

# Ordered activities and semantics of the delimitative

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## Overview

### ■ The delimitative

- (1) Vasjanemnogo **po-čita-l** roman.  
V. for.a.while DLM-read-PST novel.ACC  
'Vasja spent some time reading a novel.'
- Isachenko 1960:235: a process which is referred to by a non-derived verb without any temporal restrictions, in the Delimitative Aktionsart appears to occur within certain temporal bounds .

## Overview

### ■ The delimitative

- Flier 1985:41: delimitatives refer to perfectivized situations confined to subjectively short period of time.
- Zalizniak, Shmelev 2000:111: delimitatives refer to a certain portion of the action, regarded as small and temporally restricted.
- Filip 2000: 28 The attenuative prefix *po-* is most frequently used as a temporal measure, contributing roughly the meaning of a durative adverbial like 'for a (short) while'

## Overview

### ■ The delimitative

- Mehlig 2003: "The function of the delimitative Aktionsart is to delimit a homogeneous situation aspectually by separating a certain temporal quantum from the temporal continuum."
- Dickey 2005: "*Po-* delimitatives perform a crucial systemic function in the Russian aspectual system — the extension of the aspect opposition to atelic activity predicates... Without *po-* delimitatives, the Russian aspect opposition would be restricted to telic predicates (accomplishments and achievements) and thus be a much more lexical category."

## Overview

How is the delimitative constrained in Russian and similar languages?

Why 'open' (2) and 'break' (3), but not 'shoot (a captive)' (4) and 'wash (the pill) down' (5)?

## Overview

- (2) Vasja **po-otkr-yva-l** dver'  
Vasja DLM-open-IPFV-PST:M door.ACC  
(p'jat' minut i brosi-l).
- {Context: the lock in the door is broken; Vasja tries to get in.} Vasja tried to open the door (for five minutes and gave up.)

## Overview

- (3) Vasja **po-razbi-va-l** vaz-u  
V. DLM-break-IPFV-PST:M vase-ACC  
(iz nebuščegosja stekla).  
'Vasja spent some time trying to break a vase  
(made of unbreakable glass).'

## Overview

- (4) ?? Vasja **po-rasstrel-iva-l** plenn-ogo.  
V. DLM-shoot-IPFV-PST captive-ACC  
'Vasja shot a/the captive (for a while).'
- (5) ?? Vasja **po-zapi-va-l** tabletk-u.  
V. DLM-ZA.drink-IPFV-PSTpile-ACC  
'Vasja washed the pile down (for a while).'

## Overview

- **The proposal:**
- The delimitative cannot be derived from verbal predicates that denote inherently ordered activities
- Inherent orderedness: contextually salient subevents making up an activity are ordered by temporal precedence and/or by causal dependence

## Outline

- Activities and accomplishments
- Inherent orderedness
- Deriving the delimitative
- Extensions

## Accomplishments and activities

- **Decomposition of accomplishments:**
  - Starting from Dowty 1979 accomplishments are viewed as consisting of at least two components: activity and change of state
- (6) John closed the door  
(6a) [[do (John, [close(John)])] cause  
[become [closed (door)]]]  
(6b)  $\lambda e \exists e' [close_A(John)(e) \wedge close_{CS}(door)(e') \wedge cause(e')(e)]$

## Accomplishments and activities

### More decompositional theories:

Rappaport Hovav, Levin 1998 and elsewhere, Kratzer 2000, 2005, Pytkkanen 2000, Paducheva 1996 and elsewhere, Folli 2002, Rothstein 2004, Ramchand 2008, and many others.

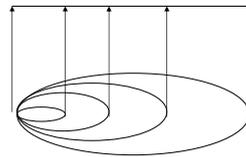
## Accomplishments and activities

Accomplishments fall into at least two types depending on how the activity subevent is related to a change of state:

- Incremental accomplishments (Rothstein 2004)
- Accomplishments that show mapping to a minimal final part (Tatevosov, Ivanov 2009)

## Accomplishments and activities

- Incremental accomplishments (Rothstein 2004)



Activity

Change of state

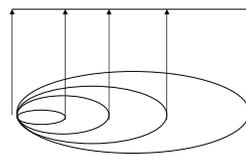
## Accomplishments and activities

### Incremental (INCR) accomplishments:

'read a novel',  
'write a letter',  
'plow a field',  
'paint a wall',  
'play a sonata', etc.

## Accomplishments and activities

- Incremental accomplishment: 'read a novel'

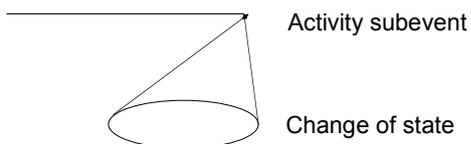


Agent's reading  
activity subevent

Subevent of the novel  
getting read

## Accomplishments and activities

Mapping to a minimal final part (MMFP)



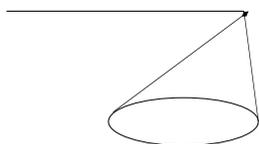
## Accomplishments and activities

### MMFP accomplishments

'open the door',  
'break the vase',  
'shoot the captive',  
'tear a thread',  
'wake up a friend', etc.

## Accomplishments and activities

MMFP accomplishment: 'break a vase'



Agent's breaking activity

The vase getting broken

## Accomplishments and activities

■ Activities: simplex, non-decompositional event descriptions:

(7) John walked

(7a) Dowty 1979

[[do (John, [walk(John)]]]

(7b)  $\lambda e.\text{walk}_A(\text{John})(e)$

## Inherent orderedness

**Back to the delimitative:**

INCR accomplishments - delimitative OK

*Popisat pis'mo* 'write a letter',

*pocitat' knigu* 'read a book',

*porisovat' kartinu* 'draw a painting',

*popaxat' pole* 'plow a field', etc.

## Inherent orderedness

**Back to the delimitative:**

MMFP accomplishments fall into two types

■ type 1; delimitative OK

*Pootkryvat' dver'* 'open the door', *porazbivat' vazu* 'break a vase', *porazryvat' nitku* 'tear a thread'

■ type 2; delimitative NOT OK

??*Porasstrelivat' plenogo* 'shoot a captive',

??*povydvat' knigu* 'give out a book',

??*povozdvigat' monument* 'erect a monument', etc.

## Inherent orderedness

What makes type 1 different from type 2?

☺ **Structure of the activity subevent!**

## Inherent orderedness

■ Mehlig 2003, 2006:

■ A property that constrains application of *po-* is homogeneity. Delimitatives can only be derived from predicates that refer to homogeneous situations in which «activity directed towards a goal can be interrupted and resumed arbitrarily many times; phases of a situation are conceptualized as identical».

## Inherent orderedness

- Mehlig's notion of homogeneity requires further refinements.
- Technically, a predicate is homogeneous iff it is divisive: any proper part of an entity from its denotation falls under its denotation, too (Rothstein 2004, among others).
- $\forall P[\text{HOM}(P) \leftrightarrow \forall x \forall x' [P(x) \wedge x' < x \rightarrow P(x')]]$

## Inherent orderedness

- Clearly, this is not what distinguishes between *pootkryvat' dver'* 'DLM-open the door' and *porasstrelivat' plennogo* 'DLM-shoot a captive'.
- Shooting-a-captive activity is only divisive down to atomic subparts like loading a bullet, taking an aim, pulling a trigger, etc.
  - Opening-a-door activity contains minimal atomic subparts, too.
- Neither is mereologically homogeneous, hence the contrast is unexplained.

## Inherent orderedness

### The hypothesis:

Predicates that do not license the delimitative meet the following condition:  
Contextually salient minimal subparts which the **activity** subevent consists of are **ordered by temporal precedence and causal dependence**.

## Inherent orderedness

- The example of inherent orderedness:  
shooting-a-captive activity
- Temporal sequencing is obligatory (e.g., pulling the trigger follows taking aim, fire follows pulling the trigger)
  - Causal dependence is obligatory (it is not possible to fire a shot without loading a bullet and to hit the target without taking aim).

## Inherent orderedness

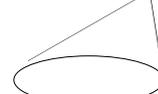
- **Causal dependence:** Lewis 1973 and much further literature.
- Event *e* is causally dependent on *e'* iff *e* would not have occurred if *e'* had not.
- If components of shooting-a-captive activity occur in an incorrect order or some of them are skipped, the overall sequence does not count as a shooting-a-captive activity.

## Inherent orderedness

MMFP accomplishment: inherently ordered

$$e_1 < e_2 < e_3 < e_4 < \dots$$

→ → → → → Activity subevent



Change of state

'Shoot a captive':  $e_1$  = load a bullet,  $e_2$  = take an aim,  $e_3$  = pull the trigger, ...

## Inherent orderedness

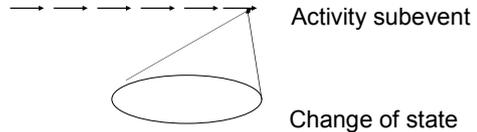
MMFP accomplishments with inherently ordered activities:

- 'Shoot a captive'
- 'Wash down a pill'
- 'Give out a book'
- ...

## Inherent orderedness

Delimitative from MMFP accomplishment: not OK

$e_1 < e_2 < e_3 < e_4 < \dots$



## Inherent orderedness

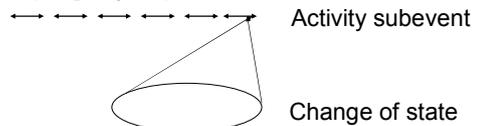
The lack of inherent orderedness: breaking a vase activity

- Scenario: the agent throws the vase on the floor, then throws it at the wall, then hits it with a hammer. Finally, when he hits it with a sledge hammer, the vase breaks.
- Fact: all these components of the activity are causally independent and can occur in whatever temporal order (except for the very final one).

## Inherent orderedness

MMFP accomplishment: not inherently ordered

$e_1 \quad e_2 \quad e_3 \quad e_4 \quad \dots$



'Break a vase':  $e_1$  = throw on the floor,  $e_2$  = throw at the wall,  $e_3$  = hit with a hammer, ...

## Inherent orderedness

MMFP accomplishments with not inherently ordered activities:

- 'Break a vase'
- 'Open the door'
- 'Wake up a friend'
- ...

Recap: It is inherent orderedness that matters!

## Deriving the delimitative

### Derivation of the delimitative

(8) Vasja **po-razbi-va-l** vaz-u  
 V. DELIM-break-IPFV-PST:M vase-ACC  
 'Vasja tried to break a vase.'

- Step 0: event description  
 Vasja razbi- vazu 'Vasja break a vase'

(8a)  $\lambda e \exists e' [\text{break}_A(\text{Vasja})(e) \wedge \text{break}_{CS}(\text{vase})(e') \wedge \text{cause}(e')(e)]$

## Deriving the delimitative

### Derivation of the delimitative

#### Step 1: Imperfective

(8b)  $\| \text{IPFV} \| = \lambda P \lambda e \exists e' [e < e' \wedge P(e)]$

NB: simplification, (8b) does not care about the Imperfective Paradox.

(8c)  $\lambda e \exists e' \exists e'' [e < e' \wedge \text{break}_A(\text{Vasja})(e') \wedge \text{break}_{CS}(\text{vase})(e'') \wedge \text{cause}(e'')(e')]$   
(from (8a), (8b))

## Deriving the delimitative

### Step 2: the delimitative (first version)

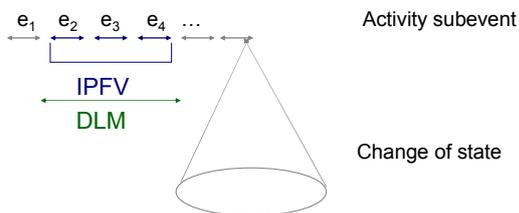
(8d)  $\| \text{DLM} \| = \lambda P \lambda t \exists e [t \supseteq \tau(e) \wedge P(e)]$

(8d) is Klein's (1994) perfectivity;  $\tau(e)$  is a temporal trace of  $e$ .

(8e)  $\lambda t \exists e \exists e' \exists e'' [[t \supseteq \tau(e) \wedge e < e' \wedge \text{break}_A(\text{Vasja})(e') \wedge \text{break}_{CS}(\text{vase})(e'') \wedge \text{cause}(e'')(e')]]$   
(from (8d), (8c))

## Deriving the delimitative

*Po-razb-iva-t' vazu* 'spend some time trying to break a vase'



## Deriving the delimitative

### The hypothesis (adjusted version): the delimitative wants the activity part extracted by IPFV be temporally and causally homogeneous.

#### Evidence: two crucial pieces

- 1 As we have already seen, the delimitative systematically fails to apply to MMFP accomplishments like 'shoot a captive', which possess a causally and temporally ordered activity subevent.

## Deriving the delimitative

### Evidence: two crucial pieces

- 2 The delimitative is derived from the imperfective. But the delimitative is semantically restricted in a way the imperfective is not. Hence, we are dealing with a genuine property of the delimitative. Evidence from MMFP accomplishments whose lexical meaning allows an activity component to be either inherently ordered or not.

## Deriving the delimitative

'Open the door':

two scenarios for the opening activity

- Scenario 1 <inherently ordered>. The door is opened by entering a code that consists of a sequence of numbers, e.g., 1-2-3-5-5-6-7-8.
- Scenario 2 <not inh. ordered>. The lock in the door is broken. The agent tries to open the door with the key, then applies a picklock, then uses a pinch bar, then tries to disassemble the lock, etc.

## Deriving the delimitative

Imperfective *otkryvaet dver'* 'is opening the door': both scenarios OK.

- Scenario 1. The door is opened by entering a code that consists of a sequence of numbers, e.g., 1-2-3-5-5-6-7-8. At the reference time, the agent is entering "6".
- Scenario 2. The lock in the door is broken. The agent tries to open the door with the key, then applies a picklock, ... At the reference time, the agent is disassembling the lock.

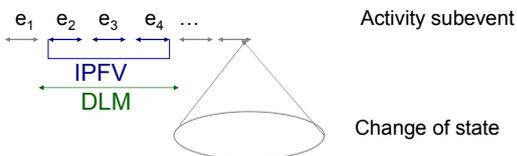
## Deriving the delimitative

Delimitative *pootkryval dver'* 'spent some time trying to open the door': Scenario 2 only OK.

- \*Scenario 1. The door is opened by entering a sequence of numbers. The agent has entered the sixth number out of eight, but then decides to stop.
- Scenario 2. The lock is broken. The agent tries to open the door with the key, then applies a picklock, then uses a pinch bar, ... At some point, he decides to stop.

## Deriving the delimitative

The delimitative imposes a restriction on a predicate it applies to (the one created by the application of IPFV)



## Deriving the delimitative

### The delimitative: final version

$$(9) \quad || \text{DLM} || = \lambda P \lambda t \exists e [t \supseteq \tau(e) \wedge H(P)(e)]$$

Part of the denotation of the delimitative is **the H operator**. It is H that takes care of inherent orderedness of an activity the delimitative applies to.

## Deriving the delimitative

### The H operator

$$(10) \quad H(P) = \{e \mid P(e) \wedge \exists Q [G\text{-HOM}(Q) \wedge Q \subseteq P \wedge Q(e)]\}$$

- The result of the application of the H operator to a predicate P, H(P), is a **generally homogeneous subset** of events from the original extension of P, if P happens to contain such a subset.
- Otherwise, the extension of H(P) is empty.

## Deriving the delimitative

### General homogeneity

$$(11) \quad \forall P [G\text{-HOM}(P) \leftrightarrow T\text{-HOM}(P) \wedge C\text{-HOM}(P)]$$

- A predicate shows a **general homogeneity property** iff it is temporally and causally homogeneous.

## Deriving the delimitative

### Causal homogeneity

(12)  $\forall P[\text{C-HOM}(P) \leftrightarrow \forall e[P(e) \rightarrow \forall Q[\forall e'[Q(e') \rightarrow e' \leq e] \wedge \forall e''\forall e'''[Q(e') \wedge Q(e'') \rightarrow \neg e' \otimes e'']] \rightarrow \forall e'\forall e'' [Q(e') \wedge Q(e'') \rightarrow \neg \text{CDEP}(e'')(e')]]]$

where “ $\otimes$ ” is an overlap relation, and CDEP is a relation of causal dependence.

- A predicate P is causally homogeneous iff for any (contextually relevant) set Q of non-overlapping parts of events from the extension of P it is not the case that any member of Q causally depends on any other.

## Deriving the delimitative

### Temporal homogeneity

(13)  $\forall P[\text{T-HOM}(P) \leftrightarrow \forall e[P(e) \rightarrow \forall Q[\forall e'[Q(e') \rightarrow e' \leq e] \wedge \forall e''\forall e'''[Q(e') \wedge Q(e'') \rightarrow \neg e' \otimes e'']] \rightarrow \forall e'\forall e'' [Q(e') \wedge Q(e'') \rightarrow \neg \text{NPREC}(e'')(e')]]]$

- Replacing the relation “be causally dependent on” with the relation “necessarily precede” (NPREC) gives us the notion of **temporal homogeneity** in (13). The NPREC relation can be thought of as a combination of metaphysical necessity with temporal precedence.

## Deriving the delimitative

### The contrast again:

(14) Vasja **po-otkr-yva-l** dver' dver'  
V. DELIM-open-IPFV-PST door:ACC  
'Vasja spent some time trying to open the door.'

(15) ??Vasja **po-rasstrel-iva-l** plenn-ogo.  
V. DLM-shoot-IPFV-PST captive-ACC  
'Vasja shot a/the captive (for a while).'

## Deriving the delimitative

- Accomplishment verbs differ as to the degree to which they fix lexically inherent orderedness of the activity subevent.
- Activities that are part of the meaning of 'open a door', (the one corresponding to the scenario 2) etc., do contain homogeneous subsets.
- Activities that are part of the meaning of 'shoot a captive', etc., fail to submit homogeneous subsets to the H operator, hence applying H to such activities yields an empty set of eventualities.
- The required contrast between (14) and (15) follows.

## Extensions

- So far, we have shown that the general homogeneity of the activity subevent restricts the distribution of the delimitative applied to MMFP accomplishment.
- Does this hold for the delimitative in general?
- What about INCR accomplishments and activities?

## Extensions

- Extension to activities: straightforward.

(16) Vasja po-gulja-l.  
V. DLM-walk-PST  
'Vasja spent some time walking.'

Simplex activities are temporally and causally homogeneous in the first place, see Vendler 1957 and huge further literature on eventuality type.

## Extensions

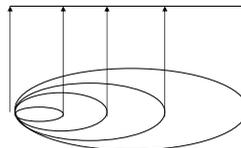
### The delimitative of INCR accomplishments: OK

(17) Vasjanemnogo **po-čita-l** roman.  
V. for.a.while DLM-read-PST novel.ACC  
'Vasja spent some time reading a novel.'

The activity subevent is only structured indirectly, by mapping established from the set of parts of the change of state to the activity. By themselves, activity subevents of INCR accomplishments are not inherently ordered.

## Extensions

- Incremental accomplishment: 'read a novel'



Agent's reading activity subevent

Subevent of the novel getting read

## Extensions

Rothstein 2004: 109-110 on INCR accomplishments

Activities are inherently nonstructured... In an accomplishment, an incremental structure is imposed on an unstructured activity by relating it to a BECOME event... An event of reading involves a reading activity which consists of a string of appropriately defined "minimal reading activity events," where a minimal reading event is an event of associating a perceived symbol, be it a word or a morpheme, with a meaning. This activity does not have any internal structure or inherent order... The order of the parts of the event *read the story of Rapunzel* is determined by what is necessary for there to be an event which is in the denotation of the predicate  $\lambda e.BECOME READ(e) \wedge Th(e)=THE STORY OF RAPUNZEL...$  The demands of this event are imposed on the reading activity which must perform accompany it.

## Extensions

- Being not inherently ordered, the activity subevent of INCR accomplishment can provide the delimitative with what it wants — with a generally homogeneous subset of the activity predicate.
- The analysis predicts, correctly, that there are no systematic restrictions on the application of the delimitative to INCR accomplishments.

## Conclusions

- The property that constrains the distribution of the delimitative is homogeneity of a simplex activity or of an activity subevent of the accomplishment.
- Homogeneity is the lack of temporal and causal orderedness of an eventuality.

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