

# When the prefixes meet the suffixes

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## Abstract

This paper explores the different interpretations the prefix *po-* in Polish gets depending on what kind of stem it attaches to. Thus, I show that the distinction between high and low suffixing verbalizers correlates with a distinction within the prefixal domain, namely the type of verbalizer influences the interpretation that *po-* is assigned, as well as being responsible for the restriction on *po-* attachment.<sup>1</sup> I argue for four different structural positions into which a prefix can be inserted. The system bears on the way Aspectual properties are decided in the course of the derivation, with three different aspectual levels (Asp<sub>1</sub>P relevant for most of the prefixes, Asp<sub>2</sub>P i.e. Secondary Imperfective (henceforth, SI), and Asp<sub>3</sub>P relevant for *po-* exclusively<sup>2</sup>) contributing information which can be overridden on higher levels.

## 1. Conjugation classes in Polish

The Polish verb is characterized by the presence of certain morphology intervening between the root and Tense markers. These morphemes (which are usually vocalic) define the conjugation class a given root belongs to. In what follows I will treat them as verbalizers in the sense of Marantz (1997). The division into conjugation classes is a point of contention. The present paper adopts the analysis in Rubach (1984). I list Polish conjugation classes together with examples below.

- **-a-** stems: pis-a-ć ‘write,’ kaz-a-ć ‘order,’ chrap-a-ć ‘snore’
- **-e-** stems: slysz-e-ć ‘hear,’ widzi-e-ć ‘see,’ szumi-e-ć ‘sigh,’ leci-e-ć ‘fly (directed motion)’
- **-C-** stems: paś-ć ‘fall,’ wle[c]-c ‘drag,’ umrz-eć ‘die,’ zacz-a-ć ‘begin’
- **-owa-** stems: bor-owa-ć ‘bore,’ mal-owa-ć ‘paint,’ chor-owa-ć ‘be sick,’ brak-owa-ć ‘lack’

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<sup>1</sup>The idea arose in the discussions about the prefixal data that I had with Eugenia Romanova and I am very grateful to her for that. I also benefited greatly from the discussions with Gillian Ramchand, Peter Svenonius and Tarald Taraldsen, as well as all the participants in the Slavic Prefixes Project at the University of Tromsø.

<sup>2</sup>Though I do not pursue the issue in this paper, it seems that *na-* is similar to *po-* in its ability to stack, i.e. to occur in Asp<sub>3</sub>.

- **-i/y-** stems: kos-i-ć ‘mow,’ pal-i-ć ‘burn,’ kroczy-y-ć ‘step,’ śnieży-y-ć ‘snow’
  - **-aj-** stems: czyta-a-ć ‘read,’ gra-a-ć ‘play,’ chowa-a-ć ‘hide,’ gniewa-a-ć ‘make angry’
  - **-ej-** stems: siwi-e-ć ‘turn grey,’ piękn-e-ć ‘grow beautiful,’ babi-e-ć ‘become effeminated,’
- 
- **semelfactive -n-**: kop-ną-ć ‘kick once,’ wark-ną-ć ‘snap once,’ mach-ną-ć ‘wave once’
  - **inchoative -n-**: marz-ną-ć ‘freeze,’ więdną-ć ‘wither,’ sch-ną-ć ‘get dry’

The first three classes are not productive in Modern Polish and I will not be making any claims about them. The fourth one, the **-owa** class, is very productive. Yet, it seems to be indiscriminate with respect to the syntactic environment. Therefore, I restrict my claims to the remaining five classes.

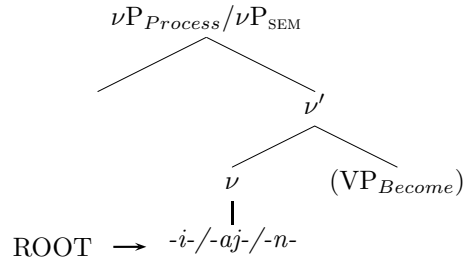
The typology of verbalizers is presented in Table 1. It is based on the hypothesis presented in Jabłońska (2004), where I argued that verbalizers impose the place of root insertion and thus set a limit to what the root can name (cf. Déchaine 2003). Specifically, a low (V-level) verbalizer requires root insertion at this level and the root can only name the BECOME predicate. A high ( $\nu$ -level) verbalizer, on the other hand, requires high root insertion and the root names both the causing and the caused subevents.

verbalizer	root insertion	properties
-i-	high (inside $\nu$ )	unerg./tr. syntax
-aj-	high (inside $\nu$ )	unerg./tr. syntax
-n- semelf.	high (inside $\nu$ )	unerg./tr. syntax + punctual
-ej-	low (inside V)	unacc. syntax
-n- inch.	low (inside V)	unacc. syntax

Table 1: Flavors of verbalizers

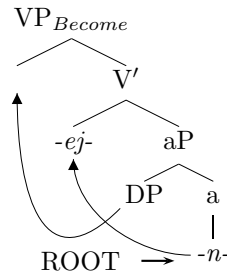
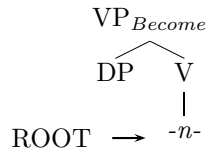
Thus, there will be three different scenarios in which the roots can insert. Note that the **-ej-** verbalizer has an embedded adjektivizing head (here glossed ADJ; for a complete list of abbreviations, see the Introduction to this volume), detectable by the presence of adjektivizing morphology, as in *pięk-n-ie-ć* (*beauty-ADJ-V-INF*; ‘get beautiful’).

(1) high verbalizer



(2)

a. low inchoative *-n-* verbalizer    b. low *-ej-* verbalizer



## 2. Superlexical *po-*

The assumption in this paper which I will not motivate (see however Isačenko (1960), Townsend (1975), and various contributions to this volume) is that prefixes do not constitute a uniform class. Instead, they fall into lexical/(VP-)internal and superlexical/(νP-)external classes. This section deals with the latter, adverbial-like prefixes.

### 2.1. The semantics of Degree Achievements

Let us first examine what readings the prefix *po-* produces when it attaches to low verbalizer stems. *-ej-* stems are presented in (3):<sup>3,4</sup>

- (3) a. *po-siwi-e-ć*<sup>5</sup> ('turn grey<sup>P</sup>)  
 b. *po-jaśni-e-ć* ('get bright<sup>P</sup>)  
 c. *po-czerwieni-e-ć* ('get red<sup>P</sup>)  
 d. *po-smutni-e-ć* ('get sad<sup>P</sup>)

<sup>3</sup>It should be borne in mind that whatever is said in this section about *-ej-* stems pertains to inchoative *-n-* stems as well. The differences between *-ej-* stems and inchoative *-n-* stems are not relevant for the purposes of this section.

<sup>4</sup>For reasons that will become apparent as the argumentation proceeds, I will not generally gloss *po-* by means of different labels: delimitative, distributive, etc. The readings are discussed in the main text.

<sup>5</sup>The symbols <sup>P</sup> and <sup>I</sup> stand for 'Perfective' and 'Imperfective' respectively and refer to the whole verbal complex that they stand next to.

In fact, it is not easy to determine the readings for the verbs in (3). The fact that they do not form secondary imperfectives seems to suggest that *po-* is purely perfectivizing in nature.<sup>6</sup> This hypothesis is in fact confirmed at least for some of the *-ej-* stems by the unavailability of any other purely perfectivizing prefixes (e.g. *??ze-smutni-e-ć* ('get sad<sup>P</sup>'), *\*z-jaśni-e-ć* ('get bright<sup>P</sup>'). Yet, other *-ej-* stems do seem to be able to attach another prefix, as in *z-czerwieni-e-ć* ('get red<sup>P</sup>').

Thus, it seems that a more thorough investigation of the lexical semantics of the verbs in question is required. Semantically speaking, *-ej-* stems (as well as inchoative *-n-* stems) are verbs of gradual change, i.e. degree achievements (henceforth, DAs). As noted in the literature (cf. e.g. Dowty 1979, Abusch 1986, Bertinetto and Squartini 1995, Ramchand 1997, Hay et al. 1999), these verbs are notoriously difficult in English to characterize in terms of a telic/atelic opposition. That is because they behave ambiguously with respect to standard telicity tests. Firstly, they are compatible with both *in an hour* and *for an hour* adverbials:

- (4) a. The soup cooled for an hour.  
b. The soup cooled in an hour.

Secondly, in certain cases the progressive forms of DAs entail the perfective variants of them, whereas in other cases they don't:

- (5) a. Kim is lengthening the rope. → Kim has lengthened the rope.  
b. Kim is straightening the rope. ↗ Kim has straightened the rope.

Thirdly, the adverbial *almost* test, which gives ambiguous interpretation for telic verbs (i.e. *almost* can either scope over the whole macro-event or else only over the resulting state) and unambiguous interpretation for atelic ones, also yields mixed results for DAs:

- (6) a. The tailor almost lengthened my pants. (ambiguous)  
b. The teacher almost lengthened the exam. (unambiguous)

This schizophrenic behaviour of DAs prompted Bertinetto and Squartini (1995) to conclude that DAs are systematically ambiguous between two interpretations (*A* stands for the underlying adjective in (7)):

- (7) a. to become A-er  
b. to become A

The same intuition is formalized in Hay et al. (1999), where DAs are taken to introduce a measure of the amount to which an argument of the verb changes with respect to the gradable property of the adjectival base. Thus,

<sup>6</sup>I will come back to the reasons *-ej-* stems are not good under SI formation in section 3.

Hay et al. (1999) propose to formalize the scalarity underlying the semantics of these verbs in terms of a scale *S*, which is a set of points ordered along some dimension (e.g. *length, volume, duration, etc.*). The points are taken to correspond to the set of real numbers between 0 and 1. Scales can be open or closed, depending on the lexical semantics of the underlying adjective. I illustrate open scale verbs in Polish in (8) and closed scale in (9):

- (8) a. drożeć ‘get expensive<sup>I</sup>  
 b. głupieć ‘get stupid<sup>I</sup>  
 c. marnieć ‘get miserable<sup>I</sup>
- (9) a. zielenieć ‘get green<sup>I</sup>  
 b. zdrowieć ‘get healthy<sup>I</sup>  
 c. kamienieć ‘get stony<sup>I</sup>

It is not the case that *po-* prefixation is allowed with all DAs. In fact, it is restricted to a bunch of roots and I illustrate the two prefixing options in (10):

- (10) a. *po-ciem-ni-e-ć* ~ *z-ciem-ni-e-ć*  
*PO-dark-ADJ-V-INF<sup>P</sup>* *PERF-dark-ADJ-V-INF<sup>P</sup>*
- b. *po-droż-e-ć* ~ *z-droż-e-ć*  
*PO-expensive-V-INF<sup>P</sup>* *PERF-expensive-V-INF<sup>P</sup>*
- c. *po-starz-e-ć się* ~ *ze-starz-e-ć się*  
*PO-old-V-INF<sup>P</sup> RFX* *PERF-old-V-INF<sup>P</sup> RFX<sup>7</sup>*

The difference between the predicates delimited by means of *po-* and the ones that have been purely perfectivized is that in the former the prefix introduces an arbitrary Reference Time that seals off the event, with the presupposition that the event could continue for some more time. In the latter, on the other hand, the Reference Time introduced by the prefix coincides with the endpoint on the scale *S*. However, since the purely perfectivizing prefix applies to open scale predicates in (10), the question that arises at this point is where the endpoint on a scale comes from. I assume this is provided by some contextually determined standard of what it means to be ‘expensive’ in a given context.<sup>8</sup> Note also that delimiting the predicates by means of *po-* in these cases results in Upward Entailment:

- (11) a. Marek *po-siwi-a-ł* w dwa lata.  $\rightarrow$   
*Marek PO-grey-V-PST.M.SG in two years*  
 ‘Marek got greyer in two years.’

<sup>7</sup>I gloss high verbalizers as ‘*ν*,’ low verbalizers as ‘*V*,’ and use ‘*v*’ when it is inessential or indeterminate what kind of verbalizer is used. In the glosses particular points are being highlighted as the discussion proceeds.

<sup>8</sup>In certain cases of open scale adjectival verbs even that contextual end of Scale is unavailable, e.g. \**z-jaśnieć* (PERF-brighten), \**z-weseleć*.

- b. Marek *po-siwi-a-l* w rok.  
*Marek PO-grey-V-PST.M.SG in year*  
 ‘Marek got greyer in a year.’

In this sense *po-* in (11) is comparable to adverbials like *significantly* or *visibly* and I will refer to this reading as ‘considerable change’ reading henceforth. Now, the fact that *po-* delimits the predicate by introducing an arbitrary Reference Time is reminiscent of delimitative *po-*. The question whether delimitative *po-* is Upward or Downward entailing is not an easy one. Consider (12):

- (12) a. Marek *po-spacerował* przez dwie godziny. →  
*Marek PO-walked for two hours*  
 b. Marek *po-spacerował* przez godzinę.  
*Marek PO-walked for hour*

It seems that (12a) entails (12b). Note, however, that the entailment is only possible on condition the value of *po-* as an extensive measure function is not kept constant. Součková (2004a) argues that this is possible due to the fact that the meaning of *po-* is vague. In other words, if *po-* here means ‘for a while,’ it is by varying the length of this ‘while’ that we get the entailment. Thus, we are forced to conclude that *po-* in DAs differs from *po-* in (12) with respect to the homogeneity of the respective predicates. Whether that forces us to assume that we are really dealing with two different prefixes is another issue.

Note that *po-* in DAs takes an *in an hour* adverbial whereas delimitative *po-* takes a *for an hour* adverbial. How is that to be explained assuming the two are collapsable?

Suppose that *in an hour* is sensitive to the processual part (roughly tantamount to Rothstein’s [+stages] feature) of an event and a change of state. Since in English the process part is really arrived at pragmatically,<sup>9</sup> any predicate (including achievements) involving change of state can occur with an *in an hour* adverbial:

- (13) a. John kicked Mark in a second.  
 b. John died in two weeks.  
 c. \*John walked in a week.  
 d. \*John loved Mary in a week.

In (13a) even though the interpretation is semelfactive, it is the kicking event that takes one second. In (13b) we get a preparatory stage reading due to world knowledge really rather than any lexical semantics of the verb. (13c) and (13d) do not involve change of state, which makes them incompatible with an *in an hour* adverbial. In fact, in English, even states

<sup>9</sup>Alternatively, as in Rothstein (2004), there is an aspectual type shifting operation that raises an achievement to a derived accomplishment.

can be coerced into inchoative readings and then they become fine with *in an hour* on a preparatory state reading (cf. Rothstein 2004:26). Now, in Polish there will be predicates lacking the process part (semelfactives in (14a) and DAs in (14b)) and others lacking a change of state component (stative (14c) and agentive (14d))—all of them incompatible with an *in an hour* adverbial:

- (14) a. ??kop-nać kogoś w sekundę.  
*kick-SEM-INF somebody in second*  
 b. \*rdze-wi-eć w pół roku  
*rust-ADJ-V-INF in half year*  
 c. \*ufać w pół roku  
*trust in half year*  
 d. \*kopać w pół roku  
*dig in half year*

Let us now see exactly how it is that DAs, i.e. *-ej-* stems (in (14b)) involve a change of state but lack a process part.

Kennedy and Levin (2002) argue that the measure of change corresponds to a (differential) degree argument.

- (15) For any verb of gradual change  $V_{\Delta}$  with associated gradable property  $G_V$ :  $[_{VP} V_{\Delta} x d\text{-much}]$  is true of an event  $e$  iff  $x$  increases in  $G_V$ -ness by  $d$ -much. Kennedy and Levin (2002)

Thus, the lexical semantics of *głupieć* adapted from Kennedy and Levin (2002) is as in (16), where BEG and END are functions from events to times that return an event's beginning and end points respectively.

- (16) a.  $V_{\Delta} = \lambda x \lambda d \lambda e. \text{INCREASE}(\text{STUPID}(x))(d)(e)$   
 b.  $[\text{INCREASE}(\text{STUPID}(x))(d)(e)] = 1$  iff  $\text{STUPID}(x)(\text{END}(e)) = \text{STUPID}(x)(\text{BEG}(e)) + d$

Furthermore, Kennedy and Levin (2002) argue that telicity versus atelicity of DAs really corresponds to a quantized versus a non-quantized  $d$  argument. Thus, in English there can be four ways of determining the value of  $d$ :

- $d$  quantized by explicitly provided linguistic material;
- $d$  quantized by inference from the lexical semantics of the verb and its arguments;
- $d$  quantized by inference from world-knowledge
- $d$  bound by an existential quantifier (the elsewhere condition).

The first strategy is illustrated in (17), where the predicate cannot be interpreted atelically once the degree is overtly specified:

- (17) The icicle lengthened **by 3 centimeters** (\*for two days).

The second one is related to open versus closed scale adjectives (cf. Hay 1998 and Kennedy and McNally 1999). The verb based on an adjective with a maximal value cannot be interpreted atelically:<sup>10</sup>

- (18) The tub is emptying.  $\nrightarrow$  The tub has emptied.

Real world knowledge may also help assign aspectual value to the verb, as in (6a), repeated here as (19):

- (19) The tailor almost lengthened my pants. (ambiguous)

What we know about tailors, as well as about trousers having a certain limit to how much they can be lengthened helps establish the telic interpretation as one of the possible readings.

Finally, if none of these factors is operative, *d* is bound by an existential quantifier at the level of the verbal predicate. The result is an atelic predicate.

Note further that the truth conditions for the gradual change event, as defined in (16), result in the following predictions:

- (20) a. When *d* is quantized, *lengthen the icicle* is true only of events whose endpoints correspond to that point in time at which the length of the icicle increased by *d*.  
 b. When *d* is not quantized, *lengthen the icicle* is true of *any* event of icicle-lengthening.

Since Polish unprefixes DAs behave as atelic in all possible respects, we conclude that they must exemplify the last case, where the value of *d* is really insignificant. The event is true even if the minimal change took place. At this point, let me elucidate the slight deviation in assumptions from the one adopted in Kennedy and Levin (2002). They assume that the Scale S is a set of real numbers between 0 and 1. That is tantamount to assuming density of the scale. It seems to me, however, to be justified to assume a certain contextually determined granularity that would be linguistically relevant.<sup>11</sup> Thus, if *John runs*, then there are certain atomic units that count as a Predicate RUN, but not every bending of a knee counts as ‘RUN.’ Analogously, for the predicate of gradual change, the granularity might bear on the visibility of change as such. Let us then assume that

<sup>10</sup>As pointed out to me by Peter Svenonius, the first three strategies can interact with each other in interesting ways. E.g. sometimes the lexical semantics of a root can be overridden by world knowledge:

- (i) The Amazon emptied into the Ocean. (*atelic*)

<sup>11</sup>Thanks to Øystein Nilsen for clarification of this point; cf. also (Dowty 1979:166–72) for relevant discussion.



the minimal granularity on the scale  $S$  is 0.01. That, in turn, implies that the event *glupieć* ('get more stupid') is true even when the change is  $d_{<0.01,0.02>}$ . The only restriction on the truth conditions of the predicate *glupieć* is as in (21):

$$(21) \quad \text{STUPID}(x)(\text{END}(e)) - \text{STUPID}(x)(\text{BEG}(e)) \geq 0.01$$

If the difference in the degree of change between the beginning of the event and the end of the event equals 0.01, then there is no subpart of the event that might fulfill the truth conditions. Therefore, in many respects these verbs will behave as semelfactives, e.g. they will not be able to form SIs (cf. section 3).

Recapitulating the results of this section, DAs (i.e. *-ej-* stems), apart from taking purely perfectivizing prefixes, can sometimes also take *po-*. These two prefixing strategies correspond to quantizing the degree argument  $d$  in the sense of Kennedy and Levin (2002). Differently from English, however, this is an overt and grammatical operation (as opposed to pragmatic inference in English). In the case of unprefixing DAs, the degree argument is existentially bound and for this reason there is no processual part involved. An *in an hour* adverbial, being sensitive to the change-of-state component and the process part, cannot apply to unprefixing DAs because the process part can then (at least in principle) be absent. Yet, it can apply to *po-* prefixed DAs since *po-* is monotone increasing in this case. Thus, some considerable degree of change must have been achieved for the predicate to be true. Let us say, for *po-* 'considerable change' it holds that:

$$(22) \quad 0.02 \leq \text{STUPID}(x)(\text{END}(e)) - \text{STUPID}(x)(\text{BEG}(e)) < 1$$

The restriction in (22) results in the presence of the process part and explains the compatibility of *po-* delimited DAs with *in an hour* adverbials.

It also seems that there is no principled reason to dissociate the two kinds of *po-*, i.e. delimitative and 'considerable change.' The differences in interpretation and possibilities of adverbial modification stem from the interaction with the semantics of particular verbalizers *po-* is attaching to.

There is, however, another reading possible with *-ej-* stems, namely the distributive reading. The choice between 'considerable change' and distributive readings is not root-specific.<sup>12</sup> Rather, the distributive reading is preferred in case there is a plural object. I illustrate the distributive reading with *-ej-* stems in (23):

$$(23) \quad \text{a.} \quad \text{Ci} \quad \text{mężczyźni} \quad \text{po-babi-e-li} \quad \text{jednocześnie.}$$

*these men*      *PO-old.woman-V-PST.PL.VIR*      *simultaneously*  
'These men get effeminated simultaneously.'

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<sup>12</sup>Of course, the competition between the two readings would only arise for these few verbs of gradual change that do take 'considerable change' *po-*.



The process, however, is very restricted. The reading that *is* productive with low verbalizers is the distributive one with multiple events involving atomic subindividuals in the denotation of the plural (deep) object. The semantics of ‘considerable change’ *po-* has an upper bound in the sense that *d* cannot correspond to the end of the scale *S*. This is the feature distinguishing it from distributive *po-*, where the end of the scale has to be reached for each subevent. We have also tried to show that the compatibility with *in an hour* adverbials is due to the fact that the adverbial is sensitive to a change of state and a process component. The semantics of the verbalizer *-ej-* is such that it involves a change of state by definition. That is why the end of the Scale does not have to be reached for the adverbial to be licit.

## 2.2. *Po-* with high processual verbalizers

When attached to underived high verbalizer stems *-aj-* and *-i/y-*, *po-* produces delimitative ‘for a while’ readings, as in (27):

- (27) a. *po-czyt-a-ć* ‘read for a while<sup>P</sup>’  
 b. *po-gr-a-ć* ‘play for a while<sup>P</sup>’  
 c. *po-chodz-i-ć* ‘walk for a while<sup>P</sup>’  
 d. *po-pal-i-ć* ‘smoke for a while<sup>P</sup>’

Yet, the distributive reading of *po-* with high verbalizers is also possible, again under special circumstances, namely when the object is plural (cf. also Lasersohn 1995:240 and Filip and Carlson 2001 for the claim that plural markers can involve multiplicity of participants, times or locations). I illustrate five different configurations: singular subject and plural object with underived stems (28a), singular subject and plural object with prefixed stems (28b), two types of plural subject (28c) and (28d), and finally both arguments singular (28e).<sup>13</sup>

- (28) a. *Maria po-chowa-ła* (wszystkie) zabawki.  
*Maria PO-hide-PST.F.SG all toys*  
 ‘Maria has hidden (all) the toys distributively/for a while.’  
 b. *Maria po-prze-pis-ywa-ła* (wszystkie) listy.  
*Maria PO-through-write-IMPF-PST.F.SG all letters*  
 ‘Maria distributively/for a while rewrote (all) the letters.’  
 c. *Chłopcy po-śpiewa-li*.  
*boys PO-sing-PST.PL.VIR*  
 ‘The boys sang for a while.’

<sup>13</sup>The are very few verbs which do allow distributive-like reading with both arguments singular: *po-kopać* (PO-kick), *po-rąbać* (PO-chop), *po-lamać* (PO-break). I follow Součková (2004a) in assuming that they involve quantification over stages of an individual.

- d. Ludzie *po-w-chodzi-li* (przez chwilę, a potem  
*people PO-in-walk-PST.PL.VIR for while and then*  
 przestali).  
*stopped*  
 ‘People entered distributively (for a while and then stopped).’
- e. ??Marek *po-o-mawia-ł* swój doktorat na każdej  
*Marek PO-about-talk-PST his dissertation on every*  
 konferencji w tym roku.  
*conference in this year*  
 ‘Marek discussed his dissertation at every conference this year.’

It seems that distributive and delimitative readings are in principle always possible with a high processual verbalizer. Certain contexts, of course, will prefer one or the other reading. Thus, e.g. in (28a) and (28b), whenever the quantifier *wszystkie* (‘all’) is used, the distributive readings will be preferred (though not obligatory).<sup>14</sup> That is because the delimitative use of *po-* sets an arbitrary right boundary to the event preceding the change of state (i.e. when all of the toys end up hidden). In case all of the object is affected, the purely perfectivizing prefix is used. However, when the quantifier is dropped, both of the readings are possible. The same ambiguity holds of the stacking case in (28b). I will come back to how the two readings arise in detail in the next section.

(28c) however, is unambiguous—the prefix can only get a delimitative reading. This seems to suggest that the external argument is not in the scope of the prefix:

- (29) [VoiceP DP [AspP *po-...* ]]

From that perspective, it is surprising that (28d) can receive a distributive reading, in addition to a delimitative one. It has been argued in the literature (cf. e.g. Levin and Rappaport Hovav 1995 and Ramchand 1997) that verbs of directed motion are really unaccusative. Yet, as I argued in Jabłońska (2004), the SI verb in (28b) is a non-directed motion stem (high *-i-* verbalizer) and hence it is unergative. As far as I can see, it is not impossible to marry these two approaches on condition one gives up the  $\Theta$ -criterion. Suppose the sole argument in (28d) is initially merged VP-internally as a subject of Result (cf. Ramchand 2003). Later on it has

<sup>14</sup>That the delimitative reading is still possible, even when the strong quantifier is used is shown in (i)

- (i) Maria *po-chowała* wszystkie zabawki przez jakiś czas, ale one wciąż  
*Maria PO-hide all toys for some time, but they still*  
 wypadały, więc je w końcu zostawiła.  
*were.falling.out, so them at last left*  
 ‘Maria was for some time involved in all toy hiding, but they were still falling out, so she finally left them.’

to move to Spec,  $\nu$ P to identify the Subject of Process. A corollary to this is a somewhat schizophrenic behavior of the predicate in (28d): in certain respects it behaves as an unaccusative (the argument is in the scope of the distributor); in others it acts as an unergative (grammatical under impersonal passive).

Last but not least, let me turn to the question concerning the difficulty of getting a distributive reading with singular subject and singular object (as in (28e)). I submit that the reason is the requirement of S-summing (cf. Rothstein 2004) on the distributed event. I turn to this issue directly.

### 2.3. The semantics of Aspectual levels in Polish

In order to explain why S-sum cannot apply in (28d) I need to spell out certain assumptions about Aspectual heads. I follow Stowell (1993), Zagona (1990) and Demirdache and Uribe-Etxebarria (2000) in assuming that Aspect, similarly to Tense, is a spatio-temporal predicate that orders two time-denoting arguments. The internal argument of Asp is ET (Event Time) and its external argument is RT (Reference Time). Furthermore, I assume that bare stems in Polish lack the right boundary, as opposed to English verbal predicates (cf. Giorgi and Pianesi 1997 for the consequences of this difference for English versus Italian and German). The left boundary is always present for dynamic eventualities by virtue of the presence of the state preceding the event  $e$  at which  $e$  does not hold (cf. Déscles and Guentchéva 1995 for the difference between process in progress and state). Thus, Asp where the prefixes check the relevant feature [+Perf] has the semantics AFTER. This is in accordance with Demirdache and Uribe-Etxebarria's (2000) assumptions relating spatial and temporal orderings by means of Prepositions of Central and Noncentral Coincidence (cf. Hale 1986). The fact that the prefix *po-* is homophonous with the preposition *po* which means 'after' makes it a relevant candidate for checking [+Perf] feature of Asp<sub>1</sub>P. Let us examine the derivation of *po-prze-pis-ywa-ć* (PO-through-write-IMPF-INF) in steps.

First, the prefix *prze-* introduces a Reference Time (R<sub>1</sub>T), which follows the ET:

$$(30) \quad \dots\dots \overset{ET}{\underbrace{\{ \dots\dots \}} \dots\dots \text{prze-pisać}$$

R<sub>1</sub>T

Note that the event is bounded and this is the reason why it cannot receive the Present Tense interpretation. If Present Tense amounts to temporal containment or overlap with the Utterance Time (UT) and if UT is always necessarily construed as punctual (cf. Giorgi and Pianesi 1997), then the bounded/perfective ET cannot be contained within UT since it violates the requirement on UT punctuality. Another way to capture the same generalization would be to say that a bounded accomplishment has no atomic subparts that would be in its denotation and would be available

for the overlap/containment relation with UT (as opposed to S-summable activities and states). There is one problem with this way of construing temporal relations, which I will call the ‘inheritance’ problem.<sup>15</sup> If RT provides a boundary, and in this sense is a point, and if UT relates only to RT, then it is surprising why the containment relation necessary for the Present Tense interpretation should be impossible. Instead, it seems UT relates to the whole temporal extension acquired during the derivation. In the case at hand, it refers to the temporal extension of ET + RT. This problem recurs in the stacking scenario and I will come back to it.

The way ET can coincide with UT is mediated by means of the Secondary Imperfective. SI, I submit, is the next aspectual level Asp<sub>2</sub>P with the semantics WITHIN under the Progressive reading. Note, however, that there is a different reading possible with SI, to wit the Habitual/Iterative reading. The semantics of iterative SI is not easily captured by means of prepositions of (non)central coincidence. The workings of SI in the Progressive interpretation is shown in (31a)<sup>16</sup> and the Iterative interpretation in (31b).

- (31) a.  $\dots\dots[\dots\dots[\dots\dots]]\dots\dots$       prze-pis-ywa-ć (Prog)  
 $\underbrace{\hspace{2em}}_{R_2T}$        $R_1T$
- b.  $\dots\dots[\dots\dots][\dots\dots]\dots\dots[\dots\dots]\dots\dots\infty$       prze-pis-ywa-ć (Iter)  
 $\underbrace{\hspace{1em}}_{e_1}$        $\underbrace{\hspace{1em}}_{e_2}$        $\underbrace{\hspace{1em}}_{e_n}$

Now, these predicates are nonbounded and imperfective. That means the minimal atomic subevents are available for reference and consequently they can coincide with the Utterance Time. Note that under these assumptions SI can only apply to the delimited predicate. Therefore bare stems are ungrammatical under SI (either Progressive or Iterative):

- (32) \*rob-i-a-ć (*make-V-IMPF-INF*), \*gwizd-Ø-ywa-ć (*whistle-v-IMPF-INF*)<sup>17</sup>

The ungrammaticality of (32) follows if SI is treated as an ordering predicate and requires ET to be an interval bounded on both sides. Furthermore, for the Iterative interpretation it is also crucial that there is a fixed right boundary. Otherwise there is no interval to be multiplied.

The next step is to bound these nondelimited predicates by means of the prefix *po-*. Note that the fact that this prefix attaches after SI is confirmed by the scoping relations: the prefix scopes over SI, i.e. it yields a delimited/perfective predicate that is not possible as a complement of a phasal verb ((33a)), nor can it receive Present Tense interpretation ((33b)).

<sup>15</sup>Thanks to Tarald Taraldsen for bringing it to my attention.

<sup>16</sup>I follow Julien (2001) in assuming that RT can be either an interval or a point.

<sup>17</sup>There is a very restricted group of verbs that are possible in unprefixed forms under SI. I assume they are residual in character and will not be preoccupied with them.

- (33) a. \*zacząć po-prze-pis-ywa-ć listy  
*begin PO-through-write-IMPF-INF letters*  
 intended: ‘begin rewriting the letters distributively/for a while’  
 b. po-prze-pis-uj-e-sz listy  
*PO-through-write-v-PRS-2SG letters*  
 ‘you will copy the letters distributively/for a while’

Now, note that the two different  $R_2$ Ts introduced in (31a) and (31b) respectively will result in two different readings when *po-* attaches. Note that in (31a) I illustrate  $R_2$ T as an interval. This is not exactly true. On the assumption that time is dense,<sup>18</sup>  $R_2$ T does not really have boundaries—it is an interval to the exclusion of the beginning and final time points of  $R_1$ T. Thus, it is always possible to introduce a new RT, i.e.  $R_3$ T that comes AFTER  $R_2$ T. The question is what the ordering of  $R_3$ T is with respect to  $R_1$ T. If  $R_3$  only relates to  $R_2$ T, then the relation between  $R_3$ T and  $R_1$ T should not be asserted. But in actuality the reading is such that the copying has not been completed, i.e.  $R_3$ T WITHIN  $R_1$ T, and we are back to the ‘inheritance problem.’ I illustrate the delimitative reading in (34a).

In (34b), on the other hand, *po-* introduces an  $R_3$ T after the last iterated delimited event, i.e. when all of the denotation of the object has been affected. This results in a distributive reading. Again, the relation between  $R_3$  and  $R_1$ T seems to be a part of the assertion in the sense that the internal constitution of each subevent is not accessible, i.e.  $R_3$  OUTSIDE  $R_1$ T. I submit that ‘inheritance’ is responsible for ‘change-of-state’/quantized interpretation of the distributive *po-*.

- (34) a.  $\dots\dots[\dots[\dots]\dots]\dots\dots$  po-prze-pis-ywa-ć<sup>P</sup> (delim.)  
 $\underbrace{\quad\quad\quad}_{R_2T} \quad\quad\quad R_3T \quad\quad\quad R_1T$   
 b.  $\dots\dots[\dots][\dots][\dots]\dots\dots$  po-prze-pis-ywa-ć<sup>P</sup> (distr.)  
 $\underbrace{\quad}_{e_1} \quad \underbrace{\quad}_{e_2} \quad \underbrace{\quad}_{e_3} \quad R_3T$

I schematically represent the structure of temporal relations in (35a) for the Progressive reading and (35b) for the Iterative:

- (35) a. [ $R_3T$  AFTER [ $R_2T$  WITHIN [ $R_1T$  AFTER ET ]]]  
 b. [ $R_3T$  AFTER [ $R_2T$  OUTSIDE [ $R_1T$  AFTER ET ]]]

By ‘inheritance,’  $R_3$ T in (35a) is not only AFTER  $R_3$ T, but also WITHIN the whole temporal extension of  $R_1$ T + ET. Analogously, in (35b)  $R_3$ T is

<sup>18</sup>It seems to me not to be contradictory to assume time density and gradable property Scale granularity. The first case is relevant for pure temporal relations between different RTs, whereas the latter is a condition on the lexical semantics of predicates. If so, then the function mapping the lexical semantics of e.g. DAs into their temporal trace would have to map minimal change events as a single point.

not only AFTER  $R_2T$ , but also OUTSIDE the whole temporal extension of  $R_1T + ET$ .

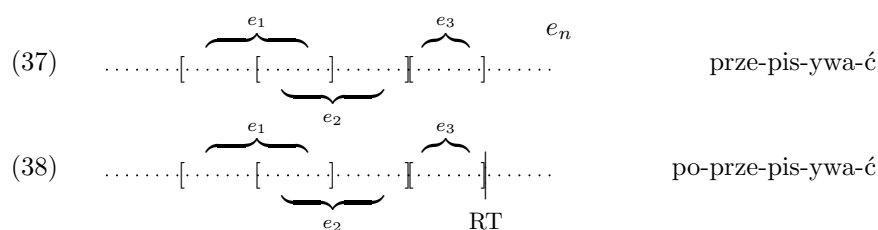
Let me now come back to the problem raised by the unavailability of the distributive reading with the singular subject and object in (28e). Suppose that (36) holds:

(36) Perfective Aspect can only apply to the predicate after S-summing.

(36) seems to me to be intuitively justified—in order to be delimited the predicate needs to be construed as holistic. Suppose now, following Rothstein (2004), that S-sum can only apply to overlapping events. Two events  $e$  and  $e'$  overlap temporally if (at least) the last point of  $e$  is the first point of  $e'$ . Now, note that with activities and states S-sum will apply even when the minimal events have the same participant. However, with predicates of change, the only overlapping possible arises when the participants of the change predicate are different.

If  $X$  is a predicate of change, then two events in  $X$  with the same participants cannot immediately follow each other since an event of change from  $\neg\varphi$  to  $\varphi$  cannot be immediately followed by a second event of the same kind (with the same participant) without first there being a change back from  $\varphi$  to  $\neg\varphi$ . (Kamp 1979)

Thus, when there is a plural object and a singular subject, in principle there is no problem conceiving of the subevents as overlapping. Specifically, with respect to (28b), Mary could have started copying one letter without finishing it, then start copying the second one, and then come back to finish the first one, and so on. This is illustrated in (37a). In this case S-sum can properly apply to the predicate, in accordance with (36). Consequently, the predicate can be delimited by means of *po-* once the copying of the last letter is over, as in (38b).



With respect to (28e), however, where both the subject and the object are singular, S-sum will not meet the conditions for application since the particular subevents of change from  $\neg\varphi$  to  $\varphi$  would have to be interrupted by events of change from  $\varphi$  to  $\neg\varphi$ .

Furthermore, note that the hypothesis in (36) also helps explain why a distributive reading is available with Degree Achievements. As noted by



Rothstein, DAs are the only kind of predicates of change that do satisfy the conditions for S-summing. Let us be more explicit. Low verbalizer *-ej-* stems were already illustrated in (10a). Now, I provide some inchoative *-n-* stems in (39):

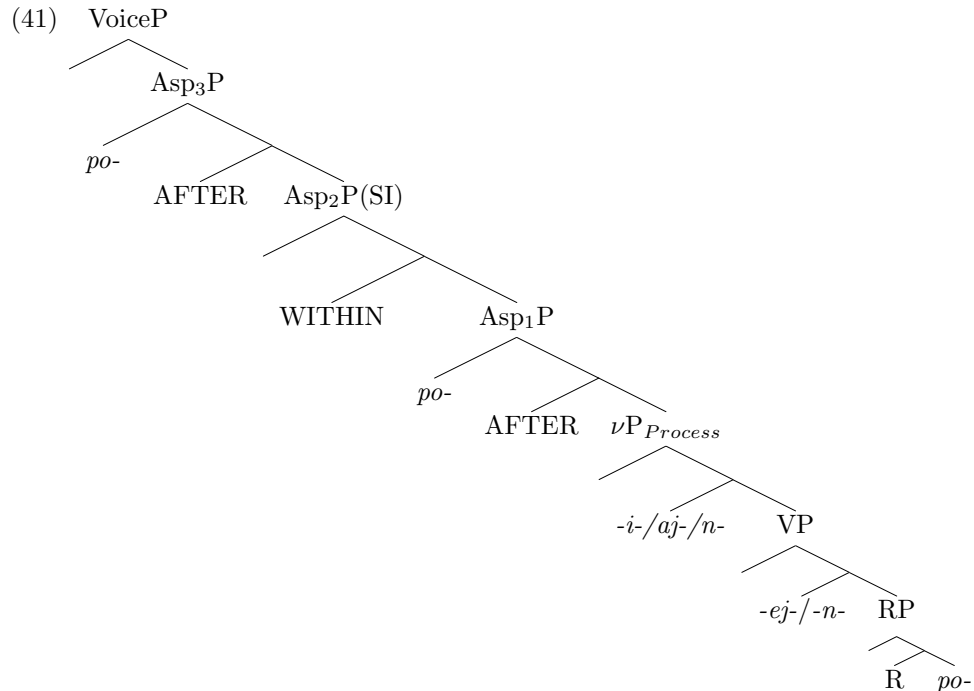
- (39) a. *po-marz-ną-ć* ‘freeze distributively’  
 b. *po-głuch-ną-ć* ‘go deaf distributively’  
 c. *po-więd-ną-ć* ‘wither distributively’  
 d. *po-ślepną-ć* ‘go blind distributively’

DAs are not changes from  $\neg\varphi$  to  $\varphi$ . They are changes of the degree on a scale with respect to some gradable property, as we have seen in section 2.1. Suppose there are two events  $e$  and  $e'$ , where  $BEG(e)$  is 0 and  $END(e)$  is 0.03, and  $BEG(e')$  is 0.03 and  $END(e')$  is 0.05. Then these two subevents minimally overlap in the sense that the final point at which  $e$  holds is the initial point at which  $e'$  holds. No other subevent need intervene. Thus, the two events are S-summable with the degree of change 0.05.

I spell out the proposal about *po-* in Polish in (40):

- (40) 
*Po-* in Polish is a spatiotemporal ordering predicate that orders a Reference Time AFTER Event Time (or another Reference Time). Since it measures the development along some continuum (e.g. temporal, degree scale or path), it selects for S-summable and non-punctual predicates. It can be merged below or above Secondary Imperfective.

Let us be explicit about the structural positions of different aspectual levels in Polish. The structure is as in (41):



Note that I assume that all prefixes are phrasal. The assumption is motivated by their phonological behaviour—very few phonological processes, (not even Vowel Deletion in homogeneous clusters) seem to occur at the prefix-root boundary (cf. Rubach 1984). For a detailed discussion of this point the reader is referred to Svenonius (2004).

It is also important to note that I assume that even lower level prefixes, e.g. lexical prefixes in the complement of RP, have [*u*Perf] which they need to value against Asp<sub>1</sub>.<sup>19</sup> Multiple Agree, however, is not possible. Therefore, any other prefix would be left without any hope of valuing its [Perf] feature. That explains an absolute ban on stacking lexical prefixes with delimitative/distributive *po*—a feature that makes Polish *po* look very different from the Czech one (cf. Součková 2004b):

- (42) \**po-s-tracić* (*PO-PREF-lose*), \**po-ob-kopać* (*PO-around-dig*), \**po-wy-rzucić* (*PO-out-throw*)

In a sense, all of these prefixes are fulfilling the same function. Therefore they cannot stack. Note, however, that there is no principled reason why the prefixes identifying different aspectual levels couldn't be stacked. Thus, once the predicates in (42) are secondary imperfectivized, it is possible to stack even homophonous prefixes that have their features valued by different

<sup>19</sup>The alternative would be of course to assume that the uninterpretable feature is really on Asp, with the same consequences. I leave the technicalities aside.

Aspectual projections:

- (43) po-ob-kop-ywa-ć (*PO-around-dig-IMPF-INF*) ‘dig around distributively/for a while,’ po-wy-rzuc-a-ć (*PO-out-throw-IMPF-INF*) ‘throw out distributively/for a while’

These forms are expected since the lexical prefix first checks its feature against Asp<sub>1</sub> and marks the predicate as perfective, later on the predicate is imperfectivized at Asp<sub>2</sub>P, and finally perfectivized the second time under Spec-head agreement between *po-* and Asp<sub>3</sub>.

Finally, let me note with respect to the structure in (41) that my motivation for merging Voice above SI is presented in (44), where the SI morpheme is attached below VoiceP. This is a verbal passive, as confirmed by the agentive auxiliary *zostać* (‘become’):

- (44) Okna zostały po-za-myk-a-n-e.  
*windows became PO-PREF-close-IMPF-PASS-PST.PL.NONVIR*  
 ‘The windows have been closed.’

### 2.3.1. Semelfactives

The semelfactive suffix is taken to be a flavor of  $\nu$  in section 1. In this sense it is similar to high level verbalizers *-i/y-* and *-aj-*. Yet, there is a major difference between the two flavors: *-i/y-* and *-aj-* are processual in nature, whereas semelfactive *-n-* is instantaneous. This fact yields a prediction that *po-* will never be able to attach to semelfactives. This is because *po-*, measuring development along the continuum, is left without anything to measure in the case of semelfactives. Semelfactives lack a process part and are not S-summable. This is contra certain assumptions in Rothstein’s (2004) theory, which, however, is tailored for English. In English semelfactives are atomic events which can be S-summed into an activity reading. In Polish, semelfactives are distinct morphologically from their non-semelfactive counterparts. The correctly predicted incompatibility with *po-* is shown in (45):

- (45) \*po-wark-ną-ć (*PO-snarl-SEM-INF*), \*po-kop-ną-ć (*PO-kick-SEM-INF*),  
 \*po-mach-ną-ć (*PO-wave-SEM-INF*)

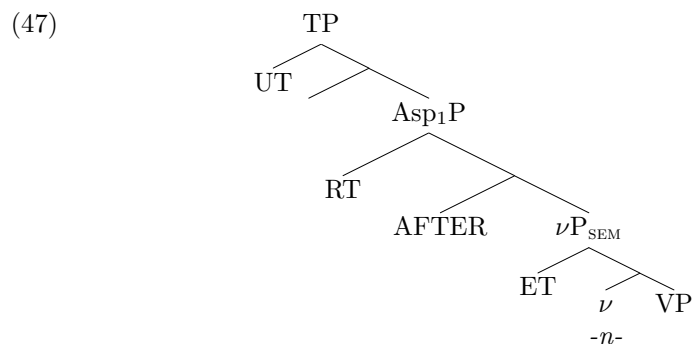
To the extent, however, that it is intuitively clear that delimitative readings are unavailable since the Event Time is a point in the case of semelfactives, it is less clear why distributive readings could not arise. Assuming there is a plural external argument, e.g. five dogs, why couldn’t the dogs snarl once each one by one and in this way create a temporal continuum? This is because if the events of single snarls by particular dogs were to minimally overlap, the initial point of  $e_2$  would have to coincide with the final point of  $e_1$ . But since the semelfactive event consists of one single point, all of the cumulation of single snarl events would have to coincide at the end of

the day. Essentially, all of the dogs would have to snarl simultaneously. That situation, however, does not result in a temporal continuum required by *po-*. Hence the ungrammaticality of (45) is explained.

Note furthermore that being punctual counts as an individuated RT, i.e. all the semelfactives are perfective. This is shown by means of the standard tests in (46):

- (46) a. \*Marek zaczął mach-*ną-ć*.  
*Marek began wave-SEM-INF*  
 b. Zaraz mach-*ni-e-sz*  
*soon wave-SEM-PRS-2SG*  
 ‘You will wave once soon’

One might argue that there is a crucial incompatibility between the semantics of phasal verbs (which require a process) and the punctual semantics of semelfactives in (46a). Yet, there is no way to explain the lack of Present Tense interpretation for semelfactives in (46b). If the ET were to be related to UT directly, there is no reason why the two should not be allowed to overlap. Since both are punctual, the WITHIN ordering should amount to  $ET = UT$  and yield the Present Tense reference. Thus, we are forced to assume that the semelfactive suffix *-n-* also has [*uPerf*] which it checks and values against  $Asp_1$ . In that case ET will be ordered with respect to RT introduced by  $Asp_1P$  and only then RT will be ordered with respect to UT introduced by T, as in (47):



In this structure, however, at the point where the  $Asp_1P$  is merged, the temporal extent referred to already consists of two points—ET followed by RT. This is a bounded sequence. Hence the semantics of T cannot be WITHIN. A containment relation is not possible.

One final remark with respect to an attempted stacking of the prefix on the semelfactive stem in (45) is that the morphology of these cases amounts to merging  $Asp_3P$  directly on top of  $Asp_1P$ , i.e. perfectivizing an already perfective verb. This is clearly impossible, and I follow Demirdache and Uribe-Etxebarria (2000) in assuming that the impossibility is due to

vacuous viewpoint shift.<sup>20</sup> One might envisage, however, a situation where the relation between the semelfactive event and Asp<sub>3</sub> is mediated by Asp<sub>2</sub>. This structure is predicted to be possible. Unfortunately, semelfactives never form Secondary Imperfectives, as illustrated in (48):

(48) \**po-wark-n-ywa-ć* (*PO-snarl-SEM-IMPF-INF*)

This brings us to the question about the semantics of SI, and the restrictions on SI formation, which I undertake in section 3. Before I proceed to investigate this issue, let me first show how *po-* produces different readings in another domain, namely motion verbs.

#### 2.4. Motion verbs

There is a distinction in Polish between directed and non-directed motion verbs. Formally, they differ in terms of conjugation classes. Semantically speaking, the difference lies in the inherent endpoint specification. Thus, directed motion verbs can take PPs specifying the initial or final location, whereas non-directed motion verbs are incompatible with these PPs (unless in the Progressive or Iterative readings). I illustrate in (49):

(49)	<b>dir.</b>	<b>class</b>		<b>non-dir.</b>	<b>class</b>	<b>gloss</b>
	<b>motion</b>			<b>motion</b>		
	iść	irreg.		chodzić	-i- stem	walk
	biec	-C- or inch. -n-?		biegać	-aj- stem	run
	lecieć	-e- stem		latać	-aj- stem	fly
	pływać	-C- stem		plwać	-aj- stem	swim
	nieść	-C- stem		nosić	-i- stem	carry
	ciągnąć	-C- or inch. -n-?		ciągać	-aj- stem	drag

Now, note what kind of readings *po-* produces when attached to directed motion verbs (in (50)) and non-directed motion ones (in (51)):

- (50) a. *pó-jść* ‘go away’  
 b. *po-biec* ‘run away’  
 c. *po-lecieć* ‘fly away’  
 d. *po-ciągnąć* ‘drag a bit’
- (51) a. *po-chodzić* ‘walk for a while’  
 b. *po-biegać* ‘run for a while’  
 c. *po-latać* ‘fly for a while’  
 d. *po-ciągać* ‘drag for a while’

<sup>20</sup>One problem I will not offer a solution for is that with certain semelfactives semantically empty or lexical prefixes seem to be possible, e.g. *u-klęk-ną-ć* (PREF-kneel-SEM-INF), *za-czerp-ną-ć* (PREF-scoop-SEM-INF), *od-wark-ną-ć* (back-snarl-SEM-INF), *przy-tup-ną-ć* (at-tramp-SEM-INF). This might be the point at which technicalities play a role: if [uPerf] is on Asp, then this feature might be checked by either a semelfactive suffix or a prefix. Since the Spec,  $\nu$ P is empty, there is a place for merging/moving the prefix.

The results for high verbalizer non-directed motion verbs in (51) are consistent with what we found earlier: the reading is delimitative since the verbalizers are of the high processual type. *Po-* sets an arbitrary right boundary by means of RT. The predicates are monotone decreasing since no change has taken place. For the same reason they are incompatible with an *in an hour* adverbial since this PP is sensitive to the final change of state.

What about directed motion, then? One might in principle hypothesize that ‘away’ is a lexical prefix. However, no argument structure change seems to occur, nor any violation of the compositionality of meaning. Note, incidentally, that an unaccusative low level verbalizer analysis is unavailable for non-directed motion verbs. This is for two reasons: firstly, some of them are transitive verbs, and secondly, some of them pass the unergativity test, namely impersonal passive -NO/TO formation:

- (52) Natychmiast po-biegnię-to po lekarza.  
*immediately PO-run-TO after doctor*  
 ‘Someone immediately ran away to bring a doctor.’

Furthermore, the conjugation classes that directed motion verbs belong to are uninformative, i.e. they are the classes where the decision about root insertion needs to be made on a case-by-case basis.

When one considers the intransitive directed motion verbs in (50), it seems that the prefix is inceptive in nature. In the present framework the function of the inceptive prefix is to introduce RT which would come BEFORE the ET. Note however, that in section 2.3 I assumed that all dynamic eventualities come necessarily equipped with the left boundary. If that is the case, it is not easy to see why the inceptive prefix should be allowed to introduce its own RT BEFORE ET. This configuration should be ruled out as a vacuous viewpoint shift. A more general consequence of such assumptions is that a ‘real’ inceptive prefix only attaches to stative verbs. In fact, there is some indication that it might be true, e.g. it is true that the inceptive can attach to low *-ej-* verbalizer stems; yet, the reading that it produces is an inchoation of a state, rather than an inchoation of a transitional dynamic eventuality, as shown in (53):

- (53) za-jaś-ni-e-ć  
 INCP-*bright*-ADJ-*V-Inf*  
 ‘to start being bright’ (#‘to start becoming bright’)

I will not investigate this prediction in detail for lack of space, noting only that in fact one of the ways to delimit a state is to fix its left boundary, as done by means of *po-* in (54).<sup>21</sup>

<sup>21</sup>Contrary to the claims in Młynarczyk (2004:132), it is sometimes possible to attach delimitative *po-* to stative verbs, e.g. *po-siedzieć* (PO-sit) ‘sit for a while,’ *po-wiszieć* (PO-hang) ‘hang for a while,’ *po-cierpieć* (PO-suffer) ‘suffer for a while.’

- (54) a. *po-kochać* (*PO-love*) ‘start loving’  
 b. *po-lubić* (*PO-like*) ‘start liking’

The conclusion seems to be that the prefix with directed motion verbs cannot be inceptive. And in fact this is clearly seen when one considers transitive verbs of directed motion (as in (50d)). Some ground must have been covered along the spatial path in order for the predicate to be true. Thus, I follow Kennedy and Levin (2002) in extending the scalarity analysis from DAs into directed motion verbs.

- (55) Directed motion verbs contain a differential degree argument *d* that measures movement along a path. (adapted from Kennedy and Levin (2002))

Analogously to Polish DAs unprefixated directed motion verbs correspond to the case where *d* is not quantized, but only existentially bound. That implies that roots denoting motion with inherently directed verbalizers (whether they are merged at  $\nu$  or V) denote predicates which are true even if  $d = 0.01$ .

In turn, since directed motion stems are S-summable, like DAs, a path is created under S-summing and *po-* can introduce RT that follows S-summed ET.

The analysis of directed motion verbalizers as consisting of minimal S-summable subevents will also become crucial for the possibility of forming SIs investigated in section 3. To sum up, we have seen that *po-* produces delimitative readings with high processual verbalizers that form non-directed motion stems, whereas it yields a *centrifugal* reading with verbalizers of directed motion. This is the result of the interaction of the semantics of *po-* with homogeneous predicates in the former and change-of-state predicates in the latter case.

One final point that requires elucidation is the domain of predicates with a differential argument *d*. Kennedy and Levin (2002) extend their analysis to Incremental Theme verbs as well. However, nothing of the sort holds of Incremental Theme verbs in Polish. Note, however, that this is concurrent with a macro-parametric difference between English, which tackles aspectual notions mostly pragmatically, and Polish, which uses morphological clues to encode aspectual notions. From this perspective, it is clear why Incremental Theme verbs are not distinguished by any common verbalizer type, but DAs, as well as directed motion verbs are. The former have a verbalizer with particular semantics; the latter stand out in opposition to their non-directed counterparts.

### 3. Secondary Imperfective

There are certain predictions associated with the structure in (41). To wit, if SI is located above  $\text{Asp}_1$ , we expect all the verbs that check aspectual

features against  $\text{Asp}_1$  to derive SIs. This, indeed seems to be (at least partially) confirmed. For the time being I restrict the discussion to deriving SI out of *po-* delimited verbs.

- (56) a. ?*po-czyt-Ø-ywa-ć* ‘from time to time read for a while’  
 b. *po-gr-Ø-ywa-ć* ‘from time to time play for a while’  
 c. \**po-chadz-a-ć* (intended: ‘from time to time walk for a while’)  
 d. *po-pal-Ø-a-ć* ‘from time to time smoke for a while’

The existing forms in (56b) and (56d) are called in the literature ‘attenuative-frequentative’ (henceforth, AF) readings of *po-* and associated with some kind of notion of ‘low intensity of action.’ In (57) and (58) I show more examples, as well as the fact that it is not a completely productive process:

- (57) a. *po-płak-Ø-iwa-ć* ‘cry a bit from time to time’ *-a-* stem  
 b. *po-kasł-Ø-ywa-ć* ‘cough a bit from time to time’ *-aj-* stem  
 c. *po-miauk-Ø-iwa-ć* ‘meow a bit from time to time’ *-e-* stem  
 d. *po-gwizd-Ø-ywać* ‘whistle a bit from time to time’ *-a-* stem
- (58) a. \**po-krocz-Ø-a-ć* (*PO-step-v-IMPf-INF*) *-i-* stem  
 b. \**po-tańcz-Ø-a-ć* (*PO-dance-v-IMPf-INF*) *-i-* stem  
 c. \**po-koch-Ø-iwa-ć* (*PO-love-v-IMPf-INF*) *-aj-* stem

The generalization seems to be that the verbs which productively derive SIs are what Młynarczyk (2004) calls UNITISABLE verbs, i.e. verbs that are conceptualized as consisting of separate minimal events and therefore they can also take a semelfactive suffix. Yet, AF formation is not restricted to these verbs, e.g. (56b)–(56d) and (57a) are not unitisable and do not form semelfactives. What is important, however, is that all of the existing AF are high level processual verbalizer stems or else stems whose status is undetermined. This is in accordance with what we said about the semantics of *po-*. An attempt at deriving SI from low level verbalizer stems, i.e. *-ej-* stems and inchoative *-n-* stems is undertaken in (59):

- (59) a. \**po-siwi-a-ć*  
*PO-grey-IMPf-INF*  
 (intended: ‘be getting grey considerably’)  
 b. \**po-/wy-marz-n-(yw)a-ć*<sup>22</sup>  
*PO-/out-freeze-INCH-IMPf-INF*  
 (intended: ‘be getting considerably frozen outside’)

I will come back to the reason why low level verbalizer stems are not able to derive SIs once the assumptions about the nature of SI are spelled out. For the time being let me continue with AFs.

<sup>22</sup>For some mysterious reason inchoative *-n-* stems do not take ‘considerable change’ *po-* at all. Nevertheless, the point about AF remains unaffected, as shown by means of the lexically prefixed verb *wy-marznąć* ‘freeze outside.’



The question is what is the nature of the prefix in AF forms. Is the prefix lexical or superlexical? I will claim below that the prefix in question is a delimitative superlexical *po-*. One thing about AFs seems to be quite easy to show, namely the fact that the SI scopes over the prefix. This is because AFs are all imperfective. Now, it seems to me that the key to understanding attenuative-frequentative forms lies in the meaning of the verbs in (57). Compare in this respect the two forms:

(60) gr-ywa-ć<sup>23</sup>(*play-IMPF-INF*) vs. po-gr-ywa-ć (*PO-play-IMPF-INF*)

The unprefixed form means ‘play regularly as a habit,’ whereas the prefixed one means: ‘play from time to time for a while, but not regularly.’ I would like to argue that the ‘low intensity’ impression is a side effect of the contribution of delimitative prefix merged in Asp<sub>1</sub>P combined with the derived imperfective. Yet, it is not a completely different ‘attenuative’ prefix *po-*. If one whistles repeatedly, but only for a while or a bit, the breaks during which whistling does not take place become linguistically significant and result in the ‘low intensity’ interpretation. Note also that in the AF cases *po-* applies to homogeneous predicates and we saw in section 2.1 that it yields a monotone decreasing ‘slightly’ reading of *po-*. Again, there is only one small step between ‘slightly’ and ‘attenuative’ nature of these predicates. If that analysis seems straining the point, let me just observe, that, as far as my native judgements are concerned, there is nothing about ‘low intensity’ that would make it more than just an ‘impression,’ in comparison to paraphrases like ‘for a while’ or ‘a bit.’ On the other hand, there are good reasons not to associate the prefix in AF forms with the attenuative lexical prefix, and I will turn to these reasons below.

It should also be pointed out that the fact that particular events are separated by breaks at which the events do not hold is perfectly fine. That is to say, the events do not need to be S-summable. The requirement on S-summation only holds for the potential prefixes scoping over SI. And that is clearly prohibited in accordance with (36):

(61) a. \*po-po-gr-ywa-ć  
       *PO-PO-play-IMPF-INF*  
       (intended: ‘for some time play irregularly from time to time’)  
       b. \*po-po-pal-a-ć  
       *PO-PO-smoke-IMPF-INF*  
       (intended: ‘for some time smoke from time to time’)<sup>24,25</sup>

<sup>23</sup>This verb is exceptional in deriving SI even without a prefix. That is why it forms such a good basis for comparison and separating the ‘attenuative’ component.

<sup>24</sup>Violation of the conditions for application of S-summation usually results in degraded status (marked with “??”) rather than outright ungrammaticality (“\*”). In the examples at hand, however, the marginality is strengthened by the homophony of the two prefixes.

<sup>25</sup>These forms under the present analysis should be fine with the Progressive reading. Yet, firstly, the progressive reading is somewhat hard to obtain, and secondly, that would

If the prefix in AFs was a lexical one, there would be no reason why this kind of stacking should be illegitimate (cf. also stacking in section 4). One might still envisage maintaining the analysis of *po-* in AF forms as a lexical prefix with the meaning of ‘low intensity,’ and in fact there is a lexical prefix with the meaning. But its morphological exponent is always *pod-* in Polish. As observed in Svenonius (2004), one expects to see allomorphy in this low region of the clause, but it is a bit surprising that a contextual allomorph *po-* should display such a long-distance dependence (i.e. selected by SI). I illustrate the lexical attenuative prefix in (62):

- (62) a. *pod-jeść*  
       *PREF-eat*  
       ‘eat at low intensity’  
       b. *pod-jad-a-ć*  
       *PREF-eat-IMPF-INF*  
       ‘eat at low intensity’

Note furthermore that the lexical attenuative prefix does not have any requirement with respect to SI, i.e. (62a) is possible alongside its derived imperfective form in (62b). If *po-* in attenuative-frequentative forms were lexical, there is no immediate account for the impossibility of (63) with attenuative reading:

- (63) a. *#po-palić*  
       *PO-smoke*  
       (intended: ‘smoke at low intensity’)  
       b. *\*po-miauk-ną-ć*  
       *PO-meow-SEM-INF*  
       (intended: ‘meow once at low intensity’)

Thus, the conclusion seems to be:

- (64) Attenuative-frequentative reading is the result of the predicate delimited at *Asp<sub>1</sub>* raising to derive an SI.

Based on what was said before the reader might get the impression that frequentative/iterative reading of AFs is the only possible one. This, in fact, is the reason why Młynarczyk excludes AFs from her analysis. When one looks closely, however, it seems that a one event Progressive reading is also possible. This is confirmed by the ability of AF forms to occur in the Progressive context in (65a). Purely iterative/habitual forms cannot occur in this context ((65b)), at least not with the same truth conditions.

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be excluded by virtue of being semantically vacuous, to wit, the forms would mean ‘to burn for a while, for a while.’

- (65) a. Maria po-dmucha-iwa-ła            na zupę kiedy wszedł Jan.  
*Maria PO-blow-IMPF-PST.F.SG at soup when entered Jan*  
 ‘Maria was in the process of blowing at the soup for a short  
 time when Jan entered.’
- b. #Maria gr-ywa-ła            na wyścigach kiedy przyjechał Jan.  
*Maria play-IMPF-PST.F.SG at races when came Jan*  
 intended: ‘Maria had a habit of gambling at the races when  
 Jan came.’

In (65b) Maria does not have to be involved in the gambling activity exactly at the moment when the event of Jan coming takes place and the sentence is still true. In (65a), on the other hand, the sentence is false if Maria’s blowing and Jan’s coming do not coincide temporally. Thus, we conclude that both the Progressive and the Habitual/Iterative readings are possible in AFs.

In fact, I adopt a stronger version of this claim, where the presence of the Habitual/Iterative is contingent on the presence of the Progressive reading, since both are realized in the same structural position (but see Młynarczyk 2004, Ramchand 2004 and Svenonius 2004 for a different view). If there were two different functional projections involved, one would see some morphological discrepancies, especially in Russian, where SI formation seems to be somewhat idiosyncratic and not so much stem-dependent. But that is clearly never the case. In some cases one or the other reading might be hard to obtain, but native speakers are usually very good at inventing the scenarios where the relevant reading would arise. Such a state of affairs is also vital for the present analysis of low level verbalizers: if Iterative was distinct from Progressive, then there is no way to inhibit SI formation with the Iterative interpretation for low verbalizer DAs. But that situation never arises either.

At this point, let me elucidate the assumptions about the function of SI. For the Progressive reading, I follow Demirdache and Uribe-Etxebarria (2000):

- (66) a. **Secondary Imperfective (Progressive)**  
 SI is a spatiotemporal dyadic predicate with the semantics of central coincidence WITHIN that orders its external argument -RT- WITHIN Event Time (ET). In this sense it selects for a delimited interval ET.
- b. **Secondary Imperfective (Iterative)**  
 SI is a spatiotemporal dyadic predicate with the semantics OUTSIDE that multiplies *infinitely* the Event Time (ET) and orders RT OUTSIDE multiplied ET. Since multiplication is infinite, the result is a nondelimited predicate. Since the event must be individuated for multiplication, it selects for delimited predicates.

I have already illustrated the way the two readings of SI work in (31). Now, let me turn to the restriction on SI stemming from the proposal in (66). We have seen that the formation of SI based on high processual verbalizer stems that have been delimited is very productive. This is expected when ET is a delimited interval and hence all the requirements of SI are fulfilled. Yet, there is a substantial group of predicates which cannot form SI even though they are high processual verbalizer stems:

- (67) a. s-trac-**i**-ć (PREF-lose- $\nu$ -INF<sup>P</sup>) vs. \*s-trac-a-ć (PREF-lose-IMPF-INF)  
 b. z-rob-**i**-ć (PREF-make- $\nu$ -INF<sup>P</sup>) vs. \*z-rab-i-a-ć (PREF-make- $\nu$ -IMPF-INF)  
 c. s-chow-**a**-ć (PREF-hide- $\nu$ -INF<sup>P</sup>) vs. \*s-chow-ywa-ć (PREF-hide-IMPF-INF)

The prefixes in question are purely perfectivizing prefixes in the sense that no meaning change is contributed. The predicates delimited by these prefixes never form SI. Why should that be so? I submit that this is because perfectivizing prefixes are merged at the level of Asp<sub>2</sub>, i.e. they are interchangeable with the SI. Thus, Asp<sub>2</sub> can have two different semantic flavors: that of central coincidence (i.e. SI) or that of non-central coincidence (i.e. Perfective AFTER).

- (68) Purely perfectivizing prefixes are merged in Spec,Asp<sub>2</sub>P.

Note that in many cases *po-* occurs in this purely perfectivizing function, as illustrated in (69):

- (69) a. po-brudzić ~ \*po-brudz- $\emptyset$ -a-ć  
           *PO-dirty*<sup>P</sup>        *PO-dirt- $\nu$ -IMPF-INF*  
 b. po-bić ~ \*po-bij-a-ć  
           *PO-beat.up*<sup>P</sup>        *PO-beat-IMPF-INF*  
 c. po-chwalić ~ \*po-chwal- $\emptyset$ -a-ć  
           *PO-praise*<sup>P</sup>        *PO-praise- $\nu$ -IMPF-INF*

The question that arises now is why there is no stacking of perfectivizing prefixes on top of other (i.e. lexical or delimitative) prefixes. The hypothetical stacking scenario is illustrated in (70):

- (70)                     $\overbrace{\quad\quad\quad}^{ET}$   
                   .....[.....].....  
                                   R<sub>1</sub>    R<sub>2</sub>

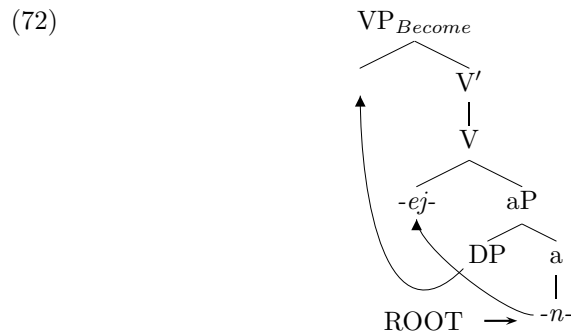
Note that this scenario is ruled out by the prohibition against vacuous viewpoint shift (cf. Demirdache and Uribe-Etxebarria 2000). What Asp<sub>1</sub> is doing is introducing an RT which follows ET. Then, Asp<sub>2</sub> is trying to do exactly the same. That yields a generalization that only the imperfective

flavor of Asp<sub>2</sub> can be merged on top of Asp<sub>1</sub>P.

Let me now come back to the question of low verbalizers under SI. Starting with DAs, note that in English DAs are perfectly fine in the Progressive:

- (71) a. The situation is worsening.  
 b. Mark is lengthening the rope.

The same is not true of Polish DAs. Firstly, the Present Tense can be expressed by the simple bare stem. As has been mentioned earlier, this is because Polish bare stems are unbounded and can coincide with the punctual UT. That means that the only situation where the need to create SI forms would arise is that in which stems are lexically prefixed. For *-ej-* stems, however, this is impossible. Consider again the structure for *-ej-* stems repeated here as (72):



Since *-ej-* stems have an adjective projection in their derivational history, and since aPs do not take RPs as complements, *-ej-* stems will never be able to take lexical prefixes (merged in the complement of RP). The only type of prefixes that *-ej-* stems can take are purely perfectivizing prefixes and (rarely) ‘considerable change’ *po-*. The reason why SI of purely perfectivized stems is impossible has been provided above and is illustrated in (73):

- (73) a. \***z**-dzicz-Ø-**a**-ć (*PERF-wild-V-IMP*-INF)  
 b. \***s**-poważ-ni-Ø-**a**-ć (*PERF-serious-ADJ-V-IMP*-INF)

Ruling out the SI of DAs with ‘considerable change’ *po-*, however, will involve more subtle details of the lexical semantics of these verbs. Note that SI always results in a homogeneous predicate. Yet, if the semantics of DAs is such that they are true of any minimal change on the Scale of degrees of change marked by numbers 0.01, 0.02, 0.03, etc. (cf. section 2.1), then in order to produce a homogeneous predicate the RT introduced by SI morpheme would have to be contained WITHIN the minimal change on the Scale S, where the  $d = 0.01$ . Given contextually determined granularity, however, there is no interval between BEG(e) and END(e) which would allow for RT containment. If, on the other hand, the RT introduced by Asp<sub>2</sub> is parasitic on the larger portion of the event created under S-summing, e.g.

contained WITHIN the interval  $d_{\langle 0.01, 0.04 \rangle}$ , then it will never result in the homogeneous predicate since the degree argument of its subintervals will always be smaller than 0.03. We conclude that the semantics of DAs is incompatible with the semantics of Secondary Imperfective and explains the ungrammaticality of (74):

- (74) \**po-siw-∅-a-ć*  
*PO-grey-V-IMPF-INF*  
 (intended: ‘be getting considerably grey’)

A subcase of the same scenario is represented by inchoative *-n-* stems. Since inchoative *-n-* stems are not derived from adjectives, the possibility of taking lexical prefixes is open. I illustrate several lexically prefixed *-n-* stems in (75a) and purely perfectivized *-n-* stems in (75b):

- (75) a. *wy-gas-ną-ć*  
*out-go.out-INCH-INF*  
 ‘expire’  
*prze-marz-ną-ć*  
*through-freeze-INCH-INF*  
 ‘freeze to the bone’  
*roze-sch-ną-ć*      *się*  
*apart-dry-INCH-INF RFX*  
 ‘dry into pieces’
- b. *z-gas-ną-ć*  
*PERF-go.out-INCH-INF*  
*z-marz-ną-ć*  
*PERF-freeze-INCH-INF*  
*s-chud-ną-ć*  
*PERF-slim-INCH-INF*  
 ‘lose weight’

Note that in accordance with what we said above about DAs verbs, it is impossible to derive SIs from inchoative *-n-* stems. I illustrate for lexically prefixed stems in (76):

- (76) \**wy-gas-n-(yw)a-ć*  
*out-go.out-INCH-IMPF-INF*  
 \**prze-marz-n-(yw)a-ć*  
*through-freeze-INCH-IMPF-INF*  
 \**roze-sch-n-(yw)a-ć*      *się*  
*apart-dry-INCH-IMPF-INF RFX*

Yet, a native speaker, when asked for SI forms of the above stems will produce the following:

- (77)      wy-gas-a-ć  
*out-go.out-AJ-**INF***  
 prze-marz-a-ć  
*through-freeze-AJ-**INF***  
 roz-sych-a-ć      się  
*apart-dry-AJ-**INF** RFX*

Note that the inchoative suffix *-n-* mysteriously disappears in these forms. There is no phonological reason for that, i.e. the forms in (76) are perfectly easy to pronounce. Thus, it is the semantics of the inchoative verbalizer *-n-* rather than the semantics of the root that is incompatible with the SI. For the forms in (77), I assume that what happens is that the root is instead redirected to a different conjugation class—namely a high processual verbalizer *-aj-* and a morphologically null SI morpheme is added.<sup>26</sup> Any theory that does not treat the verbalizers as occupying positions in the tree and having certain semantico-syntactic consequences, will have to treat *-n-* deletion as an arbitrary morphological quirk.

Obviously, for the purely perfectivized verbs in (75b), the option of shifting the conjugation class is not available at all since the prefix is merged in Asp<sub>2</sub> and is thus in complementary distribution with SI.

- (78)    \*z-gas-a-ć (PERF-*go.out-AJ-**INF***), \*z-marz-a-ć (PERF-*freeze-AJ-**INF***),  
 \*s-chud-a-ć (PERF-*slim-AJ-**INF***)

Having examined the reasons for the ungrammaticality of low level verbalizers under SI, let me now turn to the semelfactive flavor of the high verbalizers. As we have already observed, the temporal constitution of the semelfactive predicate consists of two points on the temporal continuum—ET at which the semelfactive event holds plus RT (the Reference Time AFTER the ET). RT is minimally adjacent to ET and there is no interval within which a new Reference Time could be contained. Therefore, SIs are not possible with semelfactive stems. Yet, as was the case with inchoative *-n-* stems, there is an option of shifting the conjugation class to a (already existing) non-semelfactive stem (usually *-a-* or *-aj-*) and adding a SI morpheme on top of that. In (79) I illustrate lexically prefixed semelfactives (79a), nonexistent SIs of semelfactives (79b), non-semelfactive stems of the same roots (79c), and finally SIs of non-semelfactive variants (79d).

- (79)    a.    pod-szep-**na**-ć      ~    od-mach-**na**-ć      ~  
*under-whisper-SEM-**INF**<sup>P</sup>*    *back-wave-SEM-**INF**<sup>P</sup>*  
 przy-tup-**na**-ć  
*at-tramp-SEM-**INF**<sup>P</sup>*  
 ‘make a quiet suggestion,’ ‘wave back once,’ ‘tramp once for accompaniment’

<sup>26</sup>For the arguments that there is a null allomorph of the SI see Jabłońska (in preparation).

- b. \*pod-szep-**n-ywa-ć**, \*od-mach-**n-ywa-ć**, \*przy-tup-**n-ywa-ć**  
 c. szept-**a-ć<sup>I</sup>** (*-a-* stem), mach-**a-ć<sup>I</sup>** (*-aj-* stem), tup-**a-ć<sup>I</sup>** (*-a-* stem)  
 d. pod-szept- $\emptyset$ -ywa-ć<sup>I</sup>, od-mach- $\emptyset$ -iwa-ć<sup>I</sup>, przy-tup- $\emptyset$ -ywa-ć<sup>I</sup>

(79) shows that the only possibility for forming SI out of roots denoting unitisable processes is to derive them from non-semelfactive stems. It is also by no means accidental that all of the non-semelfactive variants seem to either belong to a high processual verbalizer class (*-aj-* stems) or to a verbalizer whose status is undetermined. Neither of them belongs to a low verbalizer class.

A further question is what blocks the Iterative readings of SI of semelfactives, in other words, why couldn't the verbs in (79b) have iterative readings. I suggest that this is blocked by the existence of non-semelfactive variants. What the non-semelfactives denote is really iteration of single semelfactive events. Furthermore, as has already been observed, Iterative is strictly tied to the Progressive.

Finally, let us examine how motion verbs behave under Secondary Imperfectivization. It turns out that the Progressive as well as Iterative readings of directed motion verbs can only be rendered by means of nondirected motion verbalizer stems, as illustrated in (80):

- (80) a. Maria do-**plynie** do brzegu.  
*Maria to-swim<sub>DIR</sub>.PRS.3SG to bank*  
 'Mary will reach the bank by swimming.'  
 b. Maria zawsze/właśnie do-**plywa** do brzegu.  
*Maria always/just.now to-swim<sub>NONDIR</sub>.PRS.3SG to bank*  
 'Maria always reaches the bank by swimming/is reaching the bank by swimming just now.'

We have already worked towards a plausible answer to the puzzle in (80). Directed motion verbalizers have transitional semantics in the sense that the minimal change of the argument on the spatial continuum is enough to satisfy their truth conditions. That, in turn, implies that they do not necessarily denote an interval—a clear violation of the selectional properties of the Secondary Imperfective in (66).

Recapitulating the results of this section, we have seen that the analysis of Secondary Imperfective as an aspectual head (Asp<sub>2</sub>) with the semantics of central temporal coincidence WITHIN (for Progressive) and lack of coincidence OUTSIDE (for Iterative) explains all sorts of restrictions on the formation of SI. Thus, processual high verbalizers (i.e. *-i/y-* and *-aj-*) are always compatible with the semantics of SI, whereas low transitional verbalizers (*-ej-* and inchoative *-n-*), as well as high instantaneous verbalizer (semelfactive *-n-*) cannot derive SIs since they do not denote intervals and hence do not comply with the selectional requirement of the SI. Finally, the analysis of the purely perfectivizing prefixes (with the default spell-out *z(e)*) as instantiations of Asp<sub>2</sub>P derived mutual complementarity of SI and



purely perfectivizing prefixes. The scalarity underlying the semantics of low verbalizers has also been extended to verbalizers denoting directed motion, and accounted for the unavailability of SIs with directed motion stems.

#### 4. Lexical *po-*

In the structure in (41) in section 2.3 I tacitly assumed that *po-* can also be merged as a lexical prefix in the complement of RP position. For the sake of completeness I now need to illustrate these uses and show how they fit into the intricacies of the aspectual system of Polish. Lexical *po-* can in principle attach to all sorts of verbalizer stems, except for *-ej-* stems. The reader will recall that this is because *-ej-* stems have an adjectival derivational base. A characteristic feature of the lexical prefixes is that they result in special or idiosyncratic meanings that cannot be interpreted compositionally. This property corresponds to Marantz's domain for special meanings (i.e. first phase under current instantiations, cf. e.g. Ramchand 2003, McGinnis (to appear), Pytkäinen 2002).<sup>27</sup> I illustrate lexical uses of *po-* in (81):

- (81) a. *po-niż-y-ć* (*PO-low-ν-INF*) 'humiliate' (*-i-* stem)  
 b. *po-ciesz-y-ć* (*PO-amuse-ν-INF*) 'console' (*-i-* stem)  
 c. *po-równ-a-ć* (*PO-equal-ν-INF*) 'compare' (*-aj-* stem)  
 d. *po-zw-ać* (*PO-call-INF*) 'sue' (*-C-* stem)  
 e. *po-le-c* (*PO-lie-INF*) 'die in a battle' (C stem or *inch.*?)  
 f. \**po-grzybi-e-ć* (*PO-mushroom-V-INF*) (*-ej-* stem)

(81f) is an arbitrary *-ej-* stem meant to show the incompatibility of lexical *po-* with these stems. Note that all of the verbs in (81) are expected to derive SIs. This is indeed borne out, with the exception of (81e).

- (82) a. *po-niż-∅-a-ć* (*PO-low-ν-IMPF-INF*)  
 b. *po-ciesz-∅-a-ć* (*PO-amuse-ν-IMPF-INF*)  
 c. *po-równ-∅-ywa-ć* (*PO-equal-ν-IMPF-INF*)  
 d. *po-zyw-a-ć* (*PO-call-IMPF-INF*)

Note that the status of the verbalizer in (81e) is hard to determine due to certain irregularities in the paradigm. In a lot of forms, however, it is reminiscent of the inchoative *-n-* verbalizer. I submit that this is the reason why it resists SI formation.<sup>28</sup>

Moreover, since we claimed that lexical prefixes check their aspectual feature against *Asp<sub>1</sub>*, there should not be any problem stacking another

<sup>27</sup>When taken to its logical conclusion, the domain for special meanings/phonology amounts to reconstructing the essence of the Lexicalist Hypothesis—cf. Williams (to appear). From the perspective of prefixes, however, it does not seem that the superlexical prefixes, though part of a word, contribute in the same idiosyncratic way to the meaning of the whole complex predicate. Still, I assume that they are within the first phase if VoiceP defines a phase boundary.

<sup>28</sup>There is a verb that looks like a SI of *polec*, namely *polegać*. This verb, however, is completely dissociated from *polec* and means 'rely on.'

*po-* on top of these lexical prefixes after they have been secondary imperfectivized. This is again borne out. The speakers I consulted had some problems with the homophonous stacking; all of them, however, agreed that it's perfectly understandable what the stacked forms mean:

- (83) a. Kiedy wreszcie *po-po-równ-ywa-li-śmy* wszystkie  
*when at.last PO-PO-equal-IMPF-PST.VIR-1PL all*  
 prace, mogliśmy przystąpić do wydawania ocen.  
*works, could proceed to giving marks*  
 'When we finally finished comparing all the works, we could proceed to giving marks.'
- b. Czy wszyscy uczestnicy *po-po-twierdz-a-li*  
*if all participants PO-PO-claim-IMPF-PST.PL.VIR*  
 już swój udział?  
*already POSS.RFX participation*  
 'Have all the participants confirmed their (respective) participation?'<sup>29</sup>

Similarly to the stacking of *po-* merged in Spec, Asp<sub>1</sub> with *po-* in Spec, Asp<sub>3</sub>, the object needs to be plural for the S-summing to be operative.

Thus, it seems that lexical *po-* doesn't have any requirements with respect to the type of verbalizer: both unaccusative and unergative verbalizer stems are fine with a lexical instantiation of *po-*. This state of affairs is in fact expected considering the fact that lexical *po-* does not have a stable semantic contribution.

## 5. Summary

I summarize the correlations between types of verbalizers and uses of *po-* in Table 2.

Table 2 shows that the verbalizers defining conjugation classes induce a certain semantic typology of verbal predicates in Polish. We see that high processual verbalizers pattern together and that the two readings (delimitative and distributive) are always present in these conjugation classes, the necessary condition for the distributive being the plural denotation of the object. Careful examination of the data seems to suggest that there is no separate projection devoted to distributivity or delimitation. Rather, *po-* is systematically ambiguous between these two readings. A detectable difference between the two readings is that in delimitative use RT introduced by *po-* cannot coincide with a natural telos or the end of the Scale (for DAs). This factor is responsible for a homogeneous character of predicates delimited in this way. In distributive *po-*, on the other hand, each

<sup>29</sup>Here the object is formally singular. Yet, it is a variable bound by the plural subject.

Table 2: Different uses of *po-*

class	in Asp <sub>1</sub>	in Asp <sub>2</sub>	in Asp <sub>3</sub>	in Compl of RP	SI (in Asp <sub>2</sub> )
<b>high verb.</b> <i>-i/y-, -aj-</i>	delim. or distr. <sup>a</sup>	yes (perf.)	distr. or delim.	yes	yes
<b>semelf.</b>	no (no continuum)	yes ???	no (no SI)	yes in principle	no (no interval)
<b>low -ej-</b>	distr. or considerable change	yes in principle	no (no SI)	no (no RP)	no (no interval)
<b>low inch.</b> <i>-n-</i>	distr. (no COS) <sup>b</sup>	yes in principle	no (no SI)	yes in principle	no (no interval)
<b>dir. motion</b>	centrifugal (COS)	no <sup>c</sup>	no (no SI)	yes in principle	no (no interval)
<b>non-dir. motion</b>	delim.	no	distr. or delim.	yes in principle	yes (process verbalizer)
<b>stative</b>	inceptive or delim.	no (no telos available)	no (no SI)	yes in principle <sup>d</sup>	no (no right/left boundary)

<sup>a</sup>The order of readings reflects preferences.

<sup>b</sup>COS = change of state

<sup>c</sup>The equivalent of perfectivizing prefix in motion verbs is the completive *do-* or centripetal *przy-*.

<sup>d</sup>Statives are rarely, if ever, complex predicates.

atomic subentity in the denotation of the plural DP provides a telos to a distributed event, and hence ‘quantizedness’ arises.

Semelfactives, on the other hand, do not allow any superlexical *po-* attachment due to semantic incompatibility of the suffix *-n-* and the function of superlexical *po-* as measuring the development along a certain continuum. Low verbalizer predicates are S-summable and therefore they can contain a derived continuum, which allows for *po-* prefixation. Yet, the process part is not a necessity with low verbalizers, and in this respect they are similar to semelfactives (i.e. both are unable to derive SIs). The lack of delimitative reading with low verbalizers is due to their inherent change-of-state semantics. Since delimitative *po-* sets an RT AFTER ET, but before a change of state has occurred, and consequently results in a homogeneous predicate, this reading is unavailable with low verbalizer stems. Another domain where the prefix shows sensitivity to the type of verbalizer is motion verbs. Directed motion verbs are like DAs in that they involve a differential argument measuring the spatial extent of the path. Therefore, a delimitative reading is not possible with them, and neither is SI. Non-directed motion verbs, on the other hand, all belong to high processual verbalizer classes and hence behave accordingly. That explains a change of conjugation class when an SI form of a directed motion verb is derived.

Finally, stative verbs turn out never to be able to form SI due to the fact that they do not come equipped with the left boundary. Thus, the prefix can only delimit the predicate on one side, but neither the containment relation WITHIN, nor the OUTSIDE relation are possible with statives.

The reader will also notice that the possibility of stacking prefixes is contingent on the possibility of deriving SIs. Verbalizers whose lexical semantics is incompatible with SI will never be delimited by means of all three Aspectual Projections.

Last but not least, it seems to me that *po-* is exceptional in the sense that it displays a broad range of uses. Very few prefixes can be merged in Asp<sub>3</sub>, *po-* and *na-* being two of them. It is hoped that the analysis of *po-* presented in this paper will be extendable to *na-*, which can be merged on both a nonderived (e.g. *na-nieść* (NA-carry<sub>DIR</sub>), ‘carry a lot’), and a derived stem (e.g. *na-wy-nos-i-Ø-ć* (NA-out-carry-*ν*-IMPF-INF), ‘carry out a lot’). In spite of this broad array of uses there is a common semantic denominator for all superlexical readings of *po-* with the differences in interpretation stemming from the interaction with the lexical semantics of particular verbalizers.

A broader theoretical ramification is that projections in  $f_{seq}$  can come in different flavors: *ν*P has a processual and a semelfactive flavor, AspP [+Perf] can come in an AFTER or BEFORE flavor, AspP [-Perf] can have Progressive or Iterative interpretation.

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