
  - **aspectually sensitive past tenses** in French (and other languages):
    passé simple [aorist]: events
    imparfait [imperfect]: homogeneous eventualities
- If these input requirements are not met, silent **coercion operators** are inserted.
  - C_{he}: coercion from homogeneous eventualities to events (adds initial or final bound → inchoative or bounded)
  - C_{eh}: coercion from events to homogeneous eventualities (e.g. in-process, iterativity, habituality)
  - C_{sd}: coercion from static to dynamic eventualities (e.g. PROG on states)

(context determines the exact interpretation of the coercion)

de Swart (1998) on coercion

(76) a. John played the sonata for eight hours.

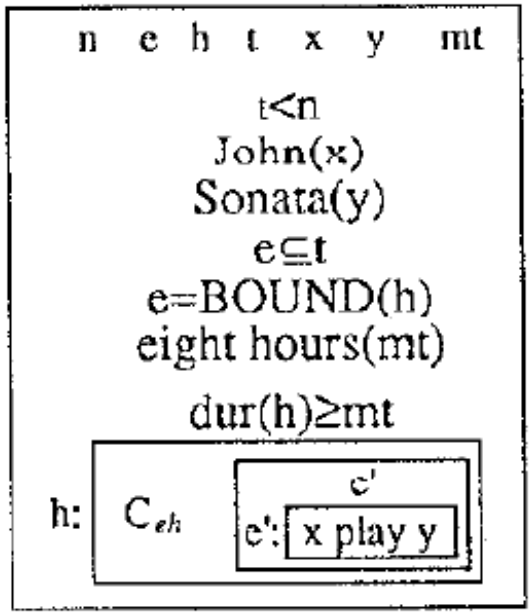
b. [PAST [FOR eight hours [C_{eh} [John play the sonata]]]]



de Swart (1998) on coercion

(76) a. John played the sonata for eight hours.

b. [PAST [FOR eight hours [C_{eh} [John play the sonata]]]]

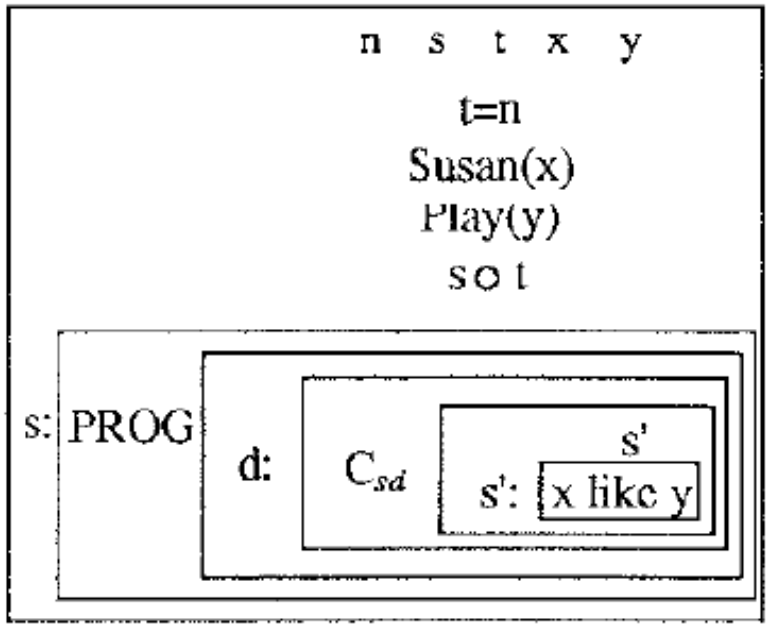


→ Most likely interpretation of the coercion in this context: iterative

de Swart (1998) on coercion

(77) a. Susan is liking this play.

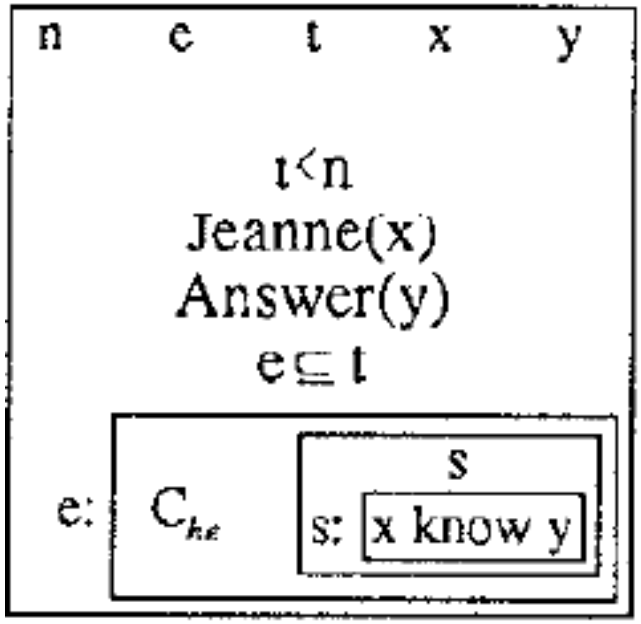
b. [PRES [PROG [C_{sd} [Susan like this play]]]]



de Swart (1998) on coercion

(78) a. (Soudain,) Jeanne sut la réponse.
Suddenly Jeanne knew.PS the answer

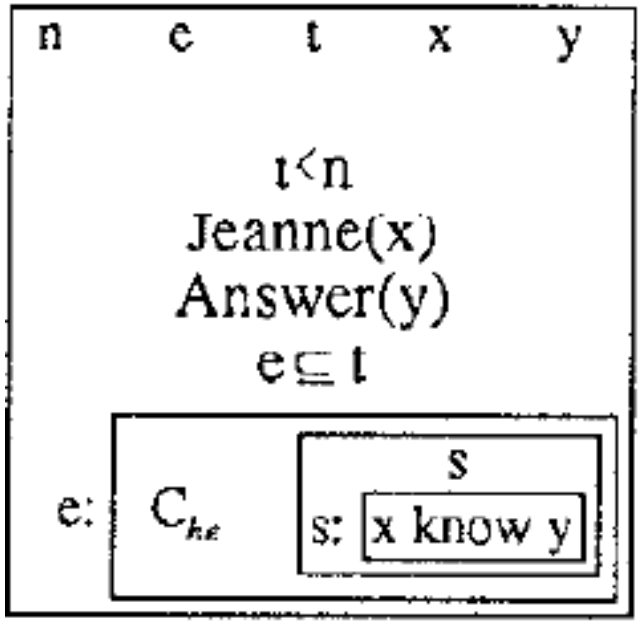
b. [PAST [C_{he} [Jeanne know the answer]]]]



de Swart (1998) on coercion

(78) a. (Soudain,) Jeanne sut la réponse.
Suddenly Jeanne knew.PS the answer

b. [PAST [C_{he} [Jeanne know the answer]]]]

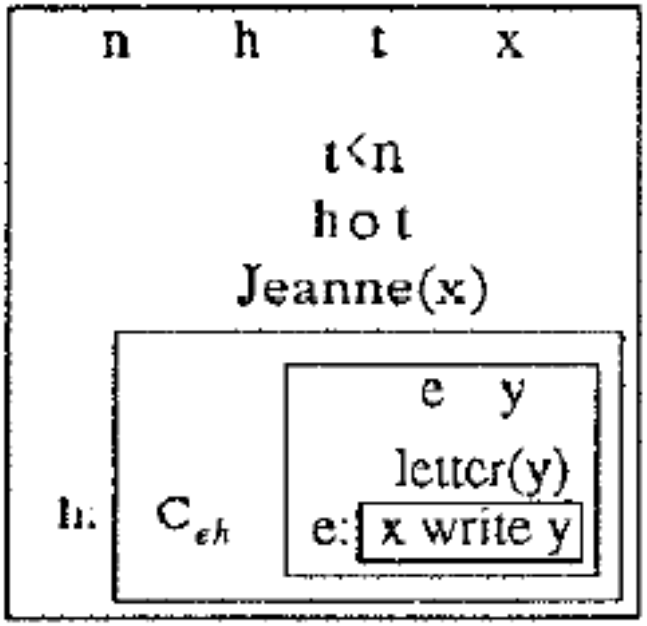


→ Most likely interpretation of the coercion in this context: inchoative

de Swart (1998) on coercion

(79) a. Jeanne écrivait une lettre.
Jeanne wrote.IMP a letter

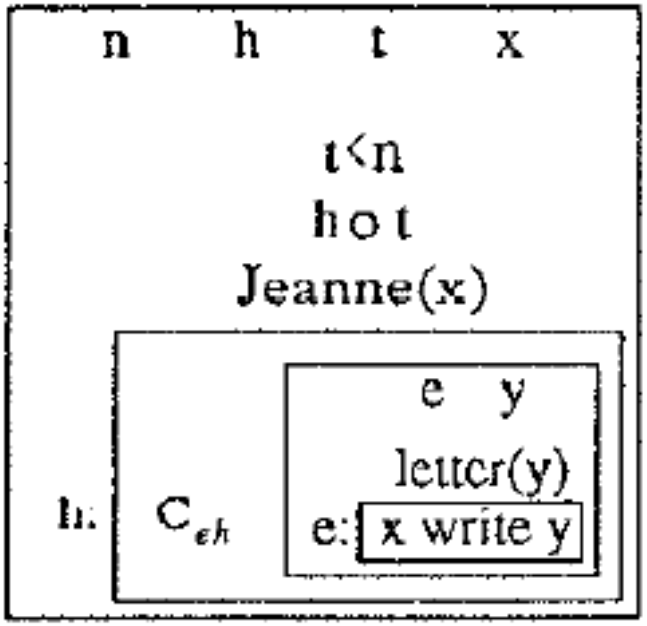
b. [PAST [C_{eh} [Jeanne write a letter]]]]



de Swart (1998) on coercion

(79) a. Jeanne écrivait une lettre.
Jeanne wrote.IMP a letter

b. [PAST [C_{eh} [Jeanne write a letter]]]]



→ Most likely interpretation of the coercion in this context: durative

Analogies between tenses and pronouns

(more general)

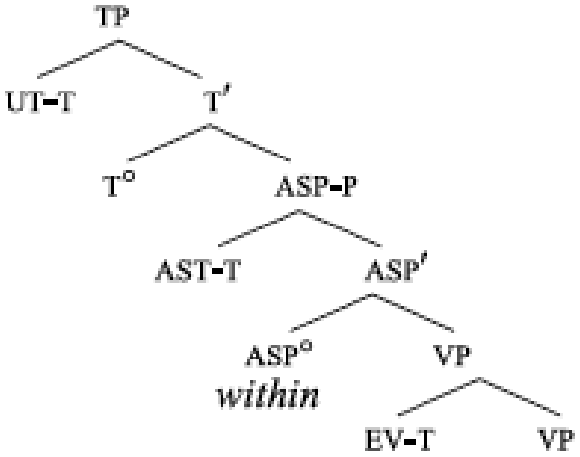
- Partee (1973): Some structural analogies between tenses and pronouns in English (see also Partee 1984)
- Kratzer (1998): More structural analogies between pronouns and tenses

Demirdache & Uribe-Etxebarria (2014)

Syntactic implementation (building on Demirdache & Uribe-Etxebarria 2000)

(see also Zagona 1990; Stowell 1995)

General architecture:

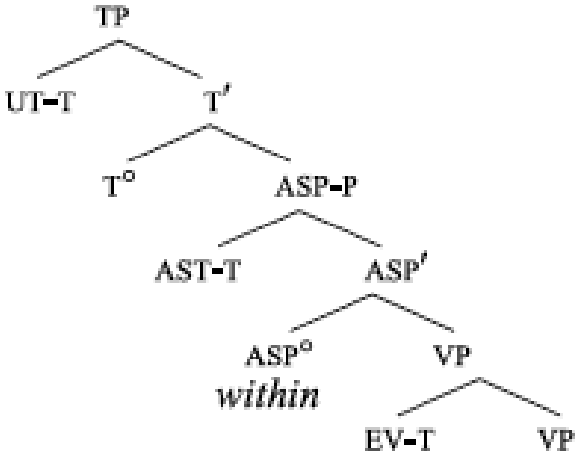


Demirdache & Uribe-Etxebarria (2014)

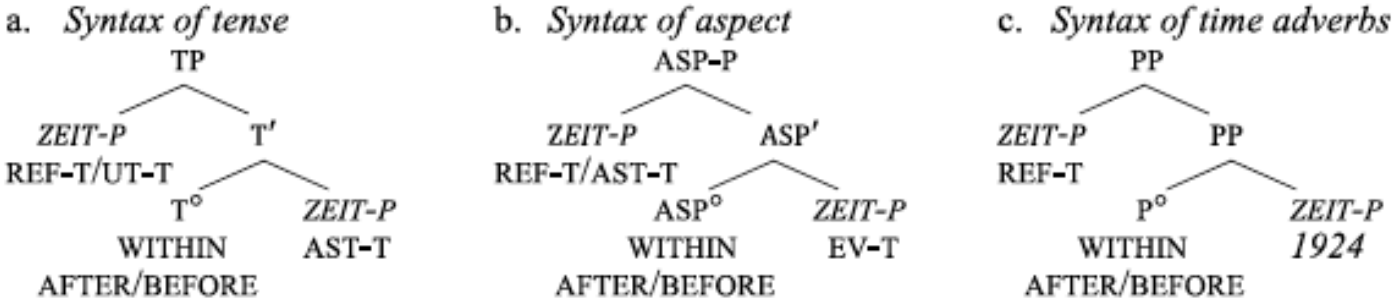
Syntactic implementation (building on Demirdache & Uribe-Etxebarria 2000)

(see also Zagona 1990; Stowell 1995)

General architecture:



Parallel between Tense, Aspect, temporal adverbials:



Demirdache & Uribe-Etxebarria (2014)

Aspects:

a. *Retrospective*

AST-T *after* EV-T

b. *Progressive*

AST-T *within* EV-T

c. *Prospective*

AST-T *before* EV-T

Demirdache & Uribe-Etxebarria (2014)

Aspects:

a. *Retrospective*

AST-T *after* EV-T

b. *Progressive*

AST-T *within* EV-T

c. *Prospective*

AST-T *before* EV-T

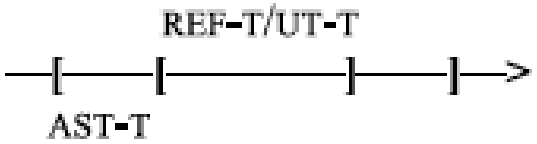
Tenses:

a. *Past*

UT-T *after* AST-T

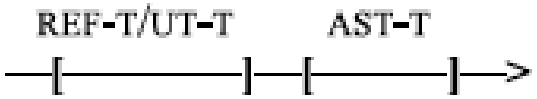
b. *Present*

UT-T *within* AST-T



c. *Future*

UT-T *before* AST-T



Demirdache & Uribe-Etxebarria (2014)

- Including French/Spanish (im)perfective past
  - Imparfait / Imperfecto
  - Passé (simple or composé) / Indefinido
  - → Do not express (BEFORE/WITHIN/AFTER) relations between E and R

Demirdache & Uribe-Etxebarria (2014)

- Including French/Spanish (im)perfective past
  - Imparfait / Imperfecto
  - Passé (simple or composé) / Indefinido
  - → Do not express (BEFORE/WITHIN/AFTER) relations between E and R
- Instead: **Temporal anaphora between E and R**, resolved via either
  - **Binding** → Imperfective,
  - or **Coreference/covaluation** → Perfective.

(building on Reinhart 2000)

Binding vs. coreference/covaluation

(Reinhart 2000)

(80)
a. Amina$_i$ [t_i loves her father]
b. Amina λx [x loves y's father]
c. Amina λx [x loves x's father] **binding**
d. Amina λx [x loves y's father]
(y/her = Amina) **coreference/covaluation**

Binding vs. coreference/covaluation

(Reinhart 2000)

(80)
a. Amina$_i$ [t_i loves her father]
b. Amina λx [x loves y's father]
c. Amina λx [x loves x's father] **binding**
d. Amina λx [x loves y's father]
(y/her = Amina) **coreference/covaluation**

(81)
a. Only Amina$_i$ [t_i loves her father]
b. Only Amina λx [x loves y's father]
c. Only Amina λx [x loves x's father] **binding**
d. Only Amina λx [x loves y's father]
(y/her = Amina) **coreference/covaluation**

Back to Demirdache & Uribe-Etxebarria (2014)

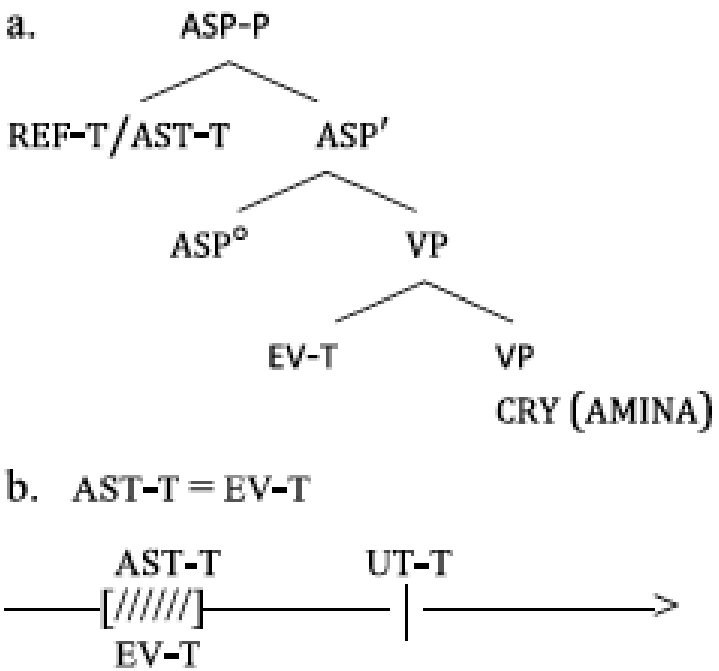
- **Coreference/covaluation** → Perfective
  - E and R are assigned the same semantic value
  - → The maximal time interval defining the running time of the described event
  - (E is already stored as a discourse referent)

Back to Demirdache & Uribe-Etxebarria (2014)

- **Coreference/covaluation** → Perfective
  - E and R are assigned the same semantic value
  - → The maximal time interval defining the running time of the described event
  - (E is already stored as a discourse referent)

for *Amina cried*$_{PF}$:

Temporal coreference/covaluation:



Back to Demirdache & Uribe-Etxebarria (2014)

- **Binding** → Imperfective
  - temporal overlap between E and R

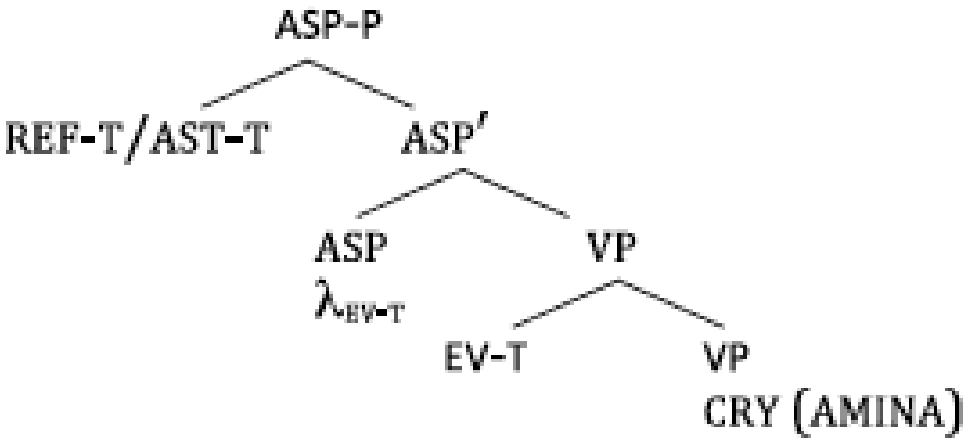
Back to Demirdache & Uribe-Etxebarria (2014)

- **Binding** → Imperfective
  - temporal overlap between E and R

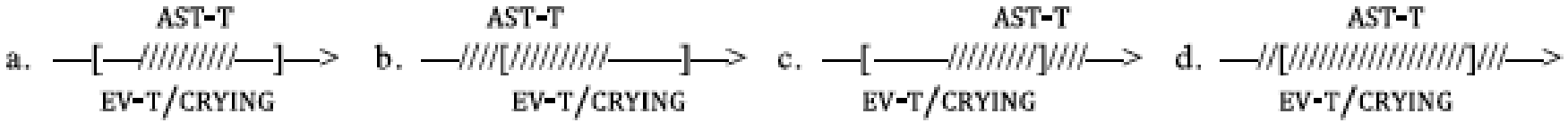
for *Amina cried*$_{IPF}$:

Temporal binding

a.



b. AST-T $\lambda_{\text{EV-T}}$[AMINA CRY (EV-T)]



The English Progressive

- Recall:
  - Not good with [most] states [exception: interval / dynamic states]
  - Not so good with achievements, unless there is additive coercion (which adds a preparatory process)
  - Imperfective paradox with accomplishments
  - Only expresses the process meaning, never habituality

Incompatibility of PROG with states

- e.g. Katz (1995, 2000, et seq.):
  - PROG maps properties of events onto properties of times
    - → PROG can only apply once
  - States: properties of times, not of events (cf. Maienborn 2007)
    - → States are incompatible with PROG

Incompatibility of PROG with states

- e.g. Katz (1995, 2000, et seq.):
  - PROG maps properties of events onto properties of times
    - → PROG can only apply once
  - States: properties of times, not of events (cf. Maienborn 2007)
    - → States are incompatible with PROG
- Many other approaches:
  - States also have event arguments (e.g. Landman 2000; Parsons 2000; Mittwoch 2005)
  - PROG requires input with 'stages' → states and achievements are not good inputs (e.g. Landman 1992; Rothstein 2004)

The imperfective paradox (Dowty 1979)

(82) **with atelic predicates: no paradox**

a. Carla was standing in the corner. STA
→ Carla stood in the corner.

b. Branko was sleeping. ACT
→ Branko slept.

The imperfective paradox (Dowty 1979)

(82) **with atelic predicates: no paradox**

a. Carla was standing in the corner. STA
→ Carla stood in the corner.

b. Branko was sleeping. ACT
→ Branko slept.

(83) **with telic predicates: paradox**

a. Vanja was crossing the road. ACC
$\not\rightarrow$ Vanja crossed the road.

b. Dunja was reaching the summit. ACH
$\not\rightarrow$ Dunja reached the summit.

The imperfective paradox (Dowty 1979)

(82) **with atelic predicates: no paradox**

a. Carla was standing in the corner. STA
→ Carla stood in the corner.

b. Branko was sleeping. ACT
→ Branko slept.

(83) **with telic predicates: paradox**

a. Vanja was crossing the road. ACC
$\not\rightarrow$ Vanja crossed the road.

b. Dunja was reaching the summit. ACH
$\not\rightarrow$ Dunja reached the summit.

(84) Vanja was crossing the road when a truck hit him.

Two kinds of solutions

- ACC VP extensions contain **completed and incompleted events** (Parsons 1990)

Two kinds of solutions

- ACC VP extensions contain **completed and incompleted events** (Parsons 1990); problems:
  - Incomplete objects with verbs of creation
  - Bare ACC VPs only pick out complete events (Zucchi 1999)

Two kinds of solutions

- ACC VP extensions contain **completed and incompleted events** (Parsons 1990); problems:
  - Incomplete objects with verbs of creation
  - Bare ACC VPs only pick out complete events (Zucchi 1999)
- **Modal semantics of PROG** (e.g. Dowty 1979; Landman 1992; Portner 1998)

Two kinds of solutions

- ACC VP extensions contain **completed and incompleted events** (Parsons 1990); problems:
  - Incomplete objects with verbs of creation
  - Bare ACC VPs only pick out complete events (Zucchi 1999)
- **Modal semantics of PROG** (e.g. Dowty 1979; Landman 1992; Portner 1998)

  → Truth in inertia worlds (Dowty 1979, 148):

(85) **Inertia Worlds**: are exactly like the given world up to the time in question and in which the future course of events after this time develops in ways most compatible with the past course of events. $\mathrm{Inr}(I, w)$ = set of inertia worlds for w and interval I.

(86) [Prog ϕ] is true at $< I, w >$ iff for some interval I' s.th. $I \subset I'$ and I is not a final subinterval for I', and for all w' such that $w' \in \mathrm{Inr}(I, w)$, ϕ is true at $< I', w' >$.

(recall 'subinterval property' in Bennett & Partee 1972)

Some problems with Dowty's inertia worlds

(e.g. Vlach 1981; Asher 1992; Landman 1992; Bonomi 1997; Portner 1998)

(87) #Mary was wiping out the Roman Army.

Some problems with Dowty's inertia worlds

(e.g. Vlach 1981; Asher 1992; Landman 1992; Bonomi 1997; Portner 1998)

(87) #Mary was wiping out the Roman Army.

→ Completed event should be plausible/reasonable.

Some problems with Dowty's inertia worlds

(e.g. Vlach 1981; Asher 1992; Landman 1992; Bonomi 1997; Portner 1998)

(87) #Mary was wiping out the Roman Army.

→ Completed event should be plausible/reasonable.

(88) Vanja was crossing the road ...
... when a truck hit him.

Some problems with Dowty's inertia worlds

(e.g. Vlach 1981; Asher 1992; Landman 1992; Bonomi 1997; Portner 1998)

(87) #Mary was wiping out the Roman Army.

→ Completed event should be plausible/reasonable.

(88) Vanja was crossing the road ...
... when a truck hit him.

→ Why is the trajectory of the truck not part of the equation?

- The bus was travelling down the road in *I* as well.
- But somehow we ignore this oncoming bus when we utter the first part in (88).

Some problems with Dowty's inertia worlds

(e.g. Vlach 1981; Asher 1992; Landman 1992; Bonomi 1997; Portner 1998)

(87) #Mary was wiping out the Roman Army.

→ Completed event should be plausible/reasonable.

(88) Vanja was crossing the road ...
... when a truck hit him.

→ Why is the trajectory of the truck not part of the equation?

- The bus was travelling down the road in *I* as well.
- But somehow we ignore this oncoming bus when we utter the first part in (88).

→ What can we ignore and what is relevant?

- Relevance of the type of event described
- Relevance of the perspective
- (Default semantics in Asher 1992)
- (Closeness relation among worlds, Landman 1992)
- ...

(see Portner 2011, for general discussion)

e.g. Landman (1992)

- PROG relates events:

(89) Mary was building a house.

a. *build a house* $\rightsquigarrow$
$\lambda x.\lambda e.\exists y[\textbf{house}(y) \wedge \textbf{build}(e) \wedge \text{AGENT}(e) = x \wedge \text{THEME}(e) = y]$

b. *ing*(VP) $\rightsquigarrow \lambda x.\lambda e.\text{PROG}(e, \text{VP}(x))$

c. *Mary was building a house* $\rightsquigarrow \exists e'.t(e') < \text{now}$
$\wedge\text{PROG}(e'.\lambda e\exists y[\textbf{house}(y) \wedge \textbf{build}(e) \wedge \text{AGENT}(e) = m \wedge \text{THEME}(e) = y])$

- Events can have parts and stages (more specific than parts).
  - Process stages
  - Planning stages
- Continuation branches

e.g. Altshuler (2012): PROG vs. Russian IPF

- building on Landman (1992), except for (iv):

(90) a. $\textsc{prog} \rightsquigarrow \lambda P \lambda e' \exists e \exists w [\textsc{stage}(e', e, w^*, w.P)]$

b. $[\![\textsc{stage}(e', e, w^*, w.P)]\!]^{M,g} = 1$ iff (i)-(iv) holds:

(i) the history of $g(w)$ is the same as the history of $g(w*)$ up to and including $\tau(g(e'))$

(ii) $g(w)$ is a reasonable option for $g(e')$ in $g(w^*)$

(iii) $[\![\mathrm{P}]\!]^{M,g}(e, w) = 1$

(iv) $g(e') \sqsubset g(e)$

e.g. Altshuler (2012): PROG vs. Russian IPF

- building on Landman (1992), except for (iv):

(90) a. $\textsc{prog} \rightsquigarrow \lambda P \lambda e' \exists e \exists w [\textsc{stage}(e', e, w^*, w.P)]$

b. $[\![\textsc{stage}(e', e, w^*, w.P)]\!]^{M,g} = 1$ iff (i)-(iv) holds:

(i) the history of $g(w)$ is the same as the history of $g(w*)$ up to and including $\tau(g(e'))$

(ii) $g(w)$ is a reasonable option for $g(e')$ in $g(w^*)$

(iii) $[\![\mathrm{P}]\!]^{M,g}(e, w) = 1$

(iv) $g(e') \sqsubset g(e)$

- Russian IPF: Difference only in the last conjunct:

(91) a. $\textsc{ipf}_{RUSS} \rightsquigarrow \lambda P \lambda e' \exists e \exists w [\textsc{stage}(e', e, w^*, w.P)]$

b. $[\![\textsc{stage}(e', e, w^*, w.P)]\!]^{M,g} = 1$ iff (i)-(iv) holds:

(i) the history of $g(w)$ is the same as the history of $g(w*)$ up to and including $\tau(g(e'))$

(ii) $g(w)$ is a reasonable option for $g(e')$ in $g(w^*)$

(iii) $[\![\mathrm{P}]\!]^{M,g}(e, w) = 1$

(iv) $g(e') \sqsubseteq g(e)$

PROG vs. (more general) IPF

- Unified meaning with modal semantics:
  - Different IPF meanings due to different choices of modal accessibility relation (Cipria & Roberts 2000)
  - Similar approaches: Ferreira (2005, 2016); Deo (2009, 2015)
    e.g. Ferreira: PROG requires singular events, HAB plural events, more general IPF can apply to either
  - (cp. Bonomi 1997)
- Syntactic explanation:
  - Distinct, phonologically null operators for different IPF meanings (Hacquard 2006)
  - ...

(see Portner 2011, for general discussion)

Aspect in Russian

Roadmap

- Aspect morphology: Verbal prefixes and suffixes
- (Im)perfectivity diagnostics
- IPF and PF readings/uses ("particular meanings")
- (A)telicity diagnostics → (Im)perfectivity ≠ (A)telicity
- Internal vs. external prefixes
- Tatevosov's (2011, 2015) arguments against prefixes and suffixes as (I)PF markers
- Klein's (1995) proposal for the semantics of Russian (I)PF
- Differences in aspect usage: Russian vs. Czech (separate handout)
- Problem for a uniform IPF semantics: Factual IPF readings (FR; separate slides)

Russian aspect morphology

(see Gehrke 2008b, and ref.s therein)

- **Simple verbs**: Most are IPF, a few are PF:

(92) a. ipf. *spat'* 'to sleep'
ipf. *pisat'* 'to write'
b. pf. *dat'* 'to give'

Russian aspect morphology

(see Gehrke 2008b, and ref.s therein)

- **Simple verbs**: Most are IPF, a few are PF:

(92) a. ipf. *spat'* 'to sleep'
ipf. *pisat'* 'to write'
b. pf. *dat'* 'to give'

- **Prefixed verbs** are PF, if there is no further suffix:

(93) a. pf. *po-spat'* 'to sleep'
b. pf. *po-pisat'* 'to write (for a while)'
c. pf. *na-pisat'* 'to write (up)' (lit. on-write)
d. pf. *pod-pisat'* 'to sign' (lit. under-write)
e. pf. *iz-dat'* 'to edit' (lit. out-give)

Russian aspect morphology

- A subset of the prefixed verbs and the few simple PF verbs can undergo **secondary imperfectivisation**:

(94) a. pf. *pod-pisat'* > ipf. *pod-pis-yva-t'* 'to sign' (lit. under-write)
b. pf. *iz-dat'* > ipf. *iz-da-va-t'* 'to edit' (lit. out-give)
c. pf. *dat'* > ipf. *da-va-t'* 'to give'

Russian aspect morphology

- A subset of the prefixed verbs and the few simple PF verbs can undergo **secondary imperfectivisation**:

(94) a. pf. *pod-pisat'* > ipf. *pod-pis-yva-t'* 'to sign' (lit. under-write)
b. pf. *iz-dat'* > ipf. *iz-da-va-t'* 'to edit' (lit. out-give)
c. pf. *dat'* > ipf. *da-va-t'* 'to give'

- Limited **stacking of prefixes** (more common in South Slavic):

(95) e.g. Russian:
ipf. *vy-da-va-t'* > pf. *po-vy-da-va-t'* 'to hand out, distribute'

(96) e.g. Czech:
pf. *od-stoupit* > pf. *po-od-stoupit* 'to step aside (a bit)'

Aspectual pairs

- **Every Russian (Slavic) verb form is either IPF or PF**
  - → Identical lexical meaning can be expressed by IPF and by PF verb forms
  - → Common assumption: Many verb(form)s come in **aspectual pairs**

Aspectual pairs

- **Every Russian (Slavic) verb form is either IPF or PF**
  - → Identical lexical meaning can be expressed by IPF and by PF verb forms
  - → Common assumption: Many verb(form)s come in **aspectual pairs**
- Aspectual pairs derived by prefixes from simple IPFs:

(97) a. ipf. *pit'* > pf. *vy-pit'* 'to drink'
b. ipf. *risovat'* > pf. *na-risovat'* 'to draw'

Aspectual pairs

- **Every Russian (Slavic) verb form is either IPF or PF**
  - → Identical lexical meaning can be expressed by IPF and by PF verb forms
  - → Common assumption: Many verb(form)s come in **aspectual pairs**
- Aspectual pairs derived by prefixes from simple IPFs:

(97) a. ipf. *pit'* > pf. *vy-pit'* 'to drink'
b. ipf. *risovat'* > pf. *na-risovat'* 'to draw'

- Aspectual pairs derived by suffixes from (mostly prefixed) PFs
  - → **S(econdary) I(mperfective)s** [descriptive term]

(98) a. pf. *pro-dat'* > ipf. *pro-da-va-t'* 'to sell' (lit. through-give)
b. pf. *ot-kryt'* > ipf. *ot-kry-va-t'* 'to discover, open' (lit. from-cover)
c. pf. *dat'* > ipf. *da-va-t'* 'to give'

Aspectual pairs

- **Every Russian (Slavic) verb form is either IPF or PF**
  - → Identical lexical meaning can be expressed by IPF and by PF verb forms
  - → Common assumption: Many verb(form)s come in **aspectual pairs**
- Aspectual pairs derived by prefixes from simple IPFs:

(97) a. ipf. *pit'* > pf. *vy-pit'* 'to drink'
b. ipf. *risovat'* > pf. *na-risovat'* 'to draw'

- Aspectual pairs derived by suffixes from (mostly prefixed) PFs
  - → **S(econdary) I(mperfective)s** [descriptive term]

(98) a. pf. *pro-dat'* > ipf. *pro-da-va-t'* 'to sell' (lit. through-give)
b. pf. *ot-kryt'* > ipf. *ot-kry-va-t'* 'to discover, open' (lit. from-cover)
c. pf. *dat'* > ipf. *da-va-t'* 'to give'

- (Suppletive pairs that - at least from a synchronic point of view - are not morphologically transparent)

Some diagnostics for (im)perfectivity

- PF is incompatible with phase verbs (e.g. Filip 1999; Borik 2002, 2006)

(99)
a. On načal pisat' pis'mo.
he began.PF write.IPF letter.ACC
'He began writing a / the letter.'

b. *On načal na-pisat' pis'mo.
he began.PF ON-write.PF letter.ACC

c. *On načal po-pisat' (pis'mo).
he began.PF PO-write.PF letter.ACC

d. *On načal dat' ženščine knigu.
he began.PF give.PF woman.DAT book.ACC

Some diagnostics for (im)perfectivity

- Only IPFs derive periphrastic future forms (e.g. Schoorlemmer 1995; Filip 1999)

(100)

a. On budet pisat' pis'mo.
he will write.IPF letter.ACC
'He will write a / the letter.'

b. *On budet na-pisat' pis'mo.
he will ON-write.PF letter.ACC

c. *On budet po-pisat' pis'mo.
he will PO-write.PF letter.ACC

d. *On budet dat' ženščine knigu.
he will give.PF woman.DAT book.ACC

Some diagnostics for (im)perfectivity

- Only IPFs derive periphrastic future forms (e.g. Schoorlemmer 1995; Filip 1999)

(100) a. On budet pisat' pis'mo.
he will write.IPF letter.ACC
'He will write a / the letter.'

b. *On budet na-pisat' pis'mo.
he will ON-write.PF letter.ACC

c. *On budet po-pisat' pis'mo.
he will PO-write.PF letter.ACC

d. *On budet dat' ženščine knigu.
he will give.PF woman.DAT book.ACC

- Further diagnostics:
  - Only IPFs can form present participles (active and passive) (e.g. Schoorlemmer 1995; Borik 2002) (but there are expections; this is specific for Russian)
  - PF present tense forms never refer to the ongoing present but get a future reference. (again: there are exceptions; in South Slavic: modal)

A side note on Tense in Russian

- Synthetic forms for **present** and **past** for IPF and PF
  - Past: (former) l-participle, which agrees with the subject in gender and number; no auxiliary (unlike, e.g., Czech)
  - PF present tense forms never refer to the ongoing present but usually get a future reference (unlike, e.g., South Slavic: modal)
- Analytical forms for **future**: *budu* etc. + infinitive; only for IPF

e.g. I.FEM READ books.ACC:

(101) a. IPF/SI PRES: Ja {čitaju / pro-čit-yv-aju} knigi.
b. PF PRES: Ja {pro-/po-}čitaju knigi.

(102) a. IPF/SI PST: Ja {čitala / pro-čit-yv-ala} knigi.
b. PF PST: Ja {pro-/po-}čitala knigi.

(103) a. IPF/SI FUT: Ja budu {čitat' / pro-čit-yv-at'} knigi.
b. *PF FUT: *Ja budu {pro-/po-}čitat' knigi.

Particular meanings [readings] of the Russian IPF

(from Zaliznjak & Šmelev 2000, 21-26)

- **'Actual process'**: process or state that holds at the point of reference

(104) Kogda ja vo-šel, moja žena **na-kry-va-la** na stol.
when I IN-walked.PF, my wife ON-covered-SI on table.ACC
'When I entered, my wife was setting the table.'

- **'Habitual, repetititve'**: any kind of repetition of an event (in the broad sense)

(105) Každyj den', pri-xodja s raboty, on **ot-kry-va-et** okno.
every day, TO-walking.SI off work.GEN, he FROM-covers-SI window
'Every day when he returns from work, he opens the window.'

→ 'Canonical IPF meanings'

Particular meanings [readings] of the Russian IPF

(from Zaliznjak & Šmelev 2000, 21-26)

- **'General-factual'**: focus is on the fact that some event took place (but not whether it is in its process, completed or the like)

(106) Zimnij Dvorec **stroil** Rastrelli.
winter-.ACC palace.ACC built.IPF Rastrelli
'The Winter Palace [= Hermitage Museum in St. Petersburg] was built by Rastrelli.'

Particular meanings [readings] of the Russian IPF

(from Zaliznjak & Šmelev 2000, 21-26)

- **'General-factual'**: focus is on the fact that some event took place (but not whether it is in its process, completed or the like)

(106) Zimnij Dvorec **stroil** Rastrelli.
winter-.ACC palace.ACC built.IPF Rastrelli
'The Winter Palace [= Hermitage Museum in St. Petersburg] was built by Rastrelli.'

Two subtypes (terms of Grønn 2004) (cp. Padučeva 1996):

- **Presuppositional**: The event is already given in the context; e.g. (106)
- **Existential**: There was at least one such event; e.g. (107) (from Grønn 2004)

(107) Ne bylo somnenij, čto ja prežde **vstrečal** ee.
not was.NEU doubts.GEN that I before met.SI her
'There was no doubt that I had met her before.'

Particular meanings [readings] of the Russian PF

(from Zaliznjak & Šmelev 2000, 19ff.)

- **'Concrete fact'**: single event that took place in the past or is expected to take place in the future

(108) Ivan **u-exal** za granicu i **po-stupil** v
John AWAY-drove.PF behind border.ACC and ON-stepped.PF in
universitet.
university.ACC
'John went abroad and entered university.'

Particular meanings [readings] of the Russian PF

(from Zaliznjak & Šmelev 2000, 19ff.)

- **'Concrete fact'**: single event that took place in the past or is expected to take place in the future

(108) Ivan **u-exal** za granicu i **po-stupil** v
John AWAY-drove.PF behind border.ACC and ON-stepped.PF in
universitet.
university.ACC
'John went abroad and entered university.'

→ 'Canonical PF meaning'

Particular meanings [readings] of the Russian PF

(from Zaliznjak & Šmelev 2000, 19ff.)

- **'Vivid-exemplifying'**: habitual event presented as single exemplifying event (habituality has to be marked contextually)

(109) U nego takaja privyčka - kak **vernetsja** s raboty,
at him such.NOM habit.NOM - how returns.PF off work.GEN,
srazu **ot-kroet** okno.
immediately FROM-covers.PF window.ACC
'He has this habit - as soon as he returns from work, he immediately opens the window.'

- **'Potential'**: specifying intellectual or physical ability

(110) On **rešit** ljubuju zadaču.
he solves.PF random.ACC task.ACC
'He can solve any task.'

Particular meanings [readings] of the Russian PF

(from Zaliznjak & Šmelev 2000, 19ff.)

- **'Vivid-exemplifying'**: habitual event presented as single exemplifying event (habituality has to be marked contextually)

(109) U nego takaja privyčka - kak **vernetsja** s raboty,
at him such.NOM habit.NOM - how returns.PF off work.GEN,
srazu **ot-kroet** okno.
immediately FROM-covers.PF window.ACC
'He has this habit - as soon as he returns from work, he immediately opens the window.'

- **'Potential'**: specifying intellectual or physical ability

(110) On **rešit** ljubuju zadaču.
he solves.PF random.ACC task.ACC
'He can solve any task.'

→ More marked uses of PF

(note also: PF PRES forms without 'future' meaning)

Telicity tests: PF ≠ telic

(111) a. On ot-kryl okno *(za) dve minuty.
he FROM-covered.PF window.ACC *(in) two minutes
'He opened a/the window in / *for two minutes.'

b. On u-bil svoju ženu *(za) dve minuty.
he AWAY-hit.PF his.ACC wife.ACC *(in) two minutes
'He killed his wife in / *for two minutes.'

c. On dal ženščine knigu *(za) dve minuty.
he gave.PF woman.DAT book.ACC *(in) two minutes
'He gave a/the woman a/the book in / *for two minutes.'

Telicity tests: PF ≠ telic

(111) a. On ot-kryl okno *(za) dve minuty.
he FROM-covered.PF window.ACC *(in) two minutes
'He opened a/the window in / *for two minutes.'

b. On u-bil svoju ženu *(za) dve minuty.
he AWAY-hit.PF his.ACC wife.ACC *(in) two minutes
'He killed his wife in / *for two minutes.'

c. On dal ženščine knigu *(za) dve minuty.
he gave.PF woman.DAT book.ACC *(in) two minutes
'He gave a/the woman a/the book in / *for two minutes.'

(112) a. On pro-spal (*za) dva dnja.
he PRO-slept.PF (*in) two days

b. On po-pisal knigu (*za) dva dnja.
he PO-wrote.PF book/ACC (*in) two days

The in/for-adverbial test in Russian (Slavic)

- Recall the problem we face with this telicity test:
  - The adverbials are additionally sensitive to (I)PF.
  - → Filip (2000, 2003): This is a test for (I)PF
- Given (112) (repeated in (113)), however, this cannot be true. (These verb forms pass the tests for PF outlined before.)

(113) a. On pro-spal (*za) dva dnja.
he PRO-slept.PF (*in) two days

b. On po-pisal knigu (*za) dva dnja.
he PO-wrote.PF book/ACC (*in) two days

Another telicity test for Russian

- **Progressive test** in Borik (2002, 2006)
  (adaptation of the imperfective paradox)

(114) Kogda po-zvonila mama, Petja **iskal** knigu.
when called.PF mom, Peter looked-for.IPF book.ACC

→ Petja uže **iskal** (ėtu) knigu.
Peter already looked-for.IPF this.ACC book.ACC

(115) Kogda po-zvonila mama, Petja **čital** knigu.
when called.PF mom, Peter read.IPF book.ACC

↛ Petja uže **pro-čital** (ėtu) knigu.
Peter already THROUGH-read.PF this.ACC book.ACC

(A)telicity ≠ (im)perfectivity

(see Borik 2002, 2006; Gehrke 2008b)

- **There are PFs that behave like atelic predicates**:

(116) On po-pisal dva časa / *za dva časa.
he PO-wrote.PF two hours / in two hours
'He wrote (was writing) for two hours / *in two hours.'

(A)telicity ≠ (im)perfectivity

(see Borik 2002, 2006; Gehrke 2008b)

- **There are PFs that behave like atelic predicates**:

(116) On po-pisal dva časa / *za dva časa.
he PO-wrote.PF two hours / in two hours
'He wrote (was writing) for two hours / *in two hours.'

- **There are IPFs that (can) behave like telic predicates**:

(117) On pere-pis-yva-l celuju stat'ju za dva časa.
he re-wrote.SI whole.ACC article.ACC in two hours
'He re-wrote a/the whole article (i.e. by changing it) in two hours.' (e.g. habitually)

Prefixes

(see Gehrke 2008b, for further discussion and references)

- **Do not 'mark' PF**:
  - Not all PFs have prefixes (e.g. *dat'* 'give').
  - SIs are IPF and (usually) contain a prefix.
  - Stacking prefixes (see also Filip 2000)

Prefixes

(see Gehrke 2008b, for further discussion and references)

- **Do not 'mark' PF**:
  - Not all PFs have prefixes (e.g. *dat'* 'give').
  - SIs are IPF and (usually) contain a prefix.
  - Stacking prefixes (see also Filip 2000)
  - Some IPFs also seem to have prefixes, e.g. (118).

(118) a. *nad-zirat'* 'to super-vise' (lit. 'above-watch'; cp. German *über-wachen*)
b. *protivo-stojat'* 'to re-sist' (lit. 'against-stand'; cp. German *wider-stehen*)
c. *vy-gljadet'* 'to look like' (lit. 'out-see'; cp. German *aus-sehen*)
d. *so-čuvstvovat'* 'to sym-pathise' (lit. 'with-feel'; cp. German *mit-fühlen*)

Prefixes

(see Gehrke 2008b, for further discussion and references)

- **Do not 'mark' PF**:
  - Not all PFs have prefixes (e.g. *dat'* 'give').
  - SIs are IPF and (usually) contain a prefix.
  - Stacking prefixes (see also Filip 2000)
  - Some IPFs also seem to have prefixes, e.g. (118).

(118) a. *nad-zirat'* 'to super-vise' (lit. 'above-watch'; cp. German *über-wachen*)
b. *protivo-stojat'* 'to re-sist' (lit. 'against-stand'; cp. German *wider-stehen*)
c. *vy-gljadet'* 'to look like' (lit. 'out-see'; cp. German *aus-sehen*)
d. *so-čuvstvovat'* 'to sym-pathise' (lit. 'with-feel'; cp. German *mit-fühlen*)

- **Do not 'mark' telicity**: There are VPs with prefixed (and even PF) verbs that behave like atelic predicates (see previous slides).

Internal and external prefixes

- Di Sciullo & Slabakova (2005) on Bulgarian:
  - External prefixes must precede internal ones, the reverse order is ungrammatical.
  - Internal prefixes can affect the argument structure, external prefixes never do.
  - External prefixes do not alter the aspectual class of the verb they attach to; internal prefixes do, since they signal telicity.
  - Only internal prefixes impose a specific reading on internal argument DPs.
  - Only external prefixes can be iterated and co-occur.

Internal and external prefixes

- Di Sciullo & Slabakova (2005) on Bulgarian:
  - External prefixes must precede internal ones, the reverse order is ungrammatical.
  - Internal prefixes can affect the argument structure, external prefixes never do.
  - External prefixes do not alter the aspectual class of the verb they attach to; internal prefixes do, since they signal telicity.
  - Only internal prefixes impose a specific reading on internal argument DPs.
  - Only external prefixes can be iterated and co-occur.
- Aka lexical vs. superlexical prefixes (Babko-Malaya 1999, on Russian) (see also Romanova 2004, 2007; Ramchand 2004; Svenonius 2004)
- Application to various Slavic languages, e.g. other papers in Nordlyd Vol 32, No 2 (2004); Arsenijević (2006); Jabłónska (2007); Žaucer (2009); Biskup (2017)

Internal and external prefixes in Russian

(Gehrke 2003, 2005, 2008a, b)

	internal prefixes	external prefixes
Argument structure effects	√	*
SIs	√	(*)
Event nominals and participles	√	*
Infinitival subjects	√	*
Stacking	*	√

Internal prefixes

(Gehrke 2003, 2005, 2008a, b)

- Bring in their own semantics, often idiosyncratic → derive new lexical items which can derive further SIs (with the same lexical meaning)
- Form a constituting part of the event structure
  → **telicity/result state markers?**

(119)
a. *u-bit'* 'kill' (lit.: away-hit) > SI *u-bi-va-t'*
b. *u-mere-t'* 'die' > SI *u-mira-t'*
c. *pri-exat'* 'arrive (driving)' (lit.: to-drive) > SI *pri-ezžat'*
d. *na-jti* 'find' (lit.: on-go) > SI *na-xodit'*

Internal prefixes

(Gehrke 2003, 2005, 2008a, b)

- More debatable: '**empty prefixes**' (120)
  - Traditional view: Derive PF aspectual partner, just double some meaning that is already part of the IPF verb meaning [mostly with incremental theme verbs]

(120)
a. *s"est'* 'OFF-eat'
b. *na-pisat', na-risovat'* etc. 'ON-write', 'ON-paint'
c. *vy-pit'* 'OUT-drink'
d. *pro-čitat'* 'THROUGH-read'

  - Less clear that they bring in their own semantics or affect the argument structure
  - Still: Such VPs are telic, optional internal arguments become obligatory

External prefixes in Russian

(Gehrke 2003, 2005, 2008a, b)

(Slavistics literature: **Aktionsart prefixes**)

- Are outside the VP, not part of the event structure
- No nominalisations, past participles, infinitival subjects with externally prefixed verbs

External prefixes in Russian

(Gehrke 2003, 2005, 2008a, b)

(Slavistics literature: **Aktionsart prefixes**)

- Are outside the VP, not part of the event structure
- No nominalisations, past participles, infinitival subjects with externally prefixed verbs
- One group: mark temporal bounds on otherwise unbounded events (either on atelic events, (121), or on pluralities of telic events)
  → **PF markers?**

(121) a. INGRESSIVE *za-*: *On vstal i* **za***pel pesnju.* 'He stood up and sang (started singing) a song.'
b. DELIMITATIVE *po-*: *Ona* **po***ela tort.* 'She ate cake (for a while).'
c. PERDURATIVE *pro-*: *Oni* **pro***sideli tam celyj den'.* 'They sat there all day.'

(122) (SEMELFACTIVE perfectivising suffix *-nu-*: *prygat'-pryg***nu***t'* 'jump' etc.)

External prefixes in Russian

(Gehrke 2003, 2005, 2008a, b)

- Another group: 'quantificational prefixes'; or (at least for Russian): mark bounded event pluralities (with plural internal arguments):

(123) a. CUMULATIVE *na-* (see later slides)
b. DISTRIBUTIVE *po-*, e.g. (124) (from Mehlig 1996)

(124) Igor' nemnogo **po-vy-da-va-l** knigi i
Igor' a bit PO-OUT-give-SI-PST.PF books.ACC and
zakryl biblioteku.
closed.PF library.ACC
'Igor' handed out books for a while and (then) closed the library.'

(on Russian prefixes more generally see Isačenko 1962)

External prefixes in Czech

(some more general remarks on Czech prefixes in Filip 1999, 2003)

- Comparison to Russian first group (**temporal delimiters**):
  - No ingressive *za-* in Czech (see also Ivančev 1961)
  - Unlike Russian *po-*, Czech *po-* ~ 'a bit' is not restricted to temporal interpretations, e.g. (125) (from Kundera, *Žert*; see Gehrke 2002, for discussion):

(125) Pak holička **po-od-stoupila** [...]
then hairdresser.FEM.NOM PO-AWAY-stepped.PF
'Then the hairdresser stepped (a bit) away ...'

External prefixes in Czech: Součková (2004)

- [Second group:] truly **quantificational** (possibly unlike Russian) (126)

(126) a. Petr na-pekl koláče.
Petr NA-baked cakes
'Petr baked a lot of cakes.'

b. Ester svou výpověď po-z-měnila.
Ester her testimony PO-changed
'Ester changed her testimony a little.'

Součková (2004):

- These prefixes are internal, because they denote extensive measure functions on events (cp. Filip 2003) → telic events (cp. Žaucer 2009, for similar claim about Slovenian)

External prefixes in Czech: Součková (2004)

- [Second group:] truly **quantificational** (possibly unlike Russian) (126)

(126) a. Petr na-pekl koláče.
Petr NA-baked cakes
'Petr baked a lot of cakes.'

b. Ester svou výpověď po-z-měnila.
Ester her testimony PO-changed
'Ester changed her testimony a little.'

Součková (2004):

- These prefixes are internal, because they denote extensive measure functions on events (cp. Filip 2003) → telic events (cp. Žaucer 2009, for similar claim about Slovenian)
- *po-* in (126) is distinct from the (external) delimitative *po-* 'for a while', e.g. (127), which merely provides a temporal bound.

(127) Jakub o tom po-přemýšlel.
Jakub about it PO-thought

Proposal in Gehrke (2008b)

- **Internal prefixes** (Russian and Czech):
  - Are of category P, head a PredP in complement to the VP, form a complex predicate with the verb they attach to
  - Mark the upper bounds of incremental chains of BECOME events (in the sense of Rothstein 2004)

  → Are necessarily part of telic VPs (ACCs and ACHs)

Proposal in Gehrke (2008b)

- **Internal prefixes** (Russian and Czech):
  - Are of category P, head a PredP in complement to the VP, form a complex predicate with the verb they attach to
  - Mark the upper bounds of incremental chains of BECOME events (in the sense of Rothstein 2004)

  → Are necessarily part of telic VPs (ACCs and ACHs)
- **External prefixes**:
  - Czech: ~ adverbial VP modifiers (VP adjuncts)
  - Russian: base-generated in Spec, AspP; signal that T-AST is a definite time moment within the event (following Ramchand 2004).

Proposal in Gehrke (2008b)

- **Internal prefixes** (Russian and Czech):
  - Are of category P, head a PredP in complement to the VP, form a complex predicate with the verb they attach to
  - Mark the upper bounds of incremental chains of BECOME events (in the sense of Rothstein 2004)
  - → Are necessarily part of telic VPs (ACCs and ACHs)
- **External prefixes**:
  - Czech: ~ adverbial VP modifiers (VP adjuncts)
  - Russian: base-generated in Spec, AspP; signal that T-AST is a definite time moment within the event (following Ramchand 2004).
- Ramchand's (2004) semantics for some Russian external prefixes:

(128) a. [[za-]] = $\lambda P \lambda t[P(t) \& t$ occurs at the onset of the temporal trace]

b. [[po-]] = $\lambda P \lambda t[P(t) \& t$ is a specific moment a short way into the temporal trace]

Tatevosov (2015): Main claims

- **Russian aspect is not lexical.** As in English and lots of other languages, semantic aspects appear in the functional domain of a clause.
- **Russian "aspectual morphology" is never interpreted as rendering semantic aspects in the position where it is merged.** (This does not mean that it is not interpreted at all; all it means that its semantic contribution, if any, is to be found elsewhere.)
- **Aspectual operators are phonologically silent.**

[NB: One-component approach]

Tatevosov (2011)

Testing different possible theories for PF and [internal] prefixes:

(129) **Aspect-low theory**

a. $[_{CP} \ldots [_{Fi+1P} \ldots [_{FiP} \ldots [_{Fi-1P} \ldots [_{VP} \ldots [_{V}\,\mathbf{PF}\,\textit{pročita-}]]]]]]$

b. $[_{CP} \ldots [_{Fi+1P} \ldots [_{FiP} \ldots [_{Fi-1P} \ldots [_{XP} \ldots \mathbf{PF}\,\textit{pro-} \ldots [_{V}\,\textit{čita-}]]]]]]$

(according to Tatevosov: Filip 2000; Ramchand 2004; Svenonius 2004)

Tatevosov (2011)

Testing different possible theories for PF and [internal] prefixes:

(129) **Aspect-low theory**

a. $[_{CP} \ldots [_{Fi+1P} \ldots [_{FiP} \ldots [_{Fi-1P} \ldots [_{VP} \ldots [_{V}\textbf{PF}\textit{pročita-}]]]]]]$

b. $[_{CP} \ldots [_{Fi+1P} \ldots [_{FiP} \ldots [_{Fi-1P} \ldots [_{XP} \ldots \textbf{PF}\textit{pro-} \ldots [_{V}\textit{čita-}]]]]]]$

(according to Tatevosov: Filip 2000; Ramchand 2004; Svenonius 2004)

(130) **Aspect-high theory**

a. $[_{CP} \ldots [_{Fi+1P} \ldots [_{FiP} \ldots \textbf{PF}[_{Fi-1P} \ldots [_{VP} \ldots [_{V}\textit{pročita-}]]]]]]$

b. $[_{CP} \ldots [_{Fi+1P} \ldots [_{FiP} \ldots \textbf{PF}[_{Fi-1P} \ldots [_{XP} \ldots \textit{pro-} \ldots [_{V}\textit{čita-}]]]]]]$

(according to Tatevosov: Verkuyl 1999; Paslawska & von Stechow 2003b; Grønn & von Stechow 2010)

Tatevosov (2011)

Testing different possible theories for PF and [internal] prefixes:

(129) **Aspect-low theory**

a. $[_{CP} \ldots [_{Fi+1P} \ldots [_{FiP} \ldots [_{Fi-1P} \ldots [_{VP} \ldots [_{V}\textbf{PF}\textit{pročita-}]]]]]]$

b. $[_{CP} \ldots [_{Fi+1P} \ldots [_{FiP} \ldots [_{Fi-1P} \ldots [_{XP} \ldots \textbf{PF}\textit{pro-} \ldots [_{V}\textit{čita-}]]]]]]$

(according to Tatevosov: Filip 2000; Ramchand 2004; Svenonius 2004)

(130) **Aspect-high theory**

a. $[_{CP} \ldots [_{Fi+1P} \ldots [_{FiP} \ldots \textbf{PF}[_{Fi-1P} \ldots [_{VP} \ldots [_{V}\textit{pročita-}]]]]]]$

b. $[_{CP} \ldots [_{Fi+1P} \ldots [_{FiP} \ldots \textbf{PF}[_{Fi-1P} \ldots [_{XP} \ldots \textit{pro-} \ldots [_{V}\textit{čita-}]]]]]]$

(according to Tatevosov: Verkuyl 1999; Paslawska & von Stechow 2003b; Grønn & von Stechow 2010)

(e.g. analysed as a concord phenomenon in Arsenijević 2010)

Tatevosov (2011)

Testing different possible theories for PF and [internal] prefixes:

(129) **Aspect-low theory**

a. $[_{CP}\ldots[_{Fi+1P}\ldots[_{FiP}\ldots[_{Fi-1P}\ldots[_{VP}\ldots[_{V}\mathbf{PF}\textit{pročita-}]]]]]]$

b. $[_{CP}\ldots[_{Fi+1P}\ldots[_{FiP}\ldots[_{Fi-1P}\ldots[_{XP}\ldots\mathbf{PF}\textit{pro-}\ldots[_{V}\textit{čita-}]]]]]]$

(according to Tatevosov: Filip 2000; Ramchand 2004; Svenonius 2004)

(130) **Aspect-high theory**

a. $[_{CP}\ldots[_{Fi+1P}\ldots[_{FiP}\ldots\mathbf{PF}[_{Fi-1P}\ldots[_{VP}\ldots[_{V}\textit{pročita-}]]]]]]$

b. $[_{CP}\ldots[_{Fi+1P}\ldots[_{FiP}\ldots\mathbf{PF}[_{Fi-1P}\ldots[_{XP}\ldots\textit{pro-}\ldots[_{V}\textit{čita-}]]]]]]$

(according to Tatevosov: Verkuyl 1999; Paslawska & von Stechow 2003b; Grønn & von Stechow 2010)

(e.g. analysed as a concord phenomenon in Arsenijević 2010)

- **a.-options**: prefixation in the lexicon
- **b. options**: prefixation in the syntax

Tatevosov (2011)

Arguments for an Aspect-high theory:

- Argument supporting deverbal nominals:
  - Do not contain AspP (project up to vP) but contain [internal] prefixes
  - Do not show perfectivity effects

Tatevosov (2011)

Arguments for an Aspect-high theory:

- Argument supporting deverbal nominals:
  - Do not contain AspP (project up to vP) but contain [internal] prefixes
  - Do not show perfectivity effects

(extension to external prefixes in some 2013 handout, leading to (131))

(131) [... [... **PF** ... [... external prefix ... [... internal prefix ...]]]]

Tatevosov (2011)

Arguments for an Aspect-high theory:

- Argument supporting deverbal nominals:
  - Do not contain AspP (project up to vP) but contain [internal] prefixes
  - Do not show perfectivity effects

(extension to external prefixes in some 2013 handout, leading to (131))

(131) [... [... **PF** ... [... external prefix ... [... internal prefix ...]]]]

Background assumption: **only one semantic aspect per clause** (unlike, e.g., de Swart 1998)

Tatevosov (2015)

What does this mean for the SI-suffix? Again, 2 options:

(132) **-yva- as an IPF operator**:
[$_{FP}$ ... IPF yva ... [$_{vP}$ ... [... pro-čita ... [...]]]

(133) **-yva- is lower, not an IPF operator**:
[$_{FP}$ ... IPF ... [... yva ... [... pro-čita ... [...]]]

Tatevosov (2015)

What does this mean for the SI-suffix? Again, 2 options:

(132) **-yva- as an IPF operator**:
[$_{FP}$ ... IPF yva ... [$_{vP}$ ... [... pro-čita ... [...]]]

(133) **-yva- is lower, not an IPF operator**:
[$_{FP}$ ... IPF ... [... yva ... [... pro-čita ... [...]]]

(Under (133) and the previous assumptions, both prefixes and suffixes would be merged low, which does not mean that they are interpreted there; it only means that they are NOT interpreted as (I)PF)

Tatevosov (2015)

- **Arguments for -yva- not being an IPF operator**:
  - Some [external] prefixes can apply to SIs, e.g. (134).
  - Such verb forms are PF.

  → There has to be a PF above this.

(134) 'Selectionally restricted' external prefixes on *otkryvat'*^{ipf} 'open':

a.	**pere**-[[ot-kry]^{pf}-va]^{ipf}-t'	DISTRIBUTIVE
b.	**za**-[[ot-kry]^{pf}-va]^{ipf}-t'	INGRESSIVE
c.	**na**-[[ot-kry]^{pf}-va]^{ipf}-t'	CUMULATIVE
d.	**po**-[[ot-kry]^{pf}-va]^{ipf}-t'	DISTRIBUTIVE
e.	**po**-[[ot-kry]^{pf}-va]^{ipf}-t'	DELIMITATIVE

Tatevosov (2015)

- **Arguments for -yva- not being an IPF operator**:
  - Some [external] prefixes can apply to SIs, e.g. (134).
  - Such verb forms are PF.
  - → There has to be a PF above this.

(134) 'Selectionally restricted' external prefixes on *otkryvat'*^{ipf} 'open':

a. **pere**-[[ot-kry]^{pf}-va]^{ipf}-t' DISTRIBUTIVE
b. **za**-[[ot-kry]^{pf}-va]^{ipf}-t' INGRESSIVE
c. **na**-[[ot-kry]^{pf}-va]^{ipf}-t' CUMULATIVE
d. **po**-[[ot-kry]^{pf}-va]^{ipf}-t' DISTRIBUTIVE
e. **po**-[[ot-kry]^{pf}-va]^{ipf}-t' DELIMITATIVE

- Arguments for *-yva-* being inside vP
  - e.g. subject-object asymmetries with the *pere*$_{dist}$ → v is above *-yva-*
- (Arguments for IPF outside vP)

Klein (1995) about Russian Aspect

- (**Tense** relates utterance time TU and assertion time T-AST)
- Distinction between **1-state verbs** (~ STA, ACT) and **2-state verbs** (~ ACC, ACH) (though not quite, because he also includes externally-prefixed verbs)

Klein (1995) about Russian Aspect

- (**Tense** relates utterance time TU and assertion time T-AST)
- Distinction between **1-state verbs** (~ STA, ACT) and **2-state verbs** (~ ACC, ACH) (though not quite, because he also includes externally-prefixed verbs)
- 2-state verbs are associated with two time intervals, that of the **source state (T-SS)** and that of the **target state (T-TS)**

Klein (1995) about Russian Aspect

- (**Tense** relates utterance time TU and assertion time T-AST)
- Distinction between **1-state verbs** (~ STA, ACT) and **2-state verbs** (~ ACC, ACH) (though not quite, because he also includes externally-prefixed verbs)
- 2-state verbs are associated with two time intervals, that of the **source state (T-SS)** and that of the **target state (T-TS)**
- **Distinguished state (DS)** for Russian:
  - The state of 1-state verbs
  - With 2-state verbs: the T-SS of SIs or else can be any

Klein (1995) about Russian Aspect

- (**Tense** relates utterance time TU and assertion time T-AST)
- Distinction between **1-state verbs** (~ STA, ACT) and **2-state verbs** (~ ACC, ACH) (though not quite, because he also includes externally-prefixed verbs)
- 2-state verbs are associated with two time intervals, that of the **source state (T-SS)** and that of the **target state (T-TS)**
- **Distinguished state (DS)** for Russian:
  - The state of 1-state verbs
  - With 2-state verbs: the T-SS of SIs or else can be any

(135) a. PF: T-AST OVL T-SS & T-AST OVL T-TS
b. IPF: T-AST OVL T-DS & T-AST NOT OVL T-TS

cp. Klein (1995) about English

DS for English: T-SS

- Perfect: T-AST AFTER T-DS
- Progressive: T-AST IN T-DS
- Simple: T-AST OVL T-DS AND T-AST OVL POSTTIME OF T-DS

References I

Alexiadou, Artemis, Monika Rathert, & Arnim von Stechow (2003) *Perfect Explorations*. Interface Explorations 2, Berlin: de Gruyter.

Altshuler, Daniel (2012) Aspectual meaning meets discourse coherence: A look at the Russian imperfective. *Journal of Semantics* **29.1**: 39–108.

Alvestad, Silje Susanne (2014) Fake imperfective imperatives in Slavic. In *Corpus-based Studies in Contrastive Linguistics*, Signe Oksefjell Ebeling, Atle Grønn, Kjetil Rå Hauge, & Diana Santos, eds., Oslo Studies in Language 6(1), 29–42.

Arregui, Ana, María Luisa Rivero, & Andrés Salanova (2014) Cross-linguistic variation in imperfectivity. *Natural Language and Linguistic Theory* **32.2**: 307–362.

Arsenijević, Boban (2006) *Inner Aspect and Telicity: The Decompositional Nature of Eventualities at the Syntax-Semantics Interface*. LOT Dissertation Series 142, Utrecht: LOT.

Arsenijević, Boban (2010) Verb prefixation of the Slavic type in terms of concord and relativization, ms. Universitat Pompeu Fabra.

Asher, Nicholas (1992) A default, truth conditional semantics for the progressive. *Linguistics and Philosophy* **15.5**: 463–508.

Babko-Malaya, Olga (1999) *Zero Morphology: A Study of Aspect, Argument Structure and Case*. Ph.D. thesis, Rutgers University.

Bach, Emmon (1981) On time, tense and aspect: An essay in English metaphysics. In *Radical Pragmatics*, Peter Cole, ed., New York: Academic Press, 63–81.

References II

Bach, Emmon (1986) The algebra of events. *Linguistics and Philosophy* **9**: 5–16.

Beavers, John (2008) Scalar complexity and the structure of events. In *Event Structures in Linguistic Form and Interpretation*, Johannes Dölling, Tatjana Heyde-Zybatow, & Martin Schäfer, eds., Berlin: de Gruyter, 245–265.

Beck, Sigrid (2005) There and back again: A semantic analysis. *Journal of Semantics* **22**: 3–51.

Bennett, Michael & Barbara H. Partee (1972) Toward the logic of tense and aspect in English. Santa Monica, CA: System Development Corporation, reprinted with an Afterword by Indiana University Linguistics Club, Bloomington, Indiana, 1978; reprinted in 2004 by Blackwell Publishing in *Compositionality in Formal Semantics: Selected Papers by Barbara H. Partee*, 59-109.

Biskup, Petr (2017) Prepositions and Verbal Prefixes: The Case of Slavic, Habilitationsschrift, Leipzig University.

Bochnak, Ryan M. (2013) Two sources of scalarity within the verb phrase. In *Studies in the Composition and Decomposition of Event Predicates*, Boban Arsenijević, Berit Gehrke, & Rafael Marín, eds., Dordrecht: Springer, 99–123.

Bonomi, Andrea (1997) The progressive and the structure of events. *Journal of Semantics* **14**: 173–205.

Borer, Hagit (2005) *Structuring Sense, Vol. II: The Normal Course of Events*. Oxford: Oxford University Press.

Borik, Olga (2002) *Aspect and Reference Time*. LOT Dissertation Series 64, Utrecht: LOT.

References III

Borik, Olga (2006) *Aspect and Reference Time*. Oxford: Oxford University Press.

Bott, Oliver (2013) The processing domain of aspectual interpretation. In *Studies in the Composition and Decomposition of Event Predicates*, Boban Arsenijević, Berit Gehrke, & Rafael Marín, eds., Dordrecht: Springer, 195–229.

Caudal, Patrick & David Nicolas (2005) Types of degrees and types of event structures. In *Event Arguments: Foundations and Applications*, Claudia Maienborn & Angelika Wöllstein, eds., Tübingen: Niemeyer, 277–300.

Champollion, Lucas (2010) *Distributivity as a Bridge between Aspect and Measurement*. Ph.D. thesis, UPenn.

Cipria, Alicia & Craige Roberts (2000) Spanish imperfecto and preterito: Truth conditions and aktionsart effects in a situation semantics. *Natural Language Semantics* **8.4**: 297–347.

de Swart, Henriëtte (1998) Aspect shift and coercion. *Natural Language and Linguistic Theory* **16.2**: 347–85.

de Swart, Henriëtte (2012) Verbal aspect. In *The Oxford Handbook of Tense and Aspect*, Robert Binnick, ed., Oxford Handbooks in Linguistics, Oxford: Oxford University Press, 752–780.

Demirdache, Hamida & Myriam Uribe-Etxebarria (2000) The primitives of temporal relations. In *Step by Step: Essays on Minimalist Syntax in Honor of Howard Lasnik*, Roger Martin, David Michaels, & Juan Uriagereka, eds., Cambridge, MA: MIT Press, 157–186.

Demirdache, Hamida & Myriam Uribe-Etxebarria (2014) Aspect and temporal anaphora. *Natural Language and Linguistic Theory* **32.2**: 855–895.

References IV

Deo, Ashwini (2009) Unifying the imperfective and the progressive: Partitions as quantificational domains. *Linguistics and Philosophy* **32.5**: 475–521.

Deo, Ashwini (2015) The semantic and pragmatic underpinnings of grammaticalization paths: The progressive and the imperfective. *Semantics and Pragmatics* **8**: 1–52.

Di Sciullo, Anna-Maria & Roumyana Slabakova (2005) Quantification and aspect. In *Perspectives on Aspect*, Angeliek van Hout, Henriëtte de Swart, & Henk Verkuyl, eds., Dordrecht: Springer, 61–80.

Dickey, Stephen M. (2000) *Parameters of Slavic Aspect: A Cognitive Approach*. Stanford: CSLI Press.

Dickey, Stephen M. (2015) Parameters of Slavic Aspect Reconsidered: The East-West Aspect Division from a Diachronic Perspective. In *Studies in Accentology and Slavic Linguistics in Honor of Ronald F. Feldstein*, Miriam Shrager, Edna Andrews, George Fowler, & Steven Franks, eds., Bloomington: Slavica, 29–45.

Dickey, Stephen M. & Susan C. Kresnin (2009) Verbal aspect and negation in Russian and Czech. *Russian Linguistics* **33**: 121–176.

Dowty, David (1979) *Word Meaning and Montague Grammar: The Semantics of Verbs and Times in Generative Semantics and in Montague's PTQ*. Dordrecht: Reidel.

Dowty, David (1991) Thematic proto-roles and argument selection. *Language* **67.3**: 547–619.

Eckardt, Regine (1998) *Adverbs, Events, and Other Things: Issues in the Semantics of Manner Adverbs*. Tübingen: Max Niemeyer Verlag.

References V

Ernst, Thomas (1998) Scope based adjunct licensing. In *Proceedings of the North East Linguistics Society (NELS) 28*, Pius N. Tamanji & Kiyomi Kusumoto, eds., UMass, Amherst: GLSA, 127–142.

Fehrmann, Dorothee, Uwe Junghanns, & Denisa Lenertová (2010) Two reflexive markers in Slavic. *Russian Linguistics* **34**: 203–238.

Ferreira, Marcelo (2005) *Event Quantification and Plurality*. Ph.D. thesis, MIT.

Ferreira, Marcelo (2016) The semantic ingredients of imperfectivity in progressives, habituals, and counterfactuals. *Natural Language Semantics* **24.4**: 353–397.

Filip, Hana (1999) *Aspect, Eventuality Types and Nominal Reference*. New York: Garland Publishing.

Filip, Hana (2000) The quantization puzzle. In *Events as Grammatical Objects: The Converging Perspectives of Lexical Semantics and Syntax*, Carol Tenny & James Pustejovsky, eds., Stanford, CA: CSLI Publications, 39–95.

Filip, Hana (2003) Prefixes and the delimitation of events. *Journal of Slavic Linguistics* **11.1**: 55–101.

Filip, Hana (2011) Aspectual class and Aktionsart. In *Semantics: An International Handbook of Natural Language Meaning (Vol. 2)*, Klaus von Heusinger, Claudia Maienborn, & Paul Portner, eds., Berlin: de Gruyter, 1186–1217.

References VI

Fleischhauer, Jens (2013) Interaction of telicity and degree gradation in change of state verbs. In *Studies in the Composition and Decomposition of Event Predicates*, Boban Arsenijević, Berit Gehrke, & Rafael Marín, eds., Dordrecht: Springer, 125–152.

Gehrke, Berit (2002) Systemhafte Unterschiede im Aspektgebrauch zwischen dem Russischen und dem Tschechischen, unpublished MA thesis, Humboldt University Berlin.

Gehrke, Berit (2003) Aspectual affixes in Russian and Czech, ms. Utrecht University.

Gehrke, Berit (2005) The prepositional aspect of Slavic prefixes and the goal-source asymmetry. In *Proceedings of the ESSLLI Workshop on Formal Semantics and Cross-Linguistic Data*, 47–56.

Gehrke, Berit (2008a) Goals and sources are aspectually equal: Evidence from Czech and Russian prefixes. *Lingua* **118**(11): 1664–1689.

Gehrke, Berit (2008b) *Ps in Motion: On the Semantics and Syntax of P Elements and Motion Events*. LOT Dissertation Series 184, Utrecht: LOT.

Gehrke, Berit (2019) Against the notion of 'fake imperfectivity', paper presented at 'Turning Slavic aspect inside out: Mini-conference for outsiders and insiders', Leipzig, June 2019, as well as at 'TbiLLC 2019', Batumi, September 2019.

Grønn, Atle (2004) *The Semantics and Pragmatics of the Russian Factual Imperfective*. Ph.D. thesis, Oslo.

References VII

Grønn, Atle (2015) On (in)definite tense and aspect in Russian. In *Formal Description of Slavic Languages: Proceedings of FDSL 10, Leipzig 2013*, Gerhild Zybatow, Petr Biskup, Marcel Guhl, Claudia Hurtig, Olav Mueller-Reichau, & Maria Yastrebowa, eds., Linguistik International, Frankfurt/M.: Peter Lang, 175–196.

Grønn, Atle & Arnim von Stechow (2010) Complement tense in contrast: The SOT parameter in Russian and English. In *Russian Contrast*, Atle Grønn & Irena Marijanovic, eds., Oslo Studies in Language 2-1, 1–45.

Hacquard, Valentine (2006) *Aspects of Modality*. Ph.D. thesis, MIT.

Hay, Jennifer, Chris Kennedy, & Beth Levin (1999) Scalar structure underlies telicity in 'degree achievements'. In *Proceedings of SALT 9*, Tanya Matthews & Dan Strolovitch, eds., Ithaca: CLC Publications, 127–144.

Isačenko, A. V. (1962) *Die russische Sprache der Gegenwart: Formenlehre*. Halle (Saale): Niemeyer.

Ivančev, Svetomir (1961) *Kontekstovo obuslovena ingresivna upotreba na glagolite ot nesvăršen vid v češkija ezik*. Godišnik na Sofijskija universitet: Filologičeski fakultet, Nauka i izkustvo.

Jabłónska, Patrycja (2007) *Radical Decomposition and Argument Structure*. Ph.D. thesis, Tromsø University.

Jackendoff, Ray (1996) The proper treatment of measuring out, telicity, and perhaps even quantification in English. *Natural Language and Linguistic Theory* **14**: 305–354.

References VIII

Kamp, Hans & Uwe Reyle (1993) *From Discourse to Logic: Introduction to Modeltheoretic Semantics of Natural Language, Formal Logic and Discourse Representation Theory*. Dordrecht: Kluwer.

Katz, Graham (1995) *Stativity, Genericity, and Temporal Reference*. Ph.D. thesis, University of Rochester.

Katz, Graham (2000) Anti Neo-Davidsonianism: Against a Davidsonian semantics for state sentences. In *Events as Grammatical Objects: The Converging Perspectives of Lexical Semantics and Syntax*, Carol Tenny & James Pustejovsky, eds., Stanford, CA: CSLI Publications, 393–416.

Kearns, Kate (2007) Telic senses of deadjectival verbs. *Lingua* **117**: 26–66.

Kennedy, Chris (2012) The composition of incremental change. In *Telicity, Change, State: A Cross-Categorial View of Event Structure*, Violeta Demonte & Louise McNally, eds., Oxford: Oxford University Press, 103–121.

Kennedy, Christopher & Beth Levin (2008) Measure of change: The adjectival core of degree achievements. In *Adjectives and Adverbs: Syntax, Semantics and Discourse*, Louise McNally & Christopher Kennedy, eds., Oxford: Oxford University Press, 156–182.

Kennedy, Christopher & Louise McNally (2005) Scale structure and the semantic typology of gradable predicates. *Language* **81.2**: 345–381.

Klein, Wolfgang (1994) *Time in Language*. Germanic Linguistics, New York: Routledge.

Klein, Wolfgang (1995) A time-relational analysis of Russian aspect. *Language* **71**: 669–695.

References IX

Kratzer, Angelika (1998) More structural analogies between pronouns and tenses. In *Proceedings SALT 8*, Devon Strolovitch & Aaron Lawson, eds., 92–109.

Kratzer, Angelika (2004) Building resultatives, ms. University of Massachusetts at Amherst, published 2005 in *Event Arguments: Foundations and Applications*, ed. Claudia Maienborn and Angelika Wöllstein, 177-212. Tübingen: Niemeyer.

Kresnin, Susan (2000) Aspect, singularization, and pluralization in Czech and Russian. *SEEJ* **44.3**: 292–412.

Krifka, Manfred (1986) *Nominalreferenz und Zeitkonstitution: Zur Semantik von Massentermen, Individualtermen, Aspektklassen*. Ph.D. thesis, University of Munich.

Krifka, Manfred (1989a) Nominal reference, temporal constitution and quantification in event semantics. In *Semantics and Contextual Expression*, Renate Bartsch, Johan van Benthem, & Peter van Emde Boas, eds., Dordrecht: Foris, 75–115.

Krifka, Manfred (1989b) Nominalreferenz, Zeitkonstitution, Aspekt, Aktionsart: Eine semantische Erklärung ihrer Interaktion. In *Tempus – Aspekt – Modus: Die lexikalischen und grammatischen Formen in den germanischen Sprachen*, Werner Abraham & Theo Janssen, eds., Tübingen: Max Niemeyer Verlag, 227–258.

Krifka, Manfred (1992) Thematic relations as links between nominal reference and temporal constitution. In *Lexical Matters*, Ivan Sag & Anna Szabolcsi, eds., Stanford: CSI Publications, 29–53.

Krifka, Manfred (1998) The origins of telicity. In *Events and Grammar*, Susan Rothstein, ed., Dordrecht: Kluwer, 197–235.

References X

Landman, Fred (1992) The progressive. *Natural Language Semantics* **1**: 1–32.

Landman, Fred (2000) *Events and Plurality: The Jerusalem Lectures*. Dordrecht: Kluwer.

Lascarides, Alex & Nicholas Asher (1993) Temporal interpretation, discourse relations and commonsense entailment. *Linguistics and Philosophy* **16**: 437–493.

Levin, Beth & Malka Rappaport Hovav (2006) Constraints on the complexity of verb meaning and VP structure. In *Between 40 and 60 Puzzles for Krifka*, Hans-Martin Gärtner, Regine Eckardt, Renate Musan, & Barbara Stiebels, eds., http://www.zas.gwz-berlin.de/fileadmin/material/40-60-puzzles-for-krifka/.

Lewis, David (1973) Causation. *Journal of Philosophy* **70**: 55–67.

Link, Godehard (1983) The logical analysis of plurals and mass terms: A lattice-theoretical approach. In *Meaning, Use and Interpretation of Language*, Rainer Bäuerle, Christoph Schwartze, & Arnim von Stechow, eds., Berlin: de Gruyter, 302–323.

Maienborn, Claudia (2007) On Davidsonian and Kimian states. In *Existence: Semantics and Syntax*, Ileana Comorovski & Klaus von Heusinger, eds., Dordrecht: Springer, 107–130.

Mehlig, Hans Robert (1996) Some analogies between the morphology of nouns and the morphology of aspect in Russian. *Folia Linguistica* **30.1-2**: 87–109.

Mittwoch, Anita (2005) Do states have a Davidsonian argument? Some empirical considerations. In *Event Arguments: Foundations and Applications*, Claudia Maienborn & Angelika Wöllstein, eds., Tübingen: Niemeyer, 69–88.

References XI

Moens, Marc & Mark Steedman (1987) Temporal ontology in natural language. In *Proceedings of the 25th Annual Meeting of the Association for Computational Linguistics*, Stanford, CA: Association for Computational Linguistics, 1–7.

Mourelatos, Alexander P.D. (1978) Events, processes and states. *Linguistics and Philosophy* **2**: 415=434.

Nouwen, Rick (2016) Plurality. In *Cambridge Handbook of Semantics*, Maria Aloni & Paul Dekker, eds., Cambdrige: Cambridge University Press, 267–284.

Padučeva, Elena V. (1996) *Semantičeskie Issledovanija*. Moscow: Škola 'Jazyki russkoj kul'tury'.

Parsons, Terence (1990) *Events in the Semantics of English: A Study in Subatomic Semantics*. Current Studies in Linguistics Series 19, Cambridge, MA: MIT Press.

Parsons, Terence (2000) Underlying states and time travel. In *Speaking of Events*, James Higginbotham, Fabio Pianesi, & Achille Varzi, eds., New York / Oxford: Oxford University Press, 81–93.

Partee, Barbara (1973) Some structural analogies between tenses and pronouns in English. *The Journal of Philosophy* **70**: 601–609.

Partee, Barbara (1984) Nominal and temporal anaphora. *Linguistics and Philosophy* **7.3**: 243–286.

Paslawska, Alla & Arnim von Stechow (2003a) Perfect readings in Russian. In *Perfect Explorations*, Artemis Alexiadou, Monika Rathert, & Arnim von Stechow, eds., Interface Explorations 2, Berlin: de Gruyter, 307–362.

References XII

Paslawska, Alla & Arnim von Stechow (2003b) Perfect readings in Russian. In *Perfect Explorations*, Artemis Alexiadou, Monika Rathert, & Arnim von Stechow, eds., Berlin: Mouton de Gruyter, 307–362.

Pelletier, Francis Jeffry (1975) Non-singular reference: Some preliminaries.

Piñón, Christopher J. (2008) Aspectual composition with degrees. In *Adjectives and Adverbs: Syntax, Semantics and Discourse*, Louise McNally & Christopher Kennedy, eds., Oxford: Oxford University Press, 183–219.

Portner, Paul (1998) The progressive in modal semantics. *Language* **74**: 760–787.

Portner, Paul (2011) Perfect and progressive. In *Semantics: An International Handbook of Natural Language Meaning (Vol. 2)*, Klaus von Heusinger, Claudia Maienborn, & Paul Portner, eds., Berlin: de Gruyter, 1217–1261.

Pustejovsky, James (1991) The syntax of event structure. *Cognition* **41**: 47–81.

Ramchand, Gillian (1997) *Aspect and Predication: The Semantics of Argument Structure*. Oxford: Oxford University Press.

Ramchand, Gillian (2004) Time and the event: The semantics of Russian prefixes. *Nordlyd* **32.2**: 323–361.

Ramchand, Gillian (2008) *Verb Meaning and the Lexicon: A First Phase Syntax*. Cambridge: Cambridge University Press.

Rapp, Irene & Arnim von Stechow (1999) *Fast* 'almost' and the visibility parameter for functional adverbs. *Journal of Semantics* **16.2**: 149–204.

References XIII

Rappaport Hovav, Malka & Beth Levin (1998) Building verb meanings. In *The Projection of Arguments: Lexical and Compositional Factors*, Miriam Butt & Wilhelm Geuder, eds., Stanford: CSLI Publications, 97–134.

Rappaport Hovav, Malka & Beth Levin (2010) Reflections on manner/result complementarity. In *Syntax, Lexical Semantics, and Event Structure*, Edit Doron, Malka Rappaport Hovav, & Ivy Sichel, eds., Oxford: Oxford University Press, 21–38.

Reichenbach, Hans (1947) *Elements of Symbolic Logic*. London: MacMillan.

Reinhart, Tanya (2000) Strategies of anaphora resolution. In *Interface Strategies*, Amsterdam: North Holland, 295–324.

Romanova, Eugenia (2004) Lexical vs. superlexical prefixes. *Nordlyd* **32.2**: 255–278.

Romanova, Eugenia (2007) *Constructing Perfectivity in Russian*. Ph.D. thesis, University of Tromsø.

Rothstein, Susan (2004) *Structuring Events: A Study in the Semantics of Lexical Aspect*. Oxford: Blackwell Publishing.

Rotstein, Carmen & Yoad Winter (2004) Total adjectives vs. partial adjectives: Scale structure and higher-order modification. *Natural Language Semantics* **12**: 259–288.

Schoorlemmer, Maaike (1995) *Participial Passive and Aspect in Russian*. Ph.D. thesis, Utrecht University.

Sharvy, Richard (1980) A more general theory of definite descriptions. *The Philosophical Review* **89**: 607–624.

References XIV

Smith, Carlota S. (1991/97) *The Parameter of Aspect*. Dordrecht: Kluwer.

Součková, Kateřina (2004) Measure Prefixes in Czech: Cumulative *na-* and Delimitative *po-*, master's thesis, University of Tromsø.

Stowell, Tim (1995) The phrase structure of Tense. In *Phrase Structure and the Lexicon*, Johan Rooryck & Laurie Zaring, eds., Dordrecht: Kluwer, 277–291.

Stunová, Anna (1993) *A Contrastive Analysis of Russian and Czech Aspect: Invariance vs. Discourse*. Ph.D. thesis, University of Amsterdam.

Svenonius, Peter (2004) Slavic prefixes inside and outside VP. *Nordlyd* **32.2**: 205–253.

Tatevosov, Sergei (2011) Severing perfectivity from the verb. *Scando-Slavica* **57**: 216–244.

Tatevosov, Sergei (2015) Severing imperfectivity from the verb. In *Formal Description of Slavic Languages: Proceedings of FDSL 10, Leipzig 2013*, Gerhild Zybatow, Petr Biskup, Marcel Guhl, Claudia Hurtig, Olav Mueller-Reichau, & Maria Yastrebowa, eds., Linguistik International, Frankfurt/M.: Peter Lang, 465–494.

Taylor, Barry (1977) Tense and continuity. *Linguistics and Philosophy* **1**: 199–220.

Tenny, Carol (1987) *Grammaticalizing Aspect and Affectedness*. Ph.D. thesis, MIT.

Tenny, Carol (1994) *Aspectual Roles and the Syntax-Semantics Interface*. Dordrecht: Kluwer.

Travis, Lisa (2000) Event structure in syntax. In *Events as Grammatical Objects: The Converging Perspectives of Lexical Semantics and Syntax*, Carol Tenny & James Pustejovsky, eds., Stanford, CA: CSLI Publications, 145–185.

Vendler, Zeno (1957) Verbs and times. *Philosophical Review* **56**: 143–160.

References XV

Verkuyl, Henk (1972) *On the Compositional Nature of the Aspects*. Dordrecht: Foundations of Language Supplement Series 15.

Verkuyl, Henk (1993) *A Theory of Aspectuality: The Interaction between Temporal and Atemporal Structure*. Cambridge: Cambridge University Press.

Verkuyl, Henk (1999) *Aspectual Issues: Structuring Time and Quantity*. Stanford: CSLI Publications.

Verkuyl, Henk (2005) Aspectual composition: Surveying the ingredients. In *Perspectives on Aspect*, Angeliek van Hout, Henriëtte de Swart, & Henk Verkuyl, eds., Dordrecht: Springer, 19–39.

Vlach, Frank (1981) The semantics of the progressive. In *Tense and Aspect*, Philip Tedeschi & Annie Zaenen, eds., Syntax and Semantics 14, New York: Academic Press, 271–292.

von Stechow, Arnim (1996) The different readings of *wieder* 'again': A structural account. *Journal of Semantics* **13**: 87–138.

Winter, Yoad (2006) Closure and telicity across categories. In *Proceedings of SALT 16*, Masayuki Gibson & Jonathan Howell, eds., Ithaca: CLC Publications, 329–346.

Zagona, Karen (1990) Times as temporal argument structure, paper presented at the conference 'Time in Language', MIT Cambridge, MA.

Zaliznjak, Anna A. & Aleksej D. Šmelev (2000) *Vvedenie v Russkuju Aspektologiju*. Moscow: Jazyki russkoj kul'tury.

References XVI

Žaucer, Rok (2009) *A VP-internal/Resultative Analysis of 4 'VP-External' Uses of Slavic Verbal Prefixes*. Ph.D. thesis, University of Ottawa.

Zucchi, Alessandro (1999) Incomplete events, intensionality, and imperfective aspect. *Natural Language Semantics* **7.2**: 179–215.

Zwarts, Joost (2005) Prepositional aspect and the algebra of paths. *Linguistics and Philosophy* **28.6**: 739–779.

Zwarts, Joost (2006) Event shape: Paths in the semantics of verbs, ms. Radboud University Nijmegen & Utrecht University.