

## Bound Ability Readings of Imperfective Verbs: A case for Presupposition\*

### 1 *Puzzle*

Giorgi and Pianesi (2001, among others) argued that in order to understand the semantics of Aspect we need to distinguish between Perfectivity and Imperfectivity on the one hand, and Telicity and Atelicity on the other hand. The distinction between Perfective and Imperfective may be characterized with respect to the relation between the reference time and the event time (Klein, 1994),<sup>1</sup> while the difference between Telicity and Atelicity may be characterized either in terms of homogeneity of the event, or in the number of the events (Higginbotham, 2000). Crucially, while the Perfective/Imperfective distinction is a matter of lexical denotation, the Telic/Atelic distinction may arise through semantic and pragmatic inferences.

(1) *Perfectivity versus Imperfectivity:*

- a. INCLUDES =  $\lambda P \lambda t \exists e. \tau(e) \subseteq t \ \& \ P(e)$  (“PERFECTIVE”)
- b. INCLUDED =  $\lambda P \lambda t \exists e. t \subseteq \tau(e) \ \& \ P(e)$ , (“IMPERFECTIVE”)

(2) *Telicity versus Atelicity*

- a. Telicity: not homogeneous / consisting of two events
- b. Atelicity: homogeneous / consisting of one event

If we assume that the Perfective morphology is interpreted as the INCLUDES relation and the Imperfective morphology is interpreted as the INCLUDED relation, then we expect – everything else being equal – that the mapping between the (Im)Perfective morphology and the (a)telic interpretation should not vary across languages.<sup>2</sup> However, this prediction is not borne out. In Romance (at least in Spanish and Italian), the Imperfective morphology is always interpreted as atelic and the Perfective morphology is ambiguous between telic and atelic, while in the Slavic languages (at least in Czech and Russian) the mapping is reversed, i.e., the Imperfective morphology may be telic or atelic but the Perfective morphology is telic. The mapping relations are schematized in (3) and (4). Spanish and Czech examples demonstrating the difference are given in (5)–(8).<sup>3</sup>

(3) *The mapping between the morphology and its interpretation in Romance:*

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<sup>1</sup>But see, for example, Filip (2008), for the view that having a terminating point is a property of telic events. In particular, it is a result of a conventional implicature and as such it doesn't belong to the core semantic meaning of Aspect. Even though none of the choices we make here is trivial, for the reasons of space we will stick to them without further justification.

<sup>2</sup>Later in the paper we will argue that in fact everything is not equal.

<sup>3</sup>The examples are not entirely parallel because of non-trivial differences in the information structure realization and the usage of definite articles. We minimize the differences by sticking to definite descriptions in the Czech examples.

Morphology	Interpretation
Imperfective	→ Atelic
Perfective	→ Atelic
Perfective	→ Telic

(4) *The mapping between the morphology and its interpretation in Slavic:*

Morphology	Interpretation
Imperfective	→ Atelic
Perfective	→ Telic

(5) *Spanish Imperfecto is always atelic* (Cipria and Roberts, 2000, p. 304-305, (10-11))

- a. Corría petróleo por las cañerías.  
flow.3sg.Imperf oil through the pipes  
'Oil flowed/was flowing through the pipes.' – atelic
- b. Corrían 3000 litros de petróleo por las cañerías.  
flow.3pl.Imperf 3000 liters of oil through the pipes  
'3000 liters of oil flowed through the pipes.' – atelic

(6) *Spanish Préterito can be telic or atelic* (Cipria and Roberts, 2000, p. 305, (12-13))

- a. Corró petróleo por las cañerías.  
flow.3sg.Perf oil through the pipes  
'Oil flowed through the pipes.' – atelic
- b. Corrieron 3000 litros de petróleo por las cañerías.  
flow.3pl.Perf 3000 liters of oil through the pipes  
'3000 liters of oil flowed through the pipes.' – telic

(7) *Czech Imperfective can be atelic or telic*

- a. Tenhle obraz maloval Lada.  
this painting painted.Imperf Lada  
'Lada painted this picture.' – telic
- b. Tenhle obraz maloval Lada, ale bohužel ho nedokončil.  
this painting painted.Imperf Lada but unfortunately him not-finished  
'Lada started painting this picture but unfortunately he didn't finish it.' – atelic

(8) *Czech Perfective can be only telic*

- a. Tenhle obraz namaloval Lada.  
this painting painted.Perf Lada  
'Lada painted (and finished) this picture.' – telic
- b. #Tenhle obraz namaloval Lada, ale bohužel ho nedokončil.  
this painting painted.Perf Lada but unfortunately him not-finished  
# 'Lada finished painting this picture but unfortunately he didn't finish it.' – #  
atelic

The mapping differences are puzzling. Either it may be the case that the denotation of the Imperfective and Perfective morphology varies across languages, or the difference in the mapping needs to be attributed to a third factor. In this paper we will look closely at Czech and Spanish and will argue for the latter explanation.

In particular, we will argue that the denotation of Perfect and Imperfect is the same in Czech and Spanish. The difference in the mapping between the lexical aspect and (a)telicity is caused by differing presuppositions associated with the Aspectual morphology. In particular, we will argue that the Czech Perfective morphology carries a presupposition that is not present in the Spanish Perfect. Because of the presence of the presupposition the mapping is subject to seman-

tic competition parallel to semantic competition independently argued for other morphological features carrying presuppositions, such as determiners,  $\phi$ -features, or number marking (Heim, 1991; Sauerland, 2002, 2003; Sauerland et al., 2005).

In the next section, we will provide a background on the Romance and Slavic aspect and its semantics. This will be important to establish the strong hypothesis that the mapping difference does not come from a distinct denotation of the Aspectual morphology in these languages. Section 3 provides evidence for the presuppositional difference between the Czech and Spanish morphology. Finally, section 4 investigates further predictions stemming from the observed presuppositional differences.

## 2 Background on Romance and Slavic Aspect

In order to argue that a third factor is responsible for the mapping differences observed in the previous section, we need to first establish that it is reasonable to assume that the denotation of the aspectual morphology does not interestingly differ between Slavic and Romance. In the following sections we will look exclusively at Czech and Spanish but we believe that the same findings carry on to other Slavic and Romance languages as well.

Spanish Imperfect is ambiguous between three distinct readings (for example, Cipria and Roberts 2000): progressive,<sup>4</sup> habitual, and intentional. The readings are exemplified in (9).

- (9) *Possible meanings of Spanish Imperfecto* (Cipria and Roberts, 2000, p. 300, (2))
- a. Ibamos a la playa cuando nos encontramos con Miguel.  
go.1pl.Imperf to the beach when RECP meet.1pl.Pret with Miguel  
'We were going to the beach when we ran into Miguel.'  
progressive
  - b. Ibamos a la playa los domingos.  
go.1pl.Imperf to the beach on Sundays  
'We went/used to go to the beach on Sundays.'  
habitual
  - c. Hasta ayer, íbamos a la playa de vacaciones, pero hoy Pepa  
until yesterday go.1pl.Imperf to the beach on vacation but today Pepa  
dijo que no hay dinero para eso.  
say.3sg.Pret that not there-is money for that  
'Up until yesterday we were going to the beach on vacation, but today Pepa said  
that there is no money for that.'  
intention in the past

We will put aside the intentional reading. This reading is caused by mismatches in temporal anchoring that is usually excluded in Slavic for reasons not directly related to the current paper (see, for example, Giorgi and Pianesi 2001).

The Czech Imperfective at first sight behaves differently from its Romance cousin. However, the seeming differences are caused by the more complex morphological formation of Czech aspectual forms that brings in an additional meaning component. Once we separate the additional morphology, similarities between the two languages emerge. As can be seen in (10), Czech

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<sup>4</sup>Notice this is a different progressive than the English progressive; Bonomi (1997).

morphologically simplex imperfectives are ambiguous between progressive and habitual reading.<sup>5</sup> The examples in (11) are here to demonstrate that only the habitual reading survives in more complex morphological forms.<sup>6</sup>

(10) *Only morphologically simple Imperfectives are ambiguous between progressive and habitual:*

- a. Jeli jsme na pláž, když jsme potkali Michala.  
driven Aux.1pl to beach when Aux.1pl met Michal  
'We were driving to the beach when we ran into Michal.'  
progressive
- b. O nedělích jsme často jeli na pláž.  
on Sundays Aux.1pl often driven to beach  
'On Sundays we often drove to the beach.'  
habitual

(11) *More complex Imperfectives may have only the habitual reading:*

- a. #Jezdívají jsme na pláž, když jsme potkali Michala.  
driven Aux.1pl to beach when Aux.1pl met Michal  
'We were driving to the beach when we ran into Michal.'
- b. O nedělích jsme jezdívají na pláž.  
on Sundays Aux.1pl driven to beach  
'We drove/used to drive to the beach on Sundays.'

Thus, if we take care of the different anchoring properties and the morphology-semantics mapping, the Aspectual semantics of Romance and Slavic languages does not seem to be different. In the rest of the paper, we will define the denotation of the aspectual semantics within event semantics. In particular, we will follow – with most of the current literature on aspect – the intuition that the Imperfective aspect corresponds to a situation seen from the inside but a situation described by the Perfective aspect is seen from the outside (completed). From this point of view, aspect connects event time with reference time (Klein, 1994). Spelling out possible relations between event time and reference time allows us to distinguish two basic semantic relations: INCLUDES and INCLUDED, as in (12) ( $e$  is an event or a state,  $\tau(e)$  stands for a time trace of the event). We can make a further step and define the denotation of the Aspectual morphemes in terms of INCLUDES and INCLUDED as well, as in (13).

- (12) a. INCLUDES =  $\lambda P \lambda t \exists e. \tau(e) \subseteq t \ \& \ P(e)$  (“PERFECTIVE”)
- b. INCLUDED =  $\lambda P \lambda t \exists e. t \subseteq \tau(e) \ \& \ P(e)$ , (“IMPERFECTIVE”)

(13) *Lexical entries for the Aspectual morphemes [to be modified]:*

- a.  $\llbracket \text{perfective} \rrbracket = \lambda P \lambda t \exists e. \tau(e) \subseteq t \ \& \ P(e)$
- b.  $\llbracket \text{imperfective} \rrbracket = \lambda P \lambda t \exists e. t \subseteq \tau(e) \ \& \ P(e)$

The INCLUDES/INCLUDED semantics captures the difference between Perfective and Imperfective but it does not say anything about its relation to telicity and atelicity. For the semantics of telicity and atelicity we will follow Giorgi and Pianesi (2001). In their event semantics, telic events consist of two separate events: activity (process),  $e_1$ , and result,  $e_2$ . Thus, under this view telic events are not homogeneous, i.e., the subinterval property does not hold for them. As we can see in (14) and (15), the semantic denotation from (13) allows us to derive both the

<sup>5</sup>The intentional reading is not attested because of the differing anchoring properties.

<sup>6</sup>This is because verbs morphologically derived from simple Imperfectives are either Perfective or habitual.

atelic and telic interpretation of the Czech Imperfective morphology. This is a desirable result because we know that the Imperfective morphology is indeed attested both with the telic and the atelic interpretation.

(14) *Atelic interpretation of Imperfective:*

- a. Petr včera četl tu knihu.  
Petr yesterday read.Imperf that book  
'Yesterday Petr read the book.'
- b.  $\exists e \exists x [read(e) \wedge Agent(Petr, e) \wedge t(e) \wedge Theme(x, e) \wedge book(x)]$

(15) *Telic interpretation of Imperfective:*

- a. Petr včera četl tu knihu.  
Petr yesterday read.Imperf that book  
'Yesterday Petr read/finished reading the book.'
- b.  $\exists \langle e_1, e_2 \rangle \exists x [read \langle e_1, e_2 \rangle \wedge Agent(Petr, \langle e_1, e_2 \rangle) \wedge Theme(x, \langle e_1, e_2 \rangle) \wedge book(x)]$

More careful work needs to be done here but we believe that it is legitimate to pursue a hypothesis that the difference between the Romance and the Slavic Aspectual mapping does not lie in the semantics of Perfect/Imperfect *per se* but it must be attributed to something else. The goal of the next section is to figure out what the additional factor is.

### 3 Activity Presupposition

If we look closely at the Aspectual morphology and its semantic interpretation, Perfective and Imperfective do not differ only in the relation of the reference time and the event time. We argue that in Czech the Perfective morphology imposes a precondition on the context that is not present in the case of the Imperfective morphology. In particular, we argue that the Perfective morphology presupposes the existence of the beginning of the event, roughly the first homogeneous part of telic events ( $e_1$ ). We will call this presupposition *Activity presupposition*.<sup>7</sup> In contrast, the Czech Imperfective has no such presupposition. That we deal with a presupposition not with another type of inference can be shown by projecting properties of the Activity presupposition. As can be seen in (16) and (17), the Activity presupposition projects under negation and under a question operator. The expected properties are found in other structural environments as well, for example, the Activity presupposition does not project from the antecedent of a conditional, as in (18).<sup>8</sup>

(16) *Activity presupposition survives under negation only in Perfective:*

- a. Jan nedopsal knihu.  
Jan.Nom neg-wrote.Perf book.Acc  
'Jan didn't finished writing a book.'  
→ *Jan started writing a book*
- b. Jan nepsal knihu.  
Jan.Nom neg-wrote.Imperf book.Acc

<sup>7</sup>Even though we use here the notion of semantic presuppositions but we are not entirely convinced that this is the correct characterization. It is plausible that this type of precondition is a secondary presupposition derived from the event representation of Perfective, along the analysis of soft presupposition triggers in Abusch (to appear).

<sup>8</sup>Notice that even if the presuppositions are secondary presuppositions, the projecting properties clearly show that we deal with some form of presupposition and not other type of inference.

'Jan didn't write a book.'  
→ *Jan started writing a book*

(17) *Activity presupposition survives in questions only in Perfective:*

- a. Dopsal Jan knihu?  
wrote.Perf Jan.Nom book.Acc  
'Did Jan finish writing a book?'  
→ *Jan started writing a book*
- b. Psal Jan knihu?  
wrote.Imperf Jan.Nom book.Acc  
'Did Jan write a book?'  
→ *Jan started writing a book*

(18) *Activity presupposition of the antecedent does not project:*

- a. Pokud Jan dopsal knihu, tak si ho Marie vezme.  
if Jan.Nom wrote.Perf book.Acc then REFL him Marie gets-married  
'If Jan finished writing a book, Marie will marry him.'  
→ *Jan started writing a book*
- b. Pokud Jan psal knihu, tak si ho Marie vezme.  
if Jan.Nom wrote.Imperf book.Acc then REFL him Marie gets-married  
'If Jan wrote a book, Marie will marry him.'  
→ *Jan started writing a book*

In contrast, in Spanish there is no presupposition of this sort associated with either of the Aspects, as witnessed by (19) and (20).

(19) *There is no Activity presupposition projection in Spanish questions:*

- a. ¿Escribia ayer Maria un poema?  
wrote.Imperf yesterday Maria a poem  
'Did Maria write a poem yesterday?'  
→ *Maria started writing a poem*
- b. ¿Escribió ayer Maria un poema?  
wrote.Perf yesterday Maria a poem  
'Did Maria write a poem yesterday?'  
→ *Maria started writing a poem*

(20) *There is no Activity presupposition projection under negation in Spanish:*

- a. Ayer Maria no escribia una poema.  
yesterday Maria not wrote.Imperf a poem  
'Yesterday Maria didn't write a poem.'  
→ *Maria started writing a poem*
- b. Ayer Maria no escribio una poema.  
yesterday Maria not wrote.Perf a poem  
'Yesterday Maria didn't write a poem.'  
→ *Maria started writing a poem*

Crucially, even though the Czech Imperfective morphology does not have the Activity presupposition, it is still compatible with the presupposition, as can be seen in (21). However, this is not a presupposition since it can be cancelled, as shown in (22).

(21) *Imperfective may have an Activity inference*

- a. (A museum guide standing in front of a painting:)
- b. Tenhle obraz maloval Lada.  
this picture.Acc painted.Imperf Lada.Nom  
'Lada painted this picture.'  
→ *Activity inference*

(22) *Imperfective does not need to have an Activity inference*

- a. (A teacher about a picture one student chose to copy for his art class:)
- b. Petr maluje tenhle obraz. Ale ještě si nekoupil  
Petr.Nom paints.Imperf this picture.Acc but not-yet REFL not-bought.PP  
ani barvy.  
even colors  
'Petr is supposed to paint this picture. But he even has not bought colors yet.'  
→ *no Activity inference*

Thus in order to capture the Czech presuppositional facts, we argue that the lexical entry of the Czech Perfective must be enriched by the Activity presupposition.<sup>9</sup> We state the Activity presupposition in terms of a homogeneous part of an event. The lexical entry thus requires that there is a proper part of the whole event ( $e'$ ) such that the whole event is the terminative counterpart of  $e'$  and for all time intervals of  $e'$  the predicate  $P$  holds. There is no such presupposition for the Imperfective morphology. The final lexical entries for the Czech Perfective and Imperfective morphology are given in (23).

(23) *Lexical entries for the Czech Aspectual morphemes [final]:*

- a.  $\llbracket \text{perfective} \rrbracket = \lambda P \lambda t \exists e: \exists e' (\text{ter}(e') = e) \wedge \forall t' \subseteq \tau(e') (P(e')) . \tau(e) \subseteq t \ \& \ P(e)$
- b.  $\llbracket \text{imperfective} \rrbracket = \lambda P \lambda t \exists e. t \subseteq \tau(e) \ \& \ P(e)$

Now we are finally in the position to address the asymmetry in the usage of the Perfective and Imperfective morphology in Czech. We argue that the asymmetry is a result of semantic competition. As has been argued in Heim (1991); Sauerland (2002, 2003); Sauerland et al. (2005), whenever a pair of morphological items differ with respect to presupposition  $\alpha$  and if the given context satisfies  $\alpha$ , then the item presupposing  $\alpha$  must be used. This principle is known as the Maximize Presupposition principle and has been first suggested in Heim (1991), following Hawkins (1991) and other work in lexical pragmatics:<sup>10</sup>

(24) *Maximize Presupposition*

In context C use the most informative presupposition satisfied in C.

Consequently, whenever the activity part is presupposed, the Perfective morphology must be used. Since the Imperfective morphology is compatible with asserting the activity event but does not presuppose the activity event, the Czech Imperfective morphology can be either telic or atelic. To sum up, the presuppositional facts and the Maximize Presupposition principle give us the asymmetry in the usage of the Czech aspectual morphology without affecting our compositional semantics. Presumably, the asymmetry in the Romance morphology is caused by the Romance Imperfective morphology positing more requirements on the context than its Perfective

<sup>9</sup>We simplify here. Since Czech Perfectives are formed by some additional morphological material (prefix or infix), it is not clear whether it is the additional morphology or the Perfective structure *per se* that carries the presupposition. Furthermore, it is a matter of further empirical investigation whether all Perfective formations in Czech and in Slavic in general behave in this way or whether further refinement is needed.

<sup>10</sup>We would like to thank Roni Katzir for his suggestion to use the Maximize Presupposition principle to account for the morphological asymmetry.

tive counterpart. The question remains open of whether the Imperfective enrichment in Spanish is of presuppositional nature as well and what the relevant presupposition would be. We will leave this question for future research.

One must still be careful about the lexical denotation of various Slavic prefixes though. The fact that Imperfective does not have the Activity presupposition does not mean that the Imperfective morphology cannot combine with a prefix which carries a presupposition. The question of the presuppositional content of various aspectual prefixes must be left for future research as well.

To summarize, we have argued that it is reasonable to assume that the lexical denotation of Perfect and Imperfect is the same in Czech and Spanish. However, the languages differ when it gets to presuppositions associated with their Aspectual morphology. Consequently, the usage of the Aspectual morphology in Czech is not identical to the usage of the Aspectual morphology in Spanish. In the following section we will investigate whether the presuppositional difference might reveal itself in other places as well.

#### 4 Further predictions: Habitual readings of Imperfective verbs

A natural question to ask is whether the presuppositional difference observed in section 3 is relevant for the interpretation of other structures as well. In this section we will consider one such case: structures in which an Imperfective verb is modified by an *in*-adverbial. Consider the pseudo-English example in (25).

(25) Peter read.Imperf War and Peace in two hours

Under the Linguistics 101 assumptions this type of structure is ungrammatical because durational *in*-adverbials are not compatible with the Imperfective interpretation. In fact, durational adverbials are often used as an aspectual diagnostics. Interestingly, as we will see shortly, this type of structure may be grammatical but only if a particular interpretation is enforced by the context. To see what is going on here let us see how this structure would be compositionally interpreted and what we can say about its aspectual properties.

In the first step of the derivation, we merge V, *read*, with the object, *War and Peace*. The resulting phrase, VP, is aspectually underspecified, i.e., there is no direct encoding of aspect. The only semantic information at this point comes from the lexical semantics of the verb. In this particular case, the VP can get either an accomplishment or an activity interpretation. The compositional semantics is straightforward because the predicate ‘read’ can take ‘War and Piece’ as its argument.

In the next derivational step, the adverbial *in two hours* is merged.<sup>11</sup> For concreteness, we will assume, following Higginbotham (2000), that *in*-adverbials, in contrast to *for*-adverbials, are two-event taking functions: proces and telos. For *for*-adverbials one event suffices. The interpretation of a structure modified by temporal adverbs is schematized in (26) and (27).

(26) Modification by *in*-adverbial:

- a. Olga vypila víno \*deset minut/ za deset minut.  
Olga drank.Perf wine ten minutes/ for ten minutes

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<sup>11</sup>Let’s assume for concreteness that the adverb adjoins to vP but other structures would do as well.

- b.  $\exists \langle e_1, e_2 \rangle (\text{drink}(\langle e_1, e_2 \rangle) \wedge \text{Agent}(\text{Olga}, \langle e_1, e_2 \rangle) \wedge \text{Theme}(x, \langle e_1, e_2 \rangle) \wedge \text{wine}(x) \wedge \text{in\_ten\_minutes}(\langle e_1, e_2 \rangle))$

(27) *Modification by for-adverbial:*

- a. Olga pila víno deset minut/ \*za deset minut.  
Olga drank.Imperf wine ten minutes/ for ten minutes
- b.  $\exists e \exists x [\text{drink}(e) \wedge \text{Agent}(\text{Olga}, e) \wedge \text{Theme}(x, e) \wedge \text{wine}(x) \wedge \text{for\_ten\_minutes}(e)]$

If we apply this semantics to our example, we see that after the adverbial *in two hours* is merged, the structure must get the accomplishment interpretation, i.e., a two-event lexical-semantic structure with process and result subevents. If an one-event interpretation were selected, the structure would not be interpretable.

Furthermore, we assume that the event time of the accomplishment is anchored to the reference time. Since we consider accomplishments, the event time should be a subset of the reference time. If this condition wasn't met, the result subevent would be outside of the reference time of the event.

So far so good. In the next step, Imperfective Asp<sup>0</sup> is merged. The Imperfective aspect requires the event time to be a superset of the reference time. However, the accomplishment semantics of vP gives us the opposite relation. Unless the structure is further modified by something that can reverse the relation of the reference time and the event time, the structure is predicted to be out. This prediction seems to be correct, as seen in (28), and this result is compatible with the Linguistics 101 observation that *in*-adverbials are not compatible with the Imperfective aspect.

- (28) #Petr četl Vojnu a mír za dvě hodiny.  
Petr.Nom read.Imperf War and Peace in two hours  
'Petr was reading War and Peace in two hours.'

Interestingly, the structure should be saved if it was possible to reverse the relation of the event time and the reference time. It has been suggested in the literature that natural languages employ type-shifting operators that may resolve aspectual mismatches of this sort (Dowty, 1979; de Swart, 1998, 2000; van Geenhoven, 2005; Boneh and Doron, 2008, among others).<sup>12</sup> We will adopt this reasoning here. Concretely, we will use the typology of type-shifting operators proposed in de Swart (1998).

Two operators in de Swart's typology have properties relevant for our case: (i) a progressive operator (PROG) which is a function from events and processes to states, and (ii) a habitual operator (HAB) which iterates an event over the reference time. If a structure is modified by PROG, the structure is interpreted as a process or as an event being in progress, i.e., lacking the culminating point.<sup>13</sup> If HAB applies to an Imperfective event, then the iterated habitus is a superset of the reference time. For concreteness, we will use the definition of a habitual operator given in (29).<sup>14</sup>

<sup>12</sup>This process is often called aspectual coercion.

<sup>13</sup>de Swart (1998) does not give any lexical entry for this operator. Since the lexical entry of PROG is not crucial for our discussion, we will leave it informal.

<sup>14</sup>Notice that any habitual operator that iterates events in a non-overlapping fashion would work here as well.

(29) (after van Geenhoven 2004, p. 158, (60))

$$\begin{aligned} *^t V(x) \text{ at } t = 1 &\iff \exists t'(t' \subseteq t \wedge V(x) \text{ at } t' \wedge \text{number}(t') > 1 \wedge \forall t''(t'' \subseteq t \wedge \\ V(x) \text{ at } t'' &\rightarrow \exists t'''(t''' \subseteq t \wedge (t''' > t' \vee t''' < t') \wedge V(x) \text{ at } t''' \wedge \exists t''''(t'''' < t''' < t'' \vee t'''' > \\ t''' > t'' &\wedge \neg V(x) \text{ at } t''''))) \end{aligned}$$

According to this definition, for an event to be pluralized, there must be a hiatus between iterated instances of the event. This non-overlap requirement introduces boundedness of the iterated event. Consequently, since pluralized events are bounded and since the pluralization as defined in (29) only applies to accomplishments, the iterated event is compositionally combinable with an *in*-adverbial.

Thus, there are at least two type-shifting modifications that in principle could make a structure like (25) interpretable: the structure might be interpreted either as progressive, or as habitual. The question that we want to raise here is whether both interpretations are always available or whether they might be restricted by the presuppositional content of the aspectual morphology. If the presuppositional content is relevant, we expect to find crosslinguistic differences in the range of available readings.

Let us first consider PROG. If we modify the structure by PROG, the resulting structure is progressive/episodic. However, in Czech the assertion of the progressive corresponds to the Perfective presupposition. Consequently, the Perfective morphology must be used. If the Imperfective morphology were used, the Maximize Presupposition principle would be violated. Thus, we expect that the Czech version of (25) will not have the progressive (or episodic) reading. In contrast, in Spanish, the progressive reading should be possible: since the relevant presupposition is not present, the Imperfective morphology is not excluded.

On the other hand, in case of the HAB operator, the reference time stays unchanged. Thus, there is no problem with Maximize Presupposition because the Activity presupposition is not at stake. Consequently, we expect to find the habitual reading in both languages.

As can be seen in (30) and (31), the predictions are borne out. In Czech, only the habitual reading is possible, while in Spanish, both readings are attested. The difference in readings follows from the independently attested differences in the presuppositional content of the Aspectual morphology of these two languages.

- (30) Když Petr studoval rychločtení, tak četl Vojnu a mír za dvě hodiny.  
when Petr studied speed-reading then read.Imperf War and Peace in two hours
- a. \*‘When Petr took a course in speed-reading, he (once) read War and Peace in two hours.’
- b. ✓ ‘When Petr took a course in speed-reading, he was reading / used to read / was able to read War and Peace in two hours.’
- (31) Frida ensayaba el libreto en una hora.  
Frida rehearsed.Imperf the libretto in one hour
- a. ✓ ‘Frida (once) rehearsed the libretto in an hour.’
- b. ✓ ‘Frida used to rehearse/ was rehearsing the libretto in an hour.’<sup>15</sup>

<sup>15</sup>In fact, there is also the intentional reading we took aside: ‘Frida intended to rehearse the libretto in an hour.’

## 5 Conclusion

We have argued that in order to understand the Aspectual semantics and the morphology-semantics mapping in the Aspectual domain, we must also take into account the presuppositional content of the Aspectual morphology. We have established that the denotation of Perfective and Imperfective in the Slavic and Romance languages may be identical but the usage of the Aspectual morphology differs because of distinct presuppositions associated with the morphology in these languages. This fact has consequences not only for the usage of the Aspectual morphology but also for the range of readings different constructions may obtain across languages. In particular, we have investigated a case in which there is a different range of readings for the interpretation of Imperfective verbs modified by *in*-adverbials.

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