5. Event structure of non-culminating accomplishments[1]

Abstract

In this paper, we examine *failed attempt and partial success interpretations* of *accomplishment verbs* cross-linguistically. We observe that accomplishments differ systematically as to which of these readings they can produce. Relying on Rothstein's (2004) theory of accomplishments, we propose that this diversity can be accounted for through *properties of the relation between subevents* in the accomplishment event structure.

1. Failed attempts

Accomplishment verbs in a variety of genetically and areally unrelated languages display what we call from now on *a failed attempt interpretation*. A few illustrations from Karachay-Balkar (Altaic, Turkic), Mari (Uralic, Finno-Ugric), Bagwalal (North Caucasian, Nakh-Daghestanian, Andic), and Russian are given in (1)-(4).

(1)   Karachay-Balkar (Altaic, Turkic)
    a. *fatima eki sekunt-xa xali-nɨ zirt-ti.*
       F.   two   second-DAT   thread-ACC   tear-PST.3SG[2]
       'Fatima tore a thread in two seconds.'
    b. *fatima eki minut xali-nɨ zirt-ti.*
       F.   two   minute   thread-ACC   tear-PST.3SG
       'Fatima tried to tear a thread for two minutes.'

(2)   Mari (Uralic, Finno-Ugric)
    a. *maša jivan-em lu minut-əšte kəčkər-ən.*
       M.   I.-ACC   ten   minute-INESS wake.up-PST
       'Masha woke up Ivan in ten minutes.'
    b. *maša jivan-em lu minut kəčkər-ən.*
       M.   I.-ACC   ten   minute   wake.up-PST
       'Masha tried to wake up Ivan for ten minutes.'

(3)   Bagwalal (North Caucasian, Nakh-Daghestanian, Andic)
    a. *ʕali-r maħammadi-šːu-b ӡanaza hac'ada   minuti-ɬi*
       A.-ERG M.-OBL-GEN.N   corpse ten   minute-INTER
       ihʷar-ɬi   b-ukeː.
       lake-INTER   N-drown.PST
       'Ali drowned Mohammed's corpse in the lake in ten minutes.'
    b. *ʕali-r   maħammadi-šːu-b ӡanaza č'era saʕati-r   ihʷar-ɬi*
       A.-ERG   M.-OBL-GEN.N   corpse two   hour-ERG lake-INTER
       b=ukeː.
       N-drown.PST
       'Ali tried to drown Mohammed's corpse in the lake for two hours.'

(4)   Russian
    a. *Vasja otkry-l   dver'   za minut-u.*
       V.   open.PFV-PST.M   door.ACC   in minute-ACC
       'Vasja opened the door in a minute.'

b. *Vasja   po-otkr-yva-l   dver'   pjat' minut   i*
V.   DELIM-open-IPFV-PST.M door.ACC five minute.GEN.PL and
brosi-l.
give.up-PST.M
{Context: The lock on the door is broken.} 'Vasja tried to open the door for five minutes and gave up.'

In (1)-(4), (a) examples refer to events that culminate so that their internal arguments attain a new state, a state of being torn in (1a), a state of being awake in (2a), a state of being drowned in (3a), and a state of being open in (4a). As the test on co-occurrence with time-span adverbials like 'in two minutes' indicates, these sentences, like their translations into English, are telic.[3] (b) examples are different. Each of them describes an activity performed by the agent that aims at changing a state of the theme. However, this activity terminates before the change is attained, so the agent's attempt to tear a thread, wake up a person, etc., fail, and the theme remains in its initial state. All these sentences accept measure adverbials and are therefore atelic.

A striking fact about the failed attempt interpretation is that it is heavily lexically restricted. Accomplishments differ as to whether they allow for this interpretation, as illustrated in (5)-(8). These examples are parallel to (1)-(4) in that they involve the same verb forms, the same type of arguments (agent and theme), the same reference properties of arguments (all DPs are based on quantized nominal predicates in terms of Krifka 1989, 1992, 1998). Finally, like (1)-(4) they readily have both telic and atelic readings (cf. (a) and (b) examples). On the atelic interpretation, however, (b) sentences do not describe a failed attempt.

(5)   Karachay-Balkar (Altaic, Turkic)
a. *alim eki saʁat-xa baxca-nɨ sür-dü.*
A.   two hour-DAT field -ACC plow-PST.3SG
'Alim plowed a field in two hours.'
b. *alim eki saʁat   baxca-nɨ sür-dü.*
A.   two hour   field-ACC plow-PST.3SG
1.   'Alim was involved in plowing the field for two hours.'
2. * 'Alim tried to plow the field for two hours, (but have not made a single furrow).'

(6)   Mari (Uralic, Finno-Ugric)
a. *jivan tide šereš-əm lu   minut-əšte   voz-en.*
Ivan this   letter-ACC ten   minute-INESS   write-PST
'Ivan wrote this letter in ten minutes.'
b. *jivan tide šereš-əm lu   minut voz-en.*
Ivan this   letter-ACC ten   minute write-PST
1.   'Ivan was involved in writing this letter for ten minutes.'
2. * 'Ivan tried to write this letter for ten minutes, (but have not written a single word).'

(7)   Bagwalal (North Caucasian, Nakh-Daghestanian)
a. *pat'imati-r gur č'era zebu-ɬi   q'ini.*
P.-ERG   dress two day-INTER   sew.PST
'Fatima sewed a dress in two days.'
b. *pat'imati-r gur č'era zebu-r   q'ini.*
P.-ERG   dress two   day-ERG sew.PST
1.   'Fatima was involved in sewing a dress for two days.'

2. * 'Fatima tried to sew a dress for two days (but have not even started making a pattern).'

(8)   Russian (Mehlig 2006)
   a. *Vasja   zapolni-l   anket-u   za pjat' minut.*
      V.   fill.PFV-PST.M   form-ACC   in five   minutes
      'Vasja filled in the form in five minutes.'
   b. *Vasja   po-zapoln-ja-l   anket-u   pjat' minut.*
      V.   DELIM-fill-IPFV-PST.M   form-ACC   five   minutes
      1.   'Vasja spent five minutes filling in the form.'
      2. * 'Vasja tried to fill in the form for five minutes (but has not filled in a single entry).'

In (5)-(8), (a) examples have the same interpretation as their (a) counterparts in (1)-(4): the event culminates, and immediately after the culmination the field is (in a state of being) completely plowed, (5a), the letter is written, (6a), the dress is sewed, (7a), and the form is filled, (8a). In atelic (b) examples, the event does not culminate, but in a strikingly different way than in (b) examples in (1)-(4). The failed attempt interpretation in not available for (5b)-(8b): each entails that an affected participant undergoes at least some change. We call this interpretation *a partial success interpretation* hereafter.

   Finally, it is not difficult to find verbal predicates that allow for both types of interpretation. For the sake of space, we limit ourselves to illustrating this by one example from Karachay-Balkar:

(9)   *išci   eki   kün/saʁat üj-nü   oj-du.*
       worker two   day/hour   house-ACC   destroy-PST.3SG
       1. 'The worker tried to take down the house for two days'. {But soon it became clear that it is not possible for a single person; so he gave up, not being able to remove a single brick}.
       2. The worker was involved in taking down the house for two hours. {He had already removed two walls, but was asked to stop}.

Unlike verbs in (1)-(8), which can refer either to failed attempts or to partially successful actions, the verb *oj* 'destroy, take down, crumble' is compatible with both scenarios, with the context determining the choice in every specific case. Imagine a big medieval house made of huge heavy rocks and a worker only equipped with a pickax. Here we are most likely to get the interpretation in (9.1). If, on the other hand, the house is a small shack and the worker came with a pneumatic chipper, the interpretation in (9.2) would be most probable.

In what follows, we call verbs like those in (1)-(4) *failed attempt accomplishments* (FA-accomplishments, for short). Verbs in (5)-(8) are referred to as *partial success accomplishments*, or PS-accomplishments. Finally, verbs similar to *oj* 'destroy' in (9) are *non-restricted accomplishments*.

   The above observations motivate main questions addressed in the present study. First, we want to know how the failed attempt interpretation in (b) examples in (1)-(4) is compositionally derived and how this interpretation is related to the 'regular' telic interpretation in (a) examples. Secondly, our goal is to determine where the difference between FA-accomplishments like 'tear a thread' 'wake up a person', etc., in (1)-(4) and PS-accomplishments like 'plow' a fields, 'sew a dress', etc., in (7)-(8) comes from. Thirdly, we have to account for why non-restricted accomplishments like 'destroy' in (9) have both interpretations.

In answering these questions, we take the following steps. First, we identify the FA-predicates, PS-predicates and non-restricted predicates as special cases of non-culminating accomplishments. After reviewing a number of proposals accounting for the non-culmination in Section 2, we conclude that the difference between the failed attempt and partial success interpretations has to do with the lexical meaning of corresponding accomplishments verbs. In Section 3, we will see that most theories of accomplishment event structure face difficulties in capturing this difference. In Section 4 we propose that FA-verbs are distinguished from PS-verbs in terms of the relation between activity and become subevents in their semantic representation. Non-restricted accomplishments are characterized as underspecified with respect to such a relation. A number of more general issues related to the data and analysis discussed in the present paper are addressed in Section 5.

2. Non-culminating accomplishments

2.1. *Non-culminating accomplishments*

A part of the answer to the question about how the failed attempt interpretation is compositionally derived suggests itself immediately. All verbal predicates in (b) examples above, including those that refer to failed attempts, are evidently instances of *non-culminating accomplishments* extensively discussed in the literature (see Ikegami 1985; Koenig and Muansuwan 2001; Tatevosov 2002; Bar-el et al. 2005; Bar-el 2006). So a reasonable null hypothesis would be that whatever mechanism creates non-culminating accomplishments, it is likely to be involved in the derivation of failed attempts. Let us therefore discuss non-culminating accomplishments in some detail.

(10)-(11) illustrate non-culminating accomplishments in Thai and St'át'imcets in (b) examples contrasted with corresponding culminating ones in (a) examples:

(10) Thai (Koenig and Muansuwan 2001).
    a. *Surii tɛ̀ɛŋ   klɔɔn   kʰûm.*
        S.   compose   poem   ascend
        'Surii composed a/the poem.'
    b. *Surii tɛ̀ɛŋ   klɔɔn   kʰûm   tɛ̀ɛ   jaŋ   mâj   sèd.*
        S.   compose   poem   ascend   but   still   not   finish
        Lit. 'Surii composed a/the poem, but she has not finished it yet.'

(11) St'át'imcets (Bar-el et al. 2005)
    a. *máys-en-lhkan   ti   q'láxan-a.*
        fix-TRANS-1SG.SUBJ   DET   fence-DET
        'I fixed the fence.'
    b. *máys-en-lhkan   ti   q'láxan-a,   t'u7   cw7aoy   t'u7   kw-s*
        fix-TRANS-1SG.SUBJ   DET   fence-DET   but   NEG   just   DET-NOM
        tsúkw-s-an.
        finish-CAUS-1ERG
        Lit. 'I fixed the fence, but I didn't finish.'

In the literature, one can find a few proposals as to how non-culminating readings like those in (10)-(11) are generated. The vast majority of them can be thought of as instances of what we call *a partitive theory of non-culmination*. After reviewing this type of theory in subsequent sections, we will see that for a number of reasons it only offers one of a few necessary ingredients of the analysis. Other ingredients will be developed in Sections 3-4.

2.2. *Partitive theory*

The basic intuition behind various versions of the partitive theory is that events referred to by non-culminating accomplishments are nothing but parts of events from the denotation of culminating ones. Take 'fix a fence' from (11) as an example. The complete event of fixing a fence involves agent's activity, a corresponding change of state of the theme and the resultant state of the fence being fixed. (11b), however, describes a "smaller" eventuality, whereby the fence does not undergo sufficient change to count as a fixed one. Up to some point, complete and incomplete eventualities develop in exactly the same way, and the difference between them has to do with the fact that the latter stop before the culmination, whereas the former reach it. This suggests a very simple architecture of the analysis. We start with a predicate that only have complete eventualities in its extension, and by applying an operator that maps these eventualities into incomplete ones, the desired non-culminating reading is derived.

  Specific implementations of this idea can vary. Manfred Krifka (1998: 215) in his brief comment on the semantics of measure adverbials like *for an hour* suggests that in order to accept such adverbials a quantized event predicate can be coerced into an imperfective interpretation. Krifka defines the imperfective version of a quantized predicate *P* as a predicate that applies to events *e′* iff there is an event *e* such that *P(e)*, and *e′< e*. That is:

(12) $\forall P \forall e'[\text{Ipfv}(P)(e') \leftrightarrow \exists e[P(e) \wedge e' < e]$, where $<$ is a proper part relation.

Application of Ipfv to a predicate P creates an event predicate that denotes parts of an event from the original extension of P. One can easily check that this new predicate is cumulative and not quantized, and can thus be combined with measure adverbials like *for an hour*. This is a welcome prediction of the theory, because it is exactly what happens with all non-culminating accomplishments in (1)-(9), regardless of whether they refer to failed attempts or to partially successful actions.

  Krifka's approach contrasts sharply with modal accounts developed by Koenig and Muansuwan's (2001), Bar-el et al.'s (2005), and Bar-el's (2006),. who point out that the extensional analysis based on the part-of relation does not suffice to account for non-culmination.

  Koenig and Muansuwan (2001) assume that accomplishment stems in Thai are fundamentally imperfective in that they do not refer to complete eventualities to begin with, but to non-necessarily proper parts of such eventualities. In their system, lexical entries for all accomplishment stems contain a built-in imperfective operator, based on Dowty's (1977, 1979) notion of inertia worlds.

(13) Semantics for the imperfective operator (Koenig and Muansuwan 2001: 163).
  a. α = Impfv(ev, φ)
  b. An eventuality *ev* and an event description φ satisfy condition α iff there is an *e′* which (non-necessarily properly) includes *ev* and satisfies φ in all inertia worlds, i. e. in all worlds compatible with what it would mean to complete *ev* without being interrupted.

Similarities between this approach and Dowty's (1977, 1979) analysis of the progressive are evident. The reason for this seems to be fairly straightforward. What non-culminating accomplishments and progressives have in common is the Imperfective Paradox: a proposition in all (b) examples in (1)-(9) can be true in the actual world without a corresponding proposition in (a) examples being true. A semantic representation of the non-culminating reading based on (12) fails to capture this characteristic, since a "complete"

event, according to (12), must exist in the actual world. This suggests that main arguments for the intensional analysis of the progressive put forward in Dowty (1977, 1979) as well as in later developments of Dowty's approach (e.g., Landman 1992; Portner 1998) are applicable to non-culminating accomplishments, too. Specifically, in (13), unlike in (12) a complete eventuality exists in intertia worlds rather than in the actual world.

Bar-el et al.'s model is much in the spirit of Koenig and Muansuwan's proposal as far as the modal nature of non-culmination is concerned. Specifically, in St'át'imcets, the modal component is taken to be a part of the denotation of the transitivizer *–n* in (14) which creates transitive accomplishments out of unaccusative verb roots. Applying to an event predicate, *-n* introduces an agent and moves the culmination from the actual world to inertia worlds:

(14) The transitivizer
$\| \text{-n} \|^w = \lambda f_{<l,st>} \lambda e[e$ is controlled by its agent in $w \wedge \forall w'[w'$ is an inertia world w.r.t. w at the beginning of $e \rightarrow \exists e'[f(e')(w') \wedge e$ causes e' in $w']]]$,
where l is the type of events.

For (11b), after application of *-n* to the denotation of unaccusative VP 'stem get fixed' projected by the unaccusative verb *máys* 'get fixed', the event predicate in (15) obtains:

(15) The denotation of tenseless and aspectless *v*P in (11b):
$\| \text{máys}en\text{lhkan ti q'láxana} \|^w = \lambda e[I$ am the agent of $e \wedge e$ is controlled by me in w $\wedge \forall w'[w'$ is an inertia world w.r.t. w at the beginning of $e \rightarrow \exists e'[$the fence gets fixed in $w'(e') \wedge e$ causes e' in $w']]]$

(15) is (a characteristic function of) a set of events in which the speaker is an agent who exercises control over their development in the actual world. In every inertia world these events bring about a change of state of the fence, the fence getting fixed.[4]

2.3. Problems for the partitive theory

2.3.1. One- vs. two-operator approaches

All the theories outlined so far do capture in some way the intuition that non-culminating accomplishments involve 'parts' or 'stages' of complete eventualities from the extension of an original verbal predicate. However, here the partitive approach faces a fundamental problem. Non-culmination is what failed attempts in (1b)-(4b) and partially successful actions in (5b)-(9b) have in common. Whatever analysis of the partitive/imperfective/inertia modal operator we adopt, it is not clear how to derive the failed attempt reading for (1b)-(4b) without obtaining the same result for (5b)-(8b). Similarly, if the operator is able to derive the partial success interpretation for (5b)-(8b) it is not obvious why the same operator produces a different reading for (1b)-(4b). Even more problematic is (9): the result of the application of the operator must be compatible with both failed attempt and partial success scenarios.

At this juncture, one can take different directions. The first is: failed attempts and partially successful actions are derived by different operators, say *FA* and *PS*. These operators should be semantically alike in order to account for the very fact that failed attempts and partially successful actions both involve non-culmination. Both should be partial functions whose domains (verb or VP denotations) do not coincide (given that for (1)-(8) only one non-culminating interpretation is available).

As a rough analogue of *FA* and *PS* one could think of English weak quantifiers *many* and *much*: the former applies to plural nouns, the latter takes mass nouns, and both express virtually the same meaning. This example suggests immediately what kind of difficulty we can face in pursuing this approach. Domains of *many* and *much* have different lattice-theoretic

structures (Link 1983 and much subsequent work): the former contains pluralities constructed out of atoms, while the latter is non-atomic. There does not seem to be an equally well-motivated distinction between domains from which verbs like 'tear' in (1) and verbs like 'plow' in (5) take their denotations. One further difficulty for this approach is that domains of *FA* and *PS* (unlike those of complementarily distributed *much* and *many*) should intersect — otherwise it would be difficult to capture ambiguity of examples like (9). Obviously, this is one more potential sourse of ad hoc stipulations.

Another option does not seem to suffer from these difficulties. We can assume a single operator extracting parts of complete eventualities as occurring in the actual world and guaranteeing that the culmination only exists in inertia worlds (or in whatever possible worlds our favorite theory solving the imperfective paradox tells us). In this case, the operator will be a total function, whose domain contains all verb denotations, but, depending on the properties of subdomains, this function will yield different non-culminating readings. Under this approach, the difference between failed attempts and partially successful actions should exist before event predicates combine with the partitive operator. It will be rooted in different semantic representations of corresponding verbs/verbal predicates, and the partitive operator will merely pass this difference on. In what follows, we will pursue exactly this type of approach.

2.3.2. One-operator approach: morphological evidence

One-operator approach finds an empirical support from the morphological make-up of verbs in Russian. In Russian, both failed attempts and partially successful actions are derived by the same pieces of morphology. Look at two non-culminating verbs in (4b) and (8b) again:

(16) a. = (4b) *Vasja* **po-otkry-va-l** *dver'...*
           V. DELIM-open-IPFV-PST.M door.ACC
           'Vasja tried to open the door for some time.'
    b. = (8b) *Vasja* **po-zapoln-ja-l** *anket-u.*
           V. DELIM-fill-IPFV-PST.M form-ACC
           'Vasja spent some time filling in the form.'

In both cases, non-culminating readings come with the so called delimitative verbs (see Mehlig 2003, 2006 for their detailed description and Filip 2000, 2005 for a possible analysis). Morphologically, derivation of these verbs involve two steps. First, an accomplishment stem (*otkry-* 'open' and *zapoln-* 'fill in' in (16a-b), respectively) merges with the so called "secondary imperfective" morpheme (*-va-* in (16a), *-(j)a-* in (16b)) and secondly, the resulting stem is combined with the prefix *po-*. The fact that both types of non-culminating accomplishments are derived in the same way and both bear the same piece of secondary imperfective morphology strongly suggests that the single operator is responsible for both readings. (Culminating eventualities in (4a) and (8a), in contrast, are referred to by original accomplishment stems that lack the secondary imperfective morphology: *otkry-l* 'open' in (4a) attaches the past tense inflection *-l* directly, and in *zapoln-i-l* 'filled in' the theme vowel *i* only occurs between the stem and inflection.)

Other languages in (1)-(10) do not exhibit a morphological distinction between culminating and non-culminating accomplishments (like that between *otkryl* and *pootkryval* in Russian), nor between different types of non-culmination. In Karachay-Balkar, Mari, and Bagwalal the simple past verb form is associated with the whole range of possible readings. Crucially, we are aware of no language in which failed accepts and partially successful actions are morphologically distinguished. But if the two-operator approach to non-culmination is correct, that is exactly a kind of language we expected to find.

We can conclude, therefore, that whenever a language allows non-culminating accomplishments, a morphological distinction, if any, will be between culminating and non-

culminating readings, not between FA-accomplishments and PS-accomplishments. This generalization falls out naturally from a single-operator approach but is not easily captured by the two-operator approach.

For the single-operator approach to work, we need, therefore, an articulated analysis of the internal structure of verbal predicates based on FA-accomplishments like 'open', 'wake up' and 'tear' in (1)-(4) vs. PS-accomplishments like 'sew', 'write', 'plow' and 'fill in' in (5)-(8). The rest of this paper will be mainly devoted to developing such an analysis.

2.4. *The partitive theory and perfectivity*

A note on the notion of imperfectivity is due at this point. Krifka (1998) maintains that extracting parts of eventualities from the original denotation of an accomplishment predicate is essentially imperfectivization. However, we believe that for the languages under discussion this suggestion is not tenable. Russian material is again instructive here. In (16a-b) the perfectivizing prefix *po-* is attached above the imperfective stems *otkr-yva-* and *zapoln-ja-*, creating so-called delimitative verbs. Delimitative verbs are perfective, as is extensively discussed in the literature on Russian aspect (Isachenko 1960; Zaliznjak and Shmelev 2000; Filip 2000, 2003; Mehlig 2003, 2006, to cite only a few). They pass all diagnostics for perfectivity, e.g., the test on temporal interpretation of the Present tense and on co-occurrence with the future auxiliary:

(17)   Imperfective   Perfective   Delimitative
        Future time reference in the Present tense   *   √   √
        Compatibility with the future auxiliary   √   *   *

Other non-culminating accomplishments in (1)-(8) are perfective, too. Consider (18) from Bagwalal:

(18) *ʕali w-aː-w-q'ʷaʟi   pat'imati-r č'era saʕati-r   gur q'ini*.
     A.   M-come-M-TEMP P.-ERG   two   hour-ERG dress sew.PST
     1.   'When Ali came, Fatima spent two hours sewing a dress.'
     2. * 'When Ali came, Fatima was sewing a dress for two hours.'

(18) does not support the interpretation (18.2) in which the running time of the sewing event includes that of the coming event referred to by the adverbial clause. (18) is only true if coming temporally precedes sewing, as in (18.1). Evidently, this would have never been the case if the imperfective viewpoint aspect were a part of the meaning of the main clause. In contrast, temporal sequencing of events in (18) follows naturally if *q'ini* 'sewed' is perfective.

Therefore, the operator creating non-culminating accomplishments does not introduce the imperfective viewpoint aspect. Rather, in the above examples the output of the application of this operator serves as input to the *perfective aspectual operator*. Among other things, this strongly suggests that non-culmination and perfectivity/imperfectivity are to be kept distinct. Koenig and Muansuwan and Bar-el et al. independently make a similar point. Specifically, Koenig and Muansuwan (2001) suggest that their Impfv operator stands in feeding relation with what they call semi-perfectivity. Bar-el et al. explicitly analyze non-culminating accomplishments in St'át'imcets as having perfective viewpoint aspect whereby the running time of an event is included in the reference time. Moreover, to avoid terminological confusion they propose to characterize non-culmination in terms of *inertia modality* rather than imperfectivity. The notion of viewpoint aspect involving the perfective/imperfective opposition, they argue, should be reserved to refer to relations between a running time of event and a reference time. Following their generalizations, as well as evidence from the

morphological makeup of verbs in Russian, in what follows we assume the following hierarchy of functional heads:

(19) [… [$_{AspP}$ (IM)PERFECTIVE/PERFECTIVE [$_{CmP}$ CONTINUATION MODALITY [$_{vP}$ … v … […]]]]]

In (19), there are two distinct functional heads dominating vP. One is (Viewpoint) Aspect, another is Continuation Modality that projects a phrase the Asp head takes as a complement.[5] The term "*continuation modality*" replacing Bar-el at al's inertia modality is connected to the notion of continuation branch from Landman (1992). Landman's analysis of the progressive will be one of the ingredients of our account of non-culmination in Section 4, hence our terminological choice — continuation rather than inertia.

   Given (19), examples like (16) would be analyzed as in (20), where the *–yva-* morpheme, traditionally labeled as imperfective, is treated as an exponent of the Continuation Modality head:

(20) [… [$_{AspP}$ *po-* [$_{CmP}$ *–yva-* [$_{vP}$ ... Vasja otkry- dver' ... 'V. open a/the door']]]]

Let us take stock of what we have observed so far. FA-predicates are instances of non-culminating accomplishments, other instances being PS-predicates and non-restricted predicates. Non-culmination leads to an imperfective paradox thus calling for a modal analysis. Existing theories of non-culmination posit a single operator doing the job for all instances of non-culmination, and we saw a good empirical evidence behind this single-operator approach. However, by itself a single operator is not able to distinguish between the failed attempt interpretation, partial success interpretation, and other non-culminating interpretations, if any. Given that verbs in (1)–(4) and (5)–(8) do not show any morphosyntactic difference and bear the same inflectional and derivational morphology, the observed contrast can only be attributed to their lexical representations. To this issue we now turn.

3. Analyzing accomplishments

3.1. The difference

Intuitively, what makes failed attempts different from partially successful actions is how the agent's activity is related to the change of state of the theme induced by that activity. Partially successful actions (e.g., (5b) repeated as (21a)) are construed in such a way that any contextually relevant part of the activity produce some change of state of the theme.[6]

(21) a. *alim eki saʁat baxca-nɨ sür-dü.*
         A.   two   hour field-ACC   plow-PST.3SG
         'Alim was involved in plowing the field for two hours.'
      b. *fatima eki minut xalɨ-nɨ zɨrt-tɨ.*
         F.   two   second thread-ACC   tear-PST.3SG
         'Fatima tried to tear a thread for two minutes.'

Although it is not the case in (21a) that the field has been plowed to completion, it has undergone some change — merely by virtue of the fact that some plowing activity has been performed. In contrast, as far as failed attempts are concerned, non-final parts of activities do not produce any change at all. If the event in (1a), repeated as (21b), had culminated, the

whole change of state of the thread would have occurred at the very final part of tearing activity. But the activity stops before the culmination, and at that point the thread is still in its initial state.

At this juncture, several ways of capturing the intuitive difference between PS-verbs and FA-verbs seem to be open. Accordingly, before developing our proposal in Section 4 we will discuss and reject two main alternatives, a non-decompositional theory of accomplishments in Section 3.2 and causative decomposition theory in Sections 3.3-3.4.

3.2. *Non-decompositional theory of accomplishments*

Within standard Davidsonian or neo-Davidsonian frameworks, accomplishments are analyzed as monadic event predicates. Assuming that *v*Ps denote event predicates created when all individual argument positions of the verb are saturated, and representing for simplicity DP arguments as individual constants, for (21a-b) we get (22) and (23) respectively (where (b) examples contain Davidsonian and (c) examples — neo-Davidsonian representations):

(22) a. [$_{vP}$ alim baxca-nɨ sür- 'Alim plow the field']
   b. $\lambda e[\text{plow(field)(alim)}(e)]$
   c. $\lambda e[\text{plow}(e) \wedge \text{agent(alim)}(e) \wedge \text{theme(field)}(e)]$

(23) a. [$_{vP}$ fatima xalɨ-nɨ zɨrt- 'Fatime tear the thread']
   b. $\lambda e[\text{tear(thread)(fatima)}(e)]$
   c. $\lambda e[\text{tear}(e) \wedge \text{agent(fatima)}(e) \wedge \text{theme(thread)}(e)]$

The problem with (22)-(23) seems to be clear. Tearing and plowing events are treated on a par. Both are conceived of as a single indivisible whole, without separating activity performed by the external argument and change of state undergone by the internal argument. As a consequence, (22)-(23) do not impose any explicit restrictions on how activity is related to the change of state. Suppose that the denotation of event predicates in (23b-c) contains tearing events in which the activity immediately precedes the change of state. If so, why is the same temporal constitution not available for events in the denotation of event predicates in (22b-c)? Why can't it be the case that (22b-c) contain plowing events in which the whole agent's activity temporally precedes change of state of the field? The other way round, if plowing events are construed as involving gradual change of state that temporally coincide with the activity, why should tearing events in (23) be incompatible with the similar scenario whereby the agent tears a thread gradually, parts of the change of state being mapped onto parts of the activity? Common sense suggests that this would not be a possible tearing-a-thread event, but (23) does not tell us why this should be the case.[7]

If we want to get round this problem while sticking to representations like (22)-(23), one way of doing so is to capture the difference between 'tear' and 'plow' in terms of the relation between events and their internal arguments.

The verb 'plow' is an incremental theme / gradual patient verb in the sense of Krifka (1989, 1992, 1998): its internal argument stands in the incremental relation to the event. Specifically, 'plow' possesses the Mapping to Subobjects property (MSO) in (24a):

(24) a. $\forall R[\text{MSO}(R) \leftrightarrow \forall x \forall e \forall e'[R(x)(e) \wedge e' < e \rightarrow \exists x'[x' < x \wedge R(x')(e')]]$

According to (24a), a relation *R* between individuals and events shows mapping to subobjects iff whenever an object *x* stands in the relation *R* to an event *e*, for every proper part of *e, e′*,

there is a proper part of *x*, *x'*, that stands to *e'* in the same relation. From this property, the following meaning postulate for 'plow' is easily derivable:

(24) $\forall y \forall x \forall e[\text{plow}(y)(x)(e) \rightarrow \forall e'[\ e' < e \rightarrow \exists y'[y' < y \wedge \text{plow }(y')(x)(e')]]]$

This postulate says that if, e.g., a field is plowed (by x) in the event *e*, then in any subevent of *e* some proper part of that field is plowed (by x). Apparently, that is exactly what we need to account for the partial success reading available for 'plow' — recall that in any incomplete plowing event some part of the field is obligatorily plowed.

'Tear', then, has an opposite property. If a thread is torn in an event *e*, then neither the thread itself nor any of it's proper parts are torn in any subevent of *e*:

(25) a. $\forall y \forall x \forall e[\text{tear}(y)(x)(e) \rightarrow \forall e'[e' < e \rightarrow \neg\exists y'[y' \leq y \wedge \text{tear}(y')(x)(e')]]]$

(25a) ensures that nothing happens to a thread unless the whole event develops from the very beginning to the very end. From this property, one can argue, the failed attempt reading is derivable. On the non-culminating interpretation of 'tear a thread', the partitive operator extracts a proper part *e'* of an event *e* from the denotation of (23b) or (23c), and due to (25a), the thread is not torn in *e'*.

Generalizing over this case, we can say that for verbs like 'tear' the relation between the event and theme arguments possesses an Anti-Mapping to (Sub)objects property (AMSO) in (25b):

(25) b. $\forall R[\text{AMSO}(R) \leftrightarrow \forall x \forall e \forall e'[R(x)(e) \wedge e' < e \rightarrow \neg\exists x'[x' \leq x \wedge R(x')(e')]$

(25) says that a relation R shows anti-mapping to subobjects iff whenever an object *x* stands in the relation R to an event *e*, no part of *x* stands in the same relation to any proper part of *e*.

MSO and AMSO successfully distinguish between verbs like 'tear' and verbs like 'plow'.[8] Furthermore, by not assigning either of the corresponding postulates for non-restricted verbs like *oj* 'destroy, take down, crumble' in (9), we make these verbs underspecified as to the relation between the event and the internal argument thus accounting for the fact that they share properties of 'tear' and 'plow'.

An essential premise behind this analysis is that whatever we have to say about the relation between activity and become subevents can be redescribed in terms of the relation between the overall eventuality and its theme participant. Neither AMSO nor MSO determine how the progress of the activity corresponds to a change of state brought about by that activity. Rather, both relate the part structure of the whole eventuality (comprising both activity and change of state) to that of the internal argument. And this is where a problem for the non-decompositional theory of accomplishment event structure lies.

If our attention is limited to non-incremental verbs like 'tear' and incremental theme verbs like 'plow', the MSO/AMSO distinction works perfectly well. However, this approach faces a complication as soon as we take into account other types of incremental verbs for which the physical extent of the theme is irrelevant for tracking the progress of the event. One example are so called degree achievement verbs like 'deepen', 'lengthen', etc. (see Dowty 1979; Hay et al. 1999; Kennedy and Levin 2002, 2008, among others). In languages like Russian, non-culminating readings are readily available for such verbs:

(26) *Rabočij-e   po-uglubl-ja-l-i   jam-u   polčasa   i*
       worker-NOM.PL DELIM-deepen-IPFV-PST-PL pit-ACC   for.half.an.our and

uš-l-i   *obeda-t'*.
go.away.PFV-PST-PL have.lunch.IPFV-INF
'The workers were involved in deepening the pit for half an hour and went out for lunch.'

(26) refers to a partially successful action in which the depth of the pit increases a little, but the deepening activity stops before the depth reaches some intended (contextually salient) degree. Essentially, in (26) we are dealing with the same 'partial success' scenario as in (21a) with the verb 'plow'. But unlike on 'plow', on 'deepen' MSO fails: it is not the case that if the pit has been deepened by some degree d in the event e, then in every subevent of e some part of the pit was deepened by d. Rather, in every e', $e' < e$, the depth of the *whole* pit increases by some degree d', $d' < d$. This, of course, happens because evens in the extension of 'deepen' are incrementally related to gradable properties of theme participants (depth, in the case at hand), not to theme participants as such. To capture this, we will need some sort of Mapping-to-Degrees property, parallel to MSO (see Piñon 2008 for a similar idea).

The problem is that there can be even more entities incrementally related to eventualities (e.g., incremental paths, see Dowty 1991), and for every such an entity we may have to have a separate "Mapping-to-..." property (and, possibly, the whole family of corresponding "Anti-Mapping-to-..." properties as well). In this way, we end up by not having a natural class of verbal predicates that allow for a partial success interpretation. As a result, the observation that, e.g., both incremental theme verbs like 'plow' and degree achievement verbs like 'deepen' allow for a partial success interpretation would reflect two independent facts about distinct verb classes.

Evidently, this is not a welcome outcome of the analysis. If we could develop a theory of accomplishments in which all verbs that allow a specific type of non-culmination form a natural class, this would be a better option. But an attempt to describe relations between activity and become subevents in terms of another relation, that between the whole eventuality and some entity incrementally related to the eventuality, does not yield this result. Accordingly, in the subsequent sections we try another possibility: we will introduce a predicate decomposition theory whereby representations like (22b-c)-(23b-c) are replaced by those in which activity and become subevents are distinguished explicitly. Specifically, after reviewing in Section 3.3 a few current approaches to predicate decomposition, in Section 3.4 we will discuss what can be called *a causative decomposition theory*. After that, having rejected the causative decomposition, we will be ready to formulate our proposal in Section 4.

3.3. Predicate decomposition

The idea that accomplishments are inherently complex is not of course, new. At least since Dowty (1979) accomplishments are analyzed as involving at least two components: an activity/process performed by the agent/causer and change of state of the theme induced by this activity/process. Here come a few illustrations about how (the relevant part of the meaning of) the sentence *John closed the door* would be analyzed within different decompositional theories, putting tense and grammatical aspect aside.

(27) Dowty (1979)
      [[DO (John, [close(John)])] CAUSE [BECOME [closed (door)]]]

(28) Rappaport Hovav and Levin (1998)
      [[John ACT] CAUSE [BECOME [door *<closed>*]]]

(29) Kratzer (2000), Paslawska and von Stechow (2003)
      λe∃s[agent(John)(e) ∧ close(e) ∧ CAUSE(s)(e) ∧ closed(the door)(s)]

(30) Pylkkänen (2002)
$\lambda e[\text{agent}(\text{John})(e) \wedge \exists e'[\text{closing}(e') \wedge \text{theme}(\text{the door})(e) \wedge \text{CAUSE}(e')(e)]]$

(31) Ramchand (2002, 2003, 2008)
$\lambda e \exists e_2 \exists e_3 \exists e_4 \exists e_5 \; [\text{close-a}(e_2) \wedge \text{Causing}(e_2) \wedge e = e_2 \rightarrow e_3 \wedge \text{Subject}(\text{John})(e_2) \wedge$
$\text{close-p}(e_4) \wedge \text{Process}(e_4) \wedge e_3 = (e_4 \rightarrow e_5) \wedge \text{Subject}(\text{the door})(e_4) \wedge \text{close-s}(e_5) \wedge$
$\text{State}(e_5) \wedge \text{Subject}(\text{the door})(e_5)],$
where "$\rightarrow$" is a "lead to" or "cause" relation on events.[9]

(27)-(31) represent a very small part of proposals about predicate decomposition. But even within this small part one can observe a considerable degree of diversity. Analyses represented in (29)-(31) exploit event semantics, whereas (27)-(28) are eventless. As a consequence, the causal relation in (29)-(31) is a relation between events, while CAUSE in (27)-(28) is a two-place sentential operator. (27)-(31) differ as to how many propositional or eventive components the decompositional structure involves. Ramchand in (31) analyses accomplishments as consisting of three subevents (activity, change of state and result state), while others offer a two-component decomposition. (27)-(31) further differ in what the components of accomplishment structures are. In Dowty's original system further elaborated and extended by Rappaport Hovav and Levin, the caused component consists of a state embedded under BECOME. Kratzer (2000 and elsewhere) suggests that the causing activity and result state are directly connected by CAUSE with no BECOME. On the other hand, Pylkkänen (2002) proposes that accomplishments fall into two eventive components with no result state.

Evaluating a full range of predictions one can deduce from these differences goes far beyond the scope of this paper. Rather, we would like to focus on one aspect (27)-(31) have in common: components of all decompositional structures in (27)-(31) are causally related. All of them can thus be regarded as instances of the *causative theory of accomplishments*. Recall from Section 3.1 that the relation between activity and become subevents is exactly one we are after. Let us therefore look at the causative theory in more detail.

3.4. Causative theory

3.4.1. Two problems
Assume for the moment that accomplishments like 'tear a thread' and 'plow a field' are decomposed into two subevents along the lines of (32a-b) (putting the result state aside):

(32) a. $\|$ John tear thread $\| = \lambda e \exists e' \exists e'' \; [e = e' \oplus e'' \wedge \text{tear}_{ACT}(e') \wedge \text{agent}(\text{John})(e') \wedge$
$\text{tear}_{CS}(e'') \wedge \text{theme}(\text{thread})(e'') \wedge \text{cause}(e'')(e')]$
b. $\|$ John plow field $\| = \lambda e \exists e' \exists e'' \; [e = e' \oplus e'' \wedge \text{plow}_{ACT}(e') \wedge \text{agent}(\text{John})(e') \wedge$
$\text{plow}_{CS}(e'') \wedge \text{theme}(\text{field})(e'') \wedge \text{cause}(e'')(e')],$
where $\oplus$ is the sum operator (Link 1983 and much subsequent work)

Both (32a) and (32b) denote events that are sums of causally related subevents. Let us therefore try to figure out if the causal relation will do for our purposes and what kind of problems we can face in pursuing the causal approach of accomplishments.

Kratzer (2005) argues extensively, following Ginet (1990), that two types of causal relations are to be kept distinct. First, an event *c* can *cause* the event *e*. Secondly, an event *c* may be a *causing* of the event *e*. The former relation between events obtains iff *c* is a minimal event in some causal chain with a maximal element *e*; the latter holds for *e* and *c* if *c* is the sum of all events in some causal chain with the maximal element *e*. Kratzer argues that the causing-of relation rather than cause relation is a part of the meaning of adjectival resultatives like *John drank the teapot empty* whereby John's drinking activity brings about the teapot's state of being

empty. Adjectival resultatives do not allow that the causal chain connecting activity (e.g., drinking) and result state (e.g., being empty) contains intermediate causes that are not parts of that activity.

Evidently, the same argument can be applied to the causal relation in structures like (32). For 'John plowed the field' to be true, the causal chain leading to the change of state of the field cannot contain intermediate causes that has nothing to do with plowing activity. Similarly, 'John tore a thread' is not compatible with the scenario in which it is not Johns's activity that makes the thread tear, but some other event, only indirectly related to that activity. Therefore, we can safely assume that if a causal relation is a part of the meaning of accomplishments like 'plow' and 'tear' at all, it is the causing-of but not the cause relation.

However, there are reasons to doubt that the relation between subevents in (32a-b) can be reduced to causation. There are at least two problems with the causal analysis of accomplishments — problem of *temporal relatedness* and problem of *causal irrelevance.*

The problem of temporal relatedness rises because the causing-of relation between two events does not entail any specific type of temporal relation between them. Arguing against the causal analysis of accomplishments like 'read', Rothstein (2004: 104) points out that if *c* causes *e*, "it is usually agreed that we are entitled to assume that" *c* temporally precedes *e*, but for 'read' this is not a possible temporal relation between activity and become subevents.

Strictly speaking, this formulation may not be quite accurate. Nothing in the classic definition of causation going back to Lewis (1973), nor in its later developments including Kratzer (2005), suggest that the temporal precedence *must* be the case. But this definitely *can* be the case, and this is exactly what makes (32b) problematic. When one plows the field (sews a dress, plays a sonata, reads a book), activity and become subevents necessarily coincide in time. But, as it stands, (32b) does not (and in effect cannot) capture this essential characteristic of accomplishments like 'plow'.[10]

The problem of causal irrelevance rises with failed attempt verbs. Take 'wake up' as an example (see, e.g., (2) above). In (33), it is analyzed parallel to 'tear a thread' and 'plow a field' in (32):

(33) a. Masha woke up Ivan.
   b. $\parallel$ Masha wake up Ivan $\parallel$ = $\lambda e \exists e' \exists e''$ [e = e' $\oplus$ e'' $\wedge$ wake$_{ACT}$(e') $\wedge$ agent(Masha)(e') $\wedge$ wake$_{CS}$(e'') $\wedge$ theme(Ivan)(e'') $\wedge$ cause(e'')(e')]

The crucial observation is that (33a) is compatible with two types of scenarios we could call a *totally causal scenario* and a *partially causal scenario*.

An example of the totally causal scenario for 'wake up' is as follows. Masha aims at waking up Ivan; she calls him in a whisper, and he wakes up immediately. In this case, the activity subevent is a calling-in-a-whisper and it is clearly this subevent that causes Ivan wake up. The event predicate in (33b) contains events that correspond to exactly this scenario.

A partially causal scenario for sentences like (33a) obtains if some components of the activity do not contribute to the change of state. Imagine that the agent, who aims at waking up Ivan, first calls him in a whisper, then calls him loudly, then claps hands at his ear, then shakes his shoulder. Finally, when she pours cold water on his face, Ivan wakes up.

The problem of causal irrelevance is that calling Ivan loudly, clapping hands and shaking his shoulder are not members of the causal chain leading to the waking up at all. Waking up does not casually depend on these (sub)events, since if they do not occur this has no consequences for the occurrence of waking up (sub)event. However, these subevents are clearly parts of waking up activity denoted by wake$_{ACT}$ predicate in (33b). But according to (33b), the whole activity *e'* is a causing of the change of state *e''*, hence *e'* cannot contain any parts that are not members of the causal chain leading to Ivan's waking up. The partially

causal scenario available for (33a) where most parts of the activity are causally irrelevant is not thus captured by (33b).

3.4.2. Looking for solutions

To get round the above problems one can offer a few improvements for the causal analysis of accomplishments but all of them seem to be stipulative to some extent. To solve the problem of temporal relatedness that rises for PS-accomplishments like 'plow', we can merely add the clause $\tau(e') = \tau(e'')$ to (32b) guaranteeing that running times of causally related subevents coincide:

(34) $\| \text{John plow field} \| = \lambda e \exists e' \exists e'' [e = e' \oplus e'' \wedge \text{plow}_{ACT}(e') \wedge \text{agent(John)}(e') \wedge$
$\text{plow}_{CS}(e'') \wedge \text{theme(field)}(e'') \wedge \text{cause}(e'')(e') \wedge \tau(e') = \tau(e'')]$,
where τ is a temporal trace function.

To deal with the problem of causal irrelevance one can argue that (33b) should be replaced by (35) in which the activity subevent, e', splits into two parts:

(35) $\| \text{John wake up Sue} \| = \lambda e \exists e' \exists e'' [e = e' \oplus e'' \wedge \text{wake}_{ACT}(e') \wedge \text{agent(John)}(e') \wedge$
$\text{wake}_{CS}(e'') \wedge \text{theme(Sue)}(e'') \wedge \exists e'''[e''' \leq e' \wedge \text{fin}(e')(e''') \wedge \text{cause}(e'')(e''')]]^{11}$

One of these parts, e''', is a causing of the change of state e'', while another part, the reminder of e', is irrelevant for causation. Furthermore, it seems reasonable to require e''' be a final part of the activity e'.

At first sight, (35) contains everything we need to capture the meaning of accomplishments like 'wake up'. There are still problems with (35), however.

Firstly, the problem of temporal relatedness of causing and caused subevents we came across earlier is still here. (35) does not tell us how e''', a causing part of the activity, is temporally related to e'', the change of state. In case of 'wake up' in (33a), e''' and e'' must not temporally coincide but the causative relation does not guarantee temporal sequencing of the causing and caused subevents (in the same way as in (32b) it does not guarantee their temporal coincidence.). Again, the only way of obtaining the desired meaning is a stipulation. Thus, in (36), we require e''' and e'' be temporally adjacent:

(36) $\| \text{John wake up Sue} \| = \lambda e \exists e' \exists e'' [e = e' \oplus e'' \wedge \text{wake}_{ACT}(e') \wedge \text{agent(John)}(e') \wedge$
$\text{wake}_{CS}(e'') \wedge \text{theme(Sue)}(e'') \wedge \exists e'''[e''' \leq e' \wedge \text{fin}(e')(e''') \wedge \text{cause}(e'')(e''') \wedge$
$\tau(e'') \propto \tau(e'')]]$, where '$\propto$' is a temporal adjacency relation (see Krifka 1998: 206).

Secondly, and more importantly, having compared (36) with (34), we immediately discover that (34) and (36) taken together miss a significant generalization. There exists an implicational relation between temporal relatedness and causal irrelevance. PS-verbs like 'plow' *must* have temporally coinciding activity and change of state and *cannot* have parts of activity irrelevant for causation. FA-verbs like 'wake up', in contrast, *disallow* temporal coincidence but *do allow* that some parts of the activity do not cause any change of state. Therefore, if the activity temporally coincides with the change of state, it does not contain causally irrelevant parts.

But this fact, given (34) and (36), comes out as a pure coincidence, because the temporal relation between causing and caused subevents ($\tau(e') = \tau(e'')$ in (34) and $\tau(e''') \propto \tau(e'')$ in (36)) is independent from whether the activity is a part of the causing subevent, as in (36), or is a causing subevent by itself, as in (34).

We conclude, therefore, that the decompositional analysis in terms of causing-of relation does not do the job for capturing genuine characteristics of verbs like 'plow' and 'wake up'. We need an alternative, and below we will try to develop such an alternative.

4. The proposal

4.1. Rothstein's theory of accomplishment event structure

In what follows we build on and extend Susan Rothstein's (2004) theory of accomplishment event structure briefly summarized in (37):

(37) 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 $\text{PART}(e_1)$ such that $\forall e \in C(e_2) \, \tau(e)= \tau(\mu(e))$
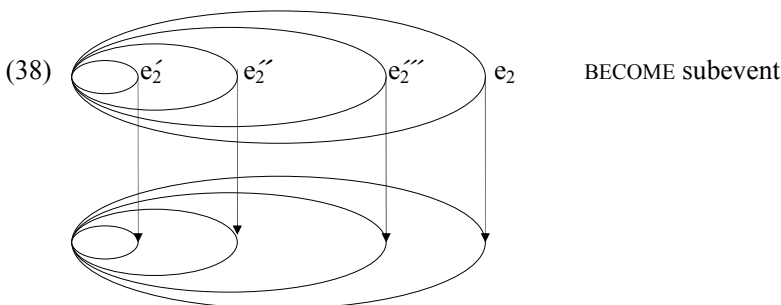c. *Incremental chain*
$C(e)$ is a set of parts of e such that
(i) the smallest event in $C(e)$ is the initial bound of e,
(ii) for every e_1, e_2 in $C(e)$ $e_1 \leq e_2$ or $e_2 \leq e_1$, and
(iii) e is in $C(e)$

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 (37a)) and become (=change of state, e_2 in (37a)). As (37a) shows, 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 (37b) 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 (37c), is a set 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 the previous section. Related subevents must temporarily coincide. Event structure of accomplishments is schematically represented in (38):

(38)
BECOME subevent

$$e_1' \qquad e_1'' \qquad e_1''' \qquad e_1 \qquad \text{ACTIVITY subevent}$$

In (38), e_2 is a become subevent, and e_2', e_2'', … are its parts arranged in an incremental chain. e_1 and e_1', e_1'',... are an activity subevent and its parts. Arrows represent a mapping established by the μ function from the incremental chain on e_2 into the set of parts of e_1.

4.2. Accomplishments vs. achievements

For Rothstein, the INCR relation is a defining property of accomplishments. In this way, her analysis captures characteristics of PS-verbs like 'read', 'sew', or 'plow'. However, she does not discuss in any detail predicates like 'tear a thread', 'wake up a person', etc. If such predicates are analyzed as denoting events that consist of two subevents, the relation between subevents cannot be incremental, since, as we saw earlier, in such cases we are dealing with the activity that up to its final point does not contribute to the development of the become subevent at all. Under the failed attempt interpretation, whatever activity is performed, the patient retains its initial state, cf. (4b) above and (39):

> (39) Bagwalal (North Caucasian, Nakh-Daghestanian)
> *waša-šɹu-r   č'era   saʕati-r   hungar rūhã.*
> boy-OBL.M-ERG   two   hour-ERG   window open.PST
> {Context: the lock upon the window is broken; the boy tries to open it.}.'The boy tried to open the window for two hours (and gave up).'

Within Rothstein's system, one solution would be to treat such verbs as achievements, that is, as predicates denoting simplex eventualities only containing a become subevent. But apart from the observation in Section 3.2 that a single-event analysis does not look plausible for this type of verbs, it should be noticed that FA-verbs in languages like Bagwalal, Mari, Balkar and Russian pattern with genuine Rothstein's accomplishments rather than with achievements. The crucial piece of evidence is that while both FA-verbs and PS-verbs do allow for non-culminating readings (see (1)-(9)), true achievements, e.g., 'arrive' in (40), do not.

> (40) * *Pojezd   po-priby-va-l   na stancij-u   pjat'*
> train   DELIM-arrive-IPFV-PST.M   at station-ACC   five
> *minut*.
> minute.GEN.PL
> lit. 'The train arrived at the station for five minutes.'

We have every reason to suggest, therefore, that FA-verbs like 'wake up' and 'tear' are true accomplishments and not achievements. This calls for extension of Rothstein's account.

4.3. Mapping to a minimal final part

We argue that INCR is only one of the possible relations between activity and change of state (=become) subevents within the accomplishment event structure. FA-predicates like 'wake up a person' and 'tear a thread' are associated with the same event structure as 'read a book' and 'plow a field' except for one thing: the relation between subevents is not INCR, but a *Mapping to a minimal final part* (MMFP) defined in (41).

> (41) $\text{MMFP}(e_2)(e_1)$

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 $PART(e_1)$ 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 (Krifka 1998: 207)

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 $e \wedge e'' < e']$

The event structure of the FA-accomplishments is represented in (42):

(42)

e_2 BECOME subevent

e_1 ACTIVITY subevent
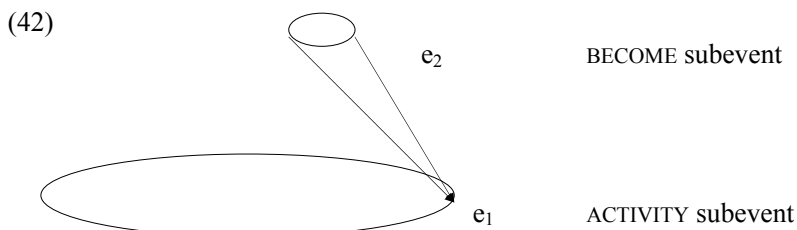
Due to MMFP, nothing in the become subevent is mapped onto non-final parts of the activity subevent, and this is exactly what we need to capture the intuition that non-final parts of the activity do not contribute to the change of state.

4.4. Deriving non-culminating readings

4.4.1. Failed attempts and partially successful actions

Having distinguished INCR and MMPF, we can offer the following semantic representation for PS-accomplishments like 'plow' and FA-accomplishments like 'wake up':

(43) $\| \text{ plow } \| = \lambda y \lambda x \lambda e \exists e_1 \exists e_2 \ [e = {}^S(e_1 \cup e_2) \wedge \text{Activity}_{<\text{plow}>}(e_1) \wedge \text{agent}(e_1)=x \wedge \text{theme}(e_1)=y \wedge \text{Become}_{<\text{plowed}>}(e_2) \wedge \text{arg}(e_2)=\text{theme}(e_1) \wedge \text{INCR}(e_2)(e_1)(C(e_2))]$

(44) $\| \text{ wake up } \| = \lambda y \lambda x \lambda e \exists e_1 \exists e_2 \ [e = {}^S(e_1 \cup e_2) \wedge \text{Activity}_{<\text{wake.up}>}(e_1) \wedge \text{agent}(e_1)=x \wedge \text{theme}(e_1)=y \wedge \text{Become}_{<\text{awake}>}(e_2) \wedge \text{arg}(e_2)=\text{theme}(e_1) \wedge \text{MMFP}(e_2)(e_1)]$

Essentially, the difference between two types of accomplishments is reduced to the relation between activity and become subevents, exactly as the intuitive characterization in Section 3.1 suggests. PS-accomplishments involve Rothstein's incremental relation, whereas FA-accomplishments are constructed by mapping the whole change of state to a minimal final part of the activity.[12]

Consider an example derivation of the failed attempt predicate in (4b) from Russian repeated as (45). For (45) we assume the syntactic representation in (46), where CmP stands for Continuation Modality phrase, as before:

(45) *Vasja*   **po-otkr-yva-l**   *dver'.*
      V.   DELIM-open-IPFV-PST.M   door.ACC
      'Vasja tried to open the door.'

(46) $[_{TP}$ -l $[_{AspP}$ po- $[_{CmP}$ -va- $[_{vP}$ Vasja otkry- dver' 'V. open the door']]]]

Assuming that the verb stem *otkry-* 'open' is analyzed as in (47), in the same way as 'wake up' in (44), after saturating argument positions we get the event predicate in (48) as a denotation of vP:

(47) $\| [_V \text{ otkry-}] \| = \lambda y \lambda x \lambda e \exists e_1 \exists e_2 [e = {}^S(e_1 \cup e_2) \wedge \text{Activity}(e_1) \wedge \text{agent}(e_1)=x \wedge$
$\text{theme}(e_1)=y \wedge \text{Become}_{<\text{open}>}(e_2) \wedge \text{arg}(e_2)=\text{theme}(e_1) \wedge \text{MMFP}(e_2)(e_1)]$

(48) $\| [_{vP} \text{ V. otkry- dver'}] \| = \lambda e \exists e_1 \exists e_2 [e = {}^S(e_1 \cup e_2) \wedge \text{Activity}(e_1) \wedge \text{agent}(e_1)=\text{Vasja}$
$\wedge \text{theme}(e_1)=\text{door} \wedge \text{Become}_{<\text{open}>}(e_2) \wedge \text{arg}(e_2)=\text{theme}(e_1) \wedge \text{MMFP}(e_2)(e_1)]$

Recall from Section 1 that delimitative verbs in Russian contain an overt exponent of the continuation modality head. Here the partitive analysis of non-culmination discussed in Section 2.2 comes into play. We suggest, in the spirit of the proposals discussed above, that the continuation modality operator CM applies to the denotation of vP in (48). We assume without further discussion that this operator is identical to Landman's (1992) progressive (PROG) operator mapping events onto their stages, except for one thing. Since a stage of the event *e* can be *e* itself, PROG allows the event to culminate in the base world.[13] CM, in contrast, maps events onto their *proper non-final stages*. Application of CM operator to (48) yields (49).

(49) $\| [_{CmP} \text{ -va- } [_{vP} \text{ V. otkry- dver'}]] \| = \lambda e'.\text{CM}(\lambda e \exists e_1 \exists e_2 [e = {}^S(e_1 \cup e_2) \wedge \text{Activity}(e_1) \wedge$
$\text{agent}(e_1)=\text{Vasja} \wedge (e_1)=\text{door} \wedge \text{Become}_{<\text{open}>}(e_2) \wedge \text{arg}(e_2)=\text{theme}(e_1) \wedge$
$\text{MMFP}(e_2)(e_1)])(e')$

(49) denotes events that are proper non-final stages of complete opening events consisting of activity and change of state parts in which Vasja is the agent and the door is the theme. By definition, proper non-final stages do not contain final parts of events from the original extension of the event predicate denoted by vP. But due to MMFP, it is exactly the final part of opening event at which the change of state occurs. Consequently, the predicate in (49) denotes events in which the agent's activity does not yield any change of state. In this way, the 'failed attempt' reading obtains.

In contrast, if an INCR-accomplishment, e.g., 'plow' in (43) or 'fill in' in (8b) repeated as (50), undergoes the same derivation, this results in a predicate in (51):

(50) *Vasja* **po-zapoln-ja-l** *anket-u pjat' minut.*
V.   DELIM-fill.in-IPFV-PST.M form-ACC five minute.GEN.PL
'Vasja spent five minutes filling in the form.'

(51) $\| [_{CmP} \text{ -ja- } [_{vP} \text{ V. zapoln- anketu}]] \| =$
$\lambda e'.\text{CM}(\lambda e \exists e_1 \exists e_2 [e = {}^S(e_1 \cup e_2) \wedge \text{Activity}(e_1) \wedge \text{agent}(e_1)=\text{Vasja} \wedge$
$\text{theme}(e_1)=\text{form} \wedge \text{Become}_{<\text{filled}>}(e_2) \wedge \text{arg}(e_2)=\text{theme}(e_1) \wedge$
$\text{INCR}(\text{C}(e_2))(e_2)(e_1)])(e')$

The crucial difference between (49) and (51) is that the latter contains the become subevent incrementally related to activity subevent. Accordingly, while (51) denotes not fully developed filling-in-the-form events, but their proper non-final stages, any such a stage due to incrementality will necessarily involve some change of state of the theme. This accounts for the partial success interpretation of *zapolnjat'* 'fill in' and other PS-verbs discussed in Section 1.

Finally, since non-culminating accomplishments we are dealing with are perfective, as we saw in Section 2.4, we suggest that a perfective operator applies to event predicates in (49) and (51) mapping them into predicates over times. We assume, following Klein (1994) and

much other work in the field, that perfective predicates denote times that include the running time of the event:

(52) $\| PFV \| = \lambda P\lambda t\exists e[t \supset \tau(e) \wedge P(e)]$

In Russian, we take the delimitative prefix *po-* to be a morphological exponent of the perfective operator in (52) (see Filip 2000, 2005, and elsewhere for a different analysis of the delimitative prefix). Applying (52) to (49) yields a property of times in (53). (Application of PFV to the event predicate in (51) proceeds in exactly the same way; for the sake of space, we leave out a corresponding example.)

(53) $\| [_{AspP} \text{ po- } [_{CmP} \text{ -va- } [_{vP} \text{ V. otkry- dver'}]]] \| =$
      $\lambda t\exists e' \ [t \supset \tau(e') \wedge CM(\lambda e\exists e_1\exists e_2 \ [e =^S(e_1\cup e_2) \wedge \text{Activity}(e_1) \wedge \text{agent}(e_1)=\text{Vasja} \wedge$
      $\text{theme}(e_1)=\text{the door} \wedge \text{Become}_{<open>}(e_2) \wedge \text{arg}(e_2)=\text{theme}(e_1) \wedge$
      $\text{MMFP}(e_2)(e_1)])(e')]$

For (1)-(3) from Karachay-Balkar, Mari, and Bagwalal, which are strictly parallel to (45) from Russian, but lack overt imperfective/continuation modality morphology, we suggest that non-culminating readings are derived in exactly the same way, assuming that the CM operator is covert and that the perfective operator is bundled with tense morphology.

4.4.2. A rejected alternative: accomplishment-to-activity shift
Discussing non-culminating (atelic) interpretations that some INCR accomplishments (e.g., *read a novel*) allow in English, Rothstein (2004 and elsewhere) hypothesizes that such interpretations are the product of accomplishment-to-activity shift. Therefore, while the telic sentence in (54a) involves an accomplishment predicate in (55a), its non-culminating counterpart in (54b) is derived by a SHIFT operation in (55b).

(54) a. John read a novel in two days.
      b. John read a novel for two days.

(55) a. $\| \text{John read a novel} \| = \lambda e\exists e_1\exists e_2 \ [e =^S(e_1\cup e_2) \wedge \text{Activity}_{<plow>}(e_1) \wedge$
          $\text{agent}(e_1)=\text{John} \wedge \text{theme}(e_1)=\text{novel} \wedge \text{Become}_{<read>}(e_2) \wedge \text{arg}(e_2)=\text{theme}(e_1) \wedge$
          $\text{INCR}(e_2)(e_1)(C(e_2))]$
      b. $\text{SHIFT}_{\text{ACCOMPLSHMENT}\rightarrow\text{ACTIVITY}}(\| \text{John read a novel} \|) = \lambda e[\text{Activity}_{<read>}(e) \wedge$
          $\text{agent}(e)=\text{John} \wedge \text{theme}(e)=\text{novel}]$

Essentially, accomplishment to activity shift is an operation that eliminates information about the become subevent as well as about its relation to the activity subevent. The output is a simplex activity predicate like that in (55b) that denotes activities, not accomplishments.

Suppose that such a shift functions as a universal mechanism of creating non-culminating interpretations. This would suggest that the derivation of non-culminating accomplishments does not involve the CM operator (nor any other operator of a similar sort required by the partitive theory of non-culmination) and that no continuation modality head is located in between *v* and Asp, as in (56):

(56) $[_{AspP} \text{ PFV } [_{vP} \text{ ... SHIFT}_{\text{ACCOMPLSHMENT}\rightarrow\text{ACTIVITY}} \text{ (...) ... }]]$

Unlike in English, where $\text{SHIFT}_{\text{ACCOMPLSHMENT}\rightarrow\text{ACTIVITY}}$ only applies to a subset of INCR accomplishments (e.g., to *read a novel*), in languages under discussion this operation should

be available to all non-culminating predicates, including INCR and MMFP accomplishments (see Section 5 for the discussion of cross-linguistic variation in the domain). If so, non-culminating perfective MMFP accomplishments like (45) would have the semantic representation in (57):

(57) $\| [_{\text{AspP}} \text{ Vasja po-okryva- dver'}] \| =$
PFV(SHIFT$_{\text{ACCOMPLSHMENT}\rightarrow\text{ACTIVITY}}$ ($\|$V. open door$\|$)) =
$\lambda t \exists e \ [t \supset \tau(e) \wedge \text{Activity}_{<\text{open}>}(e) \wedge \text{agent}(e)=\text{Vasja} \wedge \text{theme}(e)=\text{the door}]$

(57) differs from (53) in a number of respects. The most significant one is of course that (53) does contain information about the culmination. (53) entails that the opening event *does not reach* culmination in the base world (it only happens in a world on the continuation branch of the event with respect to the base world, see Landman 1992 for details). (57) makes explicit that the event *does not have* culmination *in any world*, since opening-the-door is a plain activity (like, e.g., 'push the cart'). Even putting aside the question if such an analysis is intuitively plausible, we could mention two complications it produces.

First, SHIFT$_{\text{ACCOMPLSHMENT}\rightarrow\text{ACTIVITY}}$ is an operation that violates Monotonicity. Essentially, Monotonicity is a universal constraint on morphosyntactic operations saying that such operations cannot destroy semantic structure. Koontz-Garboden (2007) has recently shown that even the most challenging data (e.g., anticausativization) observed across languages are fully compatible with Monotonicity. SHIFT$_{\text{ACCOMPLSHMENT}\rightarrow\text{ACTIVITY}}$, however, is precisely an operation that removes pieces of structure originally present in the semantic representation, hence, other things being equal, is not a desirable option.

Secondly, and most significantly, if one adopts SHIFT$_{\text{ACCOMPLSHMENT}\rightarrow\text{ACTIVITY}}$, the question we started with in Section 3.2, rises again immediately: why sentences like (45) in Russian refer to failed attempts, whereas sentences like (50) to partially successful actions?
The analysis developed in Sections 4.1-4.4.1 attributes the difference between FA- and PS-accomplishments like 'open the door' and 'fill in the form' to different relations between activity and become subevents, MMFP and INCR. But SHIFT$_{\text{ACCOMPLSHMENT}\rightarrow\text{ACTIVITY}}$ removes exactly this information, yielding the same representations in both cases:

(58) a. $\lambda e \ [\text{Activity}_{<\text{open}>}(e) \wedge \text{agent}(e)=\text{Vasja} \wedge \text{theme}(e)=\text{the door}]$
      b. $\lambda e \ [\text{Activity}_{<\text{fill.in}>}(e) \wedge \text{agent}(e)=\text{Vasja} \wedge \text{theme}(e)=\text{the form}]$

In (58), MMFP predicates like 'open the door' and INCR predicates like 'fill in the form' are strictly parallel, and it is not clear why nothing happens to the door in (45) but something happens to the form in (50). This is our main reason to believe that (49) and (51) derived by the CM operator that preserves information about MMFP and INCR relations is superior to (58a-b).

4.5. Advantages and further questions

A few additional comments are due at this point. A significant advantage of the analysis outlined so far is that it faces none of the problems of the causative decomposition theory discussed in Section 3.4. The problem of temporal relatedness disappears because, unlike the causal relation, both INCR and MMFP specify the temporal structure of accomplishments directly.

The problem of causal irrelevance that shows up with partially causal scenarios available for FA- verbs like 'wake up', is effectively solved, too. The semantic representation of FA-accomplishments ('wake up' in (44), in particular) does not involve a causal relation between

subevents at all, hence does not specify what parts of activity contribute causally to the change of state. The change of state must happen at the minimal final part of the activity — that is all that is required by (44). In this way, (44) is fully compatible with both totally causative and partially causative scenarios discussed in 3.4, and this is a desired result. Finally, the fact that PS-accomplishments cannot involve parts of activities irrelevant for bringing about the change of state falls out as well: due to the INCR relation, the activity subevent cannot contain parts left unassociated with the become subevent.

However, there are two more questions to address: whether the become subevent in the denotation of FA-accomplishments like 'wake up' is structured by the incremental chain, and what kind of contextual information is involved in their interpretation.

4.5.1. The problem of the incremental chain

One can observe that the MMFP relation in (41), unlike the INCR relation in (37b-c) does not involve the incremental chain generated by the become subevent. This move reflects a significant intuition: unlike for PS-accomplishments, for FA-accomplishments the become subevent is construed as lacking internal complexity.

An alternative way of defining MMFP would be as in (59):

(59) $\text{MMFP}(e_2)(e_1)(C(e_2))$
e_1 stand in the Mapping to the minimal final part relation to e_2 with respect to the incremental chain $C(e_2))$ iff there is a contextually available function μ from $C(e_2)$ into $\text{PART}(e_1)$ such that every (sub)event in $C(e_2)$ is mapped onto the minimal final part of e_1.

There are three pieces of evidence supporting our hypothesis that (41) is superior to (59).

First of all, the developmental structure of the become subevent of FA-accomplishments is not accessible for semantic operations. Take 'wake up' as an example again. We have seen that in languages under consideration this verb can produce two types of interpretation — culminating (telic) and non-culminating (failed attempt). What is crucial is that in both cases we cannot make reference to the development of the become subevent, that is, to a situation when the patient has already left the state of being asleep but has not yet entered the state of being awake:

(60) = (2b) Mari (Uralic, Finno-Ugric)
     a. *maša jivan-em   lu   minut-əšte   kəčkər-ən.*
       M.   I.-ACC   ten   minute-INESS wake.up-PST
       'Masha woke up Ivan in ten minutes.'
     b. *maša jivan-em   lu   minut   kəčkər-ən.*
       M.   I.-ACC   ten   minute wake.up-PST
       'Masha tried to wake up Ivan for ten minutes.'

On the culminating reading in (60b), the change of state is already attained. On the failed attempt reading in (60b), the patient is still in the initial state. In both cases, the internal structure of the become subevent is not taken into consideration. This does not suggest of course that in the real world the transfer from sleeping to being awake does not involve identifiable phases. But this indicates clearly that information about these phases is not a part of the meaning of the verb like *kəčkər* in (60). If the incremental chain is taken to represent exactly this information, we should not have it in the definition of the MMFP relation.

Another piece of evidence has to do with the meaning shift that occurs in hitting-one-key contexts discussed by Verkuyl (1993: 48-49). Taking *John drew a circle* as an example,

Verkuyl comments: "On a sophisticated computer, there are keys to touch in order to reach a result... By hitting the last key in a series of drawing tasks on the keyboard, the circle can be produced at once, which would make it analogous to reaching the top or winning the race".

In normal contexts, 'draw' is a typical incremental theme verb, similar to 'plow', 'read' or 'play (a sonata)' and should be analyzed as denoting the INCR relation in Rothstein's system: indeed, under normal circumstances the circle comes into existence gradually. As such, INCR would involve reference to the incremental chain on the become subevent. What seems to happen in hitting-one-key contexts is replacing the INCR relation by the MMFP relation whereby the whole change-of-state subevent occurs when the last key is hit. But as soon as this shift happens, the circle need not come to existence gradually and can appear all at once.

It seems, therefore, that whether the become subevent is structured by the incremental chain depends on whether it enters the INCR relation. To enter the INCR relation, the become subevent must necessarily have internal structure. For the MMFP relation, its internal structure is irrelevant.

The strongest piece of evidence supporting our suggestion that the become subevent is not structured by the incremental chain if it is mapped to a minimal final part of the activity comes from causativization facts. Consider (61a-b) from Karachay-Balkar.

(61) a. *siriq eki saʁat-xa quru-du.*
      dress two hour-DAT dry-PST.3SG
      'The dress dried in two hours.'
    b. *illew eki kün-ge sin-di.*
      toy   two days-DAT break-PST.3SG
      'The toy broke in two days.'

(61a-b) show non-derived intransitives *sin* 'break' and *quru* 'dry'. The latter is a punctual change of state verb while the former is a degree achievement. This is evidenced by the fact that (61a) entails that the dress was drying during two hours, but the (61b) does not entail that the toy was breaking during two days. In (61b) the breaking event occurs at the upper bound of the period referred to by the time-span adverbial. In the present system, this difference can be captured by assuming that parts of an event from the denotation of *quru* in (61a) form an incremental chain. In contrast, punctual or near-punctual achievements like *sin* 'break' lack this property and come therefore without internal developmental structure.

Causativization creates different types of accomplishment out of achievements in (62):

(62) a. *fatima siriq-ni eki saʁat quru-t-tu.*
      F.   dress-ACC two hour   dry-CAUS-PST.3SG
      'Fatima was involved in drying a dress for two hours' {e.g., by holding the heater near the dress, but the dress still remains a bit wet}.
    b. *murat illew-nü eki saʁat sin-dir-di.*
      M.   toy-ACC   two hour   break-CAUS-PST.3SG
      1.   'Murat tried to break a toy for two hours' {but the toy was so firm that he finally gave up}.
      2. * 'Murat was involved in breaking a toy for two hours' {so that when he stopped the toy was damaged but still not completely broken}.

The derived accomplishment *qurut* in (62a) based on the incremental achievement *quru* 'dry' does have the partial success reading, indicating that drying become-events can enter the INCR relation with the activity denoted by the causative morpheme (see Pylkkänen 2002 for the analysis of the causative as denoting the causing activity event)). In contrast, (62b)

demonstrates that the punctual achievement *sin* 'break' produces a MMFP-accomplishments *syndyr* 'break' compatible with the failed attempt interpretation in (62b.1) but not with the partial success interpretation in (62b.2).

Assume that the event structure of causative verbs derived from achievements and that of non-derived accomplishments is the same (this assumption has extensively been discussed and motivated in the literature on causativization). If this assumption is correct, the fact that the MMFP relation is obligatory for FA-accomplishments like 'wake up' and 'tear' signals that the become subevent in their denotation is not structured by the incremental chain — exactly as in the case of the derived accomplishments *sindir* 'break'.

Given this evidence, we reject the definition of the MMFP relation in (59) in favor of (41).

4.5.2. *MMFP and contextual information*

Another significant question about the MMFP relation is whether the function µ that connects activity and become subevents should be made relative to the context, analogously to a corresponding function that builds denotations of INCR accomplishments (see (37b)), or its properties are fully determined by the lexical meaning of the verb itself. Rothstein's (2004: 111-112) motivation for contextualizing this function in case of the INCR relation consists of two parts, and neither is relevant for the MMFP relation.

First, for the INCR relation, the context determines which parts of the become subevent are in its incremental chain. For one and the same event predicate, e.g., *read the book*, as Rothstein points out, the incremental chain can contain parts of different size depending on who the agent is and what book is being read. Secondly, for derived accomplishments with resultative small clauses, e.g., *Mary sang the baby asleep* the context establishes an appropriate connection between (descriptive properties of) an activity and a change of state. Singing activity can naturally be connected to the baby falling asleep, but, Rothstein argues, it takes much pragmatic effort from the speech act participants to establish a corresponding connection to, say, an eating activity. That is the reason why *Mary ate her baby asleep* requires a heavily loaded context to become acceptable.

For MMFP accomplishments, neither of these two types of contextual information is relevant. On the one hand, the MMFP relation, as has been just discussed, does not involve reference to the internal developmental structure of the become subevent. In this respect, nothing is left for the context to determine. On the other hand, MMFP accomplishments do not normally accept resultative secondary predications (see, e.g., Rappaport Hovav and Levin 1998 and elsewhere). Whatever reasons for this constraint are, it weakens significantly the second motivation for making the function µ dependent on the context.

However, contextual information is still involved in the interpretation of MMFP accomplishments, although in a different way. The context plays a significant role in determining descriptive properties of the activity subevent. As Rappaport Hovav and Levin (1998 and elsewhere) observe, verbs like 'break' (as well as 'tear', 'wake up' and other result verbs in their original terminology) specify characteristics of the result state in their lexical representation. Properties of the activity are left underspecified. Indeed, take our waking up example again. We saw that the agent's actions can vary to a great extent: calling the patient loudly, shaking her shoulder, pouring water on her face, clapping hands at her ear, playing trombone, as well as various sequences of these actions can all count as waking up activity. Evidently, the lexical meaning of the verb 'wake up' does not provide us with an exhaustive list of all possible activities and their combinations. Rather, it is through the context that we determine what are characteristics of the activity in any particular waking-up event. And here the contextualized character of the function µ in the definition of the MMFP relation is revealed: this function is responsible for picking up a contextually relevant activity for a particular become subevent.

4.6. Non-restricted accomplishments

To complete our analysis, we have to characterize non-restricted accomplishments like *oj* 'destroy, take down, crumble' in (9), repeated as (63):

> (63) *išci   eki   kün/saʁat   üj-nü   oj-du.*
>   worker two   day/hour   house-ACC   destroy-PST.3SG
>   1. 'The worker tried to take down the house for two days'. {But soon it became clear that it is not possible for a single person; so he gave up, not being able to remove a single brick}.
>   2. 'The worker was involved in taking down the house for two hours'. {He had already removed two walls, but was asked to stop}.

As we see, (63) is compatible with both failed attempt and partial success interpretations. Given the above discussion of FA-accomplishments and PS-accomplishments, the solution suggest itself. The peculiarity of verbs like *oj* in (63) is that the relation between subevents is not specified in the lexicon as rigidly as for verbs like 'plow', 'read', 'wake up' or 'tear'. For plowing events any portion of the change of state must be brought about by some simultaneous portion of the activity. For tearing events the whole change of state occurs at the final part of the activity. But for an event to count as a taking down event neither of these options is obligatory.

Technically, we suggest that the lexical entry of verbs like *oj* is underspecified as to the relation between subevents, as represented in (64), where R stands for a free variable over relations between two events and an incremental chain defined on one of them:

> (64) $\| oj \| = \lambda y \lambda x \lambda e \exists e_1 \exists e_2 \, [e =^S (e_1 \cup e_2) \wedge \text{Activity}_{<destroy>}(e_1) \wedge \text{agent}(e_1)=x \wedge$
> $\text{theme}(e_1)=y \wedge \text{Become}_{<destroyed>}(e_2) \wedge \text{arg}(e_2)=\text{theme}(e_1) \wedge R(e_2)(e_1)(C(e_2))]$

A minor complication at this point is that only the INCR relation between two events and an incremental chain has an appropriate logical type to serve as a value for R. MMFP possesses a different type — that of relation between two events. This complication can be easily overcome by assuming an MMFP* relation, a counterpart of MMFP relativized to the incremental chain but only defined for degenerate incremental chains, that is, for singleton sets containing the whole become subevent:

> (65) $\text{MMFP*}(e_2)(e_1)(C(e_2))$ is only defined if $C(e_2)=\{e_2\}$. When defined,
> $\text{MMFP*}(e_2)(e_1)(C(e_2))=1$ iff $\text{MMFP}(e_2)(e_1)=1$.

We suggest that the semantic derivation of clauses like that in (63) involves the same steps as before, that is, saturation of argument positions, and subsequent application of the continuation modality and perfective operators. Assigning either INCR or MMFP* as a value to R will finally produce a proposition compatible with failed attempt or partial success scenarios.

5. Intra- and cross-linguistic variation

One of the major issues not addressed so far is that of variation, both intra-linguistic and cross-linguistic.[14]

5.1. Intra-linguistic variation: delimitative verbs in Russian

Intra-linguistic variation obtains if certain (classes of) accomplishments do not pattern with others as to the range of interpretations they have. Thus, so far we have shown that *if* an accomplishment predicate allows a non-culminating interpretation, *then* this will be a partial success, a failed attempt, or both. It may be the case, however, that in a given language, there are accomplishments that do not allow non-culminating readings at all. One of such languages is Russian. Consider (66):

> (66) ?? *Vasja* **po-rasstrel-iva-l** *plenn-ogo*.
>   V.   DELIM-shoot-IPFV-PST.M captive-ACC
>   'Vasja tried to shoot a/the captive (for some time, and gave up)'. (Kisseleva and Tatevosov 2004)

Intuitively, the predicate 'shoot a captive' resemble MMFP accomplishments discussed so far in that the change of state occurs at the minimal final part of the activity. However, rather than yielding the FA-interpretation, this predicate produces no non-culminating reading at all: the delimitative clause in (66) is definitely odd. Mehlig (2003) cites a few other examples like (66), e.g., [??]*po-vyda-va-t' knigu* 'give out a book' and [??]*po-prinima-t' tabletku* 'take a pill'.

This is where a complication lies: our analisis, as it stands, does not predict awkwardness of (66). The CM operator (whose morphological exponent in Russian is, by hypothesis, the "secondary imperfective" morpheme *–(y)va-*) is expected to be able to apply to 'shoot a captive' yielding a predicate that denotes non-final stages of shooting-a-captive event. The perfective operator, denoted by the prefix *po-*, then, is expected to take the output and create a property of times that include the running time of some non-final stage of shooting. But in (66) this does not happen.

While not trying to offer an ultimate solution at the moment, we would like to mention a few facts that bear on the issue.

First of all, it can hardly be the case that the CM operator denoted by the *–(y)va-* morpheme fails to apply to the accomplishment predicate 'shoot a captive': the imperfective sentence containing the same material as (66) except for the delimitative prefix is perfectly grammatical. It refers to what it is expected to refer — to an activity (whose precise descriptive content is left underspecified) that precedes a final shot at the captive:

> (67) *Vasja* **rasstrel-iva-l** *plenn-ogo*.
>   V.   shoot-IPFV-PST.M captive-ACC
>   '(When I came,) Vasja was shooting a/the captive (e.g., he was taking aim when I saw him)'.

This suggests that there must be something more about the perfective operator denoted by the prefix *po-* than we have said in Section 4.4.1. Application of this operator should be restricted as to prevent it from combining with predicates like CM(||shoot a captive||). The question is, then, where this restriction comes from. To put it differently: what do accomplishments like 'shoot a captive', 'give out a book', etc., that disallow non-culminating readings in Russian have in common?

Mehlig (2003 and elswhere) suggests that a relevant property that constrains application of *po-* is homogeneity. Delimitatives, he points out, 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». Assuming that this intuition is correct, the problem is how to make it clear in what sense activities in the denotation of FA-accomplishment like 'break a vase' in (68) are

homogeneous, whereas those in the denotation of predicates like 'shoot a captive' in (66) are not:

(68) *Vasja* **po-razbi-va-l** *vaz-u.*
V. DELIM-break-IPFV-PST.M vase-ACC
'Vasja tried to break a vase (for some time, and gave up).'

On the appropriate context, the FA interpretation of (68) is perfectly felicitous: imagine a person who tries to break a vase from an unbreakable glass throwing it on the floor once, twice, three times, then hitting it with a hammer a number of times, then with a sledge hammer. After the sledge hammer fails to break a vase, the Agent gives up. Given this scenario, (68) is appropriate. (66), however, is bad on any scenario and cannot be repaired.

We do not see a straightforward way of telling 'break a vase' and 'shoot a captive' apart through characteristics like "an activity can be interrupted and resumed arbitrarily many times" or "phases of an activity are conceptualized as identical". If breaking a vase activity can be interrupted and resumed, why cannot shooting a captive? And if parts of shooting a captive are not conceptualized as identical, in what sense parts of breaking a vase (throwing on the ground, hitting with a hammer) are?

We believe that a more promising way of discerning the difference between predicates like 'shoot a captive' ('give out a book', 'take a pile',…) and 'break a vase' ('open the door', 'wake up Ivan',…) would rely on the observation that parts of activities in the denotation of the former are partially ordered in a way those in the denotation of the latter are not. Here is a brief outline of the idea. Assume that the activity component of MMFP accomplishments like 'shoot a captive' and 'break a vase' consists of contextually salient atomic subevents: loading a bullet, taking aim, pulling a trigger, firing a shot in case of 'shoot', and throwing on the ground, hitting with a hammer, hitting with a sledge hammer in case of 'break'. Then one can observe that for shooting-a-captive activity the set of such subevents is partially ordered by temporal precedence (e.g., pulling the trigger follows taking aim, and firing a shot follows pulling the trigger), and also by the causal dependence (e.g., it is not possible to fire a shot without loading a bullet and to hit the target without taking aim). Furthermore, the change of state induced by the activity is causally dependent on most (if not all) of its components: it is not possible to shoot a captive without loading a bullet, without taking aim, etc. The same is true of activities referred to by 'give out a book' and 'take a pile'. They are sequences of actions such that if they are performed in incorrect temporal order or some of them are skipped, the overall sequence does not count as a giving-out-a-book or taking-a-pile activity anymore. Let us call activities like these inherently ordered, or IO-activities.

MMFP accomplishments that do possess the FA interpretation are different. As we saw in Section 3.4.1, where the problem of causal irrelevance has been discussed, predicates like 'wake up Ivan' refer to activities that do contain parts on which the change of state is not causally dependent. If the waking-up activity consists of calling the patient in a whisper, calling him loudly, clapping hands at his ear, shaking his shoulder, and pouring cold water on his face, the waking up only depends causally on the final subevent in this sequence. Nor do these subevents causally depend on each other: it is perfectly possible to shake one's shoulder without calling one in a whisper and vice versa. Their temporal sequencing is irrelevant either, except that the subevent that brings about the change of state must be final: if it is pouring the water that wakes up the patient, it does not matter in which order other subevents occur. Exactly the same is true of 'break a vase': if the change of state happens at the final part of the activity, the non-final minimal subevents in the sequence that makes up this activity have no pre-established temporal or causal ordering. Activity components of 'wake up Ivan' and 'break a vase' are thus not inherently ordered.

Therefore, being partially ordered rather than being homogeneous in a strict mereological sense is what makes the activity component of MMFP accomplishments like 'shoot a captive' different from that of MMFP accomplishments like 'break a vase'.

Given these observations, one can easily see that the application of the CM operator to two different types of MMPF accomplishments will have different consequences. The operator extracts non-final components of the activity as occurring in the base world. For 'break a vase', 'tear a thread', 'weak up Ivan', etc., the resulting event predicate will denote activities consisting of atomic subevents on which the change of state (not occurring in the base world) is not causally dependent, that are not causally dependent on each other and allow any temporal ordering.

For instance, for 'break a vase' the base world would contain non-final stages of the activity consisting of throwing to the ground, hitting with a hammer,…,…. These subevents can be arranged in any temporal order, and whatever subevent occurs, this does not contribute to the progress of the overall breaking-the-vase event, because the change of state does not causally depend on them. CM(‖break a vase‖) is thus not inherently ordered.

Applying the CM operator to 'shoot a captive', 'give out a book', etc., would also extract a proper non-final stage of the activity. However, since the whole activity is inherently ordered, the extracted part, CM(‖shoot a captive‖), CM(‖give out a book‖), etc., will be ordered, too. For CM(‖shoot a captive‖), for example, the base world can happen to contain loading a bullet and taking aim only. Still, these subevents has to occur in this exact order, and the overall shooting event will be causally dependent on both of them.

Note that the lexical meaning of INCR accomplishments, as Rothstein (2004) conclusively shows, does not impose any inherent ordering on the activity subevent. It is only structured indirectly, through the mapping from the structured become subevent to the activity, as shown in (38). Accomplishments that do combine with *po-* — MMFP predicates like 'break a vase' and INCR predicates like 'read a book' or 'fill in the form' in (8b) — thus form a natural class: they denote complex events with the activity component not inherently ordered.

Technical elaboration of these generalizations goes beyond the scope of this paper. However, the descriptive generalization seems to be clear. The property that restricts the distribution of the perfective prefix *po-* is: The activity denoted by the CmP complement of *po-* (e.g., CM(‖shoot a captive‖), CM(‖break a vase‖), CM(‖fill in the form‖)) should not be inherently ordered. In (69) this is informally captured by combining the perfective operator PFV from (52) with the additional presupposition narrowing its domain:

(69) ‖ *po-* ‖ = $\lambda P \lambda t \exists e[t \supset \tau(e) \wedge P(e)]$
P denotes not inherently ordered activities

5.2. Cross-linguistic variation: parameters and constraints

In Section 5.1, we have seen one example of *language-specific* variation. Much more complicated is the problem of defining the parameters of *cross-linguistic* variation in the domain and determining what the constraints on this variation are.

Susan Rothstein (p.c.) has mentioned two most significant manifestation of this problem: Why are non-culminating readings not derived in languages which do not allow them? Why might a language allow one of the non-culminating readings but not another? Rothstein cites the following examples showing that in perfective clauses non-culminating readings in English are not available for all MMFP predicates and for some INCR predicates:

(70) a. Ali plowed the field for two hours (and then went home for lunch).
      b. I read this book for two weeks (before giving up half way through).
      c. I sewed this dress for two days.

d. * I built the house for two weeks.
e. # I opened the door for five minutes (and then gave up)[15]

Rothstein does not mention MMFP predicates with inherently ordered activity components, but to the best of our knowledge, these predicates do not admit the non-culminating interpretation either:
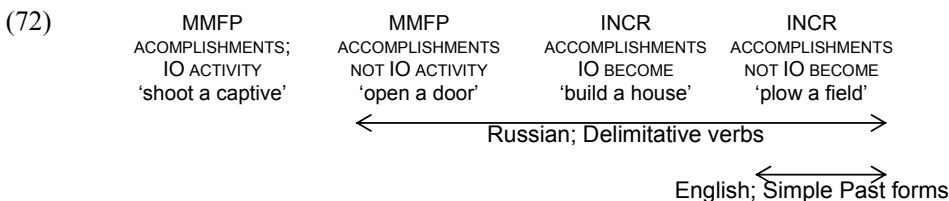
(71) # Ali shot a hostage for half an hour (and then gave up).

Rothstein (2004:114-115) hypothesizes that the borderline between INCR accomplishments that do allow for non-culmination (e.g., in (70a-c)) and those that do not (e.g., in (70d)) is determined by the properties of the activity: the ploughing-the-field activity is homogeneous ("consists of the repetition of a single kind of events"), but building-the-house activity is not.

A little clarification may be in order at this point. As was mentioned above, Rothstein (2004) has established that the activity component of INCR accomplishments is not inherently ordered: it is the mapping from the become subevent that impose partial order on the activity, as shown in (38). If so, it is rather internal structure of the become subevent that tells accomplishments like 'build a house' apart from accomplishments like 'plow a field'. Whereas for the former the incremental chain consists of parts of the become subevent arranged in a partial order by the mere part-of relation, we have more to say about the latter. In case of *build*, members of the incremental chain seem to be ordered not only by the part-of relation, but also by the temporal precedence and causal dependence.

Compare *plow a field* and *build a house*. Let e and e′ both be members of the incremental chain on the plowing become subevent, and e < e′. Then neither e is causally and temporally dependent on remainder of e in e′ nor vice versa: parts of a field can be plowed independently from each other in any temporal order. Things are different for *build a house*: before the roof is built, walls must be built, and walls cannot be built without a foundation. Therefore, given examples like (70), the descriptive generalization about English seems to be as follows: non-culminating readings are available for accomplishments whose become component is partially ordered by the part-of relaion but not by any other relation (specifically, by the temporal precedence and/or causal dependence).

These observations about the structure of the become subevent in English reveal a certain parallelism with what we have seen about the activity component of accomplishments in Russian. Mehlig (2003) and Rothstein (2004, p.c.) both mention homogeneity as a relevant property for identifying a class of predicates that allow for non-culmination. We believe that in both cases, "homogeneity" can be conceived of as the lack of inherent partial orderedness by the temporal precedence and causal dependence. Descriptively, then, Russian and Enlgish differ in that the mechanism generating non-culminating interpretations is sensitive to the inherent orderedness of the *activity subevent* in Russian but to that of the *become subevent* in English. This is shown in (72), where arrows represent the lexical distribution of non-culminating predicates in Russian and English:

(72)

MMFP ACOMPLISHMENTS; IO ACTIVITY 'shoot a captive'	MMFP ACCOMPLISHMENTS NOT IO ACTIVITY 'open a door'	INCR ACCOMPLISHMENTS IO BECOME 'build a house'	INCR ACCOMPLISHMENTS NOT IO BECOME 'plow a field'

←————————————————————————————→
Russian; Delimitative verbs

←——————→
English; Simple Past forms

The range of interpretations of imperfective clauses in Russian and English is different, too. In Russian, imperfective clauses always allow for expected readings – partial success for any INCR accomplishments, as in (73a), and an attempt that has not yield any change for any MMFP accomplishemtns, as in (73b):

(73) a. *Vasja zapoln-ja-l anket-u pjat' minut, no*
       V.   fill.in-IPFV-PST.M form-ACC five   minute.GEN.PL but
      brosi-l eto delo.
      give.up-PST.M   this   stuff
      'Vasja was filling in the form for five minutes, but gave up.'

    b. *Vasja otkr-yva-l dver' pjat' minut, no*
       V.   open-IPFV-PST.M door.ACC five minute.GEN.PL but
      brosi-l eto delo.
      give.up-PST.M   this   stuff
      'Vasja was opening the door for five minutes, but gave up.'

As Rothstein (p.c.) indicates, unlike what happens in Russian in (73b), English progressive clauses do not allow for the FA-reading with MMFP accomplishment predicates:

(74) # I was opening the door for ten minutes (but gave up).

Progressive clauses derived from INCR accomplishments, on the other hand, do have the PS reading whereby the theme undergoes a certain amount of change, no matter whether the become subevent is inherently ordered:

(75) a. John was plowing a field for two hours.
    b. John was building a house for two months.

We agree completely with Rothstein that a full-fledged theory of accomplishment event structure has to provide a principled explanation to the observed variation. A number of different options seem to be open at this juncture. Let us take a closer look at what kind of variation we can expect given the overall architecture of the analysis we have assumed. In Section 2.4, we have suggested a hierarchy of functional heads involving (Viewpoint) Aspect and Continuation Modality dominating *v*P:

(76) [… [$_{AspP}$ IMPERFECTIVE/PERFECTIVE [$_{CmP}$ CONTINUATION MODALITY [$_{vP}$ … *v* … [
    …]]]]]

Given this architecture, languages can vary along at least three dimensions: properties of aspectual operators located at AspP, properties of the continuation modality head, properties of the event descriptions denoted by *v*P. The latter includes lexical variation at the V^0 level as well variation in characteristics of functional structure dominated by *v*, if any. Properties of grammatical morphemes that originate as the same functional heads in different languages can in turn differ in two crucial respects: on the one hand, their semantics can be similar but not completely identical; on the other, they can impose different semantic restrictions on their complements.

    The difference between languages like English and Russian discussed above can possibly be an outcome of the interaction of a number of factors just listed. The analysis developed so far, however, severely restricts the range of possible sources of variation. Firstly, as a

reasonable null hypothesis we have assumed that event descriptions denoted by *v*Ps with similar lexical content are semantically alike in all languages under discussion. For instance, *v*Ps like 'John plow the field' denote event predicates $\lambda e \exists e_1 \exists e_2$ [e = $^S(e_1 \cup e_2) \wedge$ Activity$_{<plow>}$ $(e_1) \wedge$ agent(e_1)=John $\wedge$ theme(e_1)=field $\wedge$ Become$_{<plowed>}(e_2) \wedge$ arg(e_2)=theme$(e_1) \wedge$ INCR$(C(e_2))(e_2)(e_1)$]. Secondly, we have proposed that the same continuation modality operator is always involved in the derivation of any non-culminating interpretations (see the example derivation in Section 4.4.1). Thirdly, we have suggested that non-culminating perfective clauses are always created by merging CmP with the perfective operator in (52). Given these assumptions, our analysis predicts just two possible sources of variation: semantic restrictions that two functional heads – the CM operator and aspectual operators -- impose on their complements.

We believe that data from languages like English and Russian are al least compatible with this prediction.

In languages like Russian, the morphological makeup of non-culminating perfective accomplishments mirrors the hierarchy of functional heads in (76) directly: both have overt phonological exponents (see, e.g., (20) repeated as (77a)). Imperfective clauses, then, can be analyzed as involving zero imperfective morpheme, as in (77b).

(77) a. [… [$_{AspP}$ *po*- [$_{CmP}$ -*va*- [$_{vP}$ … *Vasja otkry- dver'* … 'V. open the door']]]]
b. [… [$_{AspP}$ $\varnothing_{IPFV}$ [$_{CmP}$ -*va*- [$_{vP}$ … *Vasja otkry- dver'* … 'V. open the door']]]]

As we saw in Section 5.1, in Russian availability of non-culminating interpretations in perfective clauses is restricted by the perfective aspectual operator: it does not apply to event descriptions that refer to inherently ordered activities. No restrictions is attested in imperfective clauses, which always allow for expected non-culminating interpretations, as examples in (73) demonstrate. This suggests that the CM operator in Russian does not impose any restrictions on the semantic content of its complement *v*P: otherwise some of construals available at the *v*P level would have never surfaced due to the "secondary imperfective" morpheme (assuming, as before, that this morpheme is an exponent of the CM operator). For the same reason, it cannot be the case that zero imperfective operator filters out some part of the denotation of its CmP complement. Russian is thus a language where non-culminating readings are restricted only by at the AspP level and only by the perfective operator.

Let us now turn to English material. Unlike Russian, English, as well as Balkar, Mari, and Bagwalal, do not possess separate pieces of morphology for Continuation Modality and Aspect, hence syntactically, English can be thought of as a language involving bundling of these two adjacent heads a la Pylkkänen (2002):

(78) [… [$_{Asp/CmP}$ IMPERFECTIVE/PERFECTIVE + CONTINUATION MODALITY [$_{vP}$ … *v* … […]]]]]

As Pylkkänen indicates, despite mophosyntactic bundling, semantically there still are two distinct operators (perfective/imperfective and continuation modality, in the case at hand), each of which can potentially impose semantic restrictions on its complement. Here are a few considerations about what these restrictions could look like in English.

As we have just seen, neither perfective (simple past) non-culminating clauses nor imperfective clauses in English produce the FA reading. Since, by hypothesis, the CM operator is what these clauses have in common, this fact can indicate that the FA reading is blocked as soon as the CM head merges with *v*P. If "no-activity-subevent-that-does-not-bring-about-a-change" is a presupposition associated with the CM operator in English, its application effectively eliminates semantic potential for the FA reading in both non-

culminating perfective and imperfective clauses. Still, CmP has a full potential for the PS readings where the activity does produce change in the theme.

As we saw earlier in (70a-d), simple past non-culminating clauses are further restricted: they license non-culminating PS readings for predicates like 'plow a fileld', but not for 'build a house' where the change of state is inherently ordered. This suggests that the perfective operator is associated with its own presupposition: the become subevent in the denotation of its complement is not inherently ordered. In contrast, no additional restrictions on PS readings are introduced by the imperfective operator, as is clear from examples like (75a-b).

The system just outlined can therefore be viewed as involving two filters, narrowing down the denotation of event predicates created in the course of the derivation – one at the CM level, another at the Asp level. While possessing the same denotations, CM and Asp and operators in English and Russian differ as to the selectional restrictions they are associates with. These restrictions are summarized Table 1:

	CM operator	PFV operator	IPFV operator
Russian	no restrictions	The activity subevent in the denotation of the complement is not inherently ordered	no restrictions
English	The activity subevent in the denotation of the complement brings about a change	The become subevent in the denotation of the complement is not inherently ordered	no restrictions

Table 1. Semantic restrictions associated with functional heads in English and Russian

Two concluding remarks are in order. First, within the proposed system cross-linguistic variation in the domain is attributed to selectional restrictions associates with operators located at functional heads dominating *v*P. Crucially, positing such restrictions does not seem to create a source of ad hoc stipulations: in the typological literature (e.g., in seminal work by Dahl (1985, 2000) and Bybee et al. (1994)) one can find extensive evidence that such restrictions do exist, hence should be admitted by the theory anyway. For instance, in a variety of languages, the resultative only applies to predicates that contain a result state with positively specified descriptive properties in their semantic representations, but not to activity and state predicates. Besides, progressive verb forms are famous for not being able to combine with state descriptions, especially with individual level predicates. Furthermore, these restrictions vary across languages: even within (Indo-)European family lexical distribution of progressive forms is similar but not exactly the same. These observations seem to justify, although only indirectly, our suggestion that constraints on non-culminating interpretations can originate from a similar source.

Secondly, observations we made in this section are based on the material from just two languages, English and Russian, which is critically insufficient for making reliable cross-linguistic generalizations. The problem is that typological data on non-culmination is by far incomplete, since a systematic cross-linguistic study of eventuality type have never been undertaken. Before developing a theory of non-culmination with full empirical coverage, we have to elaborate a representative list of accomplishment predicates and examine each predicate in the list across a representative sample of languages. This will give us empirical generalizations about variation, making clear what exactly are constraints on this variation and whether working hypotheses put forward in present study are tenable. We hope this work will be done soon.

6. Summary

We distinguished between three subclasses of accomplishment verbs that differ as to whether they allow for the *failed attempt reading, partial success readings or both*. Accomplishments that possess these interpretations are regarded as a special case of *non-culminating accomplishments*. In accordance with claims independently made in the literature, we suggested that the essential part of the semantic structure of non-culminating predicates is *the continuation modality operator*. However, the difference between failed attempt, partial success and non-restricted accomplishment predicates cannot be created by this operator and must be found in lexical representations of corresponding verbs. Having reviewed two main approaches to accomplishment event structure — non-decompositional and causative theories of accomplishments — we found that both face complications that cannot be overcome easily. Having opted for Rothstein's (2004) theory of accomplishments, we extended this theory by suggesting that one of the possible relations between ACTIVITY and BECOME subevents is the *mapping to a minimal final part* (MMFP). We argued that for the failed attempt interpretation to obtain, MMFP must be specified in the accomplishment event structure. The partial success interpretation is due to the incremental relation between subevents originally proposed by Rothstein (2004). Finally, we suggested that non-restricted accomplishments compatible with both failed attempt and partial success interpretations are lexically underspecified with respect to the relation between subevents.

Notes

[2] The following abbreviations are used throughout this paper: **1** 1st person, **3** 3rd person, **ACC** accusative, **CAUS** causative, **DAT** dative, **DELIM** delimitative, **DET** determiner, **ERG** ergative, **GEN** genitive, **INESS** inessive, **INF** infinitive, **INTER** interessive, **IPFV** imperfective, **M** masculine, **N** neuter, **NEG** negation, **OBL** oblique, **PFCT** perfect, **PFV** perfective, **PL** plural, **PST** past, **SG** singular, **SUBJ** subject, **TEMP** temporal clause, **TRANS** transitivizer

[3] In what follows, we assume a conceptual distinction between eventuality type (a.k.a. situation type, Aktionsart, lexical aspect, actionality, etc.) and aspect proper (a.k.a. grammatical aspect, viewpoint aspect, etc.). Following a lot of proposals in the literature, we assume that the former has to do with various properties of event predicates (e.g., telicity), whereas the latter determines how the running time of the event is related to the reference time. Our analysis is thus an instance of what Smith (1991/1997) calls a two-component theory if aspect. See Section 4.4 for further details.

[4] Differences between these two systems are by all means less significant than fundamental similarities just mentioned. For instance, while Koenig and Muansuwan pre-associate their Impfv operator with a verbal stem in the lexicon, Bar-el's modal operator is taken to be a denotation of a derivational morpheme. (For Salish languages, this move is independently motivated by the fact that transitive accomplishments in these languages are always derived from unaccusative achievements, see Bar-el et al. 2005 and references therein.) Note as well that Bar-el's system, unlike Koenig's one, involves predicate decomposition into activity performed by the agent and change of state of the theme connected by a causal relation established in inertia worlds. Discussing these differences in more detail will take us too far from the main topic of this study, however.

[5] If one thinks of the semantic interpretation of functional heads in terms of "oppositions", one remarkable difference between Aspect and Continuation Modality should be pointed out. Aspect involves an equipollent opposition between perfective and imperfective meanings. In contrast, the CM head realizes a privative opposition – that between continuation modality and lack of continuation modality.

[6] Relying on contextual relevance allows to "skip" those parts of the activity that "do not count". For instance, in could be the case that as plowing goes on, the plowman stops to fix the plow. Apparently, fixing the plow does count as a part of is the overall eventuality of plowing the field, but for obvious reasons it is irrelevant for the change of state of the field.

[7] Note that Kratzer's (2003) approach that assumes Davidsonian association of the internal argument but neo-Davidsonian association of the external argument (viz., for (21), λe[tear(thread)(e) $\wedge$ agent(fatima)(e)]) runs into the same complication and thus cannot be regarded as a better alternative.

[8] Note that no R can show both MSO and AMSO. However, there can be relations that show neither. Specifically, these are relations in which the whole internal argument is mapped into all subevents of the event. This is what happens with atelic predicates like *push (the cart),* where the whole cart stands in the theme relation to every subevent of a pushing event.

[9] The representation in (31) contains equations of the type e = (e′→e″). Since literally the left-hand and right-hand parts of the equation do not have matching logical types (e is of type s, e′ →e″ is of type t), we interpret this expression as a shorthand for e = e′ $\oplus$ e″ $\wedge$ e′ $\rightarrow$ e″.

[10] A similar problem has been mentioned by Beth Levin (2000). Discussing manner of motion to a goal and sound emission expressions (e.g., *Kim jogged to the store* and *Terry rustled into the room*), she argues that the causative analysis of such expression is unable to explain why jogging/rustling and going to the store/to the room are temporally coextensive: the former continues as long as the latter does.

[11] (35) is based on a non-necessarily proper part relation '≤' between e‴ and e′ rather than on a proper part relation '<' to guarantee that verbs like 'wake up' are compatible both totally and partially causal scenarios. Otherwise, a waking up event would necessarily contain parts of activity irrelevant for causation, which is not the case with totally causal scenarios.

[12] Representations in (43)-(44) imply that the relation between activity and become subevents is specified lexically at the V^0 level rather than derived compositionally at some higher phrasal level(s). Susan Rothstein (p.c.) turned our attention to examples that can be problematic for this view. For instance, while in (1b) 'tear a thread' is unambiguously a MMFP predicate that yields a failed attempt interpretation, there are also examples like (i) where 'tear a shirt' looks like a non-restricted predicate compatible with both FA and PS readings:

(i)   *fatima*   *beš*   *minut*   *širiq-nɨ*   *zirt-tɨ.*
    F.   five   minute   shirt-ACC   tear-PST.3SG
    1. 'Fatima spent five minutes tearing a shirt.' <partial success>
    1. 'Fatima tried to tear a shirt for five minutes (but the shirt was so firm that she soon gave up).' <failed attempt>

Therefore, the membership of an accomplishment predicate in one of the classes identified above – FA, PS, or non-restricted – can at least partially be determined by the properties of the theme. In case of 'tear', due to different spatial constitution of shirts and threads the former do license the INCR relation, the latter do not. However, much further work is necessary to figure out what accomplishment verbs under what circumstances can produce different event structures with different theme arguments and how to provide a compositional account of the contribution of the theme. With this in mind, for the moment we assume representations like (43)-(44) as a certain idealization.

[13] We are indebted to Susan Rothstein for turning our attention to this issue.

[14] We are extraordinarily grateful to Susan Rothstein for encouraging us to discuss these problems here.

[15] (70e) is appropriate on the iterative reading irrelevant for the present discussion.

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