Non-culmination and the structure of activities

Sergei Tatevosov
Lomonosov Moscow State University
tatevosov@gmail.com

TELIC 2017
University of Stuttgart
Overview

- The goal of this presentation is to offer a few observations that can provide a hint as to how to approach what may eventually develop into a reasonable way of thinking about a possible answer to the following question:

- Why do some but not all accomplishment predicates allow for non-culminating interpretations?
Overview

- **A culminating accomplishment (Mishar Tatar)**
  (1) daut bala-sı-na zadača-nı aŋnat-tı.
  D. son-3SG-DAT puzzle-ACC explain-PST
  ‘Daut explained the puzzle to his son’.

- **A non-culminating accomplishment**
  (2) daut kırık minut bala-sı-na zadača-nı aŋnat-tı.
  D. 40 minute son-3SG-DAT puzzle-ACC explain-PST
  ‘Daut spent forty minutes explaining the puzzle to his son (and did not succeed)’.
  Lit: ‘Daut explained the puzzle for forty minutes.’
Overview

- In many languages, perfective sentences based on accomplishment event descriptions do not entail culmination.


- However, most semanticists preoccupied themselves with what happens when you have a non-culminating accomplishment (NCA).

- The question of what happens when you cannot have it has not been sufficiently addressed.
Overview

- How are NCAs constrained?
- For example, why is the NC interpretation available for ‘open the door’, (4), but for ‘put the shirt on’, (5)?

(4) kerim eki minut ešik-ne ač-ti.  
   K. 2 minute door-ACC open-PST  
   {Context: the lock in the door is broken; Kerim tries to get in.} ‘Kerim spent (two minutes) trying to open the door (and gave up).’

(5) ?? Kerim ike minut külämk kij-de.  
   K. 2 minute shirt put.on-PST  
   ‘Kerim spent two minutes trying to put on his shirt.’
Overview

- NCAs are typically perfective

(3) Marat kil-gen-dä… ‘when Marat came…’

a. ... kerim ešik-ne ač-ti.
K. door-ACC open-PST
‘Kerim opened the door’; opening »_T coming

b. kerim eki minut ešik-ne ač-ti.
K. 2 minute door-ACC open-PST
‘Kerim tried to open the door for two minutes’

the agent’s activity »_T coming

c. kerim ešik-ne ača ide.
K. door-ACC open-IPFV AUX:PST
‘Kerim was opening the door.’ opening ⊃ coming
Overview

- We are looking at episodic sentences on the non-iterative construal.

(6) ?? Kerim jarti minut daru-nu ečä-de
    K. half minute medicine-ACC drink-PST
    ‘Kerim spent half a minute trying to take a medicine (and gave up).’

(7) Kerim eki aj daru-nu ečä-de
    K. two months medicine-ACC drink-PST
    ‘Kerim spent two months taking a medicine (and felt better).’
Constraints on NCAs

- Availability of NC readings with accomplishment predicates can be restricted contextually:

(8) **Scenario 1.** The lock in the door is broken. The agent tries to open the door with the key, then applies a picklock, then uses a crowbar, then tries to disassemble the lock, etc. At some point, he gives up.

*Scenario 2.** The door is opened by typing a code that consists of a sequence of numbers, e.g., 2-5-9-6. After typing “5”, the agent stops.

kerim eki minut ešik-ne ač-tı
K. two minute door open-PST
‘Kerim spent two minutes trying to open the door’
Constraints on NCAs

Acceptability an NCA can be determined by the characteristics of the internal argument

(9) Kerim eki minut / sekunt / roman-ni / mäkalä-ne /
    two minute second novel-ACC article-ACC
    xat-ni / jazu-nu / abzac / ţemlä-ne /
    letter-ACC note-ACC paragraph-ACC sentence-ACC
    süz-nu / *xäref-ni ukı-dı.
    word-ACC symbol-ACC read-PST

‘Kerim spent two minutes/seconds reading a novel/article/letter/note/paragraph/sentence/word/symbol’
Constraints on NCAs

- NCAs can be constrained by the properties of the external argument. The majority of NCAs that are licit if the external argument is the agent, are extremely awkward with non-agentive causers (events, natural forces, etc.; Martin & Schafer 2012, 2014, Martin 2015, i.a.):

(10) ??žıl eki minut ešik-ne ač-ti
wind two minute door open-PST
‘The wind spent two minutes trying to open the door’
Constraints on NCAs

- NCAs can be constrained lexically. For a class of verbs, the NC reading seems to be unavailable in any context no matter what the properties of its arguments are.

(11) ?? Kerim ike minut külmäk kij-de.

K. 2 minute shirt put.on-PST

‘Kerim spent two minutes trying to put on his shirt.’
Constraints on NCAs

- Same or similar pattern:
  - in a number of Turkic languages
    - Karachay-Balkar (Lyutikova et al. 2006)
    - Chuvash (Pazelskaya 2001)
    - Tuba Altai (Tatevosov 2009)
    - Crimean Tatar (Kavitskaya, p.c.)
  - in a few North-Caucasian languages
  - in some Uralic languages
  - in Russian
Outline of the idea

- I want to explore whether it is possible to account for the constraints on NCAs relying on the following working hypothesis

- At the point where “a non-culminating accomplishment” combines with aspectual operators, it denotes a predicate of activities.
Outline of the idea

- Perfective non-culminating accomplishments we saw above are essentially perfective activities.

(12) John walked for two hours.

- To produce a non-culminating reading, an accomplishment eventuality description has to be converted (by whatever available means) into an activity description.

- Restrictions on NCAs can thus be thought of as restrictions on this conversion.
Outline of the idea

- The hope is to relate unavailability of non-culminating readings to the inability of an accomplishment description to be re-interpreted as an activity.

(13) Kerim eki sekunt *xäref-ni ukı-dı.
    K. two second symbol-ACC read-PST
    ‘Kerim spent two seconds reading a symbol’

- Infelicity/ungrammaticality we observe in (9), for example, can be attributed to the failure of ‘read a symbol’ and similar predicates to present themselves as an activity.
Outline of the idea

- ‘Read a novel’ does allow for such a re-interpretation, hence is licensed under the non-culminating construal.

(14) Kerim eki saxat roman-ni ukı-dı.
K. two hour novel-ACC read-PST
‘Kerim spent two hours reading a novel.’
Outline of the idea

- Two questions appear immediately:
  - Is there any empirical evidence that non-culminating perfective accomplishments are perfective activities?
  - How does the reinterpretation mechanism work?
- Russian delimitative
Russian delimitative

- Russian is a language where perfective telic and perfective atelic clauses are morphologically distinct

- Perfective atelic clauses are distinguished by the prefix *po*- with the “delimitative” meaning

- Perfective telic clauses comprise all other prefixed verbs and a few morphologically simplex verbs

  - Perfective telic verbs undergo “secondary imperfectivization”
Russian delimitative

Aspectual morphology:

<table>
<thead>
<tr>
<th>“Simplex Imperfective”</th>
<th>“(Telic) Perfective”</th>
<th>“Secondary Imperfective”</th>
</tr>
</thead>
<tbody>
<tr>
<td>da-t’ ‘give’</td>
<td>da-va-t’</td>
<td></td>
</tr>
<tr>
<td>na-pisa-t’</td>
<td>[za-pis]-yva-t’</td>
<td></td>
</tr>
<tr>
<td>za-pisa-t’ ‘record’</td>
<td>[u-bi]-va-t’</td>
<td></td>
</tr>
<tr>
<td>u-bi-t’ ‘kill’</td>
<td>[pro-čit]-yva-t’</td>
<td></td>
</tr>
<tr>
<td>čita-t’ ‘read’</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Russian delimitative

- Perfective telic sentences

(15) Volodja [ot-kry]^{PFV}-I okno
V. open-PST.M window.ACC
‘Volodja opened a/the window.’

(16) Volodja [resi]^{PFV}-I zadaču
V. solve-PST.M puzzle.ACC
‘Volodja solved the puzzle.’
Russian delimitative

- Perfective atelic sentences; a lexical activity:

(17) Volodja [po-gulja]^{PFV}_{-I}
V. walk-PST.M
‘Volodja walked.’
Russian delimitative

- NCAs
  (18) Volodja [po-[[ot-kry]-va]]^{PFV}_l okno
  V. PO-open-VA-PST.M window.ACC
  ‘Volodja spent some time trying to open a/the window.’

  (19) Volodja [po-[reš-a]]^{PFV}_l zadaču
  V. PO-solve-VA-PST.M puzzle.ACC
  ‘Volodja spent some time trying to solve the puzzle.’

- NCAs share the delimitative *po-* with perfective lexical activities.
Russian delimitative

Moreover, delimitative NCAs in Russian exhibit the same type of restrictions as, e.g., NCAs in Turkic.

(20) Vasja **po-otkr-yva-l** dver’
    V. PO-open-VA-PST door.ACC
    (pja’t’ minut i brosi-l).
    {Context: the lock in the door is broken; Vasja tries to get in.} Vasja spent (five minutes) trying to open the door (and gave up.)

(21) ??Vasja **po-rasstrel-iva-l** plenn-ogo.
    V. PO-shoot-VA-PST captive-ACC
    ‘Vasja spent some time executing the captive by shooting’.

Russian delimitative

- Does *po* only apply to activities?

- There is a bunch of work that offers the positive answer to that question.

- Dickey 2005 (and elsewhere):
  “*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.” (Dickey 2005)
Russian delimitative

- Mehlig 2003, 2006

- For Mehlig, the delimitative is the perfective whose distribution is restricted by certain characteristics of a predicate it combines with.

- 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». 
Russian delimitative

- Piñon’s (1994) idea: the delimitative (pofective, in his original terminology) prefix po- has the meaning of a **durative adverbial underspecified** for duration (‘for some contextually salient time that falls below the expectations’).

(22) \( \lambda P. \lambda e. [P(e) \land \mu(\tau(e)) = r \land r < \text{Exp}(\mu(\tau(e)) \land \ldots)] \)

\( \tau \) is the temporal trace function (of type \(<v, i>\)),
\( \mu \) is a contextually determined additive measure function (of type \(<i, n>\)),
\( r \) is a contextually determined (small) number;
\( \text{Exp}(\ldots) \) is a contextually determined expectation value.

- Crucially, Piñon suggests that the event variable should **range over processes**
Russian delimitative

- What does that mean exactly that a complement of po-has to be a “homogeneous” predicate or a predicate of activities/processes?

(23) Vasja po-otkr-yva-l dver’
    V. PO-open-PART-PST door.ACC
    (pjat’ minut i brosi-l).
{Context: the lock in the door is broken; Vasja tries to get in.} Vasja spent (five minutes) trying to open the door (and gave up.)

- At this point we need to take a closer look at the composition of NCAs
Composition

- Three steps
  - Denotation of an uninflected vP
  - Partitive operator (covert in some languages, overt in others)
  - Perfective operator (part of the denotation of all perfective past sentences)
Composition

- Russian looks like a language where all the three steps are morphologically overt.

(24) Vasja \texttt{po-otkr-yva-l} dver’
V. PFV-open-PART-PST door.ACC
‘Vasja spent some time opening the door (and gave up).’

(25) ?? Vasja \texttt{po-nade-va-l} rubašk-u.
V. PFV-put.on-PART-PST shirt-ACC
‘Vasja spent some time putting the shirt on.’
Composition

- We start with the denotation of a non-inflected vP

\[
\lambda e. \exists e'[\text{open}_P(Volodja)(e) \land \text{open}_{CS}(\text{door})(e') \land \text{cause}(e')(e)],
\]

where the relations \text{open}_P and \text{open}_{CS} are process and change of state components of event structure.

Composition

- ‘Open a/the door’ represents one type of accomplishments: change of state occurs at the minimal final part (MFP) of the process in which the Agent is involved.
Composition

- Another type: incremental accomplishments (Rothstein 2004)

What I say about MFP predicates, extends to incremental predicates with minor technical adjustments
Composition

- The verb stem from (11) merges with the morpheme glossed as PART (= the (secondary) imperfective in the traditional terminology)

\[(27) \quad \text{otkry} \rightarrow \text{otkry-va-}\]

\[(28) \quad || \text{PART} || = \lambda P. \lambda e. \exists e'[e \subset e' \land P(e') \land \neg \text{FIN}(e')(e)]\]

- The PART operator extracts proper non-final parts of an event from the extension of an event predicate.

- PART is phonologically silent in languages like Turkic
Composition

‘Open a/the door’ plus PART

Process in which the agent is involved

The door attaining a state of being open
Composition

- PART makes the analysis a version of a partitive theory of non-culmination (e.g., Koenig and Muansuwan 2001 and subsequent literature)

- I ignore issues surrounding the Imperfective Paradox; the full version of the analysis is to be couched in modal terms (Dowty 1979, Landman 1992, Portner 1998 a.o.; see the recent discussion in Altshuler 2013).

- I follow Bar-el et al. 2005 and Tatevosov & Ivanov 2009 in assuming that PART by itself is neutral wrt to the viewpoint aspect (cf. Bar-el et al’s “inertia modality” operator).
Composition

- The combination of PART and the vP predicate denotes non-final parts of a process that leads to the culmination where the door gets open.

\[(29) \quad || \text{PART [V. open the door]} || = \lambda e. \exists e' \exists e'' [ e \subset e' \land \neg \text{FIN}(e')(e) \land \text{open}_P(\text{Volodja})(e') \land \text{open}_C_\text{S}(\text{door})(e'') \land \text{cause}(e'')(e') ]\]

- For ‘put the shirt on’, a parallel representation obtains:

\[(30) \quad || \text{PART [V. put the shirt om]} || = \lambda e. \exists e' \exists e'' [ e \subset e' \land \neg \text{FIN}(e')(e) \land \text{put.on}_P(\text{Volodja})(e') \land \text{put.on}_C_\text{S}(\text{shirt})(e'') \land \text{cause}(e'')(e') ]\]
At the next stage, the perfective enters the derivation and is combined with the output of PART:
Composition

- At the point where PFV applies, PART has already extracted a part of the process component of an accomplishment eventuality description.

- If the perfective can successfully combine with [PART-[open the door]], we have to figure out what prevents its application to [PART-[put the shirt on]].

- If [PART-[open the door]] is an activity in some sense, why is [PART-[put the shirt on]] not?
Composition

- Mehlig 2003 and elsewhere: an argument of the delimitative must be homogeneous / undergo homogenization

- Mehlig’s homogeneity cannot be mereological homogeneity

(31) Mereological homogeneity (Rothstein 2004, among others)
\[
\forall P[HOM(P) \leftrightarrow \forall x \forall x' [P(x) \land x' < x \rightarrow P(x')]]
\]

- Both [PART-[open the door]] and [PART-[put the shirt on]] are mereologically homogeneous (down to contextually relevant atomic parts).
Composition

- How is [PART-[open the door]] different from [PART-[put the shirt on]]?

- **The hypothesis:**
  The activity subevent of [put the shirt on] and similar accomplishments is structured in a way the activity subevent of [open the door] is not.

- For predicates like ‘put the shirt on’, contextually salient subevents making up an activity part of the description show **unique temporal arrangement**.
Structure of the process component

To see what unique temporal arrangement is, consider (32) again:

(32) Scenario 1. The lock in the door is broken. The agent tries to open the door with the key, then applies a picklock, then uses a crowbar, then tries to disassemble the lock, etc. At some point, he gives up.

*Scenario 2. The door is opened by typing a code that consists of a sequence of numbers, e.g., 2-5-6-9. After typing “6”, the agent stops.

Vasja po-otkr-yva-l dver’
V. PO-open-PART-PST door
‘Vasja spent some time opening the door’
Structure of the process component

Scenario 2. The door is opened by typing a code that consists of a sequence of numbers, e.g., 2-5-6-9.

- A process component $e_A$ of ‘open the door’ consists, on this scenario, of four subevents arranged in a specific order:

  $e_2$: typing of 2
  $e_5$: typing of 5
  $e_6$: typing of 6
  $e_9$: typing of 9

  
  $e_A = e_2 \oplus e_5 \oplus e_6 \oplus e_9$
  
  $e_2 \ll_T e_5 \ll_T e_6 \ll_T e_9$

- If subevents are arranged in a different order, some of them are skipped, etc., their sum is no longer an activity that opens the door.
In a world where $e_A$ opens the door, any process composed of typing numbers is only in the extension of $|| K. \text{open the door} ||$ if it is identical to $e_A$.

A similar point can be made about the process part of ‘put the shirt on’, ‘take a medicine’, ‘execute the captive by shooting’ etc.
Structure of the process component

- Opening the door on the Scenario 1 (“broken lock”). The lock is broken. The agent tries to open the door with the key, then applies a picklock, then uses a crowbar. When he finally hits the door with a sledgehammer, it opens.

- Relevant subevents are now (33):

  \[(33)\]
  \[
  \begin{align*}
  e_{\text{key}} &= \text{using a key} \\
  e_{\text{picklock}} &= \text{using a picklock} \\
  e_{\text{crowbar}} &= \text{using a crowbar} \\
  e_{\text{sledgehammer}} &= \text{using a sledgehammer}
  \end{align*}
  \]
Structure of the process component

- There is no unique arrangement of subevents into an activity.
- As long as a sledgehammer opens the door, all that matters is that $e_{sledgehammer}$ is the final subevent in the activity. Other subevents can be absent or occur in whatever order, since they make no causal contribution to opening of the door.
- $e'$, $e''$, $e'''$, $e''''$ are all activities that fall under the extension of $\langle K. \text{opened the door} \rangle$.
Structure of the process component

Consider an incremental accomplishment (Rothstein 2004) like ‘plow a field’ (the reasoning extends to other incremental accomplishments as well). Such accomplishments do license the NC reading:

(34) Vasja popaxal pole
    V. PO-plow.PART-PST field.ACC
    ‘Vasja spent some time plowing the field’

The process component of such event descriptions does not require unique arrangement either.

Assume, for example, that the activity consists of plowings e₁, e₂ and e₃ of three portions of the field.
Structure of the process component

- For an event $e$ to count as an process component of ‘plow the field’, it is essential that $e_1, e_2, e_3$, are all part of $e$. Their temporal arrangement is irrelevant.

- Therefore, $e''', e''''$, and $e''''$ can all be an element of the extension of $\| \text{Kerim plow the field}\|$
Structure of the process component

- **Generalization**
  
  If the process component of an event description is arranged by temporal precedence in the unique way, NCAs are not licensed.
Structure of the process component

- **Unique temporal arrangement**
  - Whenever an event $e$ falls under $P$, there is exactly one way for $e$ to start, there is exactly one way for $e$ to finish, and for any non-final part of $e$ there is exactly one follow-up.

- A predicate of events shows unique temporal arrangement, $UTA(P)$, iff
  \[
  \forall e[P(e) \rightarrow \exists! e' [e' \in \mu_c(e) \land INI(e)(e')] \land \exists! e' [e' \in \mu_c(e) \land FIN(e)(e')] \land \forall e'[e' \in \mu_c(e) \land \neg FIN(e)(e') \rightarrow \exists! e'' [e'' \in \mu_c(e) \land e' \prec_T e'']]\]
  where $\mu_c(e)$ is the contextually salient set of non-overlapping parts of $e$ such that $\bigoplus \mu_c(e)=e$
Structure of the process component

- «Activity directed towards a goal can be interrupted and resumed arbitrarily many times; phases of a situation are conceptualized as identical» (Mehlig 2006)

- With the notion of UTA, Mehlig-homogeneity (MH) can be given more content:

\[(35) \forall P [MH(P) \iff \neg UTA(P)]\]
Structure of the process component

- The prefix po- wants its complement to be an activity.

\[(36) \quad || \text{po-} || = \lambda \text{P} \ldots [\ldots \land \text{Activity(P)} \land \ldots] \]

- Now we can give the notion of activity some more content:
  Activities are Mehlig-homogeneous

- We apply PART to an accomplishment
- If what the predicate that PART returns is Mehlig-homogeneous, it is a predicate of activities
- If it is a predicate of activities, po- is happy.
Structure of the process component

- By hypothesis, the delimitative is an instance of an NCA; the only difference is that it shows more overt morphology.

- If NCAs in languages like Tatar involve the same steps of derivation, they are associated with the same restrictions, and being an activity is one of them.
Structure of the process component

- PART(λe.P(e)) is an activity:
Structure of the process component

- PART(\(\lambda e.P(e)\)) is not an activity:

- An interesting open question: is there any principle of lexical semantics that would predict that a non-Mehlig homogeneous PART(\(\lambda e.P(e)\)) is an impossible denotation?
Structure of the process component

- A potential problem.

(32) *Scenario 3 (due to Wayles Browne, p.c). The door is opened by typing a sequence of numbers 2 and 5 in whatever order. The agent types “2” and stops.

Vasja po-otkr-yva-l dver’
V. PO-open-PART-PST door
‘Vasja spent some time opening the door’
Structure of the process component

- A possible fix

- The amount of contextually salient subevents the process component consists of may have to be above a certain contextual determined threshold.

\[ | \mu_c(e) | > r_c \]

- \text{OK} Scenario 4. The door is opened by typing a sequence of any 50 numbers in whatever order. After typing first 20 numbers the agent stops.
Back to the restrictions

- MH gives hope to account for the restrictions we have seen before

(37) ?? Vasja po-zapi-va-l tabletk-u.
    V. PO-ZA.drink-PART-PST pill-ACC
    ‘Vasja spent some time washing the pill down.’

- Accomplishments like zapivat’ ‘wash down (of food, medicine, etc.)’ are lexical UTA predicates.

(38) $\forall x \forall y [UTA(\lambda e. ||zapivat'||(x)(y)(e))]$

- Any activity part of events from its extension consists of subevents whose temporal order is fixed.
Back to the restrictions

• In (39), on the scenario 2 the UTA character of the activity is contextually entailed

(39)  *Scenario 2. The door is opened by typing a code that consists of a sequence of numbers, e.g., 2-5-9-9. After typing “5”, the agent stops.
  Vasja   po-otkr-yva-l  dver’
  V.   PO-open-PART-PST  door
  ‘Vasja spent some time opening the door’

(40)  \( \forall x \forall y [\text{UTA}({\{e: ||otkryvat' \ ||(x)(y)(e)\} \cap C(e)})] \)

- Lexically, however, ‘open the door’ is not an UTA predicate, since it is compatible with non-UTA scenarios like the broken lock scenario.
Back to the restrictions

In (41), acceptability decreases with the “size” of the internal argument.

(41) Vasja po-čita-l \(\text{OK}\) roman / \(\text{OK/}\) pis’mo / V. PO-read.PART-PST novel letter ?zapisku / ??predloženie / ???slovo / *bukvu note sentence word symbol ‘Vasja spent some time reading a novel/ letter/ note/ sentence/ word/ symbol’
Back to the restrictions

- The smaller the size of an argument is, the more difficult it is to come with a partition \( \mu_c(e) \) of an event \( e \) into subparts that can be arranged in a non-unique way (see Rothstein 2004: 111-112 for related observations).

- In a limiting case like ‘read a symbol’, \( \mu_c(e) \) is a set only containing an original (atomic) event itself, and the predicate comes out as trivially having the UTA property.

\[(42) \quad \forall x \ [\text{UTA}(\{e: \text{|| read ||(x)(symbol)(e)}\})]\]
Back to the restrictions

- Whether the restriction on agentivity reduces to UTA may look somewhat less clear.

(43)  *Veter po-otkr-yva-l dver’
wind PO-open-PART-PST door
‘The wind spent some time opening the door’

- The question is whether restrictions like (33)
  - directly follow from non-agentivity of the causer or
  - have to do with temporal structure of processes (normally) brought about by non-agentive causers.

- There is evidence suggesting that the latter may be the right answer.
Acceptability of an NCA depends on whether an entity should be capable of goal-oriented behavior for an activity to be temporally arranged in a non-unique way.

This seems to be the case with ‘open’. There are verbs, however, that do license the delimitative with non-agentive causers.
Back to the restrictions

(44) V ozere on po-ispar-ja-l vodičku,
in lake it PO-evaporate-PART-PST water-ACC
poka ostyval
while cool-PST
(About a meteorite that fell down into a lake: ) ‘In the
lake, while it was cooling down, it evaporated the
water for a while’.

(45) Solntse liš’ nemnogo po-gre-l-o peremet,
sun just for.a.while PO-heat-PST snow.pile.ACC
kak vdrug on obvalilsja.
as suddenly it collapsed
‘The sun just heated the snow pile for a little, and it
suddenly collapsed.’
Evaporating and heating processes do not require a unique temporal arrangement, and the an NCA is licit even though the external argument is a natural force.

I conclude, tentatively, that the UTA analysis can be extended to the case of non-agentive causers as well.

What we need, then, is a better understanding of the relationship between (non-)agentivity and constraints on the temporal structure of processes in which agents and natural forces participate.
Summary

- The formation of NCAs is constrained by the temporal structure of the activity subevent in a complex event description.
- Whenever this subevent shows unique temporal arrangement, an NCA is out, and the culmination has to be attained in the actual world.
- In a broader perspective, we can benefit from studying restrictions on NCAs in two ways.
- First, we can find out what aspects of the internal structure of accomplishments favor their reinterpretation as activities and how exactly.
- Secondly, we can better understand what it means for an eventuality description to be a predicate of activities.
Thank you!