

## Is Topic Time Needed to Account for Russian Aspect?

Dmitry Levinson

dmitryle@stanford.edu

Stanford University

### 1 Introduction

#### 1.1 Russian Aspect

(1) Ja čital knigu.  
I read-IPFV book.  
'I was reading a book'

(2) Ja pročital knigu.  
I read-PFV book.  
'I read a book'.  
Telicity, boundedness.

#### 1.2 Topic Time

Reichenbach (1947): Speech time, Reference time, Event time.

Klein (1994):

TU - utterance time

T-SIT - event time

TT - topic time, the time for which the particular utterance makes an assertion.

Possible relationships (Klein 1994:108):

TT is included in TSIT imperfective (English progressive)

TT includes TSIT: perfective (p. 110: change of state within TT)

TT after TSIT: perfect

TT before TSIT: prospective

### 2 Paslawska and von Stechow (2003): Using Topic Time to analyze Russian Aspect

Three *temporal embeddings* (p. 324), similar to Klein (1994):

INCLUDES (PERFECTIVE):  $TSIT \subseteq TT$ , the topic time *includes* the event time

POST (PERFECT):  $TSIT < TT$ , the topic time is *after* the event time

INCLUDED (IMPERFECTIVE):  $TT \subseteq TSIT$ , the topic time is included in the event time.

Examples:

(3) *Včera ja pročital knigu.* INCLUDES/PERFECTIVE

Yesterday I read-PFV book.

'Yesterday I read a book'.

$TT \subseteq [[včera]]$ ,  $TSIT \subseteq TT$ , resulting in:  $TSIT \subseteq [[včera]]$

(4) *V 8 časov on uže zasnul.* POST/PERFECT

At 8 o'clock he fell-asleep-PFV

'At 8 o'clock he had already fallen asleep'.

$TT = [[8 \text{ o'clock}]]$ ,  $TSIT < TT$ , resulting in:  $TSIT < [[8 \text{ o'clock}]]$

(5) *V 8 časov on spal.* INCLUDED/IMPERFECTIVE

At 8 o'clock he slept-ipfv.

'At 8 o'clock he was sleeping'

$TT = [[8 \text{ o'clock}]]$ .  $TT \subseteq TSIT$ , resulting in:  $[[8 \text{ o'clock}]] \subseteq TSIT$

Their central claim (p. 322):

The *perfective morphology* has two functions:

1. marks the VP as telic (achievements/accomplishments)

2. licenses two different temporal embeddings, INCLUDES and POST.

The imperfective is in a "privative opposition" to the perfective and doesn't express any particular notion (p. 324). Later (p. 325) it is claimed that the imperfective is compatible with all the temporal embedding, so, in fact, the perfective morphology signals that the embedding is not INCLUDED/IMPERFECTIVE.

Problems:

1. No motivation for the reference time in INCLUDES/PERFECTIVE temporal embedding.
2. The two functions of the aspect marking: telicity and temporal embedding seem unrelated.
3. No motivation why perfective is incompatible with INCLUDED/IMPERFECTIVE.
4. There is another "temporal embedding": punctual adverbials marking the start of the event described by a telic predicate.

(6) *Segodnja v 11 časov ja pomyl posudu.*

Today at 11 o'clock I washed-PFV dishes.

'Today at 11 o'clock I washed the dishes'.

The three embeddings represent two distinctions: PERFECTIVE vs. IMPERFECTIVE and PERFECTIVE vs. PERFECT. I discuss the former in section 3 and the latter in section 4, showing how the distinctions can be achieved without the notion of topic time.

### 3 INCLUDES vs. INCLUDED

In my analysis the main function of the aspect is marking the telicity and what seems as difference in temporal embedding is explained by the difference in telicity. Basically, the topic time is *always* the situation time (TT = TSIT).

#### 3.1 The INCLUDES/PERFECTIVE embedding

When the sentence has a time adverbial, the topic time semantics is as follows: TT includes T-SIT, the time denoted by the adverbial includes TT. In the analysis advocated here, a time adverbial denotes an interval that includes T-SIT, and TT is not needed.

(7) *Včera ja pročitai knigu.*

Yesterday I read-PFV book.

'Yesterday I read a book'.

TT approach:  $TT \subseteq [[včera]]$ ,  $TSIT \subseteq TT$

The analysis advocated here:  $TSIT \subseteq [[včera]]$

These truth conditions can be obtained directly, similar to Kamp and Reyle (1993:511), without the need to use the notion of "topic time".

*A step aside: time adverbials and TT in previous approaches*

How do we know that interval time adverbials like *včera* 'yesterday' are interpreted as containing TT, and not setting the TT? The evidence comes from the IMPERFECTIVE sentences. For example:

(8) *Včera ja čital knigu.*

Yesterday I read-IPFV book.

'Yesterday I was reading a book'.

If  $TT = [[včera]]$  'yesterday', then, according the IMPERFECTIVE truth conditions, this sentence is true only if there is an event of reading that lasts throughout yesterday and longer. However, this is not the case, and the sentence can be true if there is an event of reading *within* yesterday. Therefore, the interpretation of time adverbial is  $TT \subseteq [[včera]]$ .

#### 3.2 The INCLUDED/IMPERFECTIVE (progressive) embedding

In my approach, the topic time is the situation time (TT = TSIT). Why does the progressive have the feeling of "inclusion" of the topic time in the event time? This feeling, that the INCLUDED/IMPERFECTIVE embedding is meant to capture, is not part of the truth conditions, but is *an implicature*. Atelic predicates are cumulative (homogeneously divisive), so if they hold for an event *e*, they can also hold for events containing *e*. Therefore, if an activity happens at some interval or point, it can continue in both directions. On the other hand, telic predicates are quantized, so if the predicate holds for an event *e*, it will not generally hold for events containing *e*.

Therefore, the INCLUDED interpretation follows from the atelicity of the predicate marked by the imperfective aspect and need not be specially postulated. The predicate holds for T-SIT, and it is the time denoted by time adverbials.

For example, if the sentence is "at 8 o'clock he was sleeping", the truth conditions are exactly that: that at 8 o'clock there was an instant-long event of "he sleeps" (with *sleep* understood as an activity). This sentence would typically be understood as meaning that the sleeping occurred at some longer-than-instant interval including 8:00 (cf. Kamp and Reyle (1993:502-3)). This can be seen as an implicature based on world knowledge that people do not usually engage in activities for an instant. Such an extension of the meaning is only possible for atelic predicates, denoting states/activities that can continue in time. This implicature does not occur for telic predicates, expressed by perfective verbs, since they are not cumulative.

(9) *V 8 časov on spal.*

At 8 o'clock he slept-IPFV.

'At 8 o'clock he was sleeping'

The TT approach:

$TT = [[8 \text{ o'clock}]]$ .  $TT \subseteq TSIT$ , resulting in:  $[[8 \text{ o'clock}]] \subseteq TSIT$

The analysis advocated here:

For the event *e* referred to by the sentence,  $TSIT(e) = [[8 \text{ o'clock}]]$ . Since the event is atelic, we can assume that there is another event *e*<sub>1</sub> that includes *e*, and for *e*<sub>1</sub>,  $TSIT(e_1)$  includes  $TSIT(e) = [[8 \text{ o'clock}]]$ .

#### 3.3 Explaining the difference between the aspects: comparison

The difference between verbs of different aspects is due to the difference in the event kinds they denote. IPFV/PFV verbs forming an aspectual pair are typically of different aspectual classes and of different telicity. A typical combination: activity/accomplishment (*stroit*'/ *postroit*' 'build'), activity/achievement (*ubezhdai*'/ *ubedit*' 'convince'), or

state/achievement (*videt'/uvidet'* 'see') (cf. Maslov (1948), Moens and Steedman (1988)).

TT approach: different temporal embeddings for different aspects.

The analysis advocated here: the difference is in the kind of the event, and the difference in relationships with time adverbials is a consequence.

Since the topic time is not needed for the INCLUDES embedding as well, my conclusion is that the notion of reference/topic time is not needed to explain the differences between the perfective and imperfective aspect.

*A similar discussion for English*

My approach is similar to the explanation of (Moens and Steedman 1988) for the progressive in English. A progressive form requires an activity/process, and if the verb denotes an activity/accomplishment, it undergoes a coercion. Using reverse embedding for progressive was advocated by Bennett and Partee (1972). Russian: the perfective/imperfective morphology is more lexicalized, giving support for the coercion approaches.

(10) John is building a house.

Bennett and Partee (1972): the predicate is *build a house* (PFV/accomplishment), and the "reverse inclusion" is how a predicate is applied when the progressive morphology is present.

Moens and Steedman (1988): when the progressive is present, the predicate is coerced, so the predicate applied to the world is *be building a house* (IPFV/process). The application of this predicate is the same as *build the house* would be applied.

When the action has been completed, the resulting truth conditions are basically the same. However, the truth conditions of Bennett and Partee (1972) lead to the Imperfective Paradox (Dowty 1979), whereas it does not occur with Moens and Steedman (1988). Other possible solutions for the imperfective paradox are discussed in Zucchi (1999).

#### 4 INCLUDES vs POST

##### 4.1 Proposal: the past perfective coerced to denote the target state

In this section I address the PERFECTIVE/POST distinction without using the notion of TT distinct from TSIT. Taking PERFECTIVE as the basic meaning, the POST sense has to be explained.

A possible way to do this is to say that in the perfect usage telic predicate is coerced to denote its result state, thus becoming an atelic predicate. When the assertion time is in the present, the past perfective verb denoting an event behaves like a present imperfective verb denoting the target state.

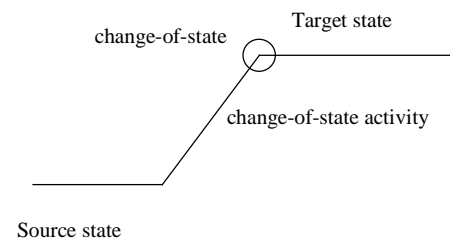


Figure 1

(11) V 8 časov on uže zasnul.

At 8 o'clock he fell-asleep-PFV

'At 8 o'clock he had already fallen asleep'.

TT approach: TT = [[8 o'clock]], TSIT < TT.

The analysis advocated here: the past perfective form is coerced to denote the result state (*he is sleeping*), and TSIT = [[8 o'clock]].

The following subsections provide supporting evidence, showing similarities between telic verbs in the past and atelic verbs in the present. Also discussed are some problematic cases.

##### 4.2 uže 'already'

The adverb *uže* 'already' invokes the PERFECT meaning with both perfective and imperfective verbs.

Past imperfective:

(12) V 8 časov on spal.

At 8 o'clock he slept-IPFV.

'At 8 o'clock he was sleeping'

The state holds at the asserted time. Anything else is an implicature.

Past imperfective with *uže*:

(13) V 8 časov on uže spal.

At 8 o'clock he already slept-IPFV.

'At 8 o'clock he was already sleeping'

The contribution of *uže* 'already' to the meaning of the sentence: the state existed before the referred time and continues to the time.

Past perfective:

(14) V 8 časov on zasnul.

At 8 o'clock he fell-asleep-PFV.

'At 8 o'clock he fell asleep'

Change-of-state happened at 8.

(15) *V 8 časov on uže zasnul.*

At 8 o'clock he fell-asleep-PFV

'At 8 o'clock he had already fallen asleep'.

The result state started before 8. The usage of *uže* with perfective is the same as with imperfective if the perfective sentences are understood as referring to the result state. The meaning is: the state/activity started earlier than expected, or before the time denoted by the adverb. Therefore, the interpretation of the temporal adverb does not depend on the aspect.

#### 4.3 *Davno* 'long ago; for a long time'

The word *davno* has two senses, *locational* (L) 'a long time ago', as in (16), and *durational-locational* (DL) 'for a long time', as in (17).

(16) *On davno uže zasnul.*

He *davno* already fell-asleep-PFV.

'He fell asleep a long time ago'.

(17) *On davno uže spít.*

He *davno* already sleeps-IPFV.

'He's been sleeping for a long time'.

Traditionally the two senses have been described separately. Yanko (2003:209) proposes a unitary analysis, giving the following semantics for *davno*: 'the situation began a long time before the moment of speaking'. When used with the state, the meaning is obviously correct: the state began a long time ago. With events, the meaning is supposed to be 'the situation started long ago and terminated in due time before the moment of speaking'. This does not seem to be entirely correct. As the following example shows, in the case of possibly prolonged actions the use of *davno* means that the action *ended* a long time ago, and not that it began a long time ago.

(18) *Ja davno pročítal ètu knihu.*

I *davno* read-PFV this book.

'I read this book a long time ago'.

The unitary analysis proposed by Yanko does not, therefore, give correct truth conditions for *davno* with actions in the past. In order to give a unitary analysis that reflects the actual usage we must assume that *davno* refers to the beginning of the result state of the action. The unitary meaning of *davno* is therefore: some atelic event (state/activity) started a long time ago and still holds. When used with atelic verb in present tense,

the meaning is straightforward. When used with perfective verb in the past, the state referred to is the result state of the event denoted by the verb.

The existence of such a unitary meaning is supported by the diachronic evidence of the development of the meanings of the word *davno* and similar expressions in the other languages. A survey of a number of languages showed that the semantic change is unidirectional: DL => L. Another process, creating the expression meaning DL by combining words meaning 'from' and L, can lead to the following diachronic cycle:

1. DL => L;DL. Extending the meaning of an existing expression.

2. *from* + L => DL. Creating a new expression.

Bulgarian:

*otdavna* 'L; DL' < Common Slavic *otdavna* 'DL' < *ot* 'from' + *davni* *ot* 'from' + *otdavna* 'L; DL' => *ototdavna* 'DL'

Hebrew:

Standard: *mi-zman* 'L; DL'. Literally 'from-time'.

Colloquial: *mi-mi-zman* 'L; DL'. Judging by the form, DL was the original meaning.

The change is facilitated by the usage with perfective. First, when the adverb is used, the perfective verb undergoes a coercion to denote the result state. Then the meaning of the word is expanded to mean L, and the perfective can be used with its regular meaning.

#### 4.4 'Kak'-clauses

Consider the following sentence:

(19) *On uže čas spít.*

He already hour sleeps-IPFV.

'He's been sleeping for an hour'.

It is possible to use the word *kak* 'that/how/as', with the same meaning:

(20) *On uže čas kak spít.*

He already hour that/as sleeps-IPFV.

'He's been sleeping for an hour'.

When the word *kak* is present, it is possible to use a perfective verb in the past instead of the present imperfective. The target state of the perfective verb is denoted by the original imperfective verb.

(21) *On uže čas kak zasnul.*

He already hour *kak* fell-asleep-PFV.

'It's been already an hour that he fell asleep'.

However, unlike present imperfective, past perfective cannot be used without *kak* in this case.

(22) \*On *uže* čas zasnul.

He already hour fell-asleep-pfv.

'It's been already an hour that he fell asleep'.

Conclusion: the coercion can only take place when *kak* is present.

#### 4.5 *Contra: the right boundary, interaction with negation*

We have seen the cases in which the perfective verb can be coerced to denote its result state. However, such a coercion is impossible with adverbs delimiting the ending of the result state, that is, its right boundary.

Examples:

(23) *S 3-x do 4-x okno bylo otkryto.*

From 3 to 4 window was open-PPP.

'The window was open from 3 to 4'.

(24) \**S 3-x do 4-x on otkryl okno.*

From 3 to 4 he opened-pfv window.

Intended meaning 'The window was open from 3 to 4'.

The left boundary of the result state:

(25) *Okno uže otkryto.*

Window already open-PPP.

'The window is already open'.

(26) *Ja uže otkryl okno.*

I already opened-PFV window.

'I have already opened a/the window'.

Being in the result state:

(27) *Okno otkryto.*

Window opened-PPP.

'The window is open'.

(28) *Ja otkryl okno.*

I opened-PFV window.

'I opened a/the window'.

The right boundary of the result state:

(29) *Okno ešče otkryto.*

Window still open-PPP.

'The window is still open'.

(30) \**Ja ešče otkryl okno.*

I still opened-PFV window.

Intended: 'I opened the window and it's still open'.

#### *Interaction with negation*

Present imperfective: both *uže* 'already' and *ešče* 'still' are possible in both positive and negative sentences:

(31) *On uže / ešče spít.*

He already / still sleeps-IPFV.

'He is already/still sleeping'

(32) *On uže / ešče ne spít.*

He already / still not sleeps-IPFV.

'He is not sleeping anymore/yet'

Past perfective: in positive sentences, *uže* 'already' but not *ešče* 'still', can be used; in negative sentences the situation is reversed (cf. Klein (1994:147)):

(33) *On uže zasnul*

He already fell-asleep-PFV.

'He already fell asleep' = 'He is already sleeping'

(34) \**On ešče zasnul.*

He still fell-asleep-PFV.

Intended: 'He is still sleeping'

(35) \**On uže ne zasnul*

He already not fell-asleep-PFV.

Intended: 'He is not sleeping anymore'

(36) *On ešče ne zasnul.*

He still not fell-asleep-PFV.

'He hasn't fallen asleep yet' = 'He is not sleeping yet'.

Referring to the onset of the result state: (33), (36). Past perfective can be used, coerced to denote the result state.

Referring to the ending of the result state: (34), (35). Past perfective cannot be used. In this case the coercion to the result state does not happen.

Interaction with *still/already* is mentioned in Klein (1994:147)

#### 4.6 Conclusion

Taking the PERFECTIVE as the base, the PERFECT embedding can be explained by the coercion of the perfective verb to the imperfective, denoting the result state. This way there is no need in separate PERFECTIVE and PERFECT embeddings, and no need to postulate a topic time separate from the event time.

### 5 Conclusions

We have seen that the contributions of the different embeddings can also be achieved in other ways, without involving the notion of topic time. Thus there is no need to postulate topic time and different temporal embeddings to account for the differences between the aspects. The aspect has one function: to signal the telicity, and relationship between the time adverbials and the event time is unrelated to the aspect.

#### Appendix A

#### Other approaches to Russian aspect using the “topic time notion”

A.2 Borik (2002)

Analysis

Three intervals, using the Reichenbach (1947) notation:

S - speech time  
R - reference time  
E - event time

$E \subseteq R$  is given (p. 155)

Aspect:  
Perfective :  $S \cap R = \emptyset$   
Imperfective:  $S \cap R \neq \emptyset$

Tense in Russian: relationship between E and S.

Past:  $E < S$   
Present:  $S \cap E \neq \emptyset$   
Future:  $S < E$

Semantics for tense-aspect combinations (p. 160):

	Imperfective	perfective
past	$E \subseteq R \wedge E < S \wedge S \cap R \neq \emptyset$	$E \subseteq R \wedge R < S$
actual present	$E \subseteq R \wedge S \cap E \neq \emptyset \wedge S \cap R \neq \emptyset$	

present		
Future	$E \subseteq R \wedge S < E \wedge S \cap R \neq \emptyset$	$E \subseteq R \wedge S < R$

Table 1. Representing Russian tense/aspect combinations

Incorporating the “Progressive operator”: “ $E \subseteq R \rightarrow R \subseteq E$ ”, for Imperfective only:

Aspect: (p. 166-167)  
Perfective :  $S \cap R = \emptyset \wedge E \subseteq R$   
Imperfective:  $\neg (S \cap R = \emptyset \wedge E \subseteq R)$

Tense/aspect combinations revised according to p. 171:

	imperfective	perfective
Past	$E < S \wedge ((E \subseteq R \wedge S \cap R \neq \emptyset) \vee (E \subseteq R))$	$E \subseteq R \wedge R < S$
actual present	$S \cap E \neq \emptyset \wedge ((E \subseteq R \wedge S \cap R \neq \emptyset) \vee (E \subseteq R))$	
Future	$S < E \wedge ((E \subseteq R \wedge S \cap R \neq \emptyset) \vee (E \subseteq R))$	$E \subseteq R \wedge S < R$

Table 2. Representing Russian tense/aspect combinations, incorporating the “progressive operator”.

#### Problems

The differences between past imperfective and perfective are given in terms of Reference time overlapping or not with S. Such explanation is unbased, nor does it explain the data. For example, the difference between past perfective and imperfective is given in (46) on p. 158 and never explained. Consider, for example, the following two sentences:

- (63) a. *Petja zavtrakal.*  
Peter had-breakfast-IPFV.  
'Petja was eating breakfast'.  
b. *Petja pozavtrakal.*  
Peter had-breakfast-PFV.  
'Petja had breakfast'.

It is not clear how the difference in the relationship between R and S reflect the difference between the sentences. Later (p. 168) the contrast is explained using a couple of English sentences:

- (62) a. John ate breakfast.  $E \subseteq R \wedge R < S$  (As for Russian perfective)

b. John has already eaten breakfast.  $E \subseteq R \wedge E < S \wedge S \cap R \neq \emptyset$  (As for Russian imperfective).

The truth conditions assigned by Borik to (62a) and (63b) are the same. Moreover, the truth conditions assigned to (62b) and (63a) are the same. While (62a) and (63b) are indeed similar, the sentences in (62b) and (63a) are very different, and should not be assigned the same truth conditions.

Earlier in her study Borik (2002:45) discusses the cases in which the imperfective has the sense of “annulled result”, while the perfective signals that the result still holds:

(37) *Kto zalez na čerdak?*

Who climbed-PFV on attic?

‘Who climbed to the attic.’ Implied: the person that climbed is currently in the attic.

(38) *Kto zalezal na čerdak?*

Who climbed-IPFV on attic?

‘Who climbed to the attic.’ Implied: the person that climbed is currently not in the attic.

Borik’s analysis does not explain this contrast.

Yet another kind of counterevidence is shown in the next sentence:

(39) *Za segodnja ja pročitaju tri knigi.*

In today I read-PFV-FUT three books.

‘Today I will (have) read three books’.

This sentence can be said in the middle of the day, in which case R and S overlap, contrary to Borik’s analysis of the perfective.

The conclusion is that Borik’s (2002) analysis is not supported by the language data.

## References

- Bennett, M. and B. Partee (1972). *Toward the logic of Tense and Aspect in English*. Reprinted in: Partee, Barbara H. (2003). *Compositionality in Formal Semantics: Selected Papers of Barbara Partee*. Oxford: Blackwell Publishers.
- Borik, Olga (2002). *Aspect and Reference time*. Ph.D. dissertation, University of Utrecht.
- Kamp, Hans, and Uwe Reyle (1993). *From Discourse to Logic*. Dordrecht: Kluwer.
- Klein, Wolfgang (1994). *Time in Language*. London: Routledge.

Klein, Wolfgang (1995). A time-relational analysis of Russian aspect. *Language* 71, 669-695.

Maslov, Ju. S. (1948). Vid i leksičeskoe značenie glagola v ruskom jazyke. *Izvestija AN SSSR. Serija literatury i jazyka* 7(4), 303-316.

Moens, Marc, and Mark Steedman (1988). Temporal ontology and temporal reference. *Computational Linguistics*. 14(2), 15-28.

Paslawska, Alla, and von Stechow, Arnim (2003). Perfect Readings in Russian. In: Alexiadou, Artemis, Monika Rathert, and Arnim von Stechow (eds.), *Perfect Explorations*. De Gruyter.

Reichenbach, Hans (1947). *Elements of Symbolic Logic*. New York: McMillan.

Yanko, Tanya (2003). The Communicative Effects of the Interaction between the Verbal Aspectual Categories and Temporal Adverbials in Russian. *Journal of Slavic Linguistics* 11(1): 199-217.

Zucchi, Sandro (1999). Incomplete Events, Intensionality and Imperfective Aspect. *Natural Language Semantics* 7, 179-215.