

Temporal Reference Frames and the Imperfective Paradox

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1. Introduction

This paper brings new evidence to bear on the topic of the Imperfective Paradox – a semantic puzzle involving tense-aspectual categories that lack completion entailments. The lack of completion entailments is usually associated with the so-called progressive and conative readings, illustrated in the Russian sentences in (1) and (2) respectively. In these examples the matrix event described by an imperfective predicate may fail to reach its natural culmination (in the real world, at least).¹

- (1) Poka mama gotovila¹ uzhin, Ivan chital¹ knigu.
while mother cook.Past.Imp dinner Ivan read.Past.Imp book
While the mother was cooking dinner, Ivan was reading the book.
- (2) V proshlom godu Ivan stroil¹ dom v derevne (, no tak i ne dostroil ego).
last year Ivan build.Past.Imp house in village (but has not finished it)
Last year Ivan was building a house in the village (but didn't finish it).

The main claim of this paper relates to the necessity of the notion of a Reference Frame for the purposes of the Imperfective Paradox. We understand the Reference Frame to be a discourse-established temporal interval that is salient based upon the relevant linguistic or extra-linguistic context, such as temporal modification within a sentence (e.g., the *while*-clause in (1) or *last year* in (2)) and across sentences.² The relevance of

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1. Although there are important differences between progressive and imperfective categories, we treat them as equivalent for the purposes of this paper.

2. It remains an open question whether this notion of Reference Frame should be equated with the R(eference)-time in Reichenbach's well-known formulation of tense/aspect relations (Reichenbach, 1947). For useful discussion of this issue see Kamp & Reyle (1993) and Borik (2002).

reference frames in calculation of a temporal interpretation of the sentence is obvious. A stronger position, that we would like to advocate here, is that discourse-established reference frames are crucial for licensing the use of the imperfective to refer to incomplete events, i.e. conative readings. We demonstrate this by showing that variation in reference frames affects the availability of conative readings. In this respect, our proposal imports insights from widespread ‘perspective-based’ analyses of progressive and imperfective forms (e.g., Comrie 1976, Smith 1991, Demirdache & Uribe-Etxebarria 2000, 2002) to the analysis of the Imperfective Paradox.

We start with a discussion of the Imperfective Paradox and theories that deal with it. We then present facts from Dutch and Russian that speak to the issue of reference frames. Finally, we present an account of the Imperfective Paradox that addresses the issues raised in this paper.

2. Theories of the Imperfective Paradox

The fact that the imperfective/progressive can have a conative or progressive reading gives rise to a semantic puzzle known as the Imperfective Paradox.

The Imperfective Paradox is sometimes presented as a puzzle concerning the existence of an entailment from a progressive to the corresponding simple past sentence for atelic predicates, and the lack of such an entailment for telic predicates: i.e., *Mary was running* entails *Mary ran*, but *Mary was crossing the street* does not entail *Mary crossed the street*. In this formulation, the Imperfective Paradox revolves around the lack of completion entailments in progressive sentences with telic predicates: *Mary was crossing the street* can be used in a situation where Mary was hit by a truck in the middle of the street (thus, *Mary crossed the street* is false).

We regard the lack of completion entailments to be a subpart of a more general version of the Imperfective Paradox – which we will also refer to as the ‘Event-type problem’ – that involves the question of how to access the denotation of a predicate in a situation where the event is incomplete. Although an instant of *crossing the street* in progress may be readily identifiable as such, identification of an event is not always so easy. Consider, for example, the fact that we can use the progressive sentence *Mary was driving from Washington DC to Boston* in a situation where Mary, who was scheduled to give a talk in Boston, started off in Washington DC, drove as far as New York and was stopped there because her car broke down, so that eventually she never reached Boston. How is the expression *was driving to Boston* about driving and getting to New York? Or, more generally, what is the nature of the relation between the incomplete event and the imperfective/progressive form that describes it?

The Event-type problem needs to be addressed in any theory of the imperfective/progressive, including those theories that consider the first part of the Imperfective Paradox non-significant or artifactual (Verkuyl, 1993). The Event-type problem is also not solved by appealing to the notion that progressives and imperfectives take an ‘insider’ perspective upon an event, and are thus blind to the outcome of the event (e.g., Comrie 1976, Smith 1991, Demirdache & Uribe-Etxebarria 2000, 2002). Although we ultimately draw upon key properties of such theories, appeal to narrow perspectives merely begs the question of how a subpart of an *Xing* event qualifies as an event of type *X*.

Among serious attempts to solve to solve the Event-type problem with the progressive, there are both extensional and intensional versions.

A clear example of an extensional approach to the progressive is Parsons (1989), in which a bare predicate is taken to contain both complete and incomplete events in its denotation. In Parsons’ own words, “a verb such as ‘cross’ is true of all crossings independently of whether they culminate.” Therefore, even if the event in the real world is incomplete, the denotation of a predicate can be accessed directly, without any necessity to relate a progressive statement and the corresponding non-progressive one.

In an intensional-style approach, such as Dowty (1979) and its various descendants, the progressive is treated as an operator that relates an incomplete event in the actual world to a complete version of that event in some possible world that coincides with the real world as far as the event interruption point and then develops in a normal fashion as the real world would have developed should the event have continued uninterrupted (an ‘inertia’ world). Thus, the denotation of a bare predicate is restricted to completed events of the type described by the predicate. For example, the denotation of the predicate ‘cross the street’ contains an event of successful street-crossing. Therefore when *Mary was crossing the street* is used in a situation where the street-crossing happened only incompletely, the denotation of the predicate cannot be accessed directly in the real world; rather, the event type is found in an inertia world that is licensed by the progressive operator and that has a completed version of the event. Dowty’s proposal is summarized in (3).

- (3) $PROG(A)$, the progressive form of the predicate A with a denotation \square , is true for a given event e iff
- (i) $\square E$, such that $e \square E, E \square \square$
 - (ii) $E \square w'$, such that w' is an inertia world for w ³

3. Dowty’s specific implementation of the ‘inertia world’ notion is not crucial for our purposes. It has been elaborated in a number of subsequent papers. See, in particular, Landman (1992) for a useful discussion of ‘normality assumptions’.

So, an event e in the real world can be referred to with the progressive form of a predicate A if e is a subpart of a (complete) event E that is of the relevant event-type (i.e. if E is in the denotation of the predicate A) and if E can be found in some inertia world w' that coincides with the real world up until the failure-point of the event e .

Importantly, extensional and intensional approaches alike typically adopt the implicit assumption that the ability of a predicate to refer to an incomplete event is entirely dependent on the PROG-operator. In the next section we challenge this assumption by showing that external parameters, such as a reference frame, affect the possibility of referring to an incomplete event.

3. Relevance of the Reference frame in the Event-type problem

In this section we present two cases that show that temporal frames of reference play a crucial role in licensing the conative use of the imperfective. Both adult Dutch and child Russian have forms that can be associated with incomplete events in some contexts but not in others. This leads us in the following section to a new formulation of how conative readings are licensed, and to further evidence of the parallels between tenses and pronouns (Partee, 1973).

3.1 Dutch Simple Past

Traditional Dutch grammars describe simple past predicates, such as *maakte een puzzel* in (4) as aspectually neutral, i.e., as lacking a completion entailment. Such claims are sometimes accompanied by a demonstration that sentences with a subordinate *when*-clause like (5) allow a simultaneity reading when the matrix verb is in the simple past, but only a sequential interpretation when the matrix verb is in the present perfect.

- (4) Het meisje maakte een puzzel.
 the girl make.Past a puzzle
 The girl did the puzzle.
- (5) Toen Jan binnenkwam, maakte het kind een puzzel / heeft het kind een puzzel gemaakt.
 when John enter.Past make.Past the child a puzzle / has the child a puzzle make.Past.Part
 When John entered, the child was doing / has done a puzzle

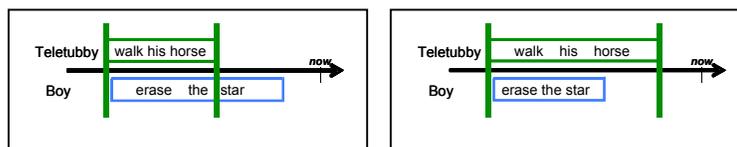
However, in simple monoclausal sentences, Dutch speakers typically have the intuition that the simple past is associated with a strong implication of

completion (for experimental evidence, see van der Feest & van Hout, 2002). Note that the existence of a completion entailment is compatible with the presence of a simultaneity reading in (5). Nothing rules out a configuration in which the main and the embedded events are simultaneous, and the matrix event reaches completion, either during or after the embedded event.

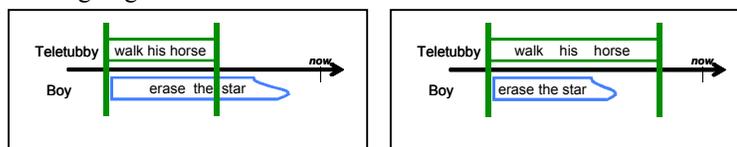
The examples in (6)-(8) illustrate the truth-conditions of the Dutch simple past in *while*-sentences in more detail. If the event described by the main clause extends beyond the reference frame established by the *while*-clause, the sentence is true, regardless of whether the main event ultimately reaches completion (rectangular bar) or not (broken bar). On the other hand, if the main clause event terminates during the reference frame, then the sentence is true only if the event reaches completion.

- (6) Terwijl Teletubby met zijn paard liep, veegde de jongen de ster uit.
 while Teletubby with his horse walked, erase.Past the boy the star out
 While Teletubby was walking his horse, the boy was erasing the star.

- (7) *Success*-situations (matrix event successfully reaches completion)
 a. Ongoing-success situation b. Within-success situation



- (8) *Failure*-situations (matrix event fails to reach completion)
 a. Ongoing-failure situation b. *Within-failure situation



The scenarios in (7)-(8) collectively show that for (6) to be true the completion of the main event is not necessary, and nor is it required that the main event extend throughout the interval specified by the reference frame. However, the conjunction of these two properties – incompleteness, and lack of complete overlap with the reference frame, is disallowed (8b). This interaction between completion and the reference frame plays a crucial role in the analysis presented below.

(9) shows the Russian equivalent of the Dutch sentence in (6), with an imperfective matrix verb form. Importantly, the Russian sentence is true in

all four situations in (7)-(8), unlike its Dutch counterpart. Also, if the main clause of (9) is presented in isolation, there is no implication of completion, again in contrast to its Dutch counterpart.

- (9) Poka Telepuzik gulyal s loshadkoy, mal'chik stiral¹ zvezdochku.
 while Teletubby walk.Past.Imp with horse boy erase.Past.Imp star
 While Teletubby was walking his horse, the boy was erasing the star.

3.2 Russian Developmental Data

The previous section showed that the completion entailments associated with the Dutch simple past vary between simple sentences and sentences with an explicit frame-of-reference, such as a *while*-clause. In this section we summarize the findings of a series of sentence comprehension experiments that we have conducted with Russian-speaking 3-6 year olds, focusing on the children's knowledge of completion entailments of imperfectives in the same two sentence contexts.

3.2.1. Experiments 1 & 2: Creation and Change-of-state Predicates

The first two experiments tested Russian children's ability to associate simple imperfective clauses with conative events. Using a design adapted from Wagner (2001), children watched a series of stories acted out in front of them with toys, in the company of a puppet. In each story a toy animal walked down a road with three landmarks – a flower-bed, a castle and a tree. An event that could have been performed completely by the animal at all three landmarks was completed at only one landmark (*complete* location), was started but failed to reach its completion due to an interruption at another landmark (*incomplete* location) and was not performed at all at the remaining landmark (*null* location). For example, in the *smurf-building* story, a monkey encounters pieces of a smurf at each of the three locations. He builds a smurf completely at the flower-bed; at the castle he starts building a smurf, but in the middle a bug bites him and therefore he leaves the smurf half-finished; at the tree he notices the pieces but decides not to do anything with them.

After each story the experimenter asked the child a series of questions. This always included both perfective and imperfective *where-* and *anywhere else-*questions about the main event (10), as well as control questions. The order of the perfective and imperfective questions was randomized. These questions were also followed-up with truth-value judgments, in which the child had to judge the truth or falsity of a statement made by the puppet, e.g. *At the flowers the monkey was building the smurf*. Each child saw four stories of this kind, making it possible to check for within-subject consistency.

- (10) a. Gde obezjyanka sobrala^P / sobirala^I gnomika?
 where monkey assemble.pst.perf / assemble.pst.imp smurf
 Where did the monkey build a smurf / was building a smurf?
- b. A gde-nibud' esh'e obezjyanka sobrala^P / sobirala^I gnomika?
 anywhere else monkey assemble.pst.perf / assemble.pst.imp smurf
 Did the monkey build/was building a smurf anywhere else?

If the Russian children have adultlike knowledge of the semantics of the imperfective, they should name only the complete location in response to a perfective question, but both the complete and incomplete locations in response to an imperfective question. This corresponds to the responses given by Russian adults in a control study. However, the children did not all respond in an adultlike fashion. The results showed a bi-modal distribution. All children gave adultlike responses to perfective statements, but only some of the children gave consistently adultlike responses to imperfective statements. The remaining children, mostly 3-4 year olds, consistently refused to associate imperfective predicates with incomplete events. This pattern was observed for creation predicates (Experiment 1) and change-of-state predicates (Experiment 2) alike, as summarized in (11).

- (11) Results: correct responses to perfective & imperfective queries⁴
- a. Experiment 1: Creation b. Experiment 2: Change-of-state

Group	Adultlike	Non-adultlike
n	8	15
PERF	93.3% (28/30)	96.4% (54/56)
IMP	86.7% (26/30)	10.7% (6/56)

Group	Adultlike	Non-adultlike
n	16	20
PERF	88.5% (54/61)	93.1% (67/72)
IMP	93.4% (57/61)	12.5% (9/72)

3.2.2. Experiments 3 & 4: Ongoing-success and Ongoing-failure

In Experiments 3 and 4 we tested Russian children's judgments of sentences with an explicit reference frame, provided by a *while*-clause, as in (6) above and its perfective counterpart. The experiments had the format of a Truth Value Judgment Task (Crain & McKee, 1985; Crain & Thornton, 1998). After the child and a puppet watched a story acted out by an experimenter using small toys, the puppet made a statement about the sentence, and the child's task was to judge whether the puppet's statement

4. The criterion for inclusion in the Adultlike and Nonadultlike groups was consistency across 3 out of 4 trials. A small number of children could not be classified in either group (Experiment 1: n = 2; Experiment 2: n = 5)

was true or false. The stories all described situations in which the main clause event extended beyond the time specified by the frame-of-reference. In Experiment 3 the main event ultimately reached completion, and in Experiment 4 the main event ultimately failed. As before, each child saw 4 different stories, and made judgments about statements with perfective and imperfective main clauses. All children in these studies also participated in either Experiment 1 or 2, making it possible to directly compare performance across sentences with and without a *while*-clause.

The results of both experiments were very clear. Almost all children gave consistently adultlike responses, rejecting perfective statements and accepting imperfective statements. Children who showed non-adultlike performance in Experiments 1 and 2 also performed well in these studies, giving overwhelmingly adultlike responses to imperfective statements in Experiment 3 (n = 12, 25/25 trials) and Experiment 4 (n=8, 13/15 trials).

These findings show that children who failed in Experiments 1 and 2 do not simply assume that imperfectives have across-the-board completion entailments, or that imperfectives and perfectives are equivalent. Experiments 3 and 4 show that they know that imperfective predicates can describe partial events in the past, and Experiment 4 shows that they can describe parts of conative events. The crucial difference between Experiments 1 and 2 on the one hand, and Experiments 3 and 4, on the other hand, is in the presence of an explicit frame-of-reference in the *while*-clause. For younger children, imperfectives have completion entailments when no explicit frame-of-reference is provided, but not when a *while*-clause explicitly focuses on a subpart of the main event. These facts are, of course, reminiscent of the adult Dutch judgments described above.

The data presented above poses interesting questions for a theory of the progressive/imperfective. That Dutch simple past lacks completion entailments in *some but not all* cases is surprising for standard approaches the Imperfective paradox. As mentioned above, in those theories the lack of completion entailments is ascribed to a particular tense-aspectual category (e.g. English progressive) that has a property of being a PROG-operator.

It is, of course, possible to simply treat the Dutch simple past as a lexically ambiguous form. However, we feel that this would fail to do justice to (i) the systematic relation between reference frames and completion entailments in adult Dutch, and (ii) the developmental continuity between a Dutch-style system and the superficially simpler adult Russian system that we have observed in Russian children. Furthermore, we saw that when completion is controlled for, the Dutch *while*-sentence in (6) is compatible with a partial overlap between the matrix and embedded events ((6) is true in (7)a and in (7)b). However, it has completion entailments only if the matrix event is contained within the embedded event ((6) is true in (7)b but false in (8)b), but not if the embedded event is

contained within the matrix event ((6) is true in both (7)a and (8)a). These differences cannot be explained under the assumption that lack of completion entailments is a general property of the Dutch simple past.

The pattern exhibited by young Russian-children is curious in two respects. First, at least superficially, it is more ‘complex’ than the target-like pattern: children’s acceptance of the imperfective with incomplete events is dependent on the sentence/situation, whereas adults accept the imperfective with incomplete events across-the-board. Second, it is identical to the Dutch adults’ pattern of the simple past.

We suggest that all of the observations above can be explained if we extend the account of the Imperfective Paradox to take into consideration discourse-established reference frames. We argue that both Dutch simple past and Russian imperfective are *PROG*-operators and that differences between the two categories come solely from different quantificational properties with respect to the Reference frame provided by the discourse. That Russian-speaking children exhibit the Dutch-like pattern is caused by the fact that they have not yet acquired the property of the Russian imperfective that allows it to quantify over discourse-established reference frames. They therefore use the more restrictive Dutch-like setting instead.

4. Our Proposal

Our account exploits the reference frame established by temporal modification to address the Event-type problem in the progressive/imperfective.⁵ We will adopt an intensional solution to the Event-type problem along the lines of Dowty (1979) and Landman (1992). Remember that in such approaches the ‘escape point’ from the real world into an alternative world occurred right before the failure point of the event. Here we restrict the set of qualifying inertia worlds (or ‘continuation branches’, in Landman’s terms) even further by imposing a requirement that an escape point into an inertia world can occur only after the end of the relevant reference interval.

(12) A *PROG*-predicate, obtained by applying a *PROG*-operator to a (bare) predicate, is true in a given discourse, iff a relevant event-type can be found in an inertia world that coincides with the real world before and throughout the relevant Reference Frame.

5. We could, in principle, adopt the solution to the Event-type problem from either extensional or intensional type account. However, in the case of incomplete events, Parsons (1989) extensional account explicitly denies any need to abstract away from the event failure in the real world to find the event type of a conative event. Therefore, it is more straightforward to present our account in the terms of intensional approaches.

(12) requires that an appropriate event-type can be found in a possible world that coincides with the real world until after the end of the relevant Reference frame. Note that the reference frame in (12) is the ‘relevant’ reference frame, which may (Dutch) or may not (Russian) coincide with the ‘discourse-established’ reference frame.

We argue that both the Russian imperfective and the Dutch simple past involve PROG-operators, and we derive the differences between the two categories solely from the different ways in which the two languages select the relevant reference frame. As for the Russian developmental data, we suggest that Russian-speaking children are aware of the progressive nature of the Russian-imperfective (i.e., they abide by the definition of PROG-operator in (12)), but that they have a Dutch-like way of representing the relevant reference frame for the Event-type problem, which explains why their judgments are similar to those of the Dutch adults. What the Russian-speaking children need to learn is that they can loosen the requirements on the choice of the Reference frame when searching for the event-type. Next, we formulate the semantics of the Dutch simple past and Russian imperfective and explain how these representations yield the corresponding pattern of judgments.

Starting with adult Dutch, we suggest the representation in (13).

- (13) Adult Dutch representation of the Dutch simple past⁶
 #1: Dutch simple past is a PROG-operator
 #2: The relevant Reference frame for the Event-type problem coincides with the discourse-established reference frame⁷

The first part of (13) reiterates our claim that the Dutch simple past is a PROG-operator. The second part indicates that the reference frame that is relevant for the Event-type problem is the reference-frame established by the discourse.

6. (13) is also Russian children’s representation of the Russian imperfective

7. The notion that temporal relations have the same anaphoric property as pronominal relations was proposed by Partee (1973). Partee suggests that the truth conditions of a sentence in a discourse must be assessed with respect to some contextually relevant temporal interval. She also noticed that while this interval is usually salient from the preceding discourse, it may also be specified extralinguistically. Partee’s widely cited example is the utterance ‘I didn’t turn off the stove’, made by a person driving on a highway. In this situation, it is obvious that the speaker’s claim was not made about the entire past time interval that preceded the moment of speech, rather the utterance refers to the period of time when the speaker was leaving home. See van der Feest & van Hout (2002) for a suggestion that Dutch simple past is anaphoric to a reference frame established in the discourse.

Let us see, how the conditions in (13) can account for Dutch adults' pattern of judgments for sentence (6).

The discourse-established reference frame for sentence (6) corresponds to the interval defined by the *while*-clause, denoted by thick vertical lines in the diagrams in (7)-(8). In the Ongoing-failure situation in (8)a this reference frame includes a subpart of an incomplete matrix event, but excludes the failure point. Thus, having the end of the reference-frame as the escape-point into an inertia world makes it possible to find a possible world where the matrix event reaches its culmination, making (6) true. Similar reasoning applies to the situation in (7)a.

The Event-type problem for the matrix imperfective in (6) can also be solved in the Within-success situation in (7)b: the event-type can be found in some inertia world (in fact, every inertia world) that coincides with the real world throughout the *while*-interval, because the event is completed in the real world during that interval.

On the contrary, in the case of the Within-failure situation in (8)b, every possible world that coincides with the real world throughout the reference frame will contain the failure point of the matrix event, thus no successful continuation of that event after the reference frame is possible. Therefore, an event-type denoted by the matrix predicate cannot be found, which leads to the falseness of the Dutch sentence (6) in situation (8)b.

As mentioned earlier, we suggest that the Russian children's representation of the Russian imperfective is equivalent to that of the Dutch simple past by Dutch-speaking adults, which explains the pattern of judgments from Russian-speaking children.⁸

The Russian-speaking adults' representation of the imperfective is given in (14).

- (14) Adult Russian representation of the imperfective
 #1: Russian imperfective is a PROG-operator
 #2: The relevant Reference frame for the Event-type problem is any temporal interval within the discourse-established reference frame (provided that it satisfies the normality assumption)

Thus, the Russian imperfective is similar the Dutch simple past in virtue of being a PROG-operator. What makes Russian imperfective special is its ability to quantify *within* a discourse-established reference frame. That is, if the discourse-established reference frame is an interval from 3 to 5 pm,

8. We have not, in fact, tested experimentally whether Russian-speaking children indeed fail to accept incomplete events in the Within-failure situation. What we have observed is that they failed to accept a simple imperfective sentence in a conative situation, which in our analysis parallels the Within-failure case.

Russian imperfective for its own needs can quantify within this interval: at some interval I such that $I \subseteq \{\text{from 3 to 5 pm}\}$.

Note that the conditions in (14) that must be satisfied for the Russian imperfective represent a subset of the conditions in (13) for the Dutch simple past. Therefore, every situation that makes Dutch example (6) true will also make Russian (9) true. This accounts for the truth of the Russian example (9) in the Ongoing-success, Within-success and Ongoing-failure situations.

What remains to be explained then is why Russian (9), unlike its Dutch counterpart, is true in the Within-failure situation. This is because there is a temporal frame that falls within the discourse-set reference interval (i.e. within the *while*-interval), such that an event-type can be found in an inertia world that coincides with the real world before and throughout that temporal frame. Specifically, this holds for a temporal frame that is properly contained within the matrix event (therefore, excludes its failure).

Finally, we would like to explain why the Russian simple imperfective sentence (15) does not have a completion entailment, whereas a similar Dutch sentence (16) has a strong implication of completion.

(15) Okolo dereva obez'yanka stroila¹ gnomika.
 at tree monkey build.Past.Imp smurf
 At the tree the monkey was building a smurf.

(16) Het meisje maakt een puzzel bij de auto.
 the girl make.Past a puzzle at the car
 The girl did the puzzle at the car.

In both cases the PP – *at the tree* or *at the car* – specifies a reference frame that spans all of the incomplete event, including its failure point. This case is thus similar to the Within-failure situation. In Dutch and child Russian, which require the event-type problem be solved at the discourse-established reference frame, this leads to failure to find a relevant event-type. In adult Russian, where the imperfective can ‘look inside’ the discourse-established reference frame, a relevant event-type can be found at a narrower reference interval that lies within the event-interval. Thus Dutch (16) cannot, but Russian (15) can serve as a description of an incomplete event. We suggest that in the absence of an overt temporal modifier a default reference-frame is considered that for the past tense includes the entire event.

5. Conclusion

We have argued against an account of the Imperfective Paradox that ascribes the ability of the progressive/imperfective to refer to an incomplete event solely to the tense-aspectual category of the predicate, based upon the

observation that the same category (e.g. Dutch simple past, child Russian imperfective) may carry or lack completion entailments in different contexts. To account for the Dutch facts and the Russian developmental findings, we suggested that the reference frame established in the discourse plays a crucial role in licensing reference to incomplete events.

The idea that we use here for Russian is reminiscent of so-called ‘perspective-based’ approaches, in which the lack of completion entailments of the progressive/imperfective is attributed to an ‘insider’ perspective on the event (e.g., Comrie 1976, Smith 1991, Demirdache & Uribe-Etxebarria 2000, 2002). However, our proposal makes different use of this device, since it does not directly specify a relation between the reference time and the event time (e.g., the reference frame need not always be narrower than the event for the imperfective). Rather, it specifies a relation between the reference frame and an interval in the actual world that contains the event. Furthermore, it crucially assumes variation in how different languages allow reference frames to be established for evaluation of progressives/imperfectives. This is possibly analogous to different ways in which languages allow pronominal NPs to establish their antecedents.

We view the framework advocated here a combination of the insights of the perspective-based approach with those approaches that solve the event-type problem.

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