Aspectual Presuppositions in Slavic and Romance[*]

Mojmír Dočekal and Ivona Kučerová
Masaryk University & McMaster University

We argue that in order to understand the Aspectual semantics and the morphology-semantics mapping in the Aspectual domain, we must take into account the presuppositional content of the Aspectual morphology. We provide an argument – based mainly on contrasts between Czech and Spanish – that cross-linguistic differences in the usage of the Aspectual morphology come from distinct presuppositions associated with a language-specific morphology.

1. The Different Readings

According to Giorgi & Pianesi (2001, among others) it is crucial to distinguish between Perfectivity/Imperfectivity and Telicity/Atelicity. The (Im)Perfective distinction may be characterized with respect to the reference time and the event time (Klein, 1994),[1] while the difference between Telicity and Atelicity may be characterized either in terms of homogeneity of the event (where only Atelicity is homogeneous), or in the number of the events (Higginbotham, 2000) (where Atelicity consists of exactly one event).[2] Crucially, while the Perfective/Imperfective

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[1] According to Dowty (1979) and Landman (1992), among others, at least some aspectual phenomena must be treated within intensional semantics. In this paper we stick to characterization of (Im)Perfectivity in terms of extensional semantics. Even though this is not a trivial choice, we believe the data we look at may be captured without reference to modality and tense etc.

[2] 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

distinction is a matter of lexical denotation, the Telic/Atelic distinction may arise through semantic and pragmatic inferences.

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.[3] 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,[4] 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. Examples demonstrating the difference are given in (1)–(4).[5]

(1) *Spanish Imperfecto is always atelic* (Cipria & Roberts, 2000, p.304-305, (10-11))
   a. Corría   petróleo por   las cañerías
      flow.3SG.IMPF oil   through the pipes
      'Oil flowed/was flowing through the pipes.' `atelic/*telic`
   b. Corrían   3000 litros de petróleo por   las cañerías.
      flow.3PL.IMPF 3000 liters of oil   through the pipes
      '3000 liters of oil flowed through the pipes.' `atelic/*telic`
(2) *Spanish Préterito can be telic or atelic* (Cipria & Roberts, 2000, p. 305, (12-13))
   a. Corrió   petróleo por   las cañerías.
      flow.3SG.PERF oil   through the pipes
      'Oil flowed through the pipes.' `atelic`

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such it doesn't belong to the core semantic meaning of Aspect.

[3] Later in the paper we will argue that in fact everything is not equal.

[4] The examples are not entirely parallel. The mass singular noun/count plural noun subject difference is used to demonstrate that even if the count plural noun is used, as in (1-b), – which makes the telic interpretation more salient –, the atelic interpretation still obtains. In contrast, if both telic and atelic interpretation is possible, as in (2), the difference in the subject noun yields differing aspectual interpretations.

[5] 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.

    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`

(3) *Czech Imperfective can be atelic or telic*
    a. Tenhle obraz   maloval   Lada.
       this   painting painted.IMPF Lada
       'Lada painted this picture.' `telic`
    b. Tenhle obraz   maloval   Lada, ale bohuže ho nedokončil.
       this   painting painted**.**IMPF Lada but unfort. him not-finished
       'Lada started painting this picture but unfortunately he didn't
       finish it.' `atelic`

(4) *Czech Perfective can be only telic*
    a. Tenhle obraz   namaloval Lada.
       this   painting painted.PF Lada
       'Lada painted (and finished) this picture.' `telic`
    b.#Tenhle obraz   namaloval Lada, ale bohužel   ho nedokončil
       this   painting painted.PF Lada but unfortunately him not-fin.
       # 'Lada finished painting this picture but unfortunately he didn't
       finish it.'   # `atelic`

The mapping differences are puzzling. One could argue 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. The latter is the route we will take in this paper: in particular, we will argue for a uniform denotation of Perfect and Imperfect and we will attribute the difference in the mapping to differing presuppositions associated with the Aspectual morphology. We will provide evidence 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 semantic competition parallel to semantic competition independently argued for other morphological features carrying presuppositions, such as determiners, φ-features, or number marking (Heim, 1991; Sauerland, 2002, 2003; Sauerland et al., 2005).

The next section provides a background on the Romance and Slavic aspect and its semantics. This will be important in order 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. The Denotation of Perfect and Imperfect in Romance and Slavic

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 as far as we were able to establish the same findings carry on to Russian and Italian and possibly they distinguish Slavic and Romance languages in general.

Spanish Imperfect is ambiguous between progressive and habitual reading (for example, Cipria & Roberts 2000):[6]

(5) *Possible meanings of Spanish Imperfecto* (Cipria & Roberts, 2000, p. 300, (2))
   a. Ibamos   a la   playa   cuando nos   encontramos con Miguel.
      go.1PL.IMPF   to the beach   when   RECP meet.1PL.PRET wi. Mig.
   'We were going to the beach when we ran into Miguel.' progress.
   b. Ibamos   a la playa   los domingos.
      go.1PL.IMPF to   the beach   on   Sundays
      'We went/used to go to the beach on Sundays.' habitual

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.[7] Once we separate the

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[6] There is also an intentional reading that we put aside because it is usually excluded in Slavic for reasons not directly related to the current paper (Giorgi & Pianesi, 2001). Notice also that the Spanish progressive is not semantically identical to the English progressive (Bonomi, 1997).

[7] Czech Imperfective and Perfective verbs may be modified by a large number of prefixes and infixes that encode rather specific lexical meanings usually described under

additional morphology, similarities between the two languages emerge. As can be seen in (6), Czech morphologically simplex imperfectives are ambiguous between progressive and habitual reading.[8]

(6) *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 `progress`.

  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`

To sum up, the Aspectual semantics of Romance and Slavic languages does not seem to be crucially different. In the rest of the paper, we will define the denotation of the aspectual semantics within event semantics. We will follow 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. We can make a further step and define the denotation of the Aspectual morphemes in terms of INCLUDES and INCLUDED as well, as in (7) (*e* is an event or a state, $\tau(e)$ stands for a time trace of the event).

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

  a. $\| \text{ perfective } \| = \lambda P \lambda t \exists e. \tau(e) \subseteq t \ \& \ P(e) \sim$ INCLUDES

  b. $\| \text{ imperfective } \| = \lambda P \lambda t \exists e. t \subseteq \tau(e) \ \& \ P(e) \sim$ INCLUDED

    The INCLUDES/INCLUDED semantics captures the difference

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the label 'Aktionsart'. In the rest of the paper, we will abstract from this additional morphology.

[8] More complex morphological forms have only the habitual reading. This is because verbs morphologically derived from simple Imperfectives are either Perfective or habitual.

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 follow Giorgi & Pianesi (2001). In their event semantics, telic events consist of two separate events: activity (process), e_1, and result, e_2. Under this view telic events are not homogeneous. As it stands, the semantic denotation from (7) allows us to derive both the 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.

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

We argue that Perfective and Imperfective do not differ only in the relation of the reference time and the event time. 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*.[9] 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: the Activity presupposition projects under negation and under a question operator, (8)–(9). The expected properties are found in other structural environments as well, for example, the Activity presupposition does not

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9 Even though we use the notion of semantic presuppositions here, 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 lines of the analysis of soft presupposition triggers in Abusch (to appear).

project from the antecedent of a conditional, as in (10).[10]

(8) *Activity presupposition survives under negation only in Perfective*
    a. Jan   nedopsal   knihu.
        Jan.NOM NEG-wrote.PF book.ACC
        'Jan didn't finish writing a book.' → *Jan started writing a book*
    b. Jan   nepsal   knihu.
        Jan.NOM NEG-wrote.IMPF book.ACC
        'Jan didn't write a book.' −/→ *Jan started writing a book*

(9) *Activity presupposition survives in questions only in Perfective*
    a. Dopsal   Jan   knihu?
        wrote.PF Jan.NOM book.ACC
        'Did Jan finish writing a book?' → *Jan started writing a book*
    b. Psal   Jan   knihu?
        wrote.IMPF Jan.NOM book.ACC
        'Did Jan write a book?' −/→ *Jan started writing a book*

(10) *Activity presupposition of the antecedent does not project*
    a. Pokud Jan   dopsal knihu   tak si   ho Marie vezme.
        if   Jan.NOM wrote.PF book.ACC then REFLhim 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 M. vezme.
        if   Jan.NOM wrote.IMPF book.ACC then REFLhim M. 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 (11) and (12).

(11) *There is no Activity presupposition projection in Spanish questions*
    a. ¿Escribía   ayer   Maria unpoema?
        wrote.IMPF yesterday Maria apoem

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    10 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.

'Did Maria write a poem yesterday?' −/→ *Maria started writing a poem*

b. ¿Escribió ayer Maria unpoema?
wrote.PF yesterday Maria apoem
'Did Maria write a poem yesterday?' −/→ *Maria started writing a poem*

(12) *There is no Activity presupposition projection under negation in Spanish:*
a. Ayer Maria no escribía unpoema.
yesterday Maria not wrote.IMPF apoem
'Yesterday Maria didn't write a poem.' −/→ *Maria started writing a poem*

b. Ayer Maria no escribió unpoema.
yesterday Maria not wrote.PF apoem
'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 (13). However, this is not a presupposition since it can be cancelled, as shown in (14).

(13) *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*

(14) *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
Petr.NOM paints.IMPF this picture.**ACC** but not-yet REFL
nekoupil ani barvy.
not-bought.PP even colors
'Petr is supposed to paint this picture. But he has not even bought colors yet.→ *no Activity inference*

We argue that in order to capture the Czech presuppositional facts, the lexical entry of the Czech Perfective must be enriched by the Activity presupposition.[11] We state the Activity presupposition in terms of a homogeneous part of an event. The lexical entry thus requires 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 (15).

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

    a. $\parallel$ perfective $\parallel$ = $\lambda P \lambda t \exists e : \exists e'(\text{ter}(e') = e) \wedge$

      $\forall t' \subseteq \tau(e')(P(e')) . \tau(e) \subseteq t \wedge P(e)$

    b. $\parallel$ imperfective $\parallel$ = $\lambda P \lambda t \exists e . t \subseteq \tau(e) \& P(e)$

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. Whenever a pair of morphological items differ with respect to presupposition α and if the given context satisfies α, then the item presupposing α 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 (see also Sauerland

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11 We simplify here. Czech Perfectives are always formed by some additional morphological material (prefix or infix), they can never be simplex. Consequently, it is not clear whether it is the additional morphology or the Perfective structure *per se* that carries the presupposition. An anonymous reviewer brought to our attention that, for instance, in Bulgarian, the Imperfective/Perfective distinction is cumulatively realized within the Tense affix as in Spanish and interestingly the available readings are parallel to Spanish as well. It is likely that a complete empirical picture of Slavic and Romance Aspectual differences will have to take into account the exact type of morphological distinctions and will have to consider the role of morphological markedness in a fuller detail than it can be done in this paper. We will thus leave further empirical investigation whether all Perfective formations in Czech and in Slavic in general behave in this way or whether further refinement is needed.

2002, 2003; Sauerland et al. 2005).[12]

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 counterpart. We leave the question of Spanish presuppositions for future research.[13]

To summarize, it is reasonable to assume that the lexical denotation of Perfect and Imperfect is the same in Czech and Spanish but 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 the previous section 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 (16).

(16) Peter read.IMPF War and Peace in two hours

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12 We would like to thank Roni Katzir for his suggestion to use the Maximize Presupposition principle to account for the morphological asymmetry.

13 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.

It is usually assumed that this type of structure is ungrammatical because durational *in*-adverbials are incompatible with the Imperfective interpretation. In fact, durational adverbials are often used as an aspectual diagnostic. 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 better understand, let us see how this structure would be compositionally interpreted.

In the first step of the derivation, we merge V, *read*, with the object, *War and Peace*. The resulting phrase, VP, is aspectually underspecified: the only semantic information comes from the lexical semantics of the verb. In this particular case, the VP can obtain either an accomplishment or an activity interpretation. In the next derivational step, the adverbial *in two hours* is merged.[14] For concreteness, we assume that *in*-adverbials, in contrast to *for*-adverbials, are two-event taking functions: process and telos (Higginbotham, 2000). For *for*-adverbials one event suffices. If we apply this semantics to our example, after the adverbial *in two hours* is merged, the structure receives the accomplishment interpretation: 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. For accomplishments, the event time should be a subset of the reference time, otherwise the result subevent would be outside of the reference time of the event.

In the next step, Imperfective Asp^0 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 is correct, (17), and this result is compatible with the observation that *in*-adverbials are usually not compatible with the Imperfective aspect.

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

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14 Let's assume for concreteness that the adverb adjoins to vP but other structures would do as well.

Interestingly, the structure could be rescued if it was possible to reverse the relation of the event time and the reference time, for example, by a type-shifting operator (Dowty, 1979; de Swart, 1998, 2000; van Geenhoven, 2005; Boneh & Doron, 2008, among others). We argue that this is indeed possible. Concretely, we follow the typology of type-shifting operators proposed in de Swart (1998), more precisely we will consider (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.[15] 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 (18).[16]

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

$$*^{t}V(x)\,at\,t = 1 \Leftrightarrow \exists t'(t' \subseteq t \wedge V(x)\,at\,t' \wedge number(t') > 1 \wedge$$

$$\forall t'(t' \subseteq t \wedge V(x)\,at\,t' \rightarrow \exists t''(t'' \subseteq t \wedge (t'' > t' \vee t'' < t') \wedge$$

$$V(x)\,at\,t'' \wedge \exists t'''(t < t''' < t'' \vee t > t''' > t'' \wedge \neg V(x)\,at\,t''))))$$

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 (18) 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 (16) 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

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15 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.

16 Notice that any habitual operator that iterates events in a non-overlapping fashion would work here as well.

relevant, we expect to find cross-linguistic 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 Maximize Presupposition principle requires the Perfective morphology to be used. Thus, we expect that the Czech version of (16) 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.

The predictions are borne out: in Czech, only the habitual reading is possible, while in Spanish, both readings are attested, (19)–(20). As we argued, the difference in readings follows from the independently attested differences in the presuppositional content of the Aspectual morphology of these two languages.

(19) Když   Petr studoval rychločtení,   tak   četl   Vojnu a
     when   Petr studied speed-reading then read.IMPF War   and
     mír   za dvě hodiny
     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.'

(20) Frida   ensayaba   el libreto en una hora.
     Frida   rehearsed.IMPF 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.'[17]

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17 In fact, there is also the intentional reading we put aside: 'Frida intended to rehearse the libretto in an hour.'

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