On the temporal structure
of non-culminating accomplishments[*]

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In the growing body of literature on non-culmination one question seems to have attracted less attention than it may deserve: why do some but not all accomplishment predicates allow for non-culminating interpretations? The goal of this paper is to review attested restrictions on non-culminating accomplishments and to explore one specific aspect of their meaning. Assuming, with the literature on predicate decomposition that accomplishments minimally consist of a process and change of state components, I focus on the temporal structure of the former. I main empirical finding of the study is that a non-culminating reading is unavailable if contextually relevant parts of this component are arranged by the temporal precedence relation in a unique way.

Keywords: non-culmination, accomplishment predicates, predicate decomposition, perfectivity, syntax-semantics interface

1 Introduction: Constraints on non-culmination

The question I would like to address in this paper is: in the languages where accomplishment predicates are capable of producing non-culminating readings, why are they available for some, but not for all accomplishments?

The phenomenon of non-culmination is best introduced through an example. Consider (1a-b) from Mishar Tatar:

(1)   a. A culminating accomplishment
           dawut   kırıkminut ečendä   bala-sı-na   zadača-nı   aŋnat-tı.
           D.   40   minute within   son-3SG-DAT   puzzle-ACC   explain-PST[1]
           'Dawut explained the puzzle to his son in forty minutes'.[2]

       b. A non-culminating accomplishment
           dawut   kırık   minut   bala-sı-na   zadača-nı   aŋnat-tı.
           D.   40   minute   son-3SG-DAT   puzzle-ACC explain-PST
           'Dawut spent forty minutes explaining the puzzle to his son (and did not succeed)'.
           Lit: 'Dawut explained the puzzle to his son for forty minutes.'

[1] In what follows, the following abbreviations are used: 3SG third person singular, ACC accusaitve, AUX auxiliary, DAT dative, IA internal argument, N neuter, NEG negation, LOC locative, PART partitive, PFCT perfect, PREP prepositional case, PST past, M masculine, TEMP temporal (adverbial).

[2] In the languages discussed throughout this paper undetermined nominals can be interpreted as either definite or indefinite. Since the choice is not relevant for the topic of the paper, I consistently represent them as definite DPs in the English translation.

(1a) is a telic sentence that conveys information about a culminating eventuality. The descriptive properties of this eventuality are roughly as follows: the agent performs a certain goal-oriented activity that reaches a culmination, with a new state coming to existence, which is 'Dawut's son understands (how to solve) the puzzle'. (1b) describes the same activity that lasts for forty minutes but for some reason stops before the culmination has been attained. The paradigm in (1a-b) makes Tatar different from languages like English, where the counterpart of (1b) is not available:

(2)   *a. David explained the puzzle to his son in forty minutes.*

        b. ^{??}David explained the puzzle to his son for forty minutes.

The same pattern obtains if the sentence is followed by an explicit indication that the culmination has not been reached. In Tatar, unlike in English, this does not bring about a contradiction:

(3)   *dawut bala-sı-na   zadača-nı   aŋnat-tı.   ämma   ul*
        D.   son-3SG-DAT   puzzle-ACC   explain-PST   but   he
        beter-mä-de.
        understand-NEG-PST
        'Dawut spent some time explaining the puzzle to his son. But he did not finish.'
        Lit. 'Dawut explained the puzzle to his son. But he did not finish.'

(4)   **David explained the puzzle to his son, but he did not finish.*

Therefore, in Tatar, perfective sentences built on accomplishment predicates like 'explain the puzzle' do not entail a culmination. In what follows, accomplishments that allow for a reading like (1) or (3) will be referred to as non-culminating accomplishments, or NCAs, for short.

If non-culmination is a parameter that can be set for a language as a whole and nothing else is said, it would be natural to expect that once a language is NCA-positive, like Tatar, any accomplishment should be allowed not to culminate. This is not the case, however. While for 'explain the puzzle' in (1) or 'open the door' in (5) a non-culminating construal is available, for 'put on the shirt' in (6) it is not.

(5)   Context: the lock in the door is broken; Kerim tries to get in.
        kerim eki   minut   ešik-ne   ač-tı.
        K.   two   minute door-ACC   open-PST
        'Kerim spent (two minutes) trying to open the door (and gave up)'.

(6)   ^{??}*kerim ike   minut   külmäk kij-de.*
         K.   two   minute shirt   put.on-PST
        'Kerim spent two minutes trying to put on his shirt.'

Compare (5) and (6). They look very similar. The two verbs occur in the same past perfective form, which also appears in (1) and (3). Both contain durative adverbials. Both are based on a predicate that describes a change of state of the internal argument ('closed' → 'open', 'not on' → 'on') brought about by an activity performed by the external argument. Both internal arguments are associated with the theme thematic relation; both external arguments are agents capable of goal-oriented behavior and endowed with other properties agents are normally supposed to have. In both cases, the agent's activity does not have to be

temporally coextensive with the change of state; rather, the change occurs at the final part of the activity. Last, but not least, both are episodic non-iterative sentences that describe a singular eventuality.

To sum up, the predicates in (5)-(6) look very alike. Yet, 'open the door' does allow for a non-culminating reading, but 'put the shirt on' does not. Why?

There are several analyses of NCAs (Koenig and Muansuwan 2001; Bar-el et al. 2005; Tatevosov 2008a; Tatevosov, Ivanov 2009a; Martin and Schäfer 2012, 2017; Altshuler 2013, Altshuler 2014; Demirdache and Martin 2015; Martin 2015). However, most semanticists preoccupy themselves with what happens when you do have a non-culminating accomplishment. The question of what is going on in examples like (6), when NCAs are unavailable, and how they are different from examples like (5), does not seem to have been sufficiently addressed.

The modest goal of this study will be to identify a constraint that seems to be at work in (6) and similar examples. I will argue that if, at the relevant stage of a derivation, an event predicate has the property of *unique temporal arrangement*, the derivation cannot output an NCA. Unique temporal arrangement is, intuitively, a property of eventuality descriptions such that every eventuality in its extension is partitioned into contextually salient subevents in the same way. But before we start approaching what may turn out to be set of arguments for this constraint, I will isolate a number of factors that can influence the availability of non-culminating interpretations.

To begin with, NCAs can be constrained lexically. For a class of verbs, non-culminting readings are unavailable no matter what their morphosyntactic environment is and what kind of contextual information is available. 'Put a shirt on' in (6) and 'take a medicine' in (7) are two examples of lexically constrained predicates; others include, for instance, 'set up a tent', 'give out a book' (e.g., in a library), 'execute a captive by shooting', etc[3].

(7)   *??* *kerim   jartı   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).'

For other verbs availability of non-culminating readings with accomplishment predicates can be restricted contextually. Consider 'open the door' again:

(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 digital 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-ACC   open-PST
       'Kerim spent two minutes trying to open the door.'

The verb *ač* 'open' is not lexically incompatible with a non-culminating interpretation, as (5) shows. However, its availability seems to be dependent on what kind of opening activity is entailed or presupposed by the context. Whereas opening of the door by typing a digital code (Scenario 2 in (8)) has to culminate, opening the door by applying different tools to the broken lock (Scenario 1) does not. Below, I will call this type of NCAs contextually-sensitive, or C-sensitive.

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[3] Some readers may find themselves puzzled if predicates like these are accomplishments in the first place and not achievements. I will return to this issue shortly, in Section 2.5.

Another pattern is illustrated by (9), where acceptability of an NCA can be determined by the characteristics of the internal argument:

(9)   *kerim   eki   minut / sekunt ^{OK}roman-nı   / ^{OK}mäkalä-ne /*
        K.   two   minute   second   novel-ACC   article-ACC
        $^{OK/?}$*xat-nı*   / $^{?}$*jazu-nu*   / $^{?/??}$*abzac*   / $^{??}$*ǯemlä-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'

The acceptability of 'read DP' on a non-culminating reading decreases with the spatial extent of the internal argument[4]. The larger an entity being read is, the easier it is for an activity to stop before the whole entity has been read. The limiting case is 'read a symbol', which strictly entails culmination. The pattern is easily replicated with other gradual patient / incremental theme verbs (Krifka 1989 and much further work) like 'write', 'draw', 'sing', 'plow' and so on.

Interaction between the eventuality type of a verbal predicate and properties of its incremental argument has been known for a while as aspectual composition (Verkuyl 1972 and further literature). However, the standard aspectual compositional pattern involves a completely different type of relationship between eventuality descriptions and the internal arguments. What matters for aspectual composition is the cumulativity / quantization status of an argument (Krifka 1989, Krifka 1992, Krifka 1998) or its [± specified quantity] (Verkuyl 1972, Verkuyl 1993, Verkuyl 1999). For example, Krifka's cumulative and non-quantized nominal expressions (e.g. 'soup') yield atelic event predicates (e.g. 'eat soup'), whereas quantized arguments lead to telicity (e.g., 'eat a/the sandwich'). In (7), all the arguments are unequivocally quantized, and what seems to matter is literally their "size", or spatial extent. In what follows, NCAs that show sensitivity to the properties of the internal argument will be referred to as IA-sensitive NCAs.

While the restrictions illustrated in (7)-(9) do not seem to have attracted much attention, the one I am turning to now has been extensively discussed. NCAs are famously constrained by the properties of the external argument: the vast majority of them are only licit if the external argument is the agent, and are extremely awkward with non-agentive causers (events, natural forces, and other effectors, to use Van Valin and LaPolla's (1997) term). This restriction has been addressed recently by Martin and Schäfer (2012, 2017), Martin (2015), Martin and Demirdache (2015), *inter alia*. One example is given in (10):

(10*)* $^{??}$*ǯıl   eki   minut   ešik-ne   ač-tı.*
        wind   two   minute   door-ACC   open-PST
        'The wind spent two minutes opening the door.'

It is not a priori obvious if the examples like (7)-(9), on the one hand, and (10), on the other, form a pattern that can be reduced to a single semantic constraint. One of my goals will

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[4] I am grateful to a reviewer who turned my attention to a similar phenomenon in Mandarin Chinese discussed in Soh and Kuo (2005). These authors observe that in Mandarin 'draw a picture' and 'write a letter' do allow for a non-culminating interpretation, while 'draw a circle' and 'write a character' do not. According to Soh and Kuo, however, this pattern is only attested with creation verbs. 'Read' in (9) is clearly not such a verb. Whether the similarity between (9) and Soh and Kuo examples is a coincidence remains to be seen.

therefore be to figure out if sentences like (6)-(10), where the culminating reading is obligatory, form a natural semantic class.

This goal is accomplished in Section 3.1. I will argue, building partly on the observations from Kiseleva and Tatevosov (2011) and Martin (2015), that restrictions in (7)-(9), on the one hand, and the one in (10), on the other, originate at different stages of derivation of NCAs. Having set the agentivity restriction apart, in Section 3.2 I will argue that the rest of the constraints stem from the same origin, which is to be found in the temporal structure of the process component of an eventuality description, whereby subevents this component consists of are temporally arranged in a unique way. I will call the relevant property of eventuality descriptions Mehlig-homogeneity, after H.-R. Mehlig, who has been in search for this property since mid-70s. In Section 3.3 I show how Mehlig-homogeneity manifests itself in a number of environments which (dis)favor the derivation of NCAs.

Before addressing these issues, however, in the next section I will set up a stage for the discussion by outlining the range of semantic environments that will be taken into account in what follows, lay out the assumptions about morphosyntactic structure of NCAs, provide an example derivation and reflect on the internal structure of uninflected, tense- and aspectless accomplishment predicates.

2 The architecture

2.1 Setting the stage

What follows does not presuppose that all non-culminating phenomena warrant a uniform analysis. It may be the case that, cross-linguistically, there is more than one way in which non-culmination comes about. The below discussion aims at accounting for one specific pattern which is observed in a number of genetically and areally unrelated languages. Whether a variety of other cases discussed in the recent literature reduces to the same pattern is a separate empirical question I am not going to address[5].

Therefore, my first, rather technical task, would be to delimit the scope of the study. I identify non-culminating accomplishments I am interested in as episodic, perfective, atelic, and non-iterative.

In (1)-(10), NCAs occur in perfective sentences (cf. Bar-el at al. 2005). This is easy to see by combining (1) with a temporal adverbial:

(11) *marat kil-gen-dä…*
       M. come-PFCT-TEMP
       'when Marat came…'

       a. dawut   kırık   minut   bala-sı-na   zadača-nı   aŋnat-tı.
           D.   40   minute son-3SG-DAT   puzzle-ACC   explain-PST
           '… Dawut spent forty minutes explaining the puzzle to his son'.
           1. COMING «$_T$ EXPLAINING   2. *COMING ⊑$_T$ EXPLAINING

       b. dawut   bala-sı-na   zadača-nı   aŋnat-a   i-de.
           D.   son-3SG-DAT   puzzle-ACC   explain-IPFV AUX-PST
           '… Dawut was explaining the puzzle to his son'.
           1. COMING ⊑ EXPLAINING   2. *COMING «$_T$ EXPLAINING

Being perfective, (11a) does not support the reading where the time of coming is included ("$\subseteq_T$") into the time of explaining; the only available temporal relation is precedence ("$\ll_T$"). To obtain the inclusion relation, one has to build up a clause in (11b) with the periphrastic past imperfective form consisting of the imperfective converb *aŋnat-a* and the past auxiliary *ide*.

Technically, progressive sentences are "non-culminating" as well, in the sense that the culmination does not occur in the evaluation world. However, this is exactly how run-of-the-mill progressives (e.g., *When I walked in, he was explaining the puzzle*) are supposed to behave. In the evaluation world, they denote non-final temporal (or mereological, depending on a theory) parts of eventualities from the extension of an accomplishment predicate, complete eventualities being typically thought of as only occurring in some other worlds (again, depending on a theory; I will come to that shortly). It is for this reason that culmination is not part of the information the progressive conveys convey about the evaluation world.

Perfective sentences are different. They are supposed to introduce "complete" eventualities, to use Comrie's (1976) descriptive notion, so if culmination is part of the denotation of a predicate, which, as most semanticists believe, is the case with accomplishments, we expect it to be entailed in the perfective. In (1b), (3), (5), (11a), and similar sentences this does not happen. The eventuality described in (11a) is, in a sense, complete in the evaluation world, but culmination is not part of it, and this is what makes languages like Tatar puzzling. Therefore, in what follows I will only be discussing properties of perfective sentences[6].

Being perfective, NCAs discussed throughout this paper are atelic. Whenever they are derivable at all, they differ from their culminating counterparts as to accepting measure adverbials like 'for five minutes', (1b), but not time-span adverbials like 'in five minutes'. As soon as the *for*-adverbial in (11a) is replaced by an *in*-adverbial, the non-culminating reading is no longer available:

(12) *dawut kırık   minut   ečände bala-sı-na   zadača-nı   aŋnat-tı.*
      D.   forty   minute   within   son-3SG-DAT   puzzle-ACC   explain-PST
      * *ämma ul   beter-mä-de.*
       but   he   finish-NEG-PST
      'Dawut explained the puzzle to his son in forty minutes. *But he did not finish.'

It should be emphasized that I am not assuming that telic non-culminating predicates do not exist. There is a bunch of phenomena, typically subsumed under the label of 'defeasible causatives', which should be, most likely, kept apart from NCAs discussed here. Defeasible causatives can be telic, yet non-culminating. Consider (13):

(13) *David explained the puzzle to his son in forty minutes. But his son did not understand it.*

For many speakers of English (13) is not a contradiction. If part of what defines the culmination of 'explain' is the patient's entering a result state of understanding the puzzle, it is clear that the culmination has not been attained. (13) takes an *in*-adverbial, however. The

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[6] In many languages, language-specific categories called "imperfective" do license perfective-like interpretation whereby the event time is included into the topic time. In such languages (see e.g. Gyarmathy and Altshuler (this volume) for the discussion), all the issues surrounding the phenomenon of non-culmination in the perfective start being relevant for this type of categories as well.

way (13) is naturally understood is: whatever it takes for the agent to provide a complete explanation for the puzzle has been done in forty minutes, and it is in this sense that (13) is telic, even though the change of state of the patient has not been brought about.

Crucially, English disallows (4), a counterpart of (3), which indicates that the agent's activity is incomplete. These examples are repeated as (14)-(15):

(14) *dawut bala-sı-na   zadača-nı   aŋnat-tı.   ämma   ul*
     D.   son-3SG-DAT   puzzle-ACC   explain-PST but   he
     beter-mä-de.
     understand-NEG-PST
     'Dawut spent some time explaining the puzzle to his son. But he did not finish.'
     Lit. 'Dawut explained the puzzle to his son, but he did not finish'.

(15) *??David explained the puzzle to his son, but he did not finish.*

Taken together, examples in (13)-(15) show that it is possible to be a defeasible causative without being a non-culminating accomplishment of the Tatar type. The narrative below only focuses on the latter. Whether it can be extended to defeasible causatives like (13) and to what extent remains to be seen[7].

To recapitulate, the scope of this study includes NCAs that are perfective and atelic. Another relevant property of theirs is non-iterativity. The significance of this parameter of interpretation is revealed by the fact that even those predicates that fail to accept a measure adverbial when describe singularities, easily do so under the iterative construal. (16)-(17) form a minimal pair that illustrates the contrast:

(16) *?? kerim jartı   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).'

(17) *kerim eki   aj   daru-nu   ečä-de.*
     K.   two   months   medicine-ACC drink-PST
     'Kerim spent two months taking a medicine (and is now feeling much better).'

On the intended reading, (16) describes the agent's unsuccessful attempt to take a pill. On this construal, the sentence is extremely odd. It easily improves, however, if the verb phrase denotes a plurality of events in (17), where each atom is a culminating taking-a-pill eventuality. No matter how the iterative predicate in (17) is derived, it suggests that in order to identify restrictions on non-culminating interpretations one should not take into account iteratives.

Finally, it should be noticed that all the sentences discussed above are episodic. A separate question is what is going on under the habitual construal. Consider (18):

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[7] Less obvious is another case mentioned by an anonymous reviewer as an alleged instance of NCAs different from the Tatar type, namely, "the Hindi perfectives by Singh (1998), which are not assumed to be atelic". As a matter of fact, Singh is not explicit as to how her "neutral perfective" sentences pattern with respect to telicity diagnostics. As Rajesh Bhatt (p.c.) pointed out to me, sentences like (i) do accept durative for-adverbials on a non-culminating interpretation, whereby it is not entailed that the cakes are fully consumed. If this is so, Hindi starts looking considerably less different from Tatar than one might initially think.

(i)   laRke   ne   do   kek   khaaye.
       boy   ERG   two   cake   eat-PERF
       'The boy ate two cakes.' (adapted from Singh 1998: 174)

(18) *dawut gel   bala-sı-na   zadača-nı   aŋnat-tı.*
     D.   always   son-3SG-DAT   puzzle-ACC   explain-PST
     'Dawut would always explain a puzzle to his soon.'

Starting from pioneering work by Milsark (1977) and Carlson (1977), habituals have been understood as derived individual-level predicates. As such, they possess all characteristic properties of individual-level statives, e.g. truth at a point (Taylor 1977 and others)[8], which means that they do not (and cannot) culminate. However, not counting a few special cases, habituals come with the inference that singular eventualities from the extension of VP occur regularly in the evaluation world. It is in this, indirect, sense, that one may be interested in what aspectual information is conveyed about such singularities. (19a) and (19b) together show a singular VP-eventuality can, but does not have to culminate:

(19) *a. dawut gel   bala-sı-na   kırık   minut   ečendä zadača-nı*
         D.   always   son-3SG-DAT   forty   minute-DAT   within   puzzle-ACC
      aŋnat-tı.
         explain-PST
         'Dawut would always explain a puzzle to his soon in forty minutes.'

    b. dawut gel   bala-sı-na   kırık   minut   zadača-nı   aŋnat-tı.
         D.   always   son-3SG-DAT   forty   minute   puzzle-ACC   explain-PST
         'Dawut would always spend forty minutes explaining a puzzle to his son (but would never succeed).'

Superficially, the pattern in (19a-b) looks exactly like what is going on in episodic sentences in (1a-b). This suggests the generalization that whenever a non-culminating reading is available in an episodic sentence, it projects onto habitual sentences as well. This generalization can be premature, however, in the light of the data from Iatridou, Tatevosov (in prep.). These authors observe that in some languages non-culminating readings are available under the habitual even if they are systematically absent in episodic sentences. This may undermine the generalization that non-culmination is derived in the same way in cases like (1a-b) and (19a-b). For that reason I will put habituals aside in this study and only focus on episodic sentences.

In the next section their derivation will be addressed in more detail.

2.2 Partitivity

I will follow the extensive body of literature on syntax-semantics interface based on event semantics in assuming that *v*Ps denote predicates of events while the role of aspect is to map predicates of events to predicates of times. The popular denotation of the perfective operator going back to Klein (1994) is shown in (20):

(20) $\| \text{PFV} \| = \lambda P: P \in D_{<v,t>}.\lambda t. \exists e\ [\ \tau(e) \subseteq t \land P(e)]$
      where *v* is the type of eventualities

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[8] There is no implicational relation in the opposite direction or course. For many semanticists who believe that achievements are empirically real (see, e.g., Verkuyl (1993) for a critical assessment) they are true at a point, too.

In (20), the perfective takes a predicate of events and returns a set of intervals such that every interval in this set includes the running time of an event from the extension of the predicate. (Alternatively, aspectual operators can be defined as modifiers of type $<<v,t>,<v,t>>$ that output a (possibly but not necessarily) different event predicate; see e.g. Altshuler (2015) for a recent discussion.)

Assume, then, that an event predicate PFV takes as its argument is an accomplishment predicate[9]. As was pointed out above, if this predicate only contains complete, culminated events in its extension, and PFV looks like (20), the system leaves little room for non-culminating interpretations to obtain. Imagine that [$_{vP}$ John open the door] is a description of events where the agent does whatever it takes for him to open the door, and the door gets open. After PFV applies on top of that description, the outcome will be the property of times that include a whole eventuality. In an indicative sentence this property of times will eventually yield a proposition conveying that a complete opening of the door occurred in our world.

It is for this reason that any existing theory of non-culmination finds some way or other to make sure that at least the culmination part of the description does not have to occur in the evaluation world. The system has to able to deal with partial, incomplete eventualities. This is what is frequently called a *partitive theory* of non-culmination.

In case of [$_{vP}$ John open the door] this would mean that what happens in our world is a non-final part (broadly conceived) of a complete opening eventuality. This part does not include the culmination where the door changes its state. A proposition expressed by a non-culminating perfective sentence will be true of a world just in case there is a time that includes the running time of some non-final part of opening the door. This is the non-culminating reading we are after.

Existing versions of the partitive theory vary along different dimensions. One aspect is whether partitive is treated intensionally, and, if yes, what kind of modal base is taken to be part of NCA denotations. It is not difficult to observe that NCAs present the same imperfective paradox as the progressive (Dowty 1977, Dowty 1979 and subsequent literature). For instance, a proposition in (1b) can be true in the evaluation world without a corresponding proposition in (1a) being true. Therefore, depending on a theory, one would say that a complete eventuality exists in inertia worlds (Dowty 1979; Bar-el et al. 2005), causally successful worlds (Martin 2015; Martin and Schäfer 2017), worlds on a continuation branch of an eventuality (Tatevosov, Ivanov 2009a) and so on. Whatever possible worlds our favorite theory invokes to solve the imperfective paradox, these worlds will do.

An independent question is where in the derivation partitivity comes in, and in approaching this issue architectural considerations start being significant. Recall that our goal is to understand it better why non-culminating construals are more easily accessible for some accomplishments than for others, and whether sensitivity to the agenthood of the external argument is a manifestation of the same phenomenon as other constraints from Section 1. As we will see shortly, morphosyntactic evidence suggests a very specific view of the architecture of the aspectual domain, which, in turn, allows to gain a better understanding of how to answer these two questions.

The standard hierarchy of functional projections outside of vP, minimally consisting of Aspect and Tense that merge on top of the verb phrase, is shown in (21):

(21)   [... T ... [… Asp …[… v … […]]]]

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[9] There does not seem to be a general agreement as to what it means to be an accomplishment predicate. I will lay out my working definition of accomplishments adopted for the purposes of this paper shortly, in Section 2.5.

If nothing else is said, (21) only allows for two options.

First, partitivity is there at the *v*P level already. We can call this view *v*P-internal partitivity. Koenig and Muansuwan (2001), Koenig and Davis (2001), Martin (2015), Martin and Schäfer (2017) all assume that partitivity appears in the lexicon (cf. Koenig and Davis's and Martin and Schäfer's term "sublexical modality")[10]. Tatevosov (2008a) takes *v*P to represent a syntactically decomposed event structure in the spirit of Ramchand (2008) and proposes that the partitive operator can adjoin at different levels within *v*P, deriving different non-culminating subreadings. *v*P-adjunction results in the zero change of state construal ("failed attempt"), while VP adjunction produces partial change of state construal ("partial success").

Secondly, partitivity can be made a component of the semantics of PFV. This Asp-internal view of partitivity is adopted by Altshuler (2014) and Gyarmathy and Altshuler (this volume). Altshuler develops a typology of aspectual operators to deal with the range of cross-linguistic phenomena suggesting that languages can differ as to their aspectual vocabularies. Specifically, in languages like Hindi, Altshuler argues, the perfective outputs "maximal actual parts" of events from the extension of a *v*P-predicate. Complete such events do not have to occur in the actual world. This derives non-culminating readings for Hindi with no further effort.

Yet another path is to modify (21) and assume that partitivity is neither as low as at the *v*P level, nor as high as in Asp. It is represented independently and is located in between the two, as in (22):

(22) [... T … [… Asp … [… Part … [… *v* … […]]]]]

This view is advanced by Bar-el *et al.* (2005) and Tatevosov, Ivanov (2009a) who assume that an inertia/continuation modality operator, the source of partitivity in their accounts, merges on top of *v*P. This does not make a clause obligatorily imperfective, however, since the perfective is allowed to apply subsequently, creating a non-culminating perfective sentence.

In the next section I will argue that (21), unlike (22), falls short of dealing with the data from languages like Russian, which gives (22) an important advantage.

2.3. Morphosyntactic composition

The three approaches just sketched seem to make different morphological predictions.

If partitivity is sublexical, we do not expect it to be associated with any morphological exponent. This meaning will be effectively encoded by the lexical item itself. Similarly, if it is a *v*P-level coercion-like phenomenon, which is the idea behind Tatevosov 2008a, it is not likely to be associated with an overt exponent either. Languages where a simple past perfective form allows for both culminating and non-culminating readings, one of them being Tatar discussed above, can be said to be an instance of this type of system.

If, on the other hand, partitivity is built into the meaning of an aspectual operator, one may expect that this should have morphological consequences. Functional categories regularly express semantic contrasts through morphology. It would be natural then to find languages

---

[10] I fully agree with a reviewer that "the cited authors … all analyse a specific set of cases (Thai and Chinese perfectives and Germanic/Romance defeasible causatives, respectively), but may not agree that the same account applies to other NC-cases". However, it seems uncontroversial to say that partitivity is what their accounts for NCAs in their languages share with my account for NCAs in my languages (see section 3 for specifics). As such, the question of how partitivity enters the derivation, once it is assumed to be part of it, seems to be at least partly independent from whether NCAs in all languages should be treated on a par.

where two morphosyntactic forms of the same verb are distinguished: one that entails culmination and one that does not. Such languages have been reported to exist, too. Hindi (Singh 1998, Altshuler 2014), Thai (Koenig and Muansuwan 2001), and Tuba Altai, illustrated in (23) (Tatevosov 2009a, Tatevosov, Ivanov 2009b), may look like languages of this type.

(23) a. *o:loč*   *bičik-ti*   *eki*   *čas*   *čij-en.*
         boy   letter-ACC   two   hour   write-PST.3SG
         'The boy spent two hours writing a letter.'

     b. **o:loč*   *bičik-ti*   *eki*   *čas*   *čij-se-n.*
         boy   letter-ACC   two   hour   write-SA-PST.3SG
         'The boy spent two hours writing a letter.'

(23a-b) form a minimal pair: the former, but not the latter allows for a non-culminating reading. Morphologically, the difference has to with the *-sa-* morpheme, which is part of (23b). On the Asp-internal view, one can suggest that Tuba has different versions of Asp: the one that guarantees culmination is overtly realized by *-sa-*.

Morphological predictions of (22) are also straightforward: the inertia/continuation modality operator, encoding partitivity, is expected to be able to receive a designated spell-out, independent of the spell-out of the perfective. Tatevosov, Ivanov (2009a) argue that this is what happens in Russian, illustrated in (24)-(25):

(24) Volodja   [po-[[otkry]-va]] -l   okno.
       V.   PO-open-PART-PST.M   window.ACC
       'Volodja spent some time trying to open the window.'

(25) Volodja   [po-[[reš]-a]]-l   zadaču.
       V.   PO-solve-PART-PST.M   puzzle.ACC
       'Volodja spent some time trying to solve the puzzle.'

(24) and (25) are interpreted in the way NCAs in other languages do: both indicate that some opening/solving activity has occurred in our world without attaining the culmination. The derivation of both (24) and (205) involves three morphological elements. These are a verb stem (*otkry-* 'open' in (24), *reši-* 'solve' in (25)), the morpheme traditionally labeled as "secondary imperfective" (*-va-* and *-a-* respectively, glossed as PART) and the "delimitative prefix" *po-* (we will return to its meaning in Section 3.2). If the prefix is not there, the sentence is imperfective, e.g., progressive or habitual:

(26) Volodja   [[ot-kry]-va]-l   okno.
       V.   open-PART-PST.M   window.ACC
       'Volodja was opening the window.'
       'Volodja would open the window regularly.'

(27) Volodja   [[reš]-a]]-l   zadaču.
       V.   solve-PART-PST.M   puzzle.ACC
       'Volodja was solving the puzzle.'
       'Volodja would solve a puzzle regularly.'

The bracketing in (24)-(25) indicates that the *-va-* morpheme merges with the stem first, and the prefix attaches to the resulting combination. If the *-va-* morpheme is an exponent of

partitivity, while the prefix has to do with the computation of perfectivity, Russian starts looking like an instance of the system in (22)[11].

At first glance, we seem to have been able to find languages that conform to all of the views introduced above. A closer look reveals a crucial asymmetry between them, however. Russian morphological data in (24)-(27) can hardly be made compatible with (21), which lies behind *v*P-internal or Aspect-internal views of partitivity. The derivation of an NCA in Russian involves three pieces of morphology: the verb stem, the "secondary imperfective", and the prefix. (21) only projects enough structure to host two of them, however.

To the contrary, systems like Tatar or Tuba can be easily subsumed under the structure in (22). They contain less pieces of morphology than there are functional heads in (22). However, this is not highly problematic. If the morphological vocabulary contains less (overt) items then there are nodes in a tree, one can find quite a number of analytical options to deal with such a situation. One can assume that some of the lexical items are phonologically silent, or that a lexical item can be associated with more than one terminal node in the syntactic tree, as in Nanosyntax (Starke 2010), or that nodes which are separated in some languages can be "bundled" in others (Pylkkanen 2002).

This is the morphological reason for Tatevosov and Ivanov (2009a) to conclude that (22) is empirically superior to (21).

If morphologically rich NCAs in languages like Russian are taken as a point of departure, it is natural to suggest that a configuration along the lines of (22) should underlie NCAs in languages like Tatar as well. It is clear, of course, that the morphological data from Russian discussed above does not force this conclusion. In the absence of a strong evidence to the opposite, however, it may look like a reasonable null hypothesis that what has to be said about Russian extends to the languages where NCAs are morphologically impoverished. In what follows, I tentatively assume that this is indeed the case.

Having said this, I will spend the rest of this section on making more explicit a few assumptions that supplement (22) and on building up a sample derivation.

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[11] A morphological clarification is due at this point. It may not a priori be obvious that in (24)-(25) the prefix merges outside of the *-va-* morpheme and not the other way around. Fortunately, there is an easy way of making sure that this is indeed the case. If the last step of morphological derivation is prefixation, the resulting verb stem falls within the class of so called "perfective verbs", which are characterized by a bunch of distributional properties that are easy to detect. Specifically, such verbs cannot form the periphrastic future and be a complement of aspectual verbs like *načat'* 'start, begin'. (i) shows a non-derive perfective, a prefixed perfective and an NCA from (24) pattern together in this respect.

(i) *nača-l /   bude-t   da-t' /   pro-čita-t' /   po-[otrky-va]-t'
     start-PST.M   be-PRS.3SG   give-INF   PRO-read-INF   PO-open-PART-INF
     'started / will give$_{PFV}$ / read$_{PFV}$ / open$_{NCA}$'

Had the last step of derivation in (24)-(25) been the *-va-* morpheme, it would have patterned as in (ii), which demonstrates a morphologically simplex imperfective verb, the imperfective verb from (26) and what is traditionally called the secondary imperfective, where the *-va-* merges outside the prefix.

(ii) nača-l /   bude-t   pisa-t'   /   otrky-va-t'   /   [pro-čit]-yva-t'
     start-PST.M   be-PRS.3SG   write-INF   open-PART-INF PRO-read-PART-INF
     'started / will write$_{IPFV}$ / open$_{IPFV}$ / read$_{IPFV}$'

Among other things, these examples show that in Russian both derivational configurations [*prefix* [*-va-* […]]] and [*-va-* [*prefix* […]]] are available. Tatevosov (2009b, 2013) discusses extensively constraints on both derivational scenarios. For space considerations it is impossible to reproduce this discussion here.

2.4 A derivation

I am assuming the derivation of the perfective non-culminating configuration shown in (28).

(28)

$$\text{AspP} \qquad \lambda t.\exists e\ [\text{PART}(\lambda e'.P(e'))(e) \wedge \tau(e) \subseteq t]$$

Asp

PFV

$$\lambda P.\lambda t.\exists e\ [P(e) \wedge \tau(e) \subseteq t]$$

$$\text{PartP} \qquad \lambda e.\text{PART}(\lambda e'.P(e'))(e)$$

Part

PART

$$\lambda P.\lambda e.\text{PART}(\lambda e'.P(e'))(e)$$

$$v\text{P} \qquad \lambda e.P(e)$$
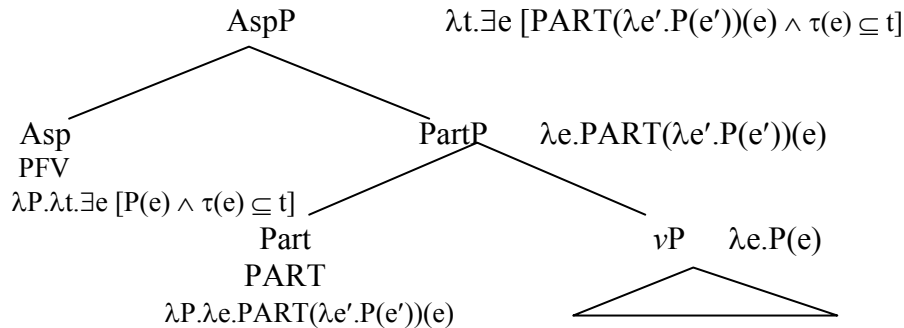
(28) makes explicit the intuitions discussed above. According to (28), the resulting interpretation of an NCA is obtained by putting together three elements: the denotation of an uninflected vP, the PART operator (covert in some languages, overt in others), and the perfective operator. Let me discuss briefly each of them.

The perfective operator PFV is part of the denotation of all perfective sentences. I will be assuming that it minimally contains a Kleinean component in (20), which says that the event time is a subinterval of the topic time. More on this operator is to be said in Section 4.

If partitivity is by itself independent from perfectivity, PartP should not be confined to perfective sentences; it should also occur in imperfective (e.g. progressive or habitual) environments. What would be the structure of such an environment? Two options suggest themselves:

(29)   [… T … [IPFV Asp … [PART Part … [… v … […]]]]]
        where IPFV is the imperfective semantic operator that comprises different meanings
        of the imperfective (e.g., Cipria and Roberts 2000; Deo 2009; Arregui et al. 2014) or a
        family of operators, if one assumes with e.g. Paslawska, von Stechow (2003), Beck,
        von Stechow (2014) that the imperfective is ambiguous.

(30)   [… T … [PART Part … [… v … […]]]

In (29), the imperfective is derived by applying the imperfective operator IPFV on top of PART. The other option is (30), where to be imperfective means to contain PART without PFV merging on top of it.

Provided that (29)-(30) are supplemented with appropriate semantics, it is not clear whether they make different semantic predictions. If one keeps on taking morphological clues seriously, evidence from languages like Russian may suggest that (30) is the right option. Morphologically, we only see the partitive morphology in imperfective clauses in Russian, (26)-(27). No additional IPFV morphology surfaces. However, I will opt for (29) relying on architectural reasons.

Sticking to the view that the denotation of vP is a predicate of events, but aspectually inflected extended projections of the verb are temporal objects, one can naturally implement these assumptions by saying that mapping of predicates of events to predicates of times happens at Asp. Under (29), PART would uniformly be a function of the modifier type $<<v,t>,<v,t>>$ that takes a predicate of events and returns another predicate of events, an aspectless object. Assuming no IPFV on top of PART, as in (30), will inevitably result in

PART doing different jobs in perfective and imperfective configurations. (29) offers an easy way of avoiding this.

The progressive and NCAs are literally identical up to a certain point in the derivation; PART is involved in the derivation of both. The role of PART is to uniformly derive a predicate of partial eventualities based on the denotation of the original event predicate. I stipulate that PART yields proper non-final parts (or, possibly, stages, Landman 1992) of an event from the extension of $\| vP \|$. As indicated above, given the imperfective paradox which NCAs share with the progressive, one may want to adopt some or other version of a modal analysis for PART (Dowty 1979; Landman 1992; Portner 1998; Cipria and Roberts 2000; Arregui et al. 2014; Varasdi 2014). My hope is that nothing in what follows relies on more specific assumptions about its precise semantic content, even though under intense scrutiny, as discussed recently by Varasdi (2017), the existing theories reveal more differences than is commonly believed. For that reason PART will be represented as in (31), with no further explication:

(31) $\lambda P. \lambda e. \text{PART}(\lambda e'. P(e')) (e)$

According to (22) and (28)-(29), the difference between the progressive and NCAs reduces to the difference in grammatical aspect. An NCA is a partial eventuality plus the perfective grammatical aspect. The progressive is the same partial eventuality plus the information that its running time contains the topic time.

On this view, essentially, two aspects of interpretation are systematically kept apart, which both have to do with the "part-of" relation. "Grammatical aspect", conceived of in temporal terms, is purely extensional. It is a relationship between what occurs in the evaluation world ("event time") and what the speaker picks out to be the content of an utterance ("topic time"). It specifies whether the topic time contains the whole eventuality occurring in the evaluation world or a (temporal) part of it. Partitivity, on the other hand, establishes a different type of relationship: one between what occurs in the evaluation world and what forms the content of an eventuality description. It determines whether a complete or a partial eventuality from the extension of a predicate is realized in the evaluation world. NCAs reinforce the suggestion that the two dimensions are at least partially independent: they describe partial eventualities in the latter sense, but complete eventualities in the former sense[12]. Altshuler's (2014) notion

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[12] To develop a complete picture of the aspectual domain more is to be said, of course. I am not discussing here what happens if the derivation does not contain PART altogether (which, by hypothesis, is spelled out as the *-va-* morpheme in Russian). This part of the system is not directly relevant for the current topic and is to be dealt with elsewhere.

Note, however, that if configurations where PART is present show a complete aspectual paradigm in (22) and (29) ("PART-PFV" and "PART-PROG"), one can expect the same from configurations where PART is not part of the derivation:

(i)   [… T… [PFV Asp … [… v … […]]]]

(ii)   [... T … [IPFV Asp … [... v ... […]]]]

Interestingly, this expectation seems to be correct. Russian shows a systematic aspectual opposition in the absence of the *-va-* morpheme. (iii)-(iv) illustrate what is traditionally labeled as "simplex imperfective" and "prefixed perfective" verbs.

(iii) pisa-t'   (iv)   na-pisa-t'
      write-INF   PRF-write-INF
      'write$_{IPFV}$'   'write$_{PFV}$'

of maximal actual part of an eventuality, that lies behind his Hindi-type perfective, PFV_H, if I understand it correctly, represents a similar intuition, even though it is implemented in a considerably different way: maximality and partiality, assumed here to be representationally distinct, in Altshuler's system come out as meaning components of the same grammatical element.

A significant implication of the architecture in (28) is that perfective NCAs and perfective culminating accomplishments involve two distinct derivations, at least in languages like Russian. Consider (32), a culminating counterpart of (24):
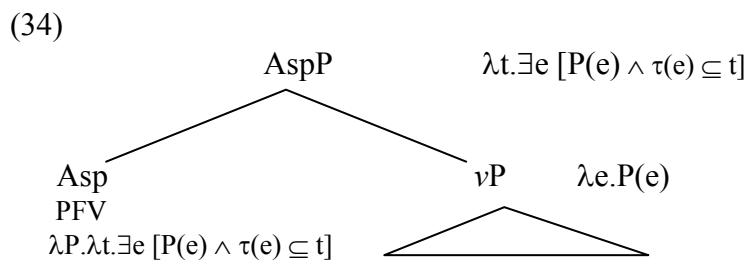
(32)　Volodja　otkry-l　　　　　okno.
　　　V.　　　open-PST.M　　　window.ACC
　　　1. 'Volodja opened the window.'
　　　2. *'Volodja spent some time trying to open the window.'

(32) is a perfective sentence that comes with the entailment that the culmination has been attained. (32) does not have a non-culminating interpretation parallel to that of (24). Nor is (24) appropriate if the agent's attempts to open the window are successful:

(33)　Context: after a number of unsuccessful attempts, the agent finally manages to open the window.
　　　$^{??}$Volodja　[po-[[otkry]-va]] -l　　okno.
　　　V.　　　PO-open-PART-PST.M　window.ACC
　　　'Volodja spent some time trying to open the window.'

It should be pointed out that (32), which says that a *v*P eventuality occurs in the evaluation world at the reference time, asymmetrically entails (24), which says the same about a proper non-final part of such an eventuality. If an entity exists in a world, all of its parts do so, too. The awkwardness of (33) is thus perceived in the same way as the statement *John ate part of the cake* uttered in a situation in which the whole cake has been eaten. Since the context warrants a more informative proposition, a cooperative speaker is not in the position of using (33).

Crucially, (32) shows no signs of partitive morphology. Rather, the perfective operator goes directly on top of the eventuality description. I take it to be the evidence that in the derivation of perfective sentences like (32) PART is absent altogether:

(34)

　　　　　　　AspP　　　　　$\lambda t.\exists e\ [P(e) \wedge \tau(e) \subseteq t]$

　Asp　　　　　　　　　*v*P　　$\lambda e.P(e)$
　PFV
　$\lambda P.\lambda t.\exists e\ [P(e) \wedge \tau(e) \subseteq t]$

In (iii), a minimally morphologically marked verb stem 'write' is shown. In the absence of any other morphology, such stems have to occur in imperfective clauses (hence the lable "simplex imperfective"). (iv) involves a so called lexical prefix (Svenonius 2004, Svenonius 2008; Romanova 2006; Tatevosov 2008b). Prefixed stems, unless undergo further derivation, end up being perfective. This opposition seems to be a perfect realization of (i)-(ii).

Therefore, if (28) and (34) are correct, perfective NCAs and culminating accomplishments involve different derivations, even though in many languages they look morphologically alike.

To complete the discussion of the composition of NCAs, in the next section I will specify a number of assumptions about the structure of accomplishment predicates.

2.5 Structure of accomplishments

PART takes an event predicate as its complement. In NCAs, this predicate is an accomplishment predicate. What it means to be an accomplishment varies across theories and frameworks. Possible ingredients of the definition may include telicity/culmination, temporal structure, argument structure, or event structure more generally. The vast majority of semanticists seem to agree that the class of accomplishments include predicates like *open the door* and *break the window*, which involve a complex subevental structure and are transitive and telic. Whether predicates like *read a novel* and *build a house* (transitive and telic, but allegedly simplex event structure, Rappaport Hovav and Levin 1998 *et seq.*), *melt* and *thicken* (intransitive, but still telic) are accomplishments is a much more controversial issue.

In what follows I take accomplishments to have two defining properties: culmination and a complex event structure minimally containing process and change of state subevents. I am assuming a decompositional view of accomplishments along the lines of (35):

(35) $\| \text{Volodja open- the door} \| = \lambda e. \exists e'[\text{open}_P(\text{Volodja})(e) \wedge \text{open}_{CS}(\text{door})(e') \wedge R(e')(e)]$,
where the relations open_P and open_{CS} are process and change of state components of event structure, and R is a relation between process and change of state subevents.
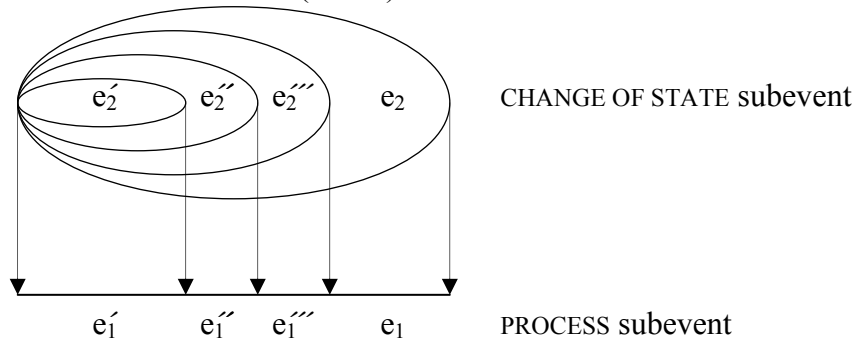
Predicate decomposition has had a long tradition in the literature going back to Dowty (1979), followed by Rappaport Hovav, Levin (1998) and elsewhere, Kratzer (2000, 2005_, Pylkkanen (2002), Folli (2002), Rothstein (2004), Ramchand (2008), Tatevosov (2008a), Lyutikova, Tatevosov (2014), and many others. (35) is a two-component variant, where a complex eventuality is represented as consisting of the process the external argument is a participant of, and the change of state undergone by the internal argument. The latter can be further decomposed into a change of state proper (the "become" subevent) and a result state, yielding a three-component decomposition, as in Ramchand 2008 or Tatevosov 2008a, but this move is not relevant to our current topic.

I follow Rothstein 2004 in assuming that predicates like *read a novel, write a letter* or *eat a sandwich* are subeventally complex. This view departs from the tradition where such predicates (manner verbs in terms of Rappaport Hovav, Levin (1998) and further literature) are analyzed as transitive activities, both individual arguments being thematically related to the same event variable. Rather, I follow Rothstein (2004), Ramchand (2008), Lyutikova, Tatevosov (2014) and other literature that suggests that the change of state of the internal argument is a separate eventuality and has to be represented by an independent event variable.

What makes *read a novel* different from predicates like *break a vase* is not the number of subevents in the decompositional representation, but the relation the subevents are connected by. In the decompositional literature, the R relation from (35) is typically identified with the relation of immediate causation. However, following Rothstein (2004) and Tatevosov, Ivanov (2009a) I will adopt a more fine-grained inventory or relations, minimally consisting of the two items in (36)-(37).

Intuitively, the incremental relation in (36) holds of a process and a change of state whenever there is one-to-one mapping between parts of the latter, arranged into an incremental chain, and parts of the former.
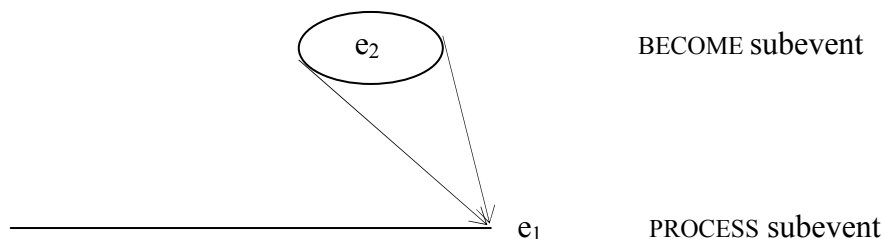
(36)   Incremental relation (INCR)

$$
\begin{array}{l}
e_2' \quad e_2'' \quad e_2''' \quad e_2 \qquad \text{CHANGE OF STATE subevent} \\[2em]
e_1' \quad e_1'' \quad e_1''' \quad e_1 \qquad \text{PROCESS subevent}
\end{array}
$$

This is what happens with *eat a sandwich*, for example: every part of the change of state of the sandwich has to be brought about by some agent's activity, and, the other way around, every relevant part of the activity results in some change in the sandwich. This is shown in (36); see Appendix for the formal definition and Rothstein (2004) for more discussion, qualifications and refinements.[13]

The MMFP relation is different. In MMFP, the whole change of state occurs at the minimal final part of the process. Other parts of the process, if any, may not bring about any change at all, nor do they even have to make a causal contribution to a change (Tatevosov, Ivanov 2009a).[14] This is depicted in (37); see the Appendix for the definitions.

(37)   Mapping to the minimal final part relation (MMFP)

$$
\begin{array}{l}
e_2 \qquad \text{BECOME subevent} \\[3em]
e_1 \qquad \text{PROCESS subevent}
\end{array}
$$

Russian examples of NCAs derived from INCR and MMFP predicates are shown in (38)-(39).

---

(38) Volodja po-paxa-l   pole.
      V.   PO-plow.PART-PST.M   field.ACC
      'Volodja spent some time plowing the field.'

(39) Volodja po-razbi-va-l   vaz-u.
      V.   PO-break-PART-PST.M   vase-ACC
      'Volodja spent some time trying to break the vase (made of unbreakable glass).'

Applied to accomplishment event predicate 'plow the field' and 'break the vase', PART extracts a proper non-final part of an eventuality in their extensions:

(40) $\parallel$ PART [Volodja plow the field] $\parallel$ = $\lambda e.\text{PART}(\lambda e'.\exists e''[\text{plow}_P(\text{Volodja})(e') \wedge \text{plowed}_{CS}(\text{field})(e'') \wedge \text{INCR}(C(e''))(e'')(e')])(e)$

(41) $\parallel$ PART [Volodja break the vase] $\parallel$ = $\lambda e.\text{PART}(\lambda e'.\exists e''[\text{break}_P(\text{Volodja})(e') \wedge \text{broken}_{CS}(\text{vase})(e'') \wedge \text{MMFP}(e'')(e')])(e)$

For INCR-accomplishments like 'plow a field' and MMFP accomplishments like 'break a vase' different consequences are predicted (Tatevosov, Ivanov 2009a). For INCR-accomplishments, partial eventualities necessarily involve partial change, as shown in (36). In case of MMFP-accomplishments, the initial state of the theme holds until a change happens at the minimal final part, (37), so PART should yield partial eventualities where nothing at all happens to the internal argument.

These predictions seem to be correct: (38) entails that some part of the field has been plowed ("partial change"), but in (39) nothing has happened to the vase ("zero change").

With these ingredients made explicit, we can move on to discussing the central issue of this study: the constraints identified in Section 1.

3 Approaching the constraints

3.1 Separating effectors

Having assumed (28) as the working hypothesis and making the assumptions about the structure of accomplishments more specific, we can go back to the central question: why do only some accomplishments come with no culmination entailment? With (28), we can start addressing this question by asking where the constraints from Section 1 come from. (28) offers two possible answers. First, failure to derive an NCA can result from the interaction between PART and a *v*P denotation: something goes wrong when PART tries to extract partial eventualities out of a *v*P predicate. Secondly, unavailability of NCAs in (6)-(10) can result from the fact that some descriptions of partial eventualities created by the application of PART are better suited to satisfy the requirements of perfective Asp than others. If this is the case, the derivation of an NCA fails later, when Asp is merged. I will keep on focusing on Russin data, where all the NCA ingredients are morphologically overt.

If (28) is on the right track, it offers a simple way of telling the two options apart, as suggested by Kiseleva and Tatevosov (2011). By hypothesis, NCAs and the progressive share PART. If PART is responsible for ungrammaticality of (4)-(10), corresponding progressives should be subject to the same restrictions.

The minimal pair in (42)-(43) shows that this is not the case with the 'open the door'. The context in (42), which is the Russian counterpart of (8) under Scenario 2, fails to support a non-culminating reading:

(42) *Context. The door is opened by typing a digital code that consists of a sequence of numbers, e.g., 2-5-9-6-7-8. After typing "6", the agent stops.

  Volodja po-otkr-yva-l   dver'   pjat'   minut (i   brosi-l).
  V.   PO-open-PART-PST.M   door.ACC five   minutes and give.up-PST
  'Volodja spent (five minutes) trying to open the door and gave up on that.'

But the progressive is not restricted in the same way. The context in (43) is parallel to that in (42), except that the topic time ('when the speaker saw him') is included in the event time. Unlike the NCA in (42), the progressive in (43) is completely acceptable.

(43) Context. The door is opened by typing a digital code that consists of a sequence of numbers, e.g., 2-5-9-6-7-8. When the speaker sees the agent, he is typing "6".

  Volodja   otkr-yva-l   dver'.
  V.   open-PART-PST.M   door.ACC
  '(When I saw him,) Volodja was opening the door.'

This suggests that the problem with (42) cannot emerge at the stage where the PART morpheme enters the derivation, since (42) and (43) have it in common. It follows that (42) fails when Asp applies on top of the description of partial eventualities to create the *po*-delimitative. The eventuality description denoted by PartP turns out to be semantically incompatible with it.

The same point can be made about Russian counterparts of other examples from Section 1. (42) is a perfective accomplishment showing C-sensitivity. (44) with 'execute the captive by shooting' is lexically restricted, exactly as 'put the shirt on' in (4) from Tatar. (45) shows its progressive counterpart.

(44) $^{??}$Volodja po-rasstrel-iva-l   plenn-ogo.
       V.   PO-shoot-PART-PST.M   captive-ACC
  'Volodja spent some time executing the captive by shooting'.

(45) Volodja   rasstrel-iva-l   plenn-ogo.
       V.   shoot-PART-PST.M   captive-ACC
  'Volodja was executing the captive by shooting'.

(46) represents a relevant part of the Russian paradigm that demonstrates IA-sensitivity, strictly parallel to the examples in (7). The progressive version of this sentence appears as (47).

(46) Volodja   po-čita-l $^{?/??}$ abzac / $^{??}$predloženie / $^{???}$slovo / *bukvu
       V.   PO-read.PART-PST.M   paragraph   sentence   word   symbol
  'Volodja spent some time reading the paragraph / sentence / word / symbol.'

(47) Volodja   čita-l   abzac /   predloženie /   slovo / $^{?}$bukvu
       V.   read.PART-PST.M   paragraph   sentence   word   letter
  'Volodja was reading the paragraph / sentence / word / letter'

As these examples indicate, the progressive counterparts of (44) and (46) are entirely acceptable. Some oddity of the final example 'was reading the symbol' can be attributed to the fact already observed by Comrie (1976). If the normal temporal extent of an eventuality

falls below a certain threshold, acceptability of the progressive starts decreasing. Out of the blue sentences like *The subject is coughing* cannot describe an atomic coughing eventuality; it only allows for the iterative construal. If the granularity of time measurement changes, however, the sentence improves, which happens under 'slow motion' scenarios (cf. a recent discussion in Gyarmathy 2015). If one watches the coughing process on a slow-motion videotape, the progressive can describe a single quantum of cough. Speakers report exactly the same intuition about 'was reading a symbol' in (47).

Therefore, NCAs identified above as lexically sensitive ('execute the captive by shooting'), contextually sensitive ('open the door') and IA-sensitive ('read DP') form a natural class as to the point in the derivation where the restriction on their formation comes into play. Moreover, since the progressive is not subject to the same constraint, one can conclude that at the stage where PART merges with the eventuality description, it is not yet there.

One of the crucial questions asked in Section 1 is: does the same natural class include agentivity sensitive NCAs as well? If this is indeed the case, we would expect to find the same pattern with agentivity sensitive NCAs as, for example, with IA-sensitive NCAs in (46)-(47). Effectors (natural forces, events, etc.), not licensed in NCAs, should be readily available in the progressive.

Evidence discussed by Martin (2015) suggests that this can hardly be the case. Martin applies essentially the same logic as the one behind (44)-(47) to argue that the progressive and NCAs do have the agentivity restriction in common. The crucial contrast appears in examples like (48)-(49):

(48)   Ana is opening the door. But it is so well stuck in the frame that there is a good chance that it will take long before it starts moving even a little bit. (Martin 2015: 250)

(49)   The wind is opening the door. #But it is so well stuck in the frame that there is a good chance that it will take long before it starts moving even a little bit. (Martin 2015: 250)

Exactly the same pattern obtains in Russian: the progressive of 'open the door' is as unavailable with a natural force argument as a corresponding NCA:

(50)   Context: The lock in the door is broken. Gusts of wind were pushing on the door for a while.
        *Veter   po-otkr-yva-l   dver'.
        wind   PO-open-PART-PST.M   door.ACC
        'The wind spent some time opening the door.'

(51)   Context: The lock in the door is broken. When the speaker walked in, gusts of wind were pushing on the door:
        *Veter   otkr-yva-l   dver'.
        wind   open-PART-PST.M   door.ACC
        '(When I walked in,) the wind was opening the door.'

Evidence from (50)-(51) is decisive: the agentivity restriction, whatever its source is, must be operative at the Part level, not at the Asp level. If this is not the case, unavailability of effectors as external arguments for both NCAs and progressives like (50)-(51) comes out as a strange coincidence.

A further prediction seems to be straightforward. If, for whatever reason, the agentivity restriction is obviated or does not apply to some predicate under a non-culminating construal, the same should happen with the progressive. (52)-(53), where the (a) examples are non-

elicited NCAs and (b) examples are their progressive counterparts, show that this prediction is borne out as well:

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

      b. V   ozere   on   ispar-ja-l   vodičku…
                  in   lake.PREP   it   evaporate-PART-PST.M   water-ACC
                  'In the lake, it was evaporating the water…'.

(53) a. Solnce liš'   nemnogo   po-gre-l-o   peremet,   kak
                  sun   just   for.a.while PO-heat.PART-PST-N   snow.pile.ACC   as
                  vdrug   on obvali-l-sja.
                  suddenly it   collapse-PST.M
                  'The sun just heated the snow pile for a little, and it suddenly collapsed.'

      b. Solnce   gre-l-o   peremet…
                  sun   heat.PART-PST-N   snow.pile.ACC
                  'The sun was heating the snow pile...'

Why effectors pattern the way they do is a separate question. The precise nature of the contrast in (50), (52) and (53) does not have to concern us here[15]. What is of significance is the implicational relation between the progressive being subject to the agentivity restriction and the availability of a corresponding NCA. If the effector is impossible in the former, it is also impossible in the latter.

A picture that emerges at this point is shown in (54):

(54)
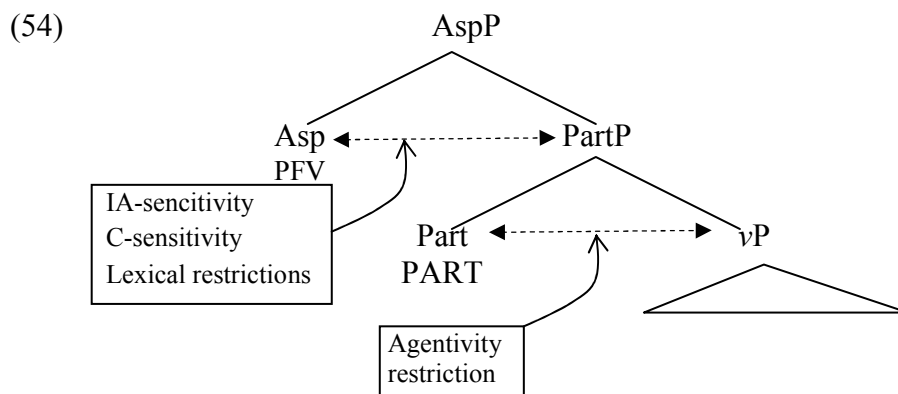
If the above reasoning is correct, we end up having two independent factors constraining the distribution on NCAs.

One is agentivity. It essentially is a relationship between PART and the predicate denoted by its complement *v*P. Since the progressive and NCAs share PART, it has the same effect on

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[15] Martin (2015) and Martin and Schäfer (2017) indicate that effectors are only absolutely excluded for what they call zero change of state NCAs, those where the process terminates without bringing about any change at all. (52)-(53) are not zero change of state NCAs: inferences of both of these sentences is that in (52) some water has been evaporated, and in (53) the temperature of water has increased.

both. An account for this relationship has been recently proposed in Martin (2015). According to Martin, it is characterized by two essential properties. First, it only restricts the distribution of effectors under zero-COS construal and has little, if any, consequences for non-zero-COS construal ("partial success"). Secondly, the restriction is a byproduct of the two other factors: a partial eventuality has to have properties that indicate a *v*P-predicate and sustain it[16]. Martin shares these ingredients with Varasdi (2014), whose theory of the progressive she builds on. I have little to add to this part of the story.

The other part, which has to do with the relationship between Asp and PartP is what the rest of this paper is about. It has to do with the cases where the progressive is licit but a corresponding NCA is not. Besides, this relationship is not confined to the derivation of zero-COS NCAs. The restriction emerges with 'read' in (46)-(47) that does not license zero-COS readings at all[17].

In the next section we will start approaching the nature of interaction between Asp and PartP.

3.2 Temporal arrangement

In this section, I will keep on using data from Russian as a representative for the class of non-culminating languages identified in Section 2.1. I will start by reviewing relevant Slavic linguistic literature in which the derivation and semantic characteristics of delimitative verbs are discussed. Even though the connection between the delimitative and NCAs has not been made in the previous studies, this literature comes up with a few significant insights that can shed some light on the phenomenon at large.

The dominant line of thought in Slavic aspectual literature seems to conform to the outline of the structure of NCAs in Section 3.1. The prefix *po-* all delimitative verbs have in common is regarded as a morphological means that contributes to the computation of perfectivity for a certain class of verbs.

Most commonly, this class is defined in terms of lexical aspect/eventuality type (Mehlig 1981 and elsewhere; Dickey 2000, 2006 and elsewhere; Dickey, Hutcheson 2003, and many others). As Dickey puts it, *"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 2006). For Dickey, therefore, the delimitative is a means of deriving perfective sentences for atelic predicates.

On this view, the structure of the delimitative like *pootkryvat'* in (24) should look like (55), which is an exact realization of (28):

(55)   [… T … [PFV *po-* … [PART *-va-* … [… *v* … [… otrkry -]]]]

The other tradition advanced by Piñon (1994) and later taken up by Filip (2000 and much further work) suggests that the delimitative prefix *po-* has the semantics of a measure adverbial underspecified for descriptive content. "The attenuative prefix *po-*," Filip 2000:50

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[16] Indicative properties of the ongoing event are those "that single out the event type encoded by the predicate of the contextually given set of alternatives". Sustaining properties "are required to sustain the development of the event toward the indicated outcome" (Martin 2015:251).

[17] I am not going back to the question why this holds for 'read' and similar predicates. Tatevosov, Ivanov (2009a) argue that the lack of zero-COS readings has to do with the incremental relation between the two subevents in their event structure. As a reviewer points out, the same is predicted if a theory assumes that 'read' a monoeventive.

indicates, "is most frequently used as a temporal measure, contributing roughly the meaning of a durative adverbial like 'for a (short) while'".[18] For Piñon and Filip, *po-* is a modifier of <<v,t>,<v,t>> type. The result of its application to an event predicate is an eventuality description. If nothing else is said, it is not immediately obvious what makes delimitative sentences necessarily perfective. At least within the current set of assumptions, PFV has to merge on top to derive a property of (topic) times that include the time of an eventuality from the extension of a *po*-verb:

(56)   [... T … [… PFV … […*po-* … [PART *-va-* … [... *v* … […]]]]]

It does not look like anything depends on the choice between (55) and (56) in what follows. Whatever empirical evidence tells (55) and (56) apart, it will hopefully be compatible with the generalizations I want to establish. Crucially, proponents of both analyses seem to agree about two most significant generalizations:

(57)   a. The delimitative is subject to semantic restrictions.
         b. The origin of these restrictions is the relationship between *po-* and its complement.

Both (57a-b) conform to the generalizations I hope to have established in Section 3.1. This gives us promise that insights about the delimitative in Russian may prove helpful to understanding NCAs in general[19]. To be specific, I will assume (55) for Occam's razor considerations, as a structure that involves less functional machinery.

Both approaches to the analysis of the delimitative agree that *po-* cannot combine with its argument freely. Piñon (1994) suggests that the event variable should range over processes, hence an argument of the prefix must be a predicate of processes. H.-R. Mehlig (1981, 2006, 2012) argues that the 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».

Here is where a problem lies. The delimitative, like its Tatar counterparts in Section 1, can be derived from some eventuality descriptions but not from others. For example, *po-* can (given an appropriate context) produce the delimitative of 'open the door', but not of 'shoot the captive', as we have already seen:

(58)   Volodja po-otkr-yva-l   dver'   pjat'   minut   (i   brosi-l).
         V.   PO-open-PART-PST.M door.ACC five   minutes and give.up-PST
         'Volodja spent (five minutes) trying to open the door and gave up on that.'

---

[18] Piñon's (1994) original analysis of the prefix *po-* (pofective, in his terminology) suggests that it has the meaning of a durative adverbial like 'for ten minutes'. Unlike for true durative adverbials, for *po-* the duration value is underspecified and is determined by the context:

(i) $\lambda P.\lambda e.[P(e) \wedge \mu(\tau(e)) = r \wedge r < Exp(\mu(\tau(e)) \wedge ...]$
       where the variable e ranges over processes, τ is the temporal trace function (of type <v, i>), μ is a contextually determined additive measure function (of type <i, n>), r is a contextually determined (small) number; Exp is a contextually determined expectation value.

[19] Strictly speaking, since Asp and *po-* in (56) originate within different functional projections, (50) leaves the possibility open that constraints on the delimitative are due to the peculiarities of *po-*, not to the interaction between Asp and PartP, contrary to what (54) suggests. However, interpretational properties and the distribution of the delimitative in Russian are strictly parallel to those of NCAs in other languages. I take this as an indication that language-specific features of Russian, including idiosyncratic properties of *po-*, if any, are irrelevant for determining the properties of delimitative verbs.

(59) $^{??}$Volodja   po-rasstrel-iva-l   plenn-ogo.
          V.   PO-shoot-PART-PST.M   captive-ACC
       'Volodja spent some time executing the captive by shooting'.

By hypothesis, ungrammaticality of (59) results from the failure of putting the denotations of Asp and its argument together. The argument of Asp, according to (48), is [PART [shoot the captive]] in (58) and [PART [open the door]] in (59). The question is: if an operator can successfully combine with the former, what prevents its application to the latter? If Piñon (1994) is right, [PART [open the door]] should be a predicate of processes in some sense. But why is [PART [shoot the captive]] not? Similarly, Mehlig's homogeneity should characterize one, but not the other.

I believe that the view advanced by Piñon and Mehlig is fundamentally correct, but to make it fully work, one has to make notions like 'process' and 'homogeneity' more precise. Let us start by pointing out that Mehlig's homogeneity cannot be mereological homogeneity.

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

Both [PART [open the door]] and [PART [shoot the captive dead]] are mereologically homogeneous according to (60) (down to contextually salient atomic parts). If e is a proper non-final part of a process that leads to opening of the door, its proper parts are, too. But the same is true of proper parts of proper parts of an executing event.

How is [PART [open the door]] and other predicates that allow for non-culminating construals different from [PART [shoot the captive dead]] and other predicates that do not? At this point I would like to take up a hypothesis that was first alluded to in Tatevosov, Ivanov (2009a) but not elaborated in any detail:

(61)   The temporal orderedness hypothesis
        The process subevent of 'execute the captive by shooting' and similar accomplishments is structured in a way the process subevent of 'open the door' is not. For predicates like 'execute the captive by shooting', contextually salient subevents making up an activity part of the description show unique temporal arrangement.

The idea of unique temporal arrangement is best introduced through an example. Consider the contrast in (62) again:

(62)   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 digital code that consists of a sequence of numbers, e.g., 2-5-6-9. After typing "6", the agent stops.
        Volodja   po-otkr-yva-l   dver'
        V.   PO-open-PART-PST.M   door.ACC
        'Volodja spent some time opening the door'

On the Scenario 2, where the door is opened by typing a digital code, 'open the door' is an MMFP accomplishment. The door changes its state from 'closed' to 'open' at the very final part of the activity, right after the final number in the sequence is typed. Let us focus on the internal structure of the process component of the complex eventuality description. This component, e_P, consists, on this scenario, of four subevents arranged in a specific order:

(63) a. e_2: typing of 2   b. $e_P = e_2 \oplus e_5 \oplus e_6 \oplus e_9$
      e_5: typing of 5
      e_6: typing of 6   c. $e_2 \ll_T e_5 \ll_T e_6 \ll_T e_9$
      e_9: typing of 9

If the subevents are arranged in a different order or some of them are skipped or occur more than once, their sum is no longer an activity that opens the door. In other words, in a world where e_P opens the door, any process composed of typing numbers can only be in the extension of ‖ open the door ‖ in (62), if it is identical to e_P. e', e'', e''', e'''', and e'''''' in (64) are all examples of processes that fail to be in the extension of ‖ open the door ‖ if the world is what Scenario 2 specifies, since no opening of the door happens at their minimal final parts. Only e'''''', identical to e_P from (63), is a process where the subevents are arranged appropriately:

(64)

e' e_9 e_5

e'' e_2

e''' e_1 e_2 e_9

e'''' e_2 e_5 e_6

e''''' e_2 e_5 e_6 e_9

e'''''' e_2 e_5 e_9 e_6
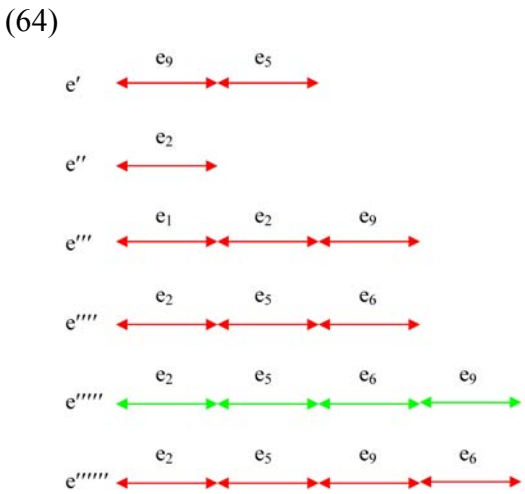
A similar point can be made about the process part of 'put the shirt on', 'take the medicine', 'execute the captive by shooting', etc.

Now consider the same sentence on the Scenario 1 ("broken lock"). Relevant subevents of the process are now something like (65):

(65) e_{key} = using a key
        $e_{picklock}$ = using a picklock
        $e_{crowbar}$ = using a crowbar
 $e_{sledgehammer}$ = using a sledgehammer

On this scenario, 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 process. Other subevents can be absent or occur in whatever order, since they make no causal contribution to opening of the door at all: change of state of the door does not counterfactually depend on them (Lewis 1973 and much further literature; see the discussion in Tatevosov, Ivanov 2009a). In (66), e'', e''', e''''', e'''''' are all activities that open the door, so all of them can form a process component of the denotation of ‖ open- the door ‖.

(66)
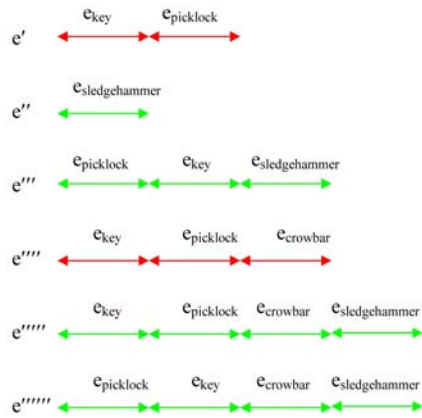
Consider an incremental accomplishment (Rothstein 2004) like 'plow the field' (the reasoning extends to other incremental accomplishments as well). The process component of such event descriptions does not require unique arrangement either. Assume, for example, that the process consists of plowings e_1, e_2 and e_3 of three parts of the field f_1, f_2 and f_3, such that $f = f_1 \oplus f_2 \oplus f_3$. For an event e to count as a process component of 'plow the field', it is essential that e_1, e_2, e_3, are all parts of e. Their temporal arrangement is irrelevant. A few options are shown in (67).

(67)
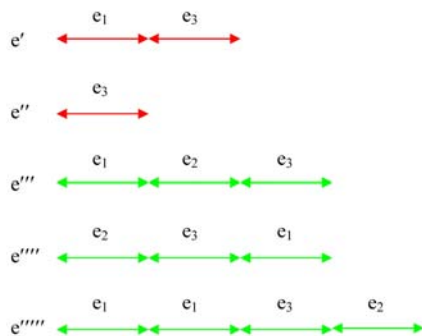
In (67), e''', e'''', and e''''' can all be an element of the extension of || plow the field ||. If it is a unique arrangement (or the lack thereof) that determines whether the delimitative can be licensed, we expect the that 'plow the field' would pattern with 'open the door' on the "broken lock" scenario. Absence of a unique arrangement is what they share. The expectation is fulfilled: incremental accomplishments ('plow the field', 'read the novel', 'paint the wall', etc.), as we have already seen, do license a non-culminating reading. The example in (38) is repeated as (68):

(68)   Volodja   po-paxa-l   pole.
       V.   PO-plow.PART-PST.M   field.ACC
       'Volodja spent some time plowing the field'

Examples like (62)-(68) seem to support the generalization in (69):

(69)   Generalization
       If the process component of an event description is arranged by temporal precedence
       in the unique way, NCAs are not licensed.

Unique temporal arrangement can be thought of as a second-order property of eventuality descriptions. To define it, we need first need *a proper mereological partition*, or pm-partition, of the process subevent:

(70) Pm-partition
    $\text{PMPART}(P)(x) \leftrightarrow \forall x'\ [P(x') \to x' \leq x] \land \forall x'[\ x' \leq x \to \exists x''[P(x'') \land x' \otimes x'']] \land$
    $\forall x' \forall x''[P(x') \land P(x'') \land x' \otimes x'' \to x' = x'']$

(70) says that P is a pm-partition of *x* iff (i) every element in this partition is a part of *x*, (ii) every part of *x* overlaps with some element in the partition (that is, the partition 'covers' the whole of *x*), and (iii) distinct elements in the partition do not overlap.

   Moreover, we may want the mereological partition of a process subevent to be *temporally discrete*, or t-discrete. TD-PMPART is a special case of a PMPART, as defined in (71):

(71) T-discrete proper mereological partition
    $\text{TD-PMPART}(P)(e) \leftrightarrow \text{PMPART}(P)(e) \land \forall e' \forall e''[P(e') \land P(e'') \to \neg \tau(e') \otimes \tau(e'')]$

According to (75), P is a *t-discrete pm-partition* of *e* iff (i) P is a pm-partition of *e* and (ii) any two events that fall under P do not temporally overlap.

   Finally, elements of any partition containing at least two distinct entities have to be ordered by the temporal precedence relation, or p-ordered. The temporal precedence relation has the usual properties: it is asymmetric, transitive, and total (e.g., Krifka 1998).

(72) p-ordered t-discrete pm-partition
    $\text{PO-TD-PMPART}(P)(e) \leftrightarrow \text{TD-PMPART}(P)(e) \land$
        $\exists e' \exists e''\ [P(e') \land P(e'')\ \land e' \neq e''\ ] \to$
        $\forall e' \forall e'' \forall e'''[P(e') \land P(e'') \land P(e''') \to$

$[e' \ll_T e'' \to \neg\ e'' \ll_T e'] \land$	(asymmerty)
$[e' \ll_T e'' \land e'' \ll_T e''' \to e' \ll_T e'''] \land$	(transitivity)
$[e' \ll_T e'' \lor e'' \ll_T e']\ ]$	(totality)

   Now every eventuality depicted in (64)-(67) can be thought of as equipped with a p-ordered temporally discrete proper mereological partition. For example, e''''' in (66) comes with the partition { e_{key}, $e_{picklock}$, $e_{crowbar}$, $e_{sledgehammer}$}. This is not the only PO-TD-PMPART partition of e''''', of course. Other options are, for example, a three-cell partition { e_{key}, $e_{picklock}$, $e_{crowbar} \oplus e_{sledgehammer}$}, a two-cell partition { $e_{key} \oplus e_{picklock}$, $e_{crowbar} \oplus e_{sledgehammer}$}, and so on. Elements of the partition can be thought of as contextually salient subevents that add up to a larger eventuality. Depending on the information in the common ground, world knowledge and the current question under discussion, partitions can be more or less fine-grained. For instance, in a conversation where the speaker aims at conveying how much effort he put into opening this particular door, he may identify explicitly every subevent in his opening activity. If this information is irrelevant, the same activity may be presented in a more coarse-grained way and, moreover, descriptive properties of every subevent may be left unspecified. Therefore, of all possible p-ordered t-discrete pm-partitions of an eventuality e, call this set $S_{\text{PO-TD-PMPART}}(e)$, we are interested in a subset that only contains partitions into contextually relevant subevents, $CS_{\text{PO-TD-PMPART}}(e)$.

   Now the idea of unique temporal arrangement formulated informally in (69) can be made more explicit in the following way. To be a plowing-the-filed activity, an eventuality does not have to be temporally structured in any specific way. A plowman can plow one side of the field first or the other side, he can do different parts in whatever order he wants, he can even

plow some part twice if he is not satisfied with the result. This is shown in (67). In other words, eventualities e and e′ can have completely different p-ordered t-descrete m-partitions, but nevetherless be described as plowing-the-field-activities.

The same holds for ‖ open the door ‖ under the broken lock scenario. Compare e′′′′′ and e′′′ from (66). As we have just seen, on the given scenario both are process components of eventualities from the extension of ‖ open the door ‖. (73)-(74) show PO-TD-PMPART partitions of e′′′ and e′′′′, respectively:

(73) PREC-TD-PMPART partitions of e′′′
     a. $\{e_{picklock}, e_{key}, e_{sledgehammer}\}$
     b. $\{e_{picklock} \oplus e_{key}, e_{sledgehammer}\}$
     c. $\{e_{picklock}, e_{key} \oplus e_{sledgehammer}\}$
     d. $\{e_{picklock} \oplus e_{key} \oplus e_{sledgehammer}\}$

(74) PREC-TD-PMPART partitions of e′′′′′
     a. $\{ e_{key}, e_{picklock}, e_{crowbar}, e_{sledgehammer}\}$
     b. $\{ e_{key} \oplus e_{picklock}, e_{crowbar}, e_{sledgehammer}\}$
     c. $\{ e_{key}, e_{picklock} \oplus e_{crowbar}, e_{sledgehammer}\}$
     d. $\{ e_{key}, e_{picklock}, e_{crowbar} \oplus e_{sledgehammer}\}$
     e. $\{ e_{key} \oplus e_{picklock}, e_{crowbar} \oplus e_{sledgehammer}\}$
     f. $\{ e_{key} \oplus e_{picklock} \oplus e_{crowbar}, e_{sledgehammer}\}$
     g. $\{ e_{key}, e_{picklock} \oplus e_{crowbar} \oplus e_{sledgehammer}\}$
     h. $\{ e_{key} \oplus e_{picklock} \oplus e_{crowbar} \oplus e_{sledgehammer}\}$

It is immediately obvious that the sets of partitions of e′′′ and e′′′′ are disjoint, and the reason is intuitively clear: once e′′′′′ contains an additional subevent, $e_{crowbar}$, it will be part of any partition of e′′′′, unlike for e′′′.

Consider e′′′′′ and e′′′′′′. These two eventualities do have identical partitions. One example is shown in (75)-(76):

(75) A partition of e′′′′′
     $\{ e_{key} \oplus e_{picklock}, e_{crowbar}, e_{sledgehammer}\}$

(76) A partition of e′′′′′′
     $\{ e_{picklock} \oplus e_{key}, e_{crowbar}, e_{sledgehammer}\}$

The partitions in (75) and (76) are identical, because the $e_{picklock} \oplus e_{key}$ and $e_{key} \oplus e_{picklock}$ are the same eventualities, given that the sum operation $\oplus$ is commutative. It is clear, however, that quite a number of other partitions are distinct, since an opening process can have different initial subevents, and it is not the case that every non-final subevent requires a specific follow-up.

Predicates like 'open the door' on the digital code door lock scenario or 'execute the captive by shooting' are different. In (64), as we have just seen, for an eventuality to be a process component of opening of the door it has to start in a specific way, to finish in a specific way, for any non-final part of *e* there must a specific follow-up. This amounts to saying that any such eventualities are partitioned into temporally discrete subevents ordered by precedence in the same way, or that they have identical p-ordered t-discrete m-partitions.

If this reasoning is correct, the property of unique temporal arrangement for event predicates can be defined as shown in (77):

(77) A predicate of events P shows unique temporal arrangement, UTA(P), iff

$\forall e \, \forall e' \, [\, P(e) \wedge P(e') \to CS_{\text{PO-TD-PMPART}}(e) = CS_{\text{PO-TD-PMPART}}(e')]$

where $CS_{\text{PO-TD-PMPART}}(e)$ is the set of p-ordered t-discrete m-partitions into contextually relevant subevents

Note that throughout (70)-(77) descriptive properties of individual subevents that fall under a partition remain underspecified. This because the lexical meaning of most accomplishments does not specify the descriptive content of the activity component of an eventuality from its extension: accomplishments are "result verbs" (Levin and Rappaport Hovav 1995, Rappapor Hovav and Levin 1998 and elsewhere). Therefore the only linguistic description available for such subevents presents them as non-final parts of a vP-eventuality, PART $\| \, [_{vP} \, \ldots \,] \, \|$. To identify subevents like those in (66), for example, one cannot rely on the lexical clues; such an identification can only be based on inferences derivable from the common ground, world knowledge etc.

With (77), we can go back to Mehlig's intuition about licensing conditions for the delimitative: «activity directed towards a goal can be interrupted and resumed arbitrarily many times; phases of a situation are conceptualized as identical». With the notion of UTA, one can try to give Mehlig-homogeneity (MH) more content:

(78) $\forall P[MH(P) \leftrightarrow \neg UTA(P)]$

According to (78), Mehlig-homogeneity is, in a sense, a negative property. It simply means the lack of a unique arrangement of contextually salient subevents in the extension of an event predicate. We only specify a condition on what an accomplishment should be like for a non-culminating interpretation to be *impossible* to derive.

Can we hope that (77) accounts for the restrictions from Section 1? In the next section we will see that there are reasons for moderate optimism.

3.3 Explaining the restrictions

If the observations and generalizations from the previous section are correct, the following picture begins to emerge. We start with an accomplishment event predicate. Then PART applies to this accomplishment. If the predicate that PART returns is Mehlig-homogeneous, the delimitative is fine. This allows us to relate unavailability of a non-culminating interpretation to the fact that the denotation of a partitive predicate is not Mehlig-homogeneous.

In Section 1, a few restrictions on the non-culmination were discussed. One is illustrated again in (79). The verb *zapivat'* 'wash down (e.g. of a food medicine, etc)' does not seem to be able to license the delimitative at all, not matter what kind of information is available in the context.

(79)   ^{??} Volodja   po-zapi-va-l   tabletk-u.
        V.   PO-drink-PART-PST.M   pill-ACC
        'Volodja spent some time washing the pill down.'

Events described as 'wash down' seem to only fall under the extension of the predicate as long as they consist of very specific subevents that have to occur in a very specific order: 'take the theme (e.g., a pill)', 'put it into your mouth', 'swallow it up', 'take some liquid', 'drink it'. Anything else can hardly be described as washing down a pill. In other words, accomplishments like *zapivat'* 'wash down' look like lexical UTA predicates:

(80)　　$\forall x \forall y [UTA(\{e : \|zapivat'\|(x)(y)(e)\})]$

It is not difficult to show that whenever P is a UTA predicate, PART P will be too. If an eventuality in the extension of P is temporally arranged in a unique way, parts of it have this property too, provided that the contextual information that comes with $CS_{PO\text{-}TD\text{-}PMPART}(e)$ is kept constant. (I do not provide a formal proof, this informal reasoning will suffice for what follows.) As a result, after PART applies, an UTA predicate obtains, which makes the delimitative impossible to derive.

In (42) on the Scenario 2, repeated as (81), the UTA character of the activity is contextually entailed.

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

Volodja	po-otkr-yva-l	dver'.
V.	PO-open-PART-PST.M	door.ACC

'Volodja spent some time opening the door'

In (81), the set of eventualities in the extension of *otkryvat'* 'open' is contextually restricted to those that match the scenario. This restricted set is again arranged in a unique way, as we have already seen.

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

Lexically, however, 'open the door' is not an UTA predicate. Its extension (in our world at least) contains eventualities where the process part can be characterized by UTA, but does not have to. This is evidenced by the fact that 'open' is compatible with non-UTA scenarios like the broken lock scenario and many others.

Does the analysis have anything to say about sentences like (83), where acceptability decreases with the "size" of the internal argument?

(83)
Volodja	po-čita-l	[OK]roman /	[OK/?]pis'mo /
V.	PO-read.PART-PST.M	novel	letter

[?]zapisku / [??]predloženie / [???]slovo / *bukvu
note　　　　sentence　　　word　　　symbol

'Volodja spent some time reading the novel / letter / note / sentence / word / symbol'

In the UTA perspective, the intuition behind the pattern in (83) may be as follows. If one reads a novel, nothing imposes any specific temporal ordering on the reading process except for the structure of the novel itself. Even though any novel is organized into a linear order, it allows the reader a lot of flexibility: one can go back and forth, skip some parts and re-read others. These leaves a lot of space for reading subevents to be arranged in a non-unique way. Partitions of reading eventualities will this be different, and the condition in (77) will not be satisfied. But the smaller the size of an argument is, the more difficult it is build partitions of an event e into subevents that can be arranged in a non-unique way (see Rothstein 2004: 111-112 for related observations). For example, one does not normally conceive of a sentence of an average length as consisting of parts that can be read in one way or other (even though some sentences by Marcel Proust possibly can). As we reach the limiting case, reading a symbol, the activity cannot be partitioned in any reasonably admissible context at all. For any reading a symbol event one will get a trivial partition, a singleton set only containing an original (atomic) event. If this happens, the predicate comes out as trivially having the UTA property, (84), which predicts, correctly, that the delimitative would be unavailable.

(84) $\forall x [UTA(\{e: \| read \|(x)(symbol)(e)\})]$

There can be a potential problem for the unique temporal arrangement hypothesis. Wayles Browne (p.c.) mentioned a class of scenarios where no unique temporal arrangement is entailed or presupposed, but a non-culminating reading is nevertheless unavailable. An example is shown in (85):

(85)   *Scenario 3. The door is opened by typing a sequence of numbers 2 and 5 in whatever order. The agent types "2" and stops.
　　　Volodja　　po-otkr-yva-l　　　　dver'
　　　V.　　　　PO-open-PART-PST.M　　door.ACC
　　　'Volodja spent some time opening the door'

Does the unique temporal arrangement hypothesis predict (85)? The way (69) is formulated seems to be compatible with (85). (69) is not a bi-conditional; it only says that UTA is a sufficient condition for making a non-culminating reading unavailable. Examples like (85) can be taken as an indication that UTA is not a necessary condition; some other factors may be at play that make (85) unacceptable.
　　　Such an answer, even if logically suitable, does not sound satisfactory, since it gives little content to the restriction that makes (85) deviant. I believe, however, that we do not have to abandon (69) in order to accommodate (85): it can be amended in a way that would extend it to Scenario 3 and similar scenarios. A possible fix comes in (86):

(86)   a. The amount of contextually salient subevents in a p-ordered t-discrete pm-partition of the process component is to be above a certain contextual determined threshold.
　　　b. $| CS_{PO\text{-}TD\text{-}PMPART}(e) | > r_C$

According to (69) and (77), if different events come with different p-ordered partitions, an NCA gets licensed by the non-uniqueness of temporal arrangement of salient subevents into a process. Adding (86) to (77) would incorporate a significant intuition: a partition should be sufficiently internally complex. (86b) sets up the lower limit for the amount of subevents in a partition, and (85) comes out highly degraded because this amount falls below r_C.
　　　I will leave a more detailed discussion of the interaction (86) and UTA for a future occasion. But, crucially, there is evidence that something like (86) may be on the right track. If we keep the overall setting of the Scenario 3 the same, but change the amount of subevents the activity consists of, the sentence \ improves. According to the native speakers' judgments, the non-culminating reading of 'open the door' is acceptable under the Scenario 4.

(87)   [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[20].

I conclude tentatively that (86) may be the right way to fix (85).
　　　The same restriction can be at work in (88), which has been brought to my attention by Oliver Bott (p.c.):

---

[20] A reviewer pointed out the following: "The constraint … appears to do more with the length of the *actualized* process part rather than the number of cells in the contextually given partition of the non-actualized whole event." I would agree. Nevertheless, whether this qualification has serious empirical consequences is difficult to asses without making the actualization machinery explicit, which I am not attempting at here.

(88) On   po-sobir-a-l   ikejsk-ij   bufet   desjat' minut.
      he   PO-assemble-PART-PST.M   IKEA-ACC.M cupboard.ACC ten   minutes
      'He spent ten minutes assembling an IKEA cupboard (and stopped).'

This example is of interest for a number of reasons. For one, everyone who has ever assembled IKEA furniture knows that the process is strictly linearly ordered by the assembly instruction. Secondly, and more importantly, it can be observed that replacing a cupboard with a stool, which only needs driving a few screws to be assembled, leads to a substantial decrease in acceptability:

(89) Context: one has to drive three screws in order to assemble a three-legged stool. After driving the second screw, the agent stops.
      ??On   po-sobir-a-l   ikejsku-ju   taburetk-u   dve   minuty.
       he   PO-assemble-PART-PST.M   IKEA-ACC.F stool-ACC   two   minutes
      'He spent two minutes assembling an IKEA stool (and stopped).'

What is the contrast between (88) and (89) due to? If the assembly process is strictly ordered in both cases, does one not expect that (88) and (89) are equally degraded? I believe the approach developed above predicts the negative answer. It consists of two parts. First, why is (88) appropriate? I believe IKEA assembly instructions only establish macro-partitions of assembling activities into a large, internally complex subevents, e.g. "insert sixteen dowels into available slots, then drive 12 screws as shown". Every element in such a macro-partition consists of a number subevents itself, which come in no particular order. It does not matter how one inserts sixteen dowels or drives twelve screws. This means that assembling activities fail to have the UTA property, so (88) is correctly predicted to be available. If this is so, (89) can be naturally attributed to the same effect that is responsible for the deviance of (85): the number of subevents in a partition falls below a certain threshold, in accordance with (86).
    This having been said, I am ready proceed to the final section of this article.

4 Instead of conclusion

The main empirical finding of this study seems to be the set of observations which point towards temporal structuredness of the process subevent in an accomplishment configuration as the basic factor that constrains the derivation of NCAs. This temporal structuredness, which I proposed to reduce to unique temporal arrangement of the elements of a process subevent, comes into play at the point where a partitive description, derived by applying the PART operator to an accomplishment predicate, meets with the perfective aspectual operator.
    Recall the recurrent idea that appears in various analyses of the Russian delimitative briefly mentioned in Section 3.2. The delimitative is not a phonological signature of NCAs. Its contribution is broader. For the semanticists like Mehlig and Dickey, the delimitative is an exponent to PFV. For Piñon and Filip, the delimitative is an eventuality description modifier. Crucially, for all of them the delimitative is constrained by the eventuality type of an argument: it can only apply to predicates of activities.
    Indeed, one can easily find the delimitative not only in NCA configurations, but also in combination with activity verbs. A few of them are shown in (90):

(90) Volodja po-bega-l   / po-tanceva-l /
      V.   PO-run-PST.M   PO-dance-PST.M
      po-kovyrja-l   v   nosu   /   po-leža-l v   posteli.
      PO-pick-PST.M   in nose.LOC   PO-run-PST.M   in   bed.PREP

1   'Volodja spent some time / running / dancing / picking his nose / lying down in bed'.'
2
3   What do NCAs and non-derived eventuality descriptions in (90) have in common? Let us
4   assume that Piñon, Dickey and others are right in suggesting that the delimitative wants a
5   predicate of activities as its argument:
6
7   (91)   a. The delimitative wants its complement to be an activity.
8   b. $\| \mathrm{PFV}_{po\text{-}} \| = \lambda P\ldots [\ldots \wedge \mathrm{Activity}(P) \wedge \ldots]$[21]
9
10   According to (92), the perfective $\mathrm{PFV}_{po\text{-}}$ that we find in delimitative configurations
11   imposes a requirement on its argument: the latter has to be a predicate of Vendlerian
12   activities. If this is correct, (92) must hold:
13
14   (92)   At the point where the perfective (spelled out as *po-* in the Russian configuration
15   under discussion) appears in the derivation, the combination of an accomplishment
16   description with PART denotes a predicate of activities.
17
18   According to (92), to produce a non-culminating reading, an accomplishment eventuality
19   description has to become an activity description in the course of a derivation. Ultimately,
20   perfective non-culminating accomplishments ('Kerim spent some time opening the door') are
21   merely perfective activities like 'John spent some time walking'.
22   Given (92), the next piece of reasoning suggests itself: impossible NCAs discussed
23   throughout this paper are impossible because the combination of PART with an eventuality
24   description fails to be a predicate of activities. Infelicity/ungrammaticality we observe in (9)
25   and (46), for example, results from the failure of 'read a sentence /a word / a symbol' and
26   similar predicates to present themselves as an activity by combining with PART.
27   Absence of strict temporal organization thus seems to be a necessary property of activities.
28   The significance of this semantic characteristic is easy to overlook, however. Run-of-the-mill
29   non-derived activity predicates like 'walk', 'eat apples' and so on are separated from
30   accomplishments ('walk to the station', 'eat an apple', 'open the door') by well-known
31   characteristics like subinterval property, cumulativity or quantization, and Mehlig-
32   homogeneity has little to add. Things change, however, if one takes into account derived
33   predicates, namely, predicates that are created by applying PART to an accomplishment
34   description. As we have already seen, [PART [execute the captive by shooting]], for
35   example, is cumulative and not-quantized. It fails to produce a NCA, however. If we accept
36   (92) as a reasonable explanation for that, we are forced to say that [PART [execute the
37   captive by shooting]] is not a predicate of activities. Since what separates it from predicates
38   like [PART [read the novel]] or [PART [explain the puzzle]] is Mehlig-homogeneity, it is
39   the latter that tells the two types of predicates apart. It is therefore in this derived environment
40   that Mehlig-homogeneity starts being critical for delimiting the class of activities.

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[21] A reviewer suggests that the "Activity(P)" element "should be at the very least a presupposition, not part of the asserted content (because then sentences with, e.g., po+achievement should simply be false rather than infelicitous)". For me this does not seem to be entirely obvious. In the literature, there has been a vivid discussion of various instances of grammatical deviance induced by semantic factors. One possibility is that such deviance comes about as a presupposition failure, exactly as the reviewer suggests. The other possibility allows to make more sense of (91b). Chierchia (2013), building upon ideas from Gajewski (2002), discusses a number of cases where ungrammaticality results from G-triviality, that is, from a sentence being invariably true or false under any arbitrary substitution of lexical material. In this perspective, the combination of PFV_{po} in (91b) with, e.g., achievements comes out ungrammatical not by virtue of being undefined, but because of yielding a contradiction irrespective of lexical content of an eventuality description. I will leave this question open for further examination.

Mehlig's homogeneity allows us to give the notion of activity more content, (93), and to formulate the final generalization, (94):

(93)   Activities are Mehlig-homogeneous, that is, UTA-negative.

(94)   NCAs we have been dealing with throughout this study are a combination of the perfective operator with an activity description derived trough an accomlisment description by means of PART.

This having been said, the agenda of this study has been accomplished. A bigger project — to provide a complete account for the structure, derivation, and interpretation of NCAs, as well as for the intra- and cross-linguistic variation in this domain — has not yet culminated, however.

One obvious question I have not addressed is: why does a description that fails to be Mehlig-homogeneous get into trouble when it tries to combine with the perfective operator?

The other is: why is the same description is not getting into trouble when it combines with the progressive?

It is obvious that the Kleinean perfective in (20) will not do: there is nothing in its semantics that can prevent its successful application to a non-MH description. To make the system work, more has to be said about the meaning of the perfective. This would be an exciting topic for a separate study. Going into detail, however, may double the volume of this article, already too long, so this will wait for another occasion. If I managed to convince the reader that something like UTA may underlie constraints on the distribution of NCAs, the modest goal of this article identified in Section 1 has been reached.

Literature

Altshuler, Daniel. 2013. There is no neutral aspect. In *Proceedings of SALT 23*. 40-61.

Altshuler, Daniel. 2014. A typology of partitive operators. *Natural Language and Linguistic Theory* 32. 735–775.

Altshuler, Daniel. 2015. Does viewpoint aspect make reference to time? Paper presented at Cornell Workshop on Aspect. Cornell University, September 25.

Arregui, Ana, María Luisa Rivero and Andrés Pablo Salanova. 2014. Cross-linguistic variation in imperfectivity. *Natural Language and Linguistic Theory* 32. 307–362.

Arunachalam, Sudha, and Anubha Kothari. 2012. An experimental study of Hindi and English perfective interpretation. Journal of South Asian linguistics 4. 27–42

Bar-el, Leora, Henry Davis, and Lisa Matthewson. 2005. On Non-Culminating Accomplishments. *Proceedings of the North Eastern Linguistics Society 35*. Amherst, MA: GLSA.

Beck, Sigrid and Arnim von Stechow. 2015. Events, Times and Worlds. An LF Architecture. In C. Fortmann (Hg.), *Situationsargumente im Nominalbereich. Linguistische Arbeiten* Bd. 562, 13-46. Berlin: Mouton De Gruyter.

Carlson, Gregory. 1977. *Reference to Kinds in English*. Ph.D Dissertation.

Chierchia, Gennaro. 2013. *Logic in Grammar. Polarity, Free Choice, and Intervention*. Oxford: Oxford University Press.

Cipria, Alicia, and Craige Roberts. 2000. Spanish imperfecto and preterito: Truth conditions and aktionsart effects in a situation semantics. *Natural Language Semantics* 8. 297–347.

Comrie, Bernard. 1976. *Aspect*. Cambridge: Cambridge University Press.

Demirdache, Hamida, and Fabienne Martin. 2015. Agent control over non-culminating events. In Elisa Barrajón López, José Luis Cifuentes Honrubia and Susana Rodríguez Rosique (eds.), *Verbal Classes and Aspect*, 185–217. Amsterdam: Benjamins.

Deo, Ashwini. 2009. Unifying the imperfective and the progressive: Partitions as quantificational domains. *Linguistics and Philosophy* 32. 475–521.

Dickey, Stephen and Julie Hutcheson. 2003. Delimitative Verbs in Russian, Czech and Slavic. In Robert Maguire and Alan Timberlake (eds.), *American Contributions to the 13th International Congress of Slavists.* Vol. 1, 23–36. Bloomington: Slavica.

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

Dickey, Stephen. 2006. Aspectual Pairs, Goal Orientation and PO- Delimitatives in Russian. *Glossos* 7

Dowty, David R. 1977. Toward a Semantic Analysis of Verb Aspect and the English "Imperfective" Progressive. *Linguistics and Philosophy* 1. 45-78.

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

Filip, Hana. 2000. The Quantization Puzzle. In James Pustejovsky and Carol Tenny (eds.), *Events as grammatical objects, from the combined perspectives of lexical semantics, logical semantics and syntax*, 3-60. Stanford, California: CSLI Press,.

Folli, Rafaella. 2002. Constructing telicity in English and Italian. PhD dissertation, University of Oxford.

Gajewski, Jon. 2002. L-analiticity and natural language. Ms.

Gyarmathy, Zsófia, and Daniel Altshuler. This volume. (Non-)culmination by abduction.

Gyarmathy, Zsófia. 2015. Achievements, durativity and scales. Ph. D. dissertation, University of Duesseldorf.

Iatridou, Sabine, and Sergei Tatevosov. In prep. Remarks on fake aspect.

Kiseleva, Xenia, and Sergei Tatevosov. 2011. Ordered activities and semantics of the delimitative. Paper presented at the Sixth Annual Meeting of the Slavic Linguistics Society. L'Université de Provence, September 1-3.

Klein, Wolfgang. 1994. *Time in language.* New York, Routledge.

Koenig, Jean-Pierre, and Anthony Davis. 2001. Sublexical modality and the structure of lexical semantic representations. *Linguistics and Philosophy* 24(1). 71–124.

Koenig, Jean-Pierre, and Nuttanart Muansuwan. 2001. How to end without ever finishing: Thai semi-perfectivity. *Journal of Semantics* 17(2). 147–184.

Kratzer, Angelika. 2005. Building resultatives. In C. Maienbaum and A. Wollstein-Leisen (eds.), *Event arguments in Syntax, Semantics, and Discourse.* Tubingen: Niemeyer.

Kratzer, Angelika. 2000. Building Statives. *Berkeley Linguistic Society* 26.

Krifka, Manfred. 1989. Nominal Reference, Temporal Constitution and Quantification in Event Semantics. In Renate Bartsch, Johan van Benthem, and Peter van Emde Boas (eds.), *Semantics and Contextual Expression, Groningen-Amsterdam Studies in Semantics*, Vol. 11, 75–115. Dordrecht: Foris Publications.

Krifka, Manfred. 1992. Thematic relations as links between nominal reference and temporal constitution. In Ivan Sag, and Anna Szabolsci (eds.), *Lexical matters*, 29-53. Stanford: CSLI.

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

Landman, Fred. 1992. The progressive. *Natural Language Semantics* 1. 1-32.

Lewis, David. 1973. Causation. *Journal of Philosophy* 70. 556-567.

Lyutikova, Ekaterina, and Sergei Tatevosov. 2014. Causativization and event structure. In Bridget Copley and Fabienne Martin (eds.), *Causation in Grammatical Structures,* 279-327. Oxford: Oxford University Press.

Martin, Fabienne, and Florian Schäfer. 2012. The modality of 'offer' and other defeasible causatives. In N. Arnett and R. Bennett (eds.), *Proceedings of WCFFL* 30, 248–258. Cascadilla Press.

Martin, Fabienne, and Florian Schäfer. 2017. Sublexical modality in defeasible causative verbs. In Ana Arregui, Maria-Luisa Romero and Andres Salanova (eds.) *Modality across Syntactic Categories.* Oxford: Oxford University Press.

Martin, Fabienne. 2015. Explaining the link between agentivity and non-culminating causation. *Proceedings of SALT 25.* 246-266.

Mehlig, Hans Robert. 1981. Satzsemantik und Aspektsemantik im Russischen. Zur Verbalklassifikation von Zeno Vendler. In P. Hill, V. Lehmann (eds.), *Slavistische Linguistik 1980*, 95-151. München.

Mehlig, Hans Robert. 2006. Glagol'nyj vid i vtorichnaja gomogenizacija oboznachaemoj situacii: K upotrebleniju delimitativnogo sposoba dejstvija v russkom jazyke. [Verbal aspect and secondary homogenization of an eventuality. On the distribution of the Delimitative Aktionsart in Russian]. In Volkmar Lehmann (ed.) *Semantika i struktura slavjanskogo vida IV*. München, pp. 235-276.

Mehlig, Hans Robert. 2012. Hybrid predications in Russian. *Journal of Slavic linguistics* 20(2). 171-227.

Milsark, G. L. 1977. Toward an explanation of certain peculiarities of the existential construction in English. *Linguistic Analysis* 3. 1-30.

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

Piñòn, Christopher. 1994. Aspectual composition and the 'pofective' in Polish. In Sergey Avrutin, Steven Franks and Liljana Progovac (eds.), *Formal Approaches to Slavic Linguistics*, 341-373. Ann Arbor: Michigan Slavic Publications.

Portner, Paul.1998. The Progressive in Modal Semantics. *Language* 74(4). 760-787.

Pylkkänen, Liina. 2002. *Introducing arguments*. MIT: Ph.D dissertation.

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

Rappaport Hovav, Malka, and Beth Levin. 1998. Building Verb Meanings. In M. Butt and W. Geuder (eds.), *The Projection of Arguments: Lexical and Compositional Factors*, 97-134. CSLI Publications, Stanford, CA,.

Romanova, Eugenia. 2006. *Constructing Perfectivity in Russian.* Ph.D. dissertation, University of Tromsø.

Rothstein, Susan. 2004. *Structuring events: a study in the semantics of lexical aspect.* Malden (Mass.): Blackwell publishing.

Singh, Mona. 1998. On the semantics of the perfective aspect. *Natural Language Semantics* 6. 171-199

Soh, Hooi Ling, and Jenny Yi-Chun Kuo. 2005. Perfective Aspect and Accomplishment Situations in Mandarin Chinese. In Angeliek van Hout, Henriette de Swart and Henk Verkuyl (eds), *Perspectives on Aspect*, 199-216. Dordrecht: Springer.

Starke, Michal. 2010. Nanosyntax: A short primer to a new approach to language. *Nordlyd* 36. 1. Svenonius, Peter; Gillian Ramchand; Michal Starke; and Knut T. Taraldsen (eds.). Special issue on Nanosyntax, 1–6.

Svenonius, Peter. 2004. Slavic prefixes inside and outside VP. *Nordlyd* 32-2. Special issue on Slavic prefixes: 323–361.

Svenonius, Peter. 2008. Russian prefixes are phrasal. In Gerhild Zybatow, Luka Szucsich, Uwe Junghanns, and R. Meyer (eds.), *Proceedings of Formal Descriptions of Slavic Languages* 5, 526-537. Frankfurt am Main: Peter Lang.

Tatevosov, Sergei, and Mikhail Ivanov. 2009a. Event Structure of non-culminating accomplishments. In Lotte Hogeweg, Helen de Hoop, and Andrei Malchukov (eds.), *Cross-linguistic semantics of Tense, Aspect, and Modality*. Amsterdam: John Benjamins

Tatevosov, Sergei, and Mikhail Ivanov. 2009b. Causativization and aspectual composition. In R. Shi and R. Vermeulen (eds.) *MIT Working Papers in Linguistics*. Vol. 58, 380-394. Cambridge: MITWPL.

Tatevosov, Sergei. 2008a. Subevental structure and non-culmination. In Bonami O., Cabredo P. (eds.) Empirical Issues in Syntax and Semantics 7. http://www.cssp.cnrs.fr/eiss7, 393-423.

Tatevosov, Sergei. 2008b. Intermediate prefixes in Russian. In Andrei Antonenko, John Baylin, and C. Bethin (eds.), *Formal approaches to Slavic Lingustics. The Stony Brook Meeting 2007*, 423-442. Ann Arbor: Michigan Slavic Publications.

Tatevosov, Sergei. 2009a. Aspectual'naja compozitsija {Aspectual composition.} In Sergei Tatevosov (ed.) *Studies in the grammar of Tuba*, 78-133. Moscow: IMLI.

Tatevosov, Sergei. 2009b. Mnozhestvennaja prefiksatsija i anatomija russkogo glagola. {Multiple prefixation and the anatomy of Russian verb.} In Xenia Kiseleva, Vladimir Plungian, Ekaterina Rakhilina and Sergei Tatevosov (eds.) *Corpus-based studies in the grammar of Russian,* 92-157. Moscow: Probel.

Tatevosov, Sergei. 2013 Mnozhestvennaja prefiksatsija i fiziologija russkogo glagola. {Multiple prefixation and physiology of Russian verb}. *Voprosy Jazykoznanija* 3. 42-89.

Taylor, Barry. 1977. Tense and Continuity. *Linguistics and Philosophy* 1. 199-220.

Van Valin, Robert Jr., and Randy LaPolla. 1997. *Syntax: structure, meaning and function.* Cambridge: Cambridge University Press

Varasdi, Károly. 2014. Making progressives: necessary conditions are sufficient. *Journal of Semantics* 31. 179–207.

Varasdi, Károly. 2017. Worlds, events, and inertia. To appear in Journal of Logic, Language and Information.

Verkuyl, Henk. 1972. *On the compositional nature of the aspects.* Dordrecht: Reidel.

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, CA: CSLI Publications.

Appendix

Rothstein's (2004) theory of accomplishment event structure is summarized in (95):

(95) Rothstein 2004: basic definitions

a. *Accomplishment event template*
$\lambda y \lambda e \exists e_1 \exists e_2 [e = {}^S(e_1 \cup e_2) \wedge \text{ACTIVITY}(e_1) \wedge \text{agent}(e_1)=x \wedge \text{Theme}(e_1)=y \wedge \text{BECOME}(e_2) \wedge \text{Arg}(e_2)=\text{Theme}(e_1) \wedge \text{INCR}(e_1, e_2, C(e_2))]$
where ${}^S(e_1 \cup e_2)$ is a singular entity created out of e_1 and e_2

b. *Incremental relation between (sub)events*
$\text{INCR}(e_1, e_2, C(e_2))$ (e_1 is incrementally related to e_2 with respect to the incremental chain $C(e_2)$) iff there is a contextually available one-one function μ from $C(e_2)$ onto the set of parts of e_1, $PT(e_1)$, such that $\forall e \in C(e_2)$ $\tau(e)= \tau(\mu(e))$

c. *Incremental chain*
$C(e)$ is a set of parts of e such that
(i) the smallest event in $C(e)$ is the initial bound of e,
(ii) for every e_1, e_2 in $C(e)$ $e_1 \leq e_2$ or $e_2 \leq e_1$, and
(iii) e is in $C(e)$

In Rothstein's account, accomplishments are sums of two subevents, where the summing operation ${}^S(e_1 \cup e_2)$ creates a singular entity. Relevant subevents are ACTIVITY (e_1 in (79a)) and BECOME (=change of state, e_2 in (79a)). Rothstein provides neo-Davidsonian association of arguments with events via thematic roles. The ACTIVITY subevent is related to the agent and patient, the single argument of the BECOME subevent is equal to the patient of ACTIVITY subevent. Subevents are incrementally related. The INCR(emental) relation in (79b) is defined relatively to the incremental chain that consists of parts of the BECOME subevent arranged in a partial order. The incremental chain, defined in (79c), is a set of parts of an event such that any two parts stand in part-of relation. The incremental relation involves a contextually salient function that establishes a one-to-one correspondence between parts of the incremental chain and parts of the activity. This function replaces the causal relation between subevents more commonly accepted in the literature on predicate decomposition and discussed in Section 2.5. Related subevents must temporarily coincide.

Mapping to a minimal final part (MMFP) is defined in (96).

(96) MMFP(e_2)(e_1)

   a. e_1 stands in the Mapping to a minimal final part relation to e_2 iff there is a contextually available function μ from e_2 onto PT(e_1) such that e_2 is mapped onto the minimal final part of e_1.

   b. an event e' is a final part of e iff $e' \leq e \wedge \neg\exists e''\ [e'' \leq e \wedge e' \ll e'']$

      where $\ll$ is a precedence relation on events

   c. an event e' is a minimal final part of e iff

      e' is a final part of e $\wedge \neg\exists e''\ [e''$ is a final part of e $\wedge e'' < e']$