

# There is only one *po-*

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## Abstract

In the present paper I argue that, in Czech, all occurrences of *po-* that contain some notion of small quantity are in fact instantiations of a single prefix, so called delimitative *po-* (analyzed as containing an extensive measure function, following Filip (e.g. 2000)), though it might not seem to be the case at first sight.

In order to do that, I first demonstrate that there is no need to have more *po-*'s (hence, the unifying analysis is superior); and second, I try to show that the *po-* that attaches to quantized and the one attaching to non-quantized predicates can be unified, too (i.e. there is no need of any homogeneity requirement for extensive measure functions).

## 1. Introduction

In Czech, as in other Slavic languages, there are verbal prefixes that express essentially quantificational meanings. These are e.g. cumulative *na-*, distributive *po-*, perdurative *pro-* or delimitative *po-*. Different quantificational prefixes seem to quantify over different things. The quantificational and aspectual properties of the verbal predicates are closely related.

Delimitative *po-* is a prime example of such a quantificational prefix. In what follows, I offer a unified analysis for all its occurrences.<sup>1</sup>

In §2, I introduce the basic data. §3 provides a unified analysis of *po-* based on the idea, taken from Filip (e.g. 2000, 2003), that measure prefixes like *po-* should be analyzed in terms of extensive measure functions. In §4, I argue that extensive measure functions have no homogeneity requirement (as is claimed in Filip 2000; 2003); hence, the cases in which *po-* combines with quantized predicates and the cases in which it combines with non-quantized ones can be easily unified, too. §5 summarizes the analysis.

## 2. Data

Cases of verbs prefixed by delimitative *po-* mentioned in the literature usually represent only a subset of all possible cases. This is caused either by the fact that this subset of *po-*verbs constitutes the most salient class, or by the fact that the other classes are not taken to be instances of the same prefix. However, I argue that this omission is the reason why *po-* is, in my opinion, sometimes misinterpreted as meaning 'for a short while.' Instead, it means rather 'a little' and the different interpretations come from the

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<sup>1</sup>Cf. Romanova (2004) and Jabłońska (2004) (both in the present volume).

differences in what is measured in each case. Once a larger set of *po*-verbs is taken into consideration, it becomes more obvious what *po*- really is and what it does.

The cases of *po*-verbs can be divided into the following three classes: ‘short distance’ (§1.1), ‘short time’ (§1.2), and ‘low degree’ (§1.3) (a fourth class, ‘low intensity’ is discussed briefly in §1.4).

### 2.1. ‘Short time’ *po*-verbs

This is the best known (and sometimes the only mentioned) class of *po*-verbs. These verbs are derived by attaching *po*- to an imperfective (semantically homogeneous) verb. They get the interpretation ‘do something for a short while’ (see the Introduction to this volume for a list of abbreviations):

- (1) a. Jakub o tom *po*-přemýšlel  
*Jakub about it PO-thought<sup>P</sup>*  
 ‘Jakub thought about it for a little while’  
 b. Přišel, *po*-hovořil s námi a za chvíli zase odešel  
*came, PO-chatted<sup>P</sup> with us and after while again left*  
 ‘He came, chatted with us for a while and, after a while, he left again’

That *po*-V really means ‘V for a *short* time’ can be seen from the incompatibility of such verbs with temporal adverbials that suggest longer duration.

- (2) a. Jakub o tom (chvilku/??dlouho) *po*-přemýšlel.  
*Jakub about it while long.time PO-thought<sup>P</sup>*  
 ‘Jakub thought about it [for a little while] (for a short while/??for a long time)’  
 b. ??Celý den s námi pohovořil.  
*whole day with us PO-chatted<sup>P</sup>*  
 ‘He chatted with us [for a while] the whole afternoon’

The facts are often complicated by the (often obligatory) presence of the dative reflexive *si*.<sup>2</sup> The reflexive has the benefactive meaning here, so, the resulting interpretation is approximately ‘do something for a short while, something that gives you pleasure or satisfaction’:

- (3) a. Léňa si při nejdojemnějších scénách *po*-plakala.  
*Léňa RFX at most.touching scenes PO-cried<sup>P</sup>*  
 ‘Léňa cried a bit, while watching the most touching scenes [she enjoyed it]’  
 b. Eka si *po* obědě chvilku *po*-spala.  
*Eka RFX after lunch while PO-slept<sup>P</sup>*  
 ‘Eka had [and enjoyed] a short nap after lunch’

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<sup>2</sup>For which I have no good explanation.

Since many of the *po*-verbs require *si*, *po*- is sometimes misinterpreted as itself containing the benefactive meaning. As we can see from the examples without *si*, this is not the case. The sentences in (1)–(2) are absolutely neutral with respect to the pleasure the described activities might bring to the people undergoing them.

## 2.2. ‘Short distance’ *po*-verbs

### 2.2.1. *po*- quantifies over distance

This class of *po*-verbs consists of verbs of directed motion or transfer. They get a uniform interpretation, namely ‘move (something) a short distance.’

In this class of verbs, *po*- attaches either to a perfective or to an imperfective verb. Let us look at the base verbs first.

In Slavic, there is an interesting opposition within verbs of motion, namely the opposition directed–non-directed (cf. Isačenko 1982). Both kinds of verbs are imperfective, but the directed ones denote motion in one direction whereas the non-directed ones suggest there is motion in all possible directions, for instance back and forth.

Table 1:

| directed (impf) | non-directed (impf) | translation    |
|-----------------|---------------------|----------------|
| jít             | chodit              | ‘go’           |
| jet             | jezdit              | ‘drive’        |
| letět           | létat               | ‘fly’          |
| nést            | nosit               | ‘carry’        |
| vézt            | vozit               | ‘drive sb/sth’ |
| táhnout         | tahat               | ‘drag’         |
| etc.            |                     |                |

As for verbs that have the directed–non-directed opposition, ‘short distance’ *po*-verbs are only derived from the verbs in the first column. As for verbs that lack this opposition, there is still the requirement that there is some notion of direction present in their semantic representation. That is, they could be either verbs prefixed by directional prefixes (*vy-jet* ‘out-drive,’ *vy-lézt* ‘out-crawl,’ *ode-jít* ‘from-go’) or semelfactives (like *skočit* ‘jump (once)’)—which can only denote motion in one direction because they happen in one instant; hence, the possibility of changing the direction is excluded.

Other motion verbs than the directed ones may take delimitative *po*-, too, but they do not get the relevant interpretation (*po-chodit* belongs to the first class and means ‘walk for a short while,’ not ‘walk a short distance’).

So, finally, let us look at some examples of ‘short distance’ *po*-verbs:<sup>3</sup>

<sup>3</sup>The second *po*- in (4a) is rather mysterious. I look at it in the following subsection.

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- (4) a. Řidič trochu *po-po-jel*, aby nám nestál v cestě.  
*driver a.bit PO-PO-drove<sup>P</sup> so.that us not.stood in way*  
 ‘The driver moved on a bit so that he didn’t stand in our way’
- b. Jakub úlekem *po-od-skočil*.  
*Jakub fright.INST PO-from-jumped<sup>P</sup>*  
 ‘Jakub jumped (once) a bit away, as he got frightened’
- c. Lucie *po-vy-táhla* dopis z obálky.  
*Lucie PO-from-pulled<sup>P</sup> letter from envelope*  
 ‘Lucie pulled out the letter from the envelope a bit’

Here, again, observe the incompatibility with adverbials suggesting longer movements:

- (5) a. Lucie *maličko/??hodně/\*úplně* *po-vy-táhla* dopis  
*Lucie a.little.bit a.lot completely PO-from-pulled<sup>P</sup> letter*  
*z obálky*  
*from envelope*  
 ‘Lucie pulled out the letter from the envelope [a bit] a little bit/??a lot/\*completely’
- b. Řidič *po-po-jel* *2m/??800 metrů/\*přes* celé  
*driver PO-PO-drove<sup>P</sup> 2m 800 meters across whole*  
*parkoviště*  
*parking.lot*  
 ‘The driver drove [a bit] 2m/??800m/\*across the whole parking lot’

2.2.2. *po-po-*

What about the double *po-*? Let us look at it in some detail.

*Po-po-jít*, for example, means ‘to move (go) a bit in some direction.’ There is no verb *\*pojít*, however;<sup>4</sup> the only form of the infinitive is *jít*.

This second *po-* is not peculiar to ‘short distance *po-*verbs’. I suppose it is the same *po-* that is used in forming imperatives and future tense of some verbs of movement (the most basic ones)—see Table 2.<sup>5</sup>

Table 2:

|                   |                   |                   |                     |                    |
|-------------------|-------------------|-------------------|---------------------|--------------------|
| <b>infinitive</b> | <i>jít</i>        | <i>jet</i>        | <i>letět</i>        | <i>lézt</i>        |
|                   | ( <i>*pojít</i> ) | ( <i>*pojet</i> ) | ( <i>*poletět</i> ) | ( <i>*polézt</i> ) |
| <b>imperative</b> | <i>pojď</i>       | <i>pojed</i>      | <i>polet’</i>       | <i>polez</i>       |
| <b>future</b>     | <i>půjde</i>      | <i>pojede</i>     | <i>poletí</i>       | <i>poleze</i>      |
| translation       | ‘go’              | ‘drive’           | ‘fly’               | ‘crawl’            |

<sup>4</sup> Actually, there is, but it means ‘to die’—when talking about animals.

<sup>5</sup> *Pů-* in *půjde* is just a morphophonological variant of *po-*: ‘ů’ [u:] is historically derived from the long ‘o’ [o:].

For imperatives, the forms in Table 3 are also possible.

Table 3:

|                   |     |      |      |     |
|-------------------|-----|------|------|-----|
| <b>imperative</b> | jdi | jed' | let' | lez |
|-------------------|-----|------|------|-----|

The difference between the two possibilities resembles the difference between English *come* (for the *po*-variants) and *go* (for the non-prefixed variants). The *po*-variants somehow involve the speaker—they either mean that the motion should be performed in the speaker's direction (*pojd' ke mně* = come to me) or together with the speaker (*pojd' se mnou* = come with me).

It looks as though the inner *po*- has the function of making a stem perfective (or look perfective); then the whole class of 'short distance *po*-verbs' would be homogeneous. The idea seems to be supported by the fact that the future tense forms of verbs like *jít*, *letět*, *jet*, *lézt* are not formed periphrastically as expected with imperfective verbs (*\*budu jít*, *\*budu letět*, *\*budu jet...*).<sup>6</sup> Instead, a prefixed present tense form is used for future reference (*půjdu*, *poletím*, *pojedu...*),<sup>7</sup> which is reminiscent of forming the future with perfective verbs (using a present tense form—non-prefixed, however). Thus, *po*-prefixed verbs of movement may appear to be perfective—more precisely, their future forms only.

These future tense *po*-verbs do not have perfective meaning, though, which can be seen from the translation of the following example where *poletím* has the progressive meaning, i.e. flying and wearing the new dress is simultaneous in (6a), whereas in (6b) flying precedes wearing the new dress.<sup>8</sup>

- (6) a. Až *po*-letím domů, budu mít na sobě nové šaty.  
*when po-fly<sup>I</sup>.1SG home, AUX.1SG have on self new dress*  
 'When (=while) I fly home I'll be wearing the new dress'
- b. Až *při*-letím domů, budu mít na sobě nové šaty.  
*when to-fly<sup>P</sup>.1SG home, AUX.1SG have on self new dress*  
 'When (=after) I get home (by flying) I'll be wearing the new dress'

So, it is perhaps safer to say that, as for 'short distance' *po*-verbs, delimitative *po*- attaches either to a perfective *or* to a directed imperfective stem.

<sup>6</sup>Some verbs have both possibilities: *po-cestuju* - *budu cestovat* (I will travel), *po-vedu* - *budu vést* (I will lead) etc.

<sup>7</sup>These are actually the only real future tense forms in Czech, since here the future is marked, it is not just a present form—compare *nesu.PRS.1SG* 'I carry/am carrying' vs. *po-nesu.FUT.1SG* 'I will carry' (cf. Kopečný 1962).

<sup>8</sup>The verb forms *po*-letím and *při*-letím in (6a) and (6b) are present tense forms with future reference.

### 2.3. ‘Low degree’ *po*-verbs

There are some change-of-state verbs that combine with *po*-, though they are not so many. These are either intransitives or causatives (they entail change of state of the direct object). The derived meaning is ‘to change (something) a little/to a low degree.’<sup>9</sup>

- (7) a. Tulipány *po*-vadly.  
*tulips PO-withered<sup>P</sup>*  
 ‘The tulips withered a bit’  
 b. Žeňa *po*-smutněla.  
*Žeňa PO-got.sad<sup>P</sup>*  
 ‘Žeňa got sad a bit’  
 c. Babička během nemoci *po*-hubla.  
*grandma during sickness PO-lost.weight<sup>P</sup>*  
 ‘Our grandma lost some weight while she was sick’

Here are some transitives:

- (8) a. Patrycja text trochu *po*-změníla, než nám ho poslala.  
*Patrycja text a.bit PO-changed<sup>P</sup> before us it sent*  
 ‘Patrycja changed the text slightly before she sent it to us’  
 b. Frank *po*-opravil záclonu na okně a narovnal  
*Frank PO-corrected<sup>P</sup> curtain on window and straightened*  
*dečku.*  
*tablecloth*  
 ‘Frank adjusted the window curtain a bit and straightened the tablecloth’

Again, the preceding sentences are well-formed when an adverbial like *trochu* ‘a bit’ is added and strange with expressions like *hodně* ‘a lot,’ *do velké míry* ‘to a large degree.’ Other more specific adverbials are, for obviously semantic reasons, hard to insert in this case.

### 2.4. ‘Low intensity’ *po*-verbs

I mention this class of verbs only for the sake of completeness. It is unclear how these verbs are derived. They do not seem to be secondary imperfectives derived from prefixed (perfective) verbs<sup>10</sup> but nor do they seem to be derived by prefixation from habitual imperfectives.<sup>11</sup> The most intu-

<sup>9</sup>The meaning ‘a little’ is easier to see in comparison with the same verbs prefixed by purely perfectivizing prefixes: *z-vadnout* (wither<sup>P</sup>), *ze-smutnět* (grow sad<sup>P</sup>), *z-hubnout* (get thin<sup>P</sup>). These do not suggest that the change was only slight.

<sup>10</sup>Which is the claim in Jabloňská (2004).

<sup>11</sup>I discussed the mysterious derivation of the attenuative frequentatives in Součková (2003). I argued there that these verbs are not secondary imperfectives derived from the ‘short while’ *po*-verbs because they do not mean ‘be doing something for a while’ (the progressive reading) nor ‘do something for a while habitually’ (the habitual reading) but

itively plausible (but otherwise problematic) solution is that these verbs are derived by circumfixation, i.e. by simultaneous prefixation and suffixation.

The interpretation of sentences containing these verbs is possible to describe like this: ‘do something a little/with low intensity from time to time/occasionally/with interruptions’:

- (9) a. Petr celé odpoledne po-kašlával.  
*Petr whole afternoon PO-coughed<sup>I</sup>*  
 ‘Petr coughed a little from time to time for the whole afternoon’
- b. Na stole po-blikávala lampa.  
*on table PO-flickered<sup>I</sup> lamp*  
 ‘There was a lamp on the table, flickering intermittently’
- c. Naše babička pořád po-stonává.  
*our grandma all.the.time PO-is.ailing<sup>I</sup>*  
 ‘Our grandma is constantly sick a bit (with improvements and deteriorations)’

Due to the problems with determining what the right derivation of these verbs is, it is hard to see the scopal relationships among the prefix, the imperfectivizing suffix and the root; it is difficult to show that the semantics follows from the morphology.

Nevertheless, I am convinced that *po-* here is the same *po-* as in the previous three classes of verbs and conveys the same meaning (‘a little’). The specific interpretation (‘do something a bit/with low intensity from time to time’) must come from the interaction with the imperfectivizing suffix.

### 3. There is only one *po-*: meaning ‘a little’

So, we have three classes of verbs (ignoring the last one) with three apparently different notions of small quantity—‘a short while,’ ‘a short distance’ and ‘a low degree.’ My claim is, nevertheless, that in all cases the prefix is the same delimitative *po-*. What *po-* really means is rather something like ‘a little’; how the different interpretations arise will be shown in the present section.

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rather ‘do something with low intensity now and then/occasionally’. Such a meaning shift is not expected under secondary imperfectivization.

Another reason for rejecting the secondary imperfectives analysis is that the perfective bases are often non-existent.

The other possibility, i.e. the one of deriving the attenuative frequentatives by prefixation from habitual imperfectives is unlikely as well because the attenuative frequentatives are imperfective—and I know of no counterexamples to the generalization that prefixation leads to perfectivization. Moreover, again, some ‘low intensity’ *po-*verbs lack the unprefixated counterparts.

### 3.1. *Po*- as an extensive measure function

Delimitative *po*- is a measure prefix. It is roughly comparable to measure phrases like *two meters* in *two meters long*. Unlike *two meters*, though, the content of the prefix is rather vague.

Filip (2000; 2003) argued that delimitative *po*- (as well as cumulative *na*-) should be analyzed in terms of an extensive measure function. I take her analysis as my point of departure but later (§4), I argue that some modification of her proposal is needed.

Following Filip (2000), I propose the semantic representation of *po*-:<sup>12</sup>

$$(10) \quad [[po-]] = \lambda P \lambda [P(e) \wedge m(e) = c_{relatively.small}]$$

where  $P$  stands for a predicate,  $e$  is an event variable,  $m$  is a measure function<sup>13</sup> and  $c$  means that the value is contextually determined.

What exactly *po*- applies to and with what effect will be discussed informally in the following subsection (a more detailed analysis is developed in Součková 2004).

### 3.2. *Po*- measures/delimits events

I suppose that *po*- quantifies over events. *Po*- takes an event, measures it and, by measuring it, delimits it.<sup>14</sup>

How does *po*- measure/delimit events? It has to find something in the event that characterizes it, that distinguishes a given event type from other event types and that can be measured. This something is a scale underlying an event—the one that is crucial for measuring/delimiting a given type of event.

In Součková (2004) I argued that measure prefixes only attach to predicates describing events of *gradual change* (e.g. directed motion verbs or degree achievements), i.e. those events that contain some scalar structure.<sup>15</sup> I take a scale to be a set of points (degrees) totally ordered along some dimension:

Formally, a scale is a pair  $\langle S, \geq_{\delta} \rangle$  consisting of a set of objects and an asymmetric ordering relation along some dimension  $\delta$  (Kennedy and McNally 2002:8).

Hay et al. (1999:15), then, state the generalization about the telicity of these verbs as follows:

<sup>12</sup>(Filip 2000:61):  $[[prefix]] = \lambda P \lambda x [P(x) \wedge m_c(x)]$ , where  $P$  is homogeneous]. I removed the homogeneity requirement for reasons discussed in section 4.

<sup>13</sup>The measure function in question can be said to be something like *quantity*; *po*-, then, meaning ‘small **quantity**’:  $po(x) = \text{small-quantity-of}(x)$ .

<sup>14</sup>When the event was not delimited before. When the event is already delimited, *po*- only measures it—without delimiting it again (see section 4).

<sup>15</sup>In Součková (2004), I adopt the model of the scalar structure as assumed and developed in work by e.g. Kennedy (2000), Hay et al. (1999), Kennedy and McNally (1999; 2002), Kennedy and Levin (2002), Rotstein and Winter (2004) etc.



More generally, all three types of telicity can be determined as a function of the boundedness of the difference value defined over a projected scale associated with one of the verb's arguments, where the nature of the scale depends on the lexical meaning of the verb.

Kennedy and Levin (2002:2) formulate the generalization in a similar way:

Telicity is determined by whether the 'degree of change' argument *d* is quantized or not

Returning to *po-*: as has been said, *po-* only combines with predicates of gradual change; it applies to a scale underlying a given event. The scale *po-* can apply to cannot be just any scale, however; it has to be the relevant one for a given type of event (e.g. a scale of the changing property for change-of-state verbs/degree achievements, a scale of progress along a path for directed motion verbs etc.). Then, *po-* measures/delimits an interval on such a scale and, by measuring/delimiting an interval on the relevant scale, it measures/delimits the event itself.

The differences in meaning among the three classes of *po-*verbs are to be accounted for by different types of scales that provide the input for the measurement.

Let us take the classes of *po-*verbs in turn.

When *po-* combines with directed motion verbs, there is a scale of progress along a path available for measuring. *Po-* applies to the scale, measures/delimits an interval on it (it says that it is short) and, by measuring/delimiting the (scale of) path, it measures/delimits the event. At the end, we have a delimited event of moving a short distance.

When *po-* combines with a change-of-state (degree achievement) verb, there is, again, a scale that can be measured; in this case it is a scale of the degree to which a property is being changed. So, *po-* applies to this scale, and measures/delimits a relatively small interval on it, with the result that the event is delimited as well.

Finally, when *po-* combines with a verb that has nothing in its semantic representation that could be measured (i.e. neither a scale of progress along a path, nor a scale of a property, nor anything else),<sup>16</sup> there is always a temporal scale available. So, then, *po-* measures (and, in so doing, delimits) an interval on the scale of temporal duration of the event and by delimiting

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<sup>16</sup> *Po-* cannot measure the incremental theme argument, which is, on the other hand, exactly what cumulative *na-* does. Why this restriction?

Maybe the restriction is purely syntactic; *na-* also quantifies over path (as *po-* does)—but only when it is overt and in the *direct object position*. With *po-*verbs the path argument is not in the direct object/structural accusative case position (Součková 2004) (and it is not obligatorily overt either). So, to conclude—without offering a deeper explanation—I claim that a direct object argument is never available for *po-* (in Czech).

the temporal duration, it delimits the event itself. This is the ‘short while’ class of *po*-verbs.

The reason why, for example in the case of directed motion verbs, *po*- cannot measure the temporal duration (assuming that the temporal scale is always present) is that it is not the defining/relevant scale for an event of directed motion. This type of event has its only input for *po*- predetermined—it is a scale of progress along a path and nothing else.<sup>17</sup>

To sum up the section, I have argued that in all the classes of *po*-verbs, the prefix is the same one, meaning roughly ‘a little.’ The different interpretations follow from the fact that the prefix measures intervals on different scales in each case. Since there is no reason to posit several different *po*-’s, I assume the simplest analysis, i.e. the one with only one delimitative prefix. In every case, though, the output of *po*- is a delimited event,<sup>18</sup> since it either delimits an interval on the relevant scale (when there was no delimited interval before) or it measures an interval already delimited.

In the next section, I argue that both options are legitimate.

#### 4. The same *po*- can apply both to quantized and non-quantized predicates

In this section, I try to demonstrate that there is no homogeneity requirement for extensive measure functions.

##### 4.1. Problems with Filip’s analysis

Filip (2000; 2003) assumes that measure prefixes like delimitative *po*- and cumulative *na*-, since containing extensive measure functions, can only apply to homogeneous predicates (see also footnote 12):

- (11) [[prefix]] =  $\lambda P \lambda x [P(x) \wedge m_c(x)$ , where P is homogeneous]  
 “‘ $m_c$ ’: a free variable over (extensive) measure functions that are linguistically or contextually specified” (Filip 2000:61)

<sup>17</sup>There is a question: why this constraint? Why does a measure prefix have to apply only to a scale responsible for delimiting a given event? This restriction does not seem to apply to measure phrases in general, since one can say e.g. *think a bit* meaning either ‘think for a while’ or ‘think slightly/superficially.’ It is not entirely clear to me why there is this difference between measure phrases and measure prefixes but, presumably, it has to do with the fact that prefixes—simplifying a bit—make predicates delimited/quantized. It does not seem surprising that their quantificational content, for some reason, has to apply to the same thing that is being delimited (or that was delimited before). (The problem is discussed in more detail in Součková 2004.)

<sup>18</sup>The fact that ‘short while’ *po*-verbs combine with durative adverbials, while the other two classes of *po*-verbs cooccur with time-span adverbials, is discussed in Součková (2004). The claim is basically that the ‘in an hour’ test tests for telicity and not delimitation and that the ‘short while’ *po*-verbs (unlike the ‘short distance’ and ‘low degree’ *po*-verbs) are atelic since they lack an internal endpoint (the temporal delimitation is essentially external to an event). I will not go into this any more here, since telicity (in the sense used in Součková 2004) is not the main issue of the present paper.

Filip uses the following definition of a measure function:<sup>19</sup>

- (12)  $m$  is an extensive measure function for a part structure  $P$  iff:
- $m$  is a function from  $U_P$  to the set of positive real numbers
  - $\forall x, y \in U_P [\neg x \otimes_P y \rightarrow m(x \oplus_P y) = m(x) + m(y)]$  (additivity)
  - $\forall x, y \in U_P [m(x) > 0 \wedge \exists z \in U_P [x = y \oplus_P z] \rightarrow m(y) > 0]$  (com-mensurability)
- (Filip 2000:61, referring to Higginbotham 1995 and Krifka 1998)

However, the homogeneity restriction on the input for the application of an extensive measure function which Filip assumes seems to be a problem in light of such verbs as *po-skočit* (PO-jump<sup>P</sup>), *po-vy-lézt* (PO-out-crawl<sup>P</sup>) where *skočit* (jump<sup>P</sup>) and *vy-lézt* (out-crawl<sup>P</sup>) are already perfective and quantized. These perfective verbs should not be possible inputs for measure prefixes.

Filip (1996; 1999; 2000; 2003) herself points out the existence of perfective verbs derived from other perfective verbs, using it as one of her arguments against the view that Slavic prefixes are perfectivizers.

In her 2000 paper, Filip defends the claim that essentially all perfective verbs are quantized; hence, the fact that there are verbs like *po-skočit* and *po-vy-lézt* is awkward. In her later (2003) article, Filip retreats from the position and argues that semelfactives like *skočit*<sup>P</sup> and verbs prefixed by Source prefixes like *vy-lézt*<sup>P</sup> are in fact atelic (homogenous).<sup>20</sup> I see this as an ad hoc, moreover, clearly problematic solution. Here, I demonstrate that verbs like *vy-lézt*, according to the widely accepted diagnostics for telicity (and the one I adopted), are telic:

- (13) a. Vy-lezl z té díry \*minutu/ za minutu.  
*out-crawled<sup>P</sup> out.of the hole minute in minute*  
 ‘He crawled out of the hole in a minute’; ‘It took him one minute to crawl out of the hole’
- b. Ode-/vy-jel z města \*půl hodiny/ za půl hodiny.  
*from-/out-drove<sup>P</sup> out.of town \*half hour in half hour*  
 ‘He left town in half an hour’; ‘It took him half an hour to get out of town’

For semelfactives, however, the same diagnostics cannot be used, since they do not have any temporal duration. I have no other diagnostics which would apply also to semelfactives; for now, I simply take the view of semelfactives as atomic, hence telic eventualities.<sup>21</sup>

<sup>19</sup> $U_P$  = set of entities,  $\otimes_P$  = overlap relation,  $\oplus_P$  = sum operation.

<sup>20</sup>The motivation for the claim is the assumption that there is only one delimitation per event possible and that measure prefixes like *po-* delimit events (make the predicates describing them telic). I.e., on Filip’s analysis, measure prefixes can only combine with atelic predicates.

<sup>21</sup>Maybe, it is enough to show that semelfactives are not atelic, by virtue of their incompatibility with durative temporal adverbials.

## 4.2. Extensive measure functions do not have the homogeneity requirement

So, how to analyze the role of *po-* in verbs like *po-skočit* and *po-vy-lézt*?

My intuition about e.g. *po-vy-lézt* is that *po-* does not carve a little chunk out of unbounded *crawling*;<sup>22</sup> it just specifies how big the chunk, already delimited (cf. the perfectivity—and telicity—of *vy-lézt*), is.

I see no principled reason why it should be impossible to measure bounded or delimited things. Actually, an excursion to a nominal domain may be very useful because there are some clear cases to be found there, where an expression containing an extensive measure function modifies a quantized (delimited) predicate.<sup>23</sup>

### 4.2.1. Schwarzschild (2002): The Grammar of Measurement

Schwarzschild (2002) is mainly concerned with measure phrases that are included in so called pseudopartitives, on the one hand, and compounds, on the other hand.

Why do we say *a foot of cable* (using a pseudopartitive construction) when speaking of length, while we can only say *quarter inch cable* (using a compound) and not *a quarter inch of cable* when we are concerned with the diameter?

To explain the difference, Schwarzschild employs the notion of *monotonicity*. Measurement systems are based on some property, e.g. weight or temperature. The goal of such a system is to reflect the degree to which an entity has the property in question.

“Now while all measurement systems mirror the degree to which an entity has the property in question, some but not all mirror as well the intuitive part structure of the stuff being measured. For example, if a quantity of oil has a certain volume, then every proper subpart of it will have a lower volume and superparts will have larger volumes. On the other hand, if the oil has a certain temperature, there is no reason to expect that proper parts of it will have lower temperatures. We will call a property **monotonic** if it tracks part-whole relations. Volume is monotonic and temperature is **non-monotonic**.” (Schwarzschild 2002:2)

If we look at pseudopartitives and compounds, the generalization is that, in the case of pseudopartitives, the property that forms the basis for

<sup>22</sup>Filip (2000) uses the metaphor of *po-* and *na-* carving chunks of certain size out of homogeneous predicates.

<sup>23</sup>It is well known that there are certain analogies between nominal and verbal predicates. The homogenous–quantized distinction is applicable to both, for example. There is a correlation homogeneous–mass/bare plurals vs. quantized–count, i.e., for an NP, to be a homogeneous predicate means to be a mass expression (or a bare plural); a quantized predicate is expressed by a count noun.

measurement has to be monotonic (with respect to the given part-whole structure), whereas for compounds it has to be non-monotonic.

So, now we have an explanation for the fact that *a foot of cable* (length), *two feet of snow* (depth—monotonic for fallen snow) or *five ounces of gold* (weight) are all well-formed expressions, whereas *\*a quarter inch of cable* (diameter), *\*zero degrees of snow* (temperature) or *\*twenty carats of gold* (purity) are not. The same is true for the reverse: we cannot say *\*two liter oil*, while *ninety degree oil* is felicitous.<sup>24</sup>

Schwarzschild mentions that Krifka makes use of the term *extensive measure function* when pointing out essentially the same contrast. *Five ounces of gold* is well-formed, while *\*twenty carats of gold* is not. The difference is that *ounce* but not *carat* denotes an extensive measure function.<sup>25</sup>

Now, let us look at the mass-count distinction.

So far, the *substantive* (the expression referring to the stuff being measured) has always been a mass term. Count nouns behave differently. It is not natural to say *seven pounds of baby*, but *a seven pound baby* is perfectly grammatical. The reason is that count nouns do not have a part-whole structure (or, as Schwarzschild puts it, they have only a *trivial* part-whole structure)—they are atomic.<sup>26</sup> Since monotonicity fails in these cases, having no part-whole structure to operate on, there is no possibility for forming pseudopartitives. Hence the following contrasts:

- (14) a. *\*two hour work*  
           *two hours of work*  
       b. *a two hour job*  
           *\*two hours of job*  
       c. *\*two page prose*  
           *two pages of prose*  
       d. *a two page story*  
           *\*two pages of story*  
           etc.

(examples from Schwarzschild 2002)

<sup>24</sup>As Schwarzschild (2002) also points out, in other languages, the non-monotonic measure phrase (corresponding to *zero degree* in *zero degree water*) is syntactically an adjective. This is true e.g. for German or Russian. In Spanish, the difference is expressed by reversing the order of the measure phrase and the substantive, like in *dos litros de agua* ('two liters of water') vs. *agua de dos grados* ('two degree water').

<sup>25</sup>In the following subsection, I argue that Schwarzschild's proposal is more general than—and by that superior to—the one of Krifka's.

<sup>26</sup>In the sense that parts of babies do not count as babies. Otherwise, babies do have parts, of course.

#### 4.2.2. What we can conclude from Schwarzschild (2002)

If we look at the examples in (14), we can see that in both pseudopartitives and compounds the measure phrases contain expressions denoting measure functions: *two hours of work*, *a two hour job*; *two pages of prose*, *a two page story*. . . *A story* and *a job* are clearly quantized (nominal) predicates but still one can measure them (apply a measure function to them).

Krifka's point (e.g. 1987) that *\*twenty carats of gold* is not a well formed expression since *carat* is not an extensive measure function is correct, but less general than Schwarzschild's generalization. It is really the monotonicity of the measured property—with respect to the given part-whole structure—that matters here.

Things may become clearer if we consider a triple like the following one: *\*twenty carats of gold (twenty carat gold)*, *\*a quarter inch of cable (diameter - OK: quarter inch cable)*, *two feet of cable (length - \*two foot cable)*.

Purity (measured in carats) is *never* a monotonic property. *Carat*, measuring a property that is always non-monotonic, is, then, always a non-monotonic, non-additive measure function.<sup>27</sup> Additivity is one of the defining properties of extensive measure functions—so, from this we can see that *carat* is not one.

Length (measured e.g. in inches or feet), on the other hand, *is* in principle a monotonic property (and *foot* is an extensive measure function). Moreover, in *two feet of cable*, it *is* monotonic also *with respect to the part-whole structure* of the cable.

In *quarter inch cable*, however, the measurement—of the diameter—*is not* monotonic *with respect to the part-whole structure* of the cable. Nonetheless, since the property itself (length) *is* monotonic, the measure function (*inch*) is also monotonic (moreover, it is additive—*inch* is an extensive measure function).

Here we can see that it is not the *extensiveness of the measure function* that matters for the pseudopartitive–compound distinction. It is really rather the *monotonicity of the (measured) property with respect to the relevant part-whole structure*—just like Schwarzschild (2002) says—that makes the difference. Or, to put it differently, non-extensive measure functions (like *degrees Celsius*, *carats* etc.) can never be part of measure phrases in pseudopartitives, but extensive measure functions can be part of measure phrases in both pseudopartitives and compounds.

If we look at the count–mass distinction, essentially the same generalization applies. In *seven pounds of oranges*, weight is monotonic with respect to the relevant part-whole structure; in *a seven pound baby*, it is not (since *a baby* has no non-trivial part-whole structure, as Schwarzschild puts it).

<sup>27</sup>Additivity is a special case of monotonicity—thanks to Øystein Nilsen for clearing up this point for me.

Nevertheless, weight is in principle a monotonic property and *pound*<sup>28</sup> is an extensive (monotonic and additive) measure function regardless of whether it is a part of a compound or pseudopartitive.

That *pound* in a *seven pound baby* is an extensive measure function can be seen if we test the example against the defining property of extensive measure functions that is the crucial one here:

$$(15) \quad \forall x, y \in U_P [\neg x \otimes_P y \rightarrow m(x \oplus_P y) = m(x) + m(y)] \text{ (additivity)}$$

(cf. (12a)b)

If we take two seven pound babies (babies usually meet the condition on non-overlapping:  $\neg x \otimes_P y$ ) and apply a measure function (*pound*) to them ( $m(x \oplus_P y)$ ) we get the same value (fourteen) as when we apply the same measure function to each of the babies in turn and then we take the sum of the values ( $m(x) + m(y)$ ):

$$(16) \quad \text{pound}(\text{baby}_1 \oplus_P \text{baby}_2) = \text{pound}(\text{baby}_1) + \text{pound}(\text{baby}_2) = 14$$

(The same does not hold for e.g. temperatures of the babies.)

So, back to *po-* and Filip (2003): Since we have seen that extensive measure functions can apply both to homogeneous and quantized nominal predicates, I believe that there is no reason to assume that *po-*, containing an extensive measure function, should not be able to apply both to homogeneous and quantized (verbal) predicates (therefore there is also no reason to claim that the semelfactives and verbs prefixed by Source prefixes are atelic or homogenous as Filip (2003) does).

To conclude, I assume that *po-* is underspecified with respect to whether it can apply to quantized or homogeneous predicates; it is both like *seven pounds of* and *seven pound*, so to speak. Generally, I assume that there are measure expressions that can only modify homogeneous predicates (*seven pounds of*) and others that can only modify quantized predicates (*seven pound*) but I take this to be a property of a particular type of expression, not a property of the measure functions contained in them.

## 5. Summary

To summarize, I hope to have shown that there is no reason to assume that there are different kinds of *po-*, each of them referring to a different notion of small quantity. I have argued that, in all the cases discussed, the prefix is the same delimitative *po-*, meaning roughly ‘a little.’ It can be analyzed as containing an extensive measure function (let us say *quantity*)

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<sup>28</sup>The difference between *seven pounds* (in pseudopartitives) and *seven pound* (in compounds) should not matter. Here, I am not interested in the syntax of the constructions (anyway, it differs from language to language), but rather in the meaning of the measure phrases. And the meaning should be the same in both kinds of constructions. Essentially, when you put a seven pound baby on scales, you get the same value as when you put seven pounds of oranges there.

applying to events—via applying to scales underlying them. Since there is no homogeneity requirement for extensive measure functions, *po-* can equally combine with non-quantized predicates (with the effect of delimiting events the predicates describe) and with quantized ones (with the effect of simply measuring the events—measuring intervals on scales relevant for given types of events).

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